Saskatchewan Apprenticeship and Trade Certification Commission

Sprinkler Fitter

Course Outline

2021

TRAINING PROFILE CHART

Since Saskatchewan Sprinkler Fitter technical training is completed in Alberta, this Training Profile Chart represents the Harmonized Alberta technical training at the topic level.

Level One	Hours
Workplace Safety and Rigging	24
Tools, Equipment and Materials	92
Metal Fabrication	46
Drawing and Specifications	30
Calculations and Science	48
	240

Level Two	Hours
Fire Sprinkler Systems	81
Water-Based Systems	68
Water Supply	51
Work Organization	40
	240

Level Three	Hours
Fire Pump Units	42
Specialty Hazard Systems	101
Inspection, Testing and Maintenance	36
Detection and Signal Initiating Devices	39
Emerging Technology, Communication and Apprenticeship	22
	240

TECHNICAL TRAINING COURSE CONTENT

This chart outlines the model for Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) technical training sequencing. For the harmonized level of training, a cross reference to the Red Seal Occupational Standard (RSOS) apprenticeship technical training sequencing, at the learning outcome level, is provided.

Implementation for harmonization took place progressively.

Since the Sprinkler Fitter technical training takes place in Alberta, Alberta is responsible for the Harmonized training. In Alberta, pipe fitting trades attend a common Level One, therefore the recommended specific Sprinkler Fitter Level One topics (*Piping Components* and *Water-Based Systems*) are taught in Level Two. Additional differences to the Harmonized recommendations include that: Communications is taught in Level Three, not Level One; Deluge systems is taught in Level Three, not Level Two; and, Private Water Supply Systems is taught in Alberta Level Two, not in Level Three.

Level One — 8 weeks — 240 hours

Workplace Safety & Rigging — 24 hours

A. Safety Legislation, Regulations & Industry Policy in the Trades — 4 hours

- demonstrate the application of the Occupational Health and Safety Act, Regulation and Code
- describe the employer's and employee's role with Occupational Health and Safety (OH&S) regulations, Worksite Hazardous Materials Information Systems (WHMIS), fire regulations, Workers Compensation Board regulations and related advisory bodies and agencies
- describe industry practices for hazard assessment and control procedures
- describe the responsibilities of worker and employers to apply emergency procedures
- describe tradesperson attitudes with respect to housekeeping, personal protective equipment and emergency procedures
- describe the roles and responsibilities of employers and employees with the selection and use of personal protective equipment (PPE)
- maintain required PPE for tasks
- use required PPE for tasks

B. Climbing, Lifting, Rigging and Hoisting — 6 hours

- describe manual lifting procedures
- describe rigging hardware and associated safety factors
- select equipment for rigging loads
- describe hoisting and load moving procedures
- maintain personal protective equipment (PPE) for climbing, lifting and load moving equipment
- use PPE for climbing, lifting and moving equipment

C. Hazardous Materials & Fire Protection — 4 hours

- describe roles, responsibilities, features and practices related to the Workplace Hazardous Materials Information System (WHMIS) program
- describe the three key elements of WHMIS
- describe handling, storing and transporting procedures for hazardous material
- describe venting procedures when working with hazardous materials

- describe fire hazards, classes, procedures and equipment related to fire protection

D. Apprenticeship Training Program 3 hours

- describe the contractual responsibilities of the apprentice, employer and Alberta Apprenticeship and Industry Training
- describe the purpose of the record book
- describe the procedure for changing employers during an active apprenticeship
- describe the purpose of the course outline
- describe the procedure for progressing through an apprenticeship
- describe advancement opportunities in this trade

E. Pipe Trades Codes 3 hours

- identify code documents relating to pipe trades including ASME/ ABSA, CSA, NRC, NFPA, ASHRAE
- explain the purpose of codes and standards
- describe where codes and standards are applicable and by what authority
- describe the procedures for the acceptance of the codes by the provinces and the local authorities

F. Electrical Safety 4 hours

- identify safe work practices to protect from arc flash hazards
- describe lockout/tagout procedures
- identify safe work practices to prevent electrical shock

Tools Equipment and Materials — 92 hours

A. Hand Tools 6 hours

- identify the types of hand tools
- describe use of hand tools
- describe the maintenance of hand tools

B. Power Tools 6 hours

- identify the types of power tools
- describe use of power tools
- describe the maintenance of power tools

C. Welded Pipe and Fittings 12 hours

- identify types, markings, designations and pressure rating for welded pipe fittings
- identify stud tensioning systems
- state factors, methods and torque measurements for bolt ups
- identify types, markings, designations, temperature and pressure ratings of flanged fittings and gaskets
- describe the fabrication process for welded pipe and fittings to the tack-up stage
- describe flange preparation and joining techniques for flanged joints

D. Plastic Pipe and Tube 12 hours

- identify types, applications and designations of plastic pipe, tubing and fittings
- describe fabrication processes for solvent welding plastic pipe
- describe fabrication processes for plastic pipe and tubing using alternative joining methods
- describe fabrication processes for bell end joints
- describe fabrication processes for plastic pipe using thermal fusion and electric resistance welding

- fabricate and test a solvent weld spool to manufacturer's specifications
- fabricate and test a fusion weld spool to manufacturer's specifications

E. Threaded and Grooved Pipe **15 hours**

- identify types, markings, designations, temperature and pressure ratings of ferrous pipe and fittings
- identify applications of codes, regulations and manufacturer's specifications
- describe the composition of ferrous, alloyed and non-ferrous pipe
- describe the fabrication steps for threading and grooving pipe
- calculate cut length for threaded and grooved pipe
- demonstrate use of hand tools to thread and groove pipe
- demonstrate use of power tools to thread and groove pipe
- assemble and pressure test an assigned project

F. Tube and Tubing 12 hours

- identify types, designations and pressure ratings
- identify fitting types and joining techniques
- identify applications and manufacturer's specifications pertaining to joining methods
- identify health and safety issues pertaining to joining methods
- describe the process for bending tubing
- describe the fabrication processes for joining tubing systems
- assemble and pressure test an assigned project including flared, compression joints and bending components

G. Valves 12 hours

- identify types of valves
- describe fundamental design variations and their applications
- describe service and maintenance procedures
- explain specifications and manufacturer's requirements for valves

H. Hangers, Supports and Fasteners 10 hours

- identify types of hangers, supports and fasteners
- describe applications of hangers, supports and fasteners
- describe installation techniques for hangers, supports and fasteners
- explain specifications and manufacturer requirements for hangers, supports and fasteners

I. Pressure Testing 3 hours

- identify equipment used for pressure testing piping installations
- describe procedures and requirements for pneumatic and hydrostatic testing
- describe hazards specific to pressure testing

J. Pumps 4 hours

- identify types of pumps
- describe applications for pumps
- describe factors affecting the operation of a pump

Metal Fabrication **46 hours**

A. Welding Safety 4 hours

- identify hazards for welding and cutting operations
- identify personal protective equipment for welding and cutting operations
- explain hazards involved with welding fumes and gases
- identify welding fume ventilation methods
- explain the effects of electricity and precautions used to prevent injury

- describe procedures for welding or cutting in confined spaces
- interpret sections of the Occupational Health and Safety Act, general safety regulations

B. Welding 30 hours

- identify five basic joint types
- describe types of welds and their required dimensions
- identify types of metals using practical tests
- identify oxy-fuel cutting equipment
- identify arc welding equipment
- build a bracket project
- build a spool project

C. Brazing and Soldering 12 hours

- identify applications of brazed and solder joints
- identify equipment and materials required to braze and solder
- describe brazing and soldering procedures
- assemble and test assigned project

Drawings and Specifications 30 hours

A. Sketching and Drawing 6 hours

- identify the types of drafting equipment
- explain the use of drafting equipment
- identify the types of drafting lines found on a drawing
- identify the three views of an orthographic projection
- draw and label the three views of an orthographic drawing

B. Single Line Drawing 12 hours

- identify piping symbols
- draw and label orthographic single-line drawings
- draw and label isometric single-line piping drawings

C. Drawing Interpretation 12 hours

- identify the views of a drawing
- explain usage of scales
- calculate dimensions using imperial and metric scales
- describe symbols found on a drawing
- identify the five divisions of a drawing package
- describe the purpose of drawing divisions
- use architectural and mechanical drawings

Calculations and Science 48 hours

A. Applied Calculations 8 hours

- perform calculations using whole numbers, fractions and decimals
- describe the metric and imperial measurement systems
- describe the operation of the AIT calculator
- perform number conversions using whole numbers, fractions and decimals
- perform measurement conversions using whole numbers, fractions and decimals

B. Perimeters, Areas, Percentage and Grade 11 hours

- identify concepts when working with formulas
- apply formulas for calculating perimeters of a rectangle, triangle and a circle

- apply formulas for calculating the surface area of regular-shaped solids, tanks and cylinders
- apply the formula for calculating percentages
- calculate grades in percentage, fractions and ratio

C. Volumes and Capacities 4 hours

- apply formulas for calculating volumes of regular shaped solids, tanks and cylinders
- calculate capacities of regular shaped tanks and cylinders using both metric and imperial values

D. Piping Offsets 6 hours

- calculate offsets for right angle triangles
- apply formulas for 45° and 90° offsets
- calculate offset dimensions around an object

E. Matter, Density and Relative Density 6 hours

- describe three common states of matter
- define the terms matter, element, compound and mixture
- define the terms adhesion, cohesion, surface tension and capillarity
- calculate density, mass and volume of substances
- calculate mass and density using relative densities

F. Pressure and Atmosphere 6 hours

- define pressure and force
- state the six principles of hydrostatics
- define pressure constants used for calculating pressures
- describe atmospheric pressure and the effect of altitude
- perform pressure and force calculations in both imperial and metric units
- perform calculations to convert absolute, gauge and mercury pressures

G. Principles of Electricity 7 hours

- identify principles of electricity including direct and alternating current flow, electrolysis and electromagnetism
- sketch series and parallel electrical circuits
- apply Ohm's Law

~~**Piping Components**~~ (*Taught in L2 not in L1 as Harm recommended*)

~~**Water Based Systems**~~ (*Taught in L2 not in L1 as Harm recommended*)

~~**Communications**~~ (*Taught in L2 not in L1 as Harm recommended*)

Level Two — 8 weeks — 240 hours

Fire Sprinkler Systems — 81 hours

A. Hazard Classifications 8 hours

- describe fire science terms
- describe sprinkler system design
- describe hazard classifications
- explain methods of fire containment
- perform hazard assessments

B. Piping Arrangements 22 hours

- identify formulas for multiple piping offsets
- describe piping system types
- describe piping system components
- describe hand hose connections
- describe application of equal and unequal spread offsets
- explain pipe schedule systems
- explain hydraulically calculated systems
- explain special piping arrangements
- explain flushing connections
- explain pipe sleeve clearances
- design pipe schedule systems
- construct piping systems

C. Sprinkler System Drainage 5 hours

- describe drainage installation requirements
- describe drainage components for sprinkler systems
- explain grade requirements for piping systems
- explain sprinkler system drainage maintenance procedures
- install sprinkler system drains

D. Piping Support Systems (**Piping Components** *Taught in L2 not Harm L1 as recommended*) 7 hours

- describe hanger types
- describe bracing types
- describe hanger components
- describe bracing components
- explain seismic bracing requirements
- explain installation of sprinkler system supports
- perform trapeze hanger calculations
- perform rod sizing calculations

E. Sprinkler Installation 22 hours

- describe sprinkler types
- describe nozzle types
- describe sprinkler components
- describe nozzle components
- describe sprinkler installation
- describe nozzle installation
- explain sprinkler care
- explain clearance requirements for sprinklers.
- explain sprinkler selection.
- explain sprinkler spray patterns.
- explain obstruction rules.
- calculate clearances for sprinkler installation.
- install sprinklers

F. System Hydraulic Design 14 hours

- describe hydraulic calculation terminology
- describe hydraulic calculation procedures
- describe pressure loss
- explain water density requirements over a design area
- perform pressure loss calculation
- perform water demand calculation
- use hydraulic calculations for system layout

G. Access Equipment 3 hours

- describe elevated work platform types
- explain OH&S standards for elevated work platforms

Water-Based Systems (*Taught in L2 not Harm L3 as recommended*) — 68 hours

A. Residential Sprinkler Systems — 10 hours

- describe residential sprinkler system types
- describe water supply requirements
- describe material requirements
- explain maintenance procedures
- perform residential piping installation
- explain OH&S standards for elevated work platforms

B. Wet Sprinkler Systems — 18 hours

- describe wet system types
- describe wet system components
- explain wet system testing procedures
- explain wet system maintenance
- sketch an isometric drawing of an alarm check valve
- perform trim installation on an alarm valve

C. Dry Sprinkler Systems — 22 hours

- describe dry system types
- describe dry system components
- explain dry system testing procedures
- explain dry system maintenance
- explain air supply requirements for a dry system
- sketch an isometric drawing of a dry pipe valve
- perform trim installation on a dry pipe valve

D. Freeze Protection — 6 hours

- describe freeze protection systems
- describe freeze protection components
- describe freeze protection for piping
- explain freeze protection system hazards
- explain freeze protection testing procedures
- service freeze protection systems

E. Stand Pipe Systems — 12 hours

- describe stand pipe system types
- describe stand pipe system components
- describe stand pipe system testing requirements
- explain stand pipe system maintenance requirements

Water Supply — 51 hours

A. Public Water Supply — 6 hours

- describe public water supply
- describe water supply terminology
- explain flushing requirements
- explain types of public water supply connections

B. Private Water Supply (*Taught in L2 not Harm L3 as recommended*) — 6 hours

- describe private water supply systems
- describe private water supply storage tanks
- describe private water supply components

- describe corrosive water supplies
- explain flushing requirements
- perform tank size calculation

C. Cross Connection Control 6 hours

- identify cross connection control categories. Describe cross connection control terminology
- describe American Water Works Association (AWWA) certification
- explain cross connection control installation procedures
- explain cross connection control testing procedures

D. Fire Department Connections 4 hours

- describe fire department connections
- describe fire department connection components
- describe fire department connection testing
- explain fire department connection installation

E. Fire Hydrant 15 hours

- identify hydrant tools
- describe hydrant types
- describe hydrant components
- describe hydrant operation
- describe hydrant maintenance
- perform hydrant flow test calculation

F. Underground Piping 10 hours

- describe underground piping systems
- describe underground piping system components
- explain flushing requirements

G. Water Properties 4 hours

- describe chemical properties of water
- describe water flow terminology
- explain Venturi effect
- explain head pressure
- interpret water properties

Work Organization — 40 hours

A. Legislated Requirements 16 Hours

- identify environmental regulations
- describe fire protection legislation
- explain National Fire Protection Association (NFPA) standards
- explain Alberta Fire Code (AFC)
- explain Alberta Building Code (ABC)
- explain National Building Code (NBC)

B. System Layout 12 Hours

- interpret installation specifications
- interpret blueprints
- perform system layout

C. Job Site Planning 12 Hours

- identify project management requirements

- identify jobsite requirements
- identify factors that affect jobsite requirements
- describe jobsite reports
- explain work permits
- coordinate tasks with other trades

~~Deluge Systems~~ **(Taught in L3 not in L2 as Harm recommended)**

Level Three — 8 weeks — 240 hours

Fire Pump Units — 42 hours

A. Fire Pumps — 30 Hours

- describe fire pumps
- describe fire pump operation principles
- describe fire pump components
- describe jockey pumps
- describe pipe sizing
- explain fire pump commissioning
- explain fire pump maintenance
- explain fire pump room
- sketch fire pump room
- perform fire pump curve calculations

B. Drivers — 6 Hours

- identify driver performance
- identify power supplies
- describe drivers
- describe driver components
- describe driver operation
- explain driver-to-pump alignment
- perform water horsepower calculation

C. Controllers — 6 Hours

- describe controllers
- describe controller operation
- describe controller components
- explain sensing line installations

Specialty Hazard Systems — 101 hours

A. Chemical Systems — 6 Hours

- describe chemical systems
- describe dry chemical system components
- describe wet chemical system components
- describe operations of dry chemical systems
- describe wet chemical systems
- explain maintenance of chemical systems

B. Extinguishers — 6 Hours

- describe fire extinguisher classes
- describe fire extinguisher components
- explain fire extinguisher inspection
- explain fire extinguisher maintenance

C. Foam Systems — 15 Hours

- describe foam systems.
- describe foam concentrates.
- describe foam system discharge devices.
- explain foam system component installation
- explain commissioning of foam systems
- explain operation of a foam system

D. Clean Agent Systems 10 Hours

- describe clean agent systems
- describe clean agent system components
- describe clean agent system operation
- explain clean agent system testing requirements

E. Carbon Dioxide Systems 6 Hours

- describe carbon dioxide systems
- describe carbon dioxide system components
- describe carbon dioxide system operations
- explain carbon dioxide system testing

F. Pre-Action Systems 22 Hours

- describe pre-action systems
- describe pre-action system components
- describe pre-action system operations
- explain pre-action systems testing requirements
- perform trim installation on a pre-action valve

G. Deluge Systems (*Taught in L3 not Harm L2 as recommended*) 20 Hours

- describe deluge systems
- describe deluge system components
- describe deluge system operation
- describe fixed water spray systems
- describe outside exposure systems
- perform trim installation on a deluge valve

H. Water Mist Systems 10 Hours

- describe water mist systems
- describe water mist system components
- describe water mist system operations
- describe hybrid systems
- describe hybrid system components
- describe hybrid system operation

I. Corrosion Inhibiting 6 Hours

- describe piping corrosion
- describe corrosion inhibiting system devices
- explain corrosion inhibiting methods

Inspection, Testing and Maintenance — 36 hours

A. Inspect Fire Protection Systems 10 Hours

- identify owner's responsibilities for disarming systems
- identify sprinkler systems installer's responsibilities for disabling systems
- describe required testing procedures
- describe tools used for testing
- describe equipment used for testing
- describe types of inspection report documents
- describe inspection report terminology
- describe report document preparation

- perform a fire protection system inspection

B. Fire Protection System Maintenance 10 Hours

- identify owner's responsibilities for sprinkler systems
- identify sprinkler systems installer's legal responsibilities
- describe tools required for system maintenance
- describe equipment required for system maintenance
- describe routine maintenance procedures

C. Deficiencies 16 Hours

- describe system deficiencies
- describe system impairments
- describe sprinkler system failures
- describe sprinkler system repair procedures

Detection and Signal Initiating Devices

A. Actuating Devices 9 Hours

- describe actuating devices
- describe actuating device components
- explain device actuation

B. Spark Detection Systems 3 Hours

- describe spark detection systems
- describe spark detection system components
- describe spark detection system operation

C. Air Sampling Systems 6 Hours

- describe air sampling systems
- describe air sampling system components
- explain operation of air sampling systems

D. Signal Initiating Devices 7 Hours

- describe signal initiating devices
- describe signal initiating device components
- explain operation of a signal initiating device

E. Fire Alarm Panels 8 Hours

- describe fire alarm panels
- describe fire alarm panel terminology
- explain fire alarm devices
- explain fire alarm panel bypassing procedures
- explain fire alarm panel reset procedures
- operate fire alarm panels

F. Electrical Test Equipment 6 Hours

- identify electrical test equipment
- describe electrical test equipment functions
- use electrical test equipment

Emerging Technology, Communication and Apprenticeship 22 Hours

A. Estimation 10 Hours

- define scope of work
- describe contract purpose
- explain estimating principles
- explain contract change order process
- perform a jobsite estimate

B. Building Information Modelling 6 Hours

- describe building information modelling
- explain building information modelling functions
- use building information modelling software

C. Communication Techniques (*Taught in L3 not Harm L1 as recommended*) 3 Hours

- describe professional expectations
- describe effective communications skills
- describe conflict resolution processes
- use communication techniques

D. Workplace Coaching Skills 1 Hour24

- describe the process for coaching an apprentice

E. Alberta's Industry Network 1 Hour

- describe Alberta's Apprenticeship and Industry Training system
- describe the roles and responsibilities of the Alberta Apprenticeship and Industry Training Board, the Government of Alberta and post-secondary institutions
- describe the roles and responsibilities of the Provincial Apprenticeship Committees (PACs), Local Apprenticeship Committees (LACs) and Occupational Committees (OCs)

F. Interprovincial Standards Red Seal Program

- identify Red Seal products used to develop Interprovincial examinations
- use Red Seal products to prepare for an Interprovincial examination

~~**Private Water Supply**~~ (Taught in L2 not in Level 3 as Harm Recommended)

Red font and ~~Crossed out~~ font topics deviate from harmonized recommendations

SPRINKLER FITTER TASK MATRIX CHART

This chart outlines the major work activities, tasks and sub-tasks from the 2017 Sprinkler Fitter Red Seal Occupational Standard. Each sub-task details the corresponding essential skill and level of training where the content is covered*.

* Sub Tasks with numbers in the boxes is where the content will be delivered in technical training.

Currently all levels are harmonized. Implementation for harmonization took place progressively.

A - PERFORMS COMMON OCCUPATIONAL SKILLS — 20%

Task A-1 Performs safety-related functions 23%	1.01 Maintains safe work environment: 1	1.02 Uses personal protective equipment (PPE) and safety equipment: 1	1.03 Performs lock-out and tag-out procedures: 1	A-1.04 Performs work in confined space: 1	
Task A-2 Uses and maintains tools and equipment 26%	A-2.01 Uses hand tools: 1	A-2.02 Uses portable and stationary power tools: 1	A-2.03 Uses measuring and testing equipment: 1	A-2.04 Uses access equipment: 1	A-2.05 Uses rigging, hoisting and lifting equipment: 1
	A-2.06 Uses soldering and brazing equipment: 1				
Task A-3 Organizes work 25%	A-3.01 Interprets codes, standards, regulations and procedures: 1, 2, 3	A-3.02 Uses drawings and specifications: 1, 2, 3	A-3.03 Uses documentation and reference material: 1, 2	A-3.04 Plans job tasks and procedures: 1, 2	A-3.05 Prepares work site: 1, 2
	A-3.06 Performs layout of systems: 1, 2				
Task A-4 Commission systems 18%	A-4.01 Commissions water supply systems: 2, 3	A-4.02 Commissions fire protection systems: 2, 3			

Task A-5 **Uses communication and mentoring techniques** **8%**	**A-5.01 Uses communication techniques** ~~1~~, 3	**A-5.02 Uses mentoring techniques** ~~1~~, 3

B – INSTALLS WATER SUPPLY 15%

B-6 Prepares pipe **18%**	**B-6.01 Supervises trenching and backfilling (NOT COMMON CORE)** 2	**B-6.02 Installs underground piping and components (NOT COMMON CORE)** 2	**B-6.03 Flushes underground system** 2
Task B-7 **Installs fire pump units** **38%**	**B-7.01 Determines location of pumps, drivers, controllers and components** 3	**B-7.02 Installs pumps, drivers, controllers and components** 3	
Task B-8 **Installs fire department connections** **26%**	**B-8.01 Determines location, size and type of fire department connections** 2	**B-8.02 Installs fire department connection piping and components** 2	
Task B-9 **Installs private water supply systems** **18%**	**B-9.01 Installs water tanks** 3	**B-9.02 Installs related equipment** 3	

C – INSTALLS PIPING 28%

Task C-10 **Prepares pipe, tube and fittings for installation** **27%**	**C-10.01 Cuts pipe and tube** 1	**C-10.02 Bends pipe and tube** 1	**C-10.03 Threads pipe** 1	**C-10.04 Grooves pipe** 1	**C-10.05 Drills pipe and tube** 1
	C-10.06 Grinds pipe 1	**C-10.07 Prepares fittings** 1			

Task C-11 **Installs pipe, tube and fittings** **37%**	**C-11.01 Installs steel pipe, tube and fittings** 1	**C-11.02 Installs plastic pipe, tube and fittings** 1	**C-11.03 Installs copper pipe, tube and fittings** 1	**C-11.04 Paints and labels pipe and tube** 1	
Task C-12 **Installs piping components** **36%**	**C-12.01 Selects sprinklers** ~~1~~, 2	**C-12.02 Installs sprinklers and nozzles** ~~1~~, 2	**C-12.03 Installs sleeves** ~~1~~, 2	**C-12.04 Installs supports and hangers** ~~1~~, 2	**C-12.05 Installs seismic protection** 2
	C-12.06 Installs cross-connection control assemblies 2	**C-12.07 Installs system drainage** ~~1~~, 2			

D – INSTALLS AND LAYS OUT FIRE PROTECTION SYSTEMS AND DEVICES

21%

Task D-13 **Installs water-based systems** **58%**	**D-13.01 Installs wet pipe systems** ~~1~~, 2	**D-13.02 Installs dry pipe systems** ~~1~~, 2	**D-13.03 Installs antifreeze systems** ~~1~~, 2	**D-13.04 Installs preaction/deluge systems** ~~1~~, 2, 3	**D-13.05 Installs foam systems** 3
	D-13.06 Installs standpipe systems 2	**D-13.07 Installs water mist and hybrid systems** 3			
Task D-14 **Installs specialty fire suppression systems** **17%**	**D-14.01 Installs dry and wet chemical, clean agent and carbon dioxide systems** 3	**D-14.02 Installs portable extinguishers** 3			
Task D-15 **Installs detection devices** **11%**	**D -15.01 Installs wet and dry pilot lines** 2	**D -15.02 Installs heat-actuated devices (HADs) (NOT COMMON CORE)** 2	**D -15.03 Installs spark detection systems (NOT COMMON CORE)** 3	**D -15.04 Installs air sampling systems (NOT COMMON CORE)** 3	**D -15.05 Installs electrical detection systems (NOT COMMON CORE)** 3

Task D -16 **Installs signal-initiating devices** **14%**	**D -16.01 Installs alarm-initiating devices** **2**	**D -16.02 Installs supervisory-initiating devices** **2**

E – INSPECTS, TESTS AND MAINTAINS (ITM) FIRE PROTECTION SYSTEMS

16%

Task E-17 **Maintains and repairs fire protection systems** **54%**	**E -17.01 Troubleshoots fire protection systems** **3**	**E -17.02 Repairs deficiencies** **3**	**E -17.03 Performs scheduled maintenance** **3**
Task E -18 **Inspects and tests fire protection systems** **46%**	**E -18.01 Performs scheduled tests** **3**	**E -18.02 Performs scheduled inspections** **3**	**E -18.03 Inspects portable fire extinguishers** **3**

**The Sprinkler Fitter Red Seal Occupational Standard (RSOS), describing the "full scope" of the trade, can be found at* www.red-seal.ca.

Please refer to the complete Sprinkler Fitter Guide to Course Content for more detailed information.

Red and ~~crossed out~~ topics deviate from harmonized recommendations