

APPENDIX A

Work Experience & Related Instruction Outlines

A.1

TRADE SCHEDULE FOR: SPRINKLER FITTER (PIPEFITTER) O*NET/SOC: 47-2152.01 RAIS CODE: 0414S

This trade schedule is attached to and a part of the Apprenticeship Standards for the above identified occupation. This sequence of Related Classroom Instruction is competency based and will be offered as traditional classroom training or independent study, which may include: Internet-learning, video telecast and CD-ROM.

1. TERM OF APPRENTICESHIP

The term of the occupation shall be 4 years with a minimum OJL attainment of 8000 hours supplemented by the required hours of related technical instruction.

2. RATIO OF APPRENTICES TO JOURNEYPERSONS

One (1) Apprentice to one (1) Journeyman: one apprentice for the first skilled journeyman employed, and one additional apprentice for each additional skilled journeyman employed thereafter.

3. APPRENTICE WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based on a percentage of the current minimum journeyman wage rate of \$17.00 per hour.

Term: 8000 Hours

- 1st 1000 hours = 55 percent of journeyman's rate
- 2nd 1000 hours = 60 percent of journeyman's rate
- 3rd 1000 hours = 65 percent of journeyman's rate
- 4th 1000 hours = 70 percent of journeyman's rate
- 5th 1000 hours = 75 percent of journeyman's rate
- 6th 1000 hours = 80 percent of journeyman's rate
- 7th 1000 hours = 85 percent of journeyman's rate
- 8th 1000 hours = 90 percent of journeyman's rate

4. SCHEDULE OF WORK EXPERIENCE

Apprenticeship Committees or Program Administrator may add to the work processes prior to submitting these Standards to the appropriate Registration Agency for approval.

5. SCHEDULE OF RELATED INSTRUCTION

Curricula modules are based on industry standardized applications of current construction practices. Modules are knowledge and skill based including a system for assessment. The assessment will include task objectives, procedures, review materials, and competency-based performance tests.

A1.1- WORK PROCESSES/WORK EXPERIENCE SCHEDULE HOURS

This instruction and experience shall include the following operations but not necessarily in the listed sequence. Time spent on specific operations need not be continuous.

1. Plan reading and interpretation	750
a. Reading shop drawings	
b. Symbols and abbreviations	
c. Familiarization with NFPA #13, 14, 20 and 24	
2. Care of tools, materials, and equipment	800
a. Identifying materials, grades and types of pipe, fittings, valves, hoses, equipment, and sprinkler heads	
b. Use and operation of trade tools	
c. Maintaining and servicing of tools and equipment	
3. Preparation of tools, material and equipment	650
a. Selection of pipe, fittings, hangers and devices for rough and distribution and finish work	
b. Loading of required materials and equipment	

- c. Unloading of materials and equipment at job site using safety precautions and care in not damaging materials for equipment
 - d. Set up and use of rigging, scaffolding and mechanical lifts and platforms
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- 4. Pipe cutting, threading, reaming and welding 1250
 - a. Use of hand cutters
 - b. Use of dies and reamer
 - c. Set up and operation of power threading machine
 - d. Operation of power drills
 - e. Operation of torch and welder

 - 5. Installation of underground piping and accessories 650
 - a. Installation of cast iron pipe and fittings
 - b. Installation of plastic pipe and fittings
 - c. Installation of valves, post indicators and hydrants
 - d. Roding and thrust block installation
 - e. Valve pit installation
 - f. Flushing and testing of underground piping

 - 6. Wet pipe systems 1600
 - a. Distribution of system
 - b. Installation of feed main and cross main, grooved, screwed and welded
 - c. Branch line installation on exposed systems
 - d. Branch line installation for concealed piping with drop nipples
 - e. Hanger types and installation
 - f. Trimming of valves including Siamese connection installation
 - g. Set up and testing of system

 - 7. Dry pipe systems 500
 - a. Distribution of system
 - b. Installation of feed main and cross main, grooved, screwed and welded
 - c. Branch line installation on exposed systems
 - d. Hanger types and installation
 - e. Trimming of valves including Siamese connection installation

f. Set up and testing of system	
8. Standpipe systems	500
a. Distribution of system	
b. Pipe installation	
c. Installation of hose, hose VA's, nozzles and accessories	
d. Testing procedures	
9. Special hazard installation	350
a. Installation of deluge systems	
b. Installation of pre-action systems	
c. Installation of Halon systems	
d. Installation of Cardox systems	
e. Installation of fire extinguishers	
10. Installation of fire pumps and accessories	350
a. Setting of fire pumps and jockey pumps	
b. Alignment of fire pumps and driver	
c. Trimming of fire pumps, jockey pumps and controllers	
d. Start up and testing of fire pumps and equipment	
11. Maintenance and Repairs	600
a. Fabrication and installation of pipe on job site	
b. Care in cutting and patching of walls and ceilings	
c. Repair and replacement of system components	
d. Restoring system to service	
e. Notifying owner, fire department, insurance company of impairment to system	
TOTAL HOURS	8,000

A1.2- SPRINKLER FITTER (PIPEFITTER) RELATED CLASSROOM INSTRUCTION

Note: Due to regional and local code differences and climate conditions, duration of instructional competencies/modules is suggested estimates only.

<u>Modules</u>	<u>Suggested</u>
	<u>Hours</u>
	<u>First Year</u>
Basic Safety	15
Introduction to Construction Math	15
Introduction to Hand Tools	10
Introduction to Power Tools	5
Introduction to Blueprints	7.5
Basic Rigging	20
Introduction to the Trade	6
Hangers, Supports, Restraints, and Guides	12
Threaded Steel Pipe	15
Flanged, Grooved, and Plain End Fittings	15
Plastic Pipe	9
Copper Tube Systems	9
Underground Pipe	12

Second Year

Introduction to Sprinklers	9
Standard Sprinklers	21
Special Sprinklers and Nozzles	24
General Purpose Valves	15
Wet Fire Sprinkler Systems	36
Dry-Pipe Systems	45

Third Year

General Trade Math	33
Construction and Plans	33
Water Supplies	15
Standpipes	24
Preaction/Deluge Systems	39

Fourth Year

Fire Pumps	36
Special Extinguishing Systems	42
System Design	36
Inspection and Maintenance	15
Foremanship	15
TOTAL HOURS	588.5

A.2
TRADE SCHEDULE FOR: PROTECTIVE SIGNAL INSTALLER
O*NET/SOC: 47-2111.00
RAIS CODE: 0459

This trade schedule is attached to and a part of the Apprenticeship Standards for the above identified occupation. This sequence of Related Classroom Instruction is competency based and will be offered as traditional classroom training or independent study, which may include: Internet-learning, video telecast and CD-ROM.

1. TERM OF APPRENTICESHIP

The term of the occupation shall be 4 years with an OJT attainment of 8000 hours supplemented by the required hours of related technical instruction.

2. RATIO OF APPRENTICES TO JOURNEYPERSONS

One (1) Apprentice to one (1) Journeyman: one apprentice for the first skilled journeyman employed, and one additional apprentice for each additional skilled journeyman employed thereafter.

3. APPRENTICE WAGE SCHEDULE

Apprentices will be paid a progressively increasing schedule of wages based on a percentage of the current minimum journeyman wage rate of \$15.00 per hour.

Term: 8000 Hours

1st 1000 hours = 55 percent of journeyman's rate
2nd 1000 hours = 60 percent of journeyman's rate
3rd 1000 hours = 65 percent of journeyman's rate
4th 1000 hours = 70 percent of journeyman's rate
5th 1000 hours = 75 percent of journeyman's rate
6th 1000 hours = 80 percent of journeyman's rate
7th 1000 hours = 85 percent of journeyman's rate
8th 1000 hours = 90 percent of journeyman's rate

4. SCHEDULE OF WORK EXPERIENCE

Apprenticeship Committees or Program Administrator may add to the work processes prior to submitting these Standards to the appropriate Registration Agency for approval.

5. SCHEDULE OF RELATED INSTRUCTION

Curricula modules are based on industry standardized applications of current construction practices. Modules are knowledge and skill based including a system for assessment. The assessment will include task objectives, procedures, review materials, and competency-based performance tests.

A2.1- WORK PROCESSES/WORK EXPERIENCE SCHEDULE HOURS

This instruction and experience shall include the following operations but not necessarily in the listed sequence. Time spent on specific operations need not be continuous.

1. Blueprint Reading	400
2. Install Boxes & Fittings	400
3. Install Anchors and Fasteners: (Install cable conduits and panels to walls and ceilings)	400
4. Bend Conduit	400
5. Install Low Voltage cable	2000
6. Install Relays and Timers	600
7. Terminate Conductors	500
8. Project Planning, Survey and Layout Systems	800
9. Install and Program fire Alarm Devices & Panels	1100
10. Install Security Devices: (Video cameras, electronic locks, card access)	200
11. Voice and Data Systems	100
12. Test Systems	500
13. Repair and Troubleshoot Systems	600
TOTAL HOURS	8,000

A2.2- PROTECTIVE SIGNAL INSTALLER RELATED CLASSROOM INSTRUCTION

Note: Due to regional and local code differences and climate conditions, duration of instructional competencies/modules is suggested estimates only.

Modules	Hours
<u>First year</u>	
Basic Safety	15
Introduction to Construction Math	15
Introduction to Hand Tools	10
Introduction to Power Tools	5
Introduction to Blueprints	7.5
Basic Rigging	20
Introduction to the Trade	10
Construction Materials/Met	7.5
Pathways and Space	15
Fasteners and Anchors	5
Job-site Safety	12.5
Craft Related Math	10
Hand Bending	7.5
Low Voltage Cabling	20
<u>Second year</u>	
DC Circuit Theory	12.5
AC Circuits	15
Semiconductors and Integrated Circuits	10
Basic Test Equipment	10
Power Quality & Grounding	20
Introduction to Electrical Blueprints	7.5
Switches & Timers	12.5
Wire and Cable Terminations	20
Introduction to Codes and Standards	10
Computer Applications	20
Advanced Test Equipment	20

Third Year

Cable Selection	15
Busses and Network	25
Fiber Optics	20
Video Systems	15
Wireless Communications	15
Project Plan, Site Survey, Documentation	15
Maintenance and Repair	15
Introductory Skills for the Crew Leader	16
Rack Systems	15

Fourth Year

Fire Alarms	40
Intrusion Detection	30
Audio Systems	40
Overview of Nurse Call	10
CCTV Systems	20
Broadband Systems	30
Access Control Systems	25
System Integration	20
System Commissioning and User Training	10
Media Management Systems	10
Telecommunications Systems	10
TOTAL HOURS	708.5