

Roofer Level 2

Roofer

Unit: B1 Blueprints and Trade Documents II

Level: Two

Duration: 28 hours

Theory: 21 hours

Practical: 7 hours

Overview:

This unit, which builds on *A4 Blueprints and Trade Documents I*, is designed to provide the apprentice with additional knowledge and skills about blueprints and trade documents. The unit begins with coverage of the types of blueprints used in the roofer trade. Part of the unit covers the preparation and use blueprints in roofing projects. Finally, the unit covers drawing and interpreting blueprints and technical drawings.

Objectives and Content:

**Percent of
Unit Mark (%)**

- | | |
|--|------------|
| 1. Describe types of blueprints used in the roofer trade. | 25% |
| a. Review technical drawings | |
| • Compare/contrast the major characteristics of common roof types and details | |
| • Projections and views | |
| • Line work/weight, lettering and other standards | |
| • Common architectural symbols and abbreviations | |
| • Measurements, scales and applied geometry | |
| • Making/verifying sketches from technical drawings, blueprints, and/or specifications | |
| b. Primary categories of blueprint taxonomy and their significance | |
| • Architectural | |
| • Structural | |
| • Mechanical | |
| • Electrical | |
| • Site plan | |
| c. Secondary categories of blueprint taxonomy and significance | |
| • Specifications | |
| • Schedules | |
| • Addenda | |
| • RFI (request for information) | |
| d. Blueprint comparisons | |
| e. Codes | |
| f. Shop drawings | |
| 2. Describe preparation and use of blueprints in roofing projects. | 25% |
| a. Roof specifications | |
| • Shape | |

- Size
- Function
- Materials used
- Access
- Construction details
- Construction sequence and schedule
- b. Project coordination
- c. Roles and responsibilities in preparing and using blueprints
 - Client
 - Specification writers
 - Designer
 - Architect
 - Mechanical engineers
 - General contractor
 - Sub trades
- d. Material take-offs

3. Draw and interpret blueprints and technical drawings.

50%

- a. Draw blueprints and technical drawings
 - Identify lines, symbols and abbreviations
 - Title block drawing
 - Cross referencing symbols and notes
- b. Interpret blueprints and technical drawings
 - Architectural drawings
 - Structural drawings
 - Specifications, revisions and addenda
 - Building sections
 - Cross sections
 - Detailed drawings

Roofer

Unit: B2 Hot Process, Propane and Motorized Equipment

Level: Two

Duration: 21 hours

Theory: 21 hours

Practical: 0 hours

Overview:

This unit is designed to provide the apprentice with knowledge about hot process, propane and motorized equipment. The unit begins with coverage of motorized rooftop equipment. Part of the unit covers pneumatic tools and air compressors. Finally, the unit covers propane-fueled equipment, roofing kettles and tankers.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe motorized rooftop equipment.	25%
a. Safe work practices and procedures	
b. Basic components, controls, and functions	
c. Manufacturer specifications and requirements	
d. Buggies	
e. Roof-sweeper	
f. Roof-cutter	
g. Claw (roof peeler)	
h. Cutter/scratcher	
2. Describe preparation for using motorized equipment.	25%
a. Safe work practices and procedures	
b. Basic types, components, controls and functions	
c. Manufacturer specifications and requirements	
d. Pre-ignition and other inspections/checks	
e. Fuels and fuel mixtures	
f. Minor motor maintenance	
3. Describe pneumatic tools and air compressors.	10%
a. Safe work practices and procedures	
• PPE	
• Selection of pneumatic tools	
• Inspection and use of equipment	
b. Use of pneumatic tools	
• Hoses	
• Couplings	
• Compressors	

- Caulking guns
- Nailers
- c. Staplers
- d. Sprayers

4. Describe propane-fueled equipment. 20%

- a. Safe work practices and procedures
 - Regulatory and other requirements
 - Standards and procedures
 - Inspection and maintenance
 - Certification requirements
- b. Basic burner types
- c. Fuels and fuel mixtures

5. Describe roofing kettles and tankers. 20%

- a. Safe work practices and procedures
- b. Basic types of kettles
 - Liquid petroleum gas-fired kettle
 - Kerosene-fired kettle
 - Hot oil-bath kettle
- c. Procedures for kettle use
 - Connecting and disconnecting
 - Automatic versus manual firing
 - Maintain temperature and cleanliness of bitumen
 - Shut-down procedures
- d. Procedures for draining/disposal of hot bitumen
 - Container selection
 - Storage/disposal requirements
- e. Procedures for cleaning kettles

Roofer

Unit: B3 Low Slope and Flat Roof Construction

Level: Two

Duration: 28 hours

Theory: 28 hours

Practical: 0 hours

Overview:

This unit is designed to provide the apprentice with knowledge about low slope and flat roof construction. The unit begins with coverage of the major types of low slope/flat roof systems and construction details. Part of the unit covers the installation of built-up roofing (BUR) and modified bitumen systems. Finally, the unit covers the installation of single-ply systems.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe major types of low slope/flat roof systems and construction details.	20%
a. Built-up roofing (BUR) systems and components	
b. Modified bitumen systems and components	
c. Single-ply systems	
d. Types of roof decks	
• Wood	
• Steel	
• Concrete	
2. Describe installation procedures for BUR systems.	30%
a. Phases of BUR-system installation	
b. Gypsum board	
• Loose-laid, glued-down and mechanically fastened installation methods	
• Fastener pattern lay-outs	
• Joint sealing	
c. Primer application to substrate	
• Use of rollers, applicators, and brushes	
• Application methods	
d. Installation of vapour barriers	
• Vapour barrier selection	
• Compatibility and suitability of products	
• Side-lap and end-lap allowances	
• Seams, overlaps and sealing	
• Tie-ins/transitions with building envelope	
e. Installation of insulation	
• Patterns and placement	
• Securement	

- Installation precautions
- Compatibility of insulation product
- f. Installation of protection board
 - Patterns and placement
 - Securement
 - Installation precautions
 - Compatibility of protection board product
- g. Installation of roof components
 - Elevations for installation of components
 - Locating roof components
 - Drain sumps
 - Reinforcement of roof details
- h. Installation of ballast and components
 - Selection
 - Application techniques
 - Application rates and standards
- i. Installation of walkways
 - Lay-out of walkways
 - Fitting and placement of walkway materials
 - Safeguards to protect roof membranes
- j. BUR flashings
 - Techniques for cutting, finishing, and fastening metal flashings
 - Installation of flashings and fasteners
- k. BUR installation techniques
 - Hot-process
 - Cold-process
 - Conventional process
 - Asphalt types (1, 2, & 3) and temperature measuring, monitoring
 - Asphalt spreading
- l. PMR roof assemblies

3. Describe installation procedures for modified bitumen systems.

30%

- a. Application standards
- b. Relaxing the roofing membrane
 - Assessing flexibility of materials
 - Significance of time and weather
 - Winter application technique
 - Unrolling membrane and applying weight
- c. Membrane patterns
 - Variations in techniques
 - Establishing starting point and end-/side-lap allowances
 - Positioning membrane sheets/rolls
- d. Application techniques
 - Membrane application to asphalt
- e. Fireproofing techniques
 - Fire watch procedures
 - End-/side-lap requirements
 - Torching techniques
 - Application techniques
- f. Cold-processed modified bitumen application
 - Selection of welders
 - Application techniques

- Sealing techniques
- Establishment of side-/end-laps
- Cleaning and rolling back membranes
- Using adhesives and rolling seams
- Preparing and applying peel-and-stick membrane
- g. Mechanically-fastened applications
 - Mechanical fasteners
 - Fastener applications
 - Determining lengths of fasteners
- h. Membrane flashing application

4. Describe installation procedures for single-ply systems.

20%

- a. Application standards
- b. Description of single-ply systems

Roofer

Unit: B4 Steep Roof Construction and Products II

Level: Two

Duration: 35 hours

Theory: 14 hours

Practical: 21 hours

Overview:

This unit, which builds on **A7 Steep Roof Construction and Products I**, is designed to provide the apprentice with additional knowledge and skills about steep roof construction and products. The unit begins with coverage of cedar and composite roofing products. Part of the unit covers installation of cedar shingles. Finally, the unit covers maintenance and repair of steep slope.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe cedar roofing products.	10%
a. Types of cedar roofing	
• Cedar shingles	
• Cedar shakes	
b. Application techniques	
c. Layout techniques	
d. Fastening techniques	
e. Cutting techniques	
f. Metal flashings	
2. Describe composite roofing products.	20%
a. Types of composite roofing	
b. Application techniques	
c. Layout techniques	
d. Fastening techniques	
e. Cutting techniques	
f. Metal flashings	
3. Perform installation of cedar shingles.	30%
a. Application techniques	
b. Layout techniques	
c. Fastening techniques	
d. Cutting techniques	
e. Metal flashings	

- 4. **Describe maintenance and repair techniques for steep slope.** **10%**
 - a. Inspection techniques
 - b. Troubleshooting techniques
 - c. Repair techniques

- 5. **Perform maintenance and repair techniques for steep slope.** **30%**
 - a. Inspection techniques
 - b. Troubleshooting techniques
 - c. Repair techniques

Roofer

Unit: B5 Built-up Roofing Installation

Level: Two

Duration: 28 hours

Theory: 0 hours

Practical: 28 hours

Overview:

This unit, which is a practical unit of **B3 Low Slope and Flat Roof Construction**, is designed to provide the apprentice with skills about built-up roofing (BUR) installation. The unit covers installation of BUR systems and BUR system components.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Perform installation techniques for built-up roofing (BUR) systems.	50%
a. Vapour barriers	
b. Gypsum boards	
c. Insulation	
d. Primers	
e. Protection boards	
f. Membranes	
g. Membrane flashings	
2. Perform installation techniques for BUR system components.	50%
a. Drains	
b. Vents	
c. Fixtures	
d. Flashings	
e. Ballasts	
f. Walkways	
g. Scuppers	

Roofer

Unit: B6 Modified Bitumen Membrane Installation

Level: Two

Duration: 28 hours

Theory: 0 hours

Practical: 28 hours

Overview:

This unit, which is a practical unit of **B3 Low Slope and Flat Roof Construction**, is designed to provide the apprentice with skills about modified bitumen membrane installation. The unit covers installation of modified bitumen membrane systems and modified bitumen membrane system components.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Perform installation techniques for modified bitumen membrane systems.	50%
a. Vapour barriers	
b. Gypsum boards	
c. Insulation	
d. Primers	
e. Protection boards	
f. Membranes	
g. Membrane flashings	
2. Perform installation techniques for modified bitumen membrane system components.	50%
a. Drains	
b. Vents	
c. Fixtures	
d. Flashings	
e. Ballasts	
f. Walkways	
g. Scuppers	

Roofer

Unit: B7 Damp-proofing and Waterproofing Surfaces

Level: Two

Duration: 21 hours

Theory: 14 hours

Practical: 7 hours

Overview:

This unit is designed to provide the apprentice with the knowledge and skills about damp-proofing and waterproofing surfaces. The unit covers the definition of and procedures for damp-proofing and waterproofing surfaces.

Objectives and Content:

Percent of Unit Mark (%)

- | | |
|---|------------|
| 1. Describe damp-proofing and waterproofing. | 20% |
| a. Physical properties of water | |
| b. Hydrostatic pressure | |
| c. Damp-proofing | |
| • Substrate preparation | |
| • Priming procedures | |
| • Components | |
| • Application procedures | |
| • Protection boards | |
| d. Waterproofing | |
| • Substrate preparation | |
| • Priming procedures | |
| • Components | |
| • Application procedures | |
| • Protection boards | |
| e. Concrete foundation | |
| • Inspection | |
| • Prevention | |
| • Maintenance | |
| • Troubleshooting | |
| • Replacement | |
| • Repair | |
| 2. Demonstrate procedures for damp-proofing roof surfaces. | 40% |
| a. Application techniques | |
| b. Membrane application techniques | |
| c. Protection board application | |

3. Demonstrate procedures for waterproofing roof surfaces.

40%

- a. Application techniques
- b. Membrane application techniques
- c. Protection board application

Roofer

Unit: B8 Lifting, Rigging and Hoisting

Level: Two

Duration: 14 hours

Theory: 14 hours

Practical: 0 hours

Overview:

This unit is designed to provide the apprentice with knowledge about lifting, rigging and hoisting. The unit covers lifting, rigging and hoisting procedures.

Objectives and Content:	<u>Percent of Unit Mark (%)</u>
1. Describe lifting procedures.	20%
a. Safe work practices and procedures	
b. Manual lifting techniques	
c. Mechanically assisted lifting techniques	
2. Describe rigging procedures.	40%
a. Safe work practices and procedures	
b. Types of knots and splices	
• Bowline	
• Clove-hitch	
• Rescue knot	
• Scaffold-hitch	
c. Rigging equipment	
d. Rigging hardware	
e. Load limits	
f. Safe Working Load (SWL)	
g. Chokers and taglines	
h. Slings	
3. Describe hoisting procedures.	40%
a. Safe work practices and procedures	
b. Types of roof hoist	
• Winches	
• Boom trucks	
• Cranes	
c. Roof hoist hardware	
d. Communication equipment	
• Mobile phones	

- Two-way radios
- Hand signals

Roofer

Unit: B9 Jobsite Preparation and Inspection

Level: Two

Duration: 7 hours

Theory: 7 hours

Practical: 0 hours

Overview:

This unit is designed to provide the apprentice with knowledge about jobsite preparation and inspection. The unit covers the procedures to prepare and inspect roof jobsites.

Objectives and Content:

Percent of Unit Mark (%)

- | | |
|---|------------|
| 1. Describe procedures to prepare roof jobsites. | 40% |
| a. Safe work practices and procedures | |
| • Documentation | |
| • Communication techniques | |
| • Worksite conditions | |
| • Delivery, storage and placement of tools, equipment and materials | |
| 2. Describe procedures to inspect roof jobsites. | 60% |
| a. Jobsite conditions | |
| • Ground conditions | |
| • Site conditions | |
| • Hoisting areas | |
| • Site access/egress | |
| • Starting/finishing points | |
| • Equipment requirements | |
| • Curb/parapet heights | |
| • Type of deck | |
| b. Positioning of equipment and materials on roof | |
| c. Positioning of equipment and materials on ground | |
| d. Garbage removal | |
| • Recycling procedures | |
