

# Roofer Level 3

## Roofer

**Unit:** C1 Estimating Roof Construction Projects

**Level:** Three

**Duration:** 21 hours

Theory: 14 hours

Practical: 7 hours

### Overview:

This unit is designed to provide the apprentice with the knowledge and skills about estimating roof construction projects. The unit covers concepts related to organizing work and materials estimating.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Review concepts related to organizing work.</b>	<b>20%</b>
a. Types of communication	
• Work orders	
• Inspection reports	
• Manufacturer's documentation	
• Permits	
• Drawings and specifications	
b. Reasons for communication	
• Safety, project coordination, planning, scheduling	
• Give, receive, clarify and understand instructions	
• Customer relations	
• Project notifications	
• Training	
c. Communicate with others	
d. Order/receive supplies	
e. Arrange worksite schedule	
<b>2. Describe and perform materials estimating.</b>	<b>80%</b>
a. Identify relevant information from drawings, codes and other sources	
b. Interpret product information and industry standards	
c. Apply math formulas as required	
d. Review original calculations to find deficiencies	
e. Review blueprints to find deficiencies	
f. Use imperial and metric units	

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## Roofer

**Unit:** C2 Steep Roof Construction and Products III

**Level:** Three

**Duration:** 14 hours

Theory: 14 hours

Practical: 0 hours

### Overview:

This unit, which builds on *A7 Steep Roof Construction and Products I* and *B4 Steep Roof Construction and Products II*, is designed to provide the apprentice with additional knowledge about steep roof construction and products. The unit covers procedures for metal shingle, roof tile and pre-formed metal roofing applications.

### Objectives and Content:

**Percent of  
Unit Mark (%)**

- |   |            |
|---|------------|
| <b>1. Describe procedures for metal shingle application.</b>            | <b>35%</b> |
| a. Layout of shingles   |            |
| b. Underlayment   |            |
| c. Starter strip and starter course                                     |            |
| d. Fasteners  |            |
| e. Cutting techniques   |            |
| f. Metal flashings  |            |
| <b>2. Describe procedures for roof tile application.</b>                | <b>35%</b> |
| a. Layout of shingles   |            |
| b. Underlayment   |            |
| c. Starter strip and starter course                                     |            |
| d. Fasteners  |            |
| e. Cutting techniques   |            |
| f. Metal flashings  |            |
| g. Closure strips   |            |
| h. Ridge and hip caps   |            |
| <b>3. Describe procedures for pre-formed metal roofing application.</b> | <b>30%</b> |
| a. Layout of shingles   |            |
| b. Underlayment   |            |
| c. Starter strip and starter course                                     |            |
| d. Fasteners  |            |
| e. Cutting techniques   |            |
| f. Metal flashings  |            |
| g. Snow guards  |            |
| h. Closure strips   |            |

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## Roofer

**Unit:** C3 Analyzing and Troubleshooting Roof Failures

**Level:** Three

**Duration:** 28 hours

Theory: 28 hours

Practical: 0 hours

### Overview:

This unit is designed to provide the apprentice with knowledge about analyzing and troubleshooting roof failures. The unit begins with coverage of inspection procedures. Part of the unit covers core samples. Finally, the unit covers procedures for maintenance and repair of roof system, and waterproofing surfaces.

### Objectives and Content:

### Percent of Unit Mark (%)

- |   |            |
|---|------------|
| <b>1. Describe inspection procedures.</b>                             | <b>35%</b> |
| a. Cause of problems  |            |
| • Review common sources of roof system problems                       |            |
| • BURs  |            |
| • Single-ply roofs  |            |
| • Steep roofs   |            |
| b. Repair procedures  |            |
| • Symptoms and significance of roof failures                          |            |
| • Roof problems   |            |
| • Importance of roof inspections                                      |            |
| • Core samples  |            |
| • Thermal imaging   |            |
| • Inspection reports  |            |
| • Analysis and verification of inspection results                     |            |
| • Planning roof maintenance   |            |
| <b>2. Describe core samples.</b>                                      | <b>10%</b> |
| a. Core sample specifications   |            |
| • Location  |            |
| • Results   |            |
| • Documentation   |            |
| b. Repair procedures  |            |
| • Temporary sealant   |            |
| • Sealing   |            |
| <b>3. Describe maintenance and repair procedures of roof systems.</b> | <b>35%</b> |
| a. Roof systems   |            |
| • BUR roof  |            |

- Steep roof
- Single-ply roof
- b. Equipment and technical aids for locating leaks
  - Thermographic
  - Infrared
  - Water test
- c. Exterior and interior inspection
- d. Assess damaged roof area
- e. Assess area of wet insulation
- f. Assess area of damaged membrane
- g. Assess area of damaged flashings
- h. Solutions

**4. Describe procedures for waterproofing surfaces.**

**20%**

- a. Vegetative roof
- b. Protected membrane roof

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## Roofer

**Unit:** C4 Single-Ply Membranes

**Level:** Three

**Duration:** 35 hours

Theory: 7 hours

Practical: 28 hours

### Overview:

This unit, which builds on **B3 Low Slope and Flat Roof Construction**, is designed to provide the apprentice with skills about single-ply membranes. The unit begins with a review of single-ply membranes. Part of the unit covers installation of EPDM. Finally, the unit covers installation of TPO.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Review single-ply membranes.</b> a. EPDM (ethylene propylene diene monomer) b. PVC (polyvinyl chloride) c. TPO (thermoplastic polyolefin)	<b>10%</b>
<b>2. Perform installation of EPDM.</b>	<b>45%</b>
<b>3. Perform installation of TPO.</b>	<b>45%</b>

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## Roofer

**Unit:** C5 Jobsite Coordination and Maintenance

**Level:** Three

**Duration:** 21 hours

Theory: 21 hours

Practical: 0 hours

### Overview:

This unit is designed to provide the apprentice with knowledge about jobsite coordination and maintenance. The unit covers jobsite coordination and maintenance techniques.

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<b>1. Describe jobsite coordination and maintenance.</b>	<b>30%</b>
a. Jobsite coordination	
b. Jobsite maintenance	
<b>2. Describe jobsite coordination and maintenance techniques.</b>	<b>70%</b>
a. Planning and organizing	
• Schedules	
• Delivery of materials	
• Jobsite setup	
b. Consultation and communication	
c. Jobsite storage	
• Lifting and shifting	
• Rigging and hoisting	
• Safety and security	
d. Roof access	
• Guardrails	
• Ramps	
• Ladders	
• Shoring	
• Hoardings	
• Swing stages	
• Scaffolding and scaffold systems	
e. Winter conditions	
• Hypothermia	
• Frostbite	
• Heaters	
• Insulated tarpaulin	
f. Summer conditions	
• Heat stroke	

- Heat exhaustion
  - Sunburns
  - Burns
- g. Troubleshooting

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## Roofer

**Unit:** C6 Journeyperson Trainer

**Level:** Three

**Duration:** 21 hours

Theory: 21 hours

Practical: 0 hours

### Overview:

Level One in-school technical training offers an entry-level orientation to the challenges of apprenticeship training as it relates to the development of core tasks and skill requirements, as well as social competencies. This unit introduces senior apprentices to the responsibilities of workplace training that they will assume as supervising journeypersons. Most trades have a rich tradition of refreshing and sharing their trade skills from one generation of trade practitioner to the next. This unit orients senior apprentices to some of the practical and conceptual tools that can enable them to contribute to this trade heritage when they become certified journeypersons and, ultimately, journeyperson trainers.

The journeyperson's obligation to assist entry-level apprentices to develop skills and knowledge is complex and challenging. It involves safety considerations, employer expectations, provincial regulations, as well as the tradition of skills stewardship that links modern practice with the long history of workplace teaching and learning that defines the apprenticeable trades. The ability to offer timely and appropriate support to apprentices is itself an important area of trade learning. This unit presents material intended to help refine this ability through reflection and discussion by senior apprentices, and discussion with their in-school instructor and journeyperson trainer.

This content reflects Manitoba and Canadian standards prescribed for journeyperson-level supervisory capabilities, as well as key topics in current research on the importance of workplace training in apprenticeship systems. These detailed descriptors represent suggested focal points or guidelines for potentially worthwhile exploration, and are neither mandatory nor exhaustive.

**Note: No percentage-weightings for test purposes are prescribed for this unit's objectives. Instead, a "Pass/Fail" grade will be recorded for the unit in its entirety.**

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<p><b>1. Compare/contrast role options and responsibilities of the supervising journeyperson.</b></p> <p>a. Implicit vs. explicit standards and content: training goals are/are not codified; assessment measures are/are not used</p> <p>b. Accountability for results: e.g., journeyperson is/is not required to prepare performance evaluation that could affect apprentice's employability or wage-rate, etc.</p> <p>c. Long-term vs. short-term supervision assignments – e.g., considerable latitude/little latitude for apprentice to learn from mistakes</p> <p>d. Formally vs. informally structured – e.g., supervision assignment is part of a prescribed cycle of assignments involving coordination among multiple journeypersons; apprentice is trained according to an individual training plan negotiated with employer</p>	n/a

- e. Types of supervisory role options and what is implied by each:
  - Journeyperson Trainer (JT) role: often initiated by someone other than apprentice, and limited to a particular skill set, task, or production requirement
  - Mentor role: often initiated by apprentice, and relatively open-ended regarding content, duration, etc.
  - Peer role: typically involves individual upgrading or cross-training of one journeyperson by another; can include senior apprentice assisting less-experienced trade learner
  - Coordinator role: often a senior-level journeyperson appointed by an organization to assume responsibilities for monitoring progression of groups of apprentices
  - Other roles: may be improvised by journeyperson, such as a combination of multiple roles of the above

**2. Describe and demonstrate common requirements about providing journeyperson level supervision. n/a**

- a. Apprenticeship learning adapted to journeyperson supervision assignments and a journeyperson perspective
  - Application of adult education concepts to trades teaching and learning (e.g., responsibilities and expectations of senior-level apprentices)
  - Practical significance of 'styles' of adult learning and teaching
  - Helping senior-level apprentices integrate in-school technical training and on-the-job practical training experiences
  - Providing help and guidance about new tasks and skills
  - Providing help and guidance about fixing mistakes
  - Learning and teaching "the ropes" – socialization of apprentice within a community of trade practice (e.g., how to borrow a tool, interrupt a journeyperson, seek advice of experienced co-workers)
  - Coverage and documentation of prescribed tasks and subtasks where applicable
  - Discuss the limits of the journeyperson trainers' own responsibilities and competence (e.g., scope, willingness to train, etc.)
  - Benefits of maintaining a personal record of achievements, ideas, and needs as a journeyperson trainer (e.g., resume, portfolio, training credentials, logbook, etc.)
- b. Individual reflection and guided group discussion about personal experiences of workplace learning as an apprentice
  - Identification of best and worst practices of a journeyperson trainer
  - Identification of workplace and other factors that can contribute to good and bad trades teaching/learning experiences
  - Development of professional standards and work ethics about responsibility to share one's knowledge and skill with others in the workplace (e.g., use/misuse of humour, rigour, discretion, craft-pride, etc.)
  - Qualities of a good journeyperson trainer
  - Components of workplace journeyperson training
  - Processes and recommended practices re: journeyperson training
  - Troubleshooting problems re: supervision assignments
- c. Role of assessment in supervising, coaching, or guiding other people to learn or improve their skills (e.g., formative and summative evaluation), and how this might contribute to how the journeyperson-level supervision task is approached in future
- d. Compare and contrast discussion results with current knowledge and resources about workplace training methods as they apply to journeyperson-level supervision assignments
- e. Other (as may be specified by instructor)

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## Roofer

**Unit:** C7 Pre-Interprovincial Exam Review

**Level:** Three

**Duration:** 70 hours

Theory: 70 hours

Practical: 0 hours

### Overview:

This unit offers senior apprentices a systematic review of skills and knowledge required to pass the Inter-Provincial Examination. It promotes a purposeful personal synthesis between on-the-job learning and the content of in-school technical training. The unit includes information about the significance of Provincial certification and the features of the Inter-Provincial Examination.

**Note: No percentage-weightings for test purposes are prescribed for this unit's objectives. Instead, a "Pass/Fail" grade will be recorded for the unit in its entirety.**

<b>Objectives and Content:</b>	<b><u>Percent of Unit Mark (%)</u></b>
<p><b>1. Describe the significance, format and general content of Inter-Provincial (IP) Examinations for the trade of Roofer.</b></p> <ul style="list-style-type: none"> <li>a. Scope and aims of Inter-Provincial certification; value of certifications</li> <li>b. Obligations of candidates for Inter-Provincial certification               <ul style="list-style-type: none"> <li>• Relevance of Inter-Provincial Examinations to current, accepted trade practices; industry-based provincial and national validation of test items</li> <li>• Supplemental Policy (retesting)</li> <li>• Confidentiality of examination content</li> </ul> </li> <li>c. Multiple-choice (four-option) item format, Red Seal standards for acceptable test items</li> <li>d. Government materials relevant to the Inter-Provincial Examinations for roofer apprentices               <ul style="list-style-type: none"> <li>• Red Seal Occupational Standard (RSOS); prescribed scope of the skills and knowledge which comprise the trade</li> <li>• RSOS "Pie-chart" and its relationship to content distribution of Inter-Provincial Examination items</li> <li>• Apprenticeship Manitoba Technical Training package</li> </ul> </li> </ul>	n/a
<p><b>2. Identify resources, strategies and other considerations for maximizing successful completion of written examinations.</b></p> <ul style="list-style-type: none"> <li>a. Personal preparedness               <ul style="list-style-type: none"> <li>• Rest</li> <li>• Nutrition</li> <li>• Personal study regimen</li> <li>• Prior experience in test situations (e.g., unit tests)</li> </ul> </li> <li>b. Self-assessment, consultation and personal study plan</li> </ul>	n/a

- Self-assessment of individual strengths/weaknesses in trade related skills and knowledge
- Approved textbooks
- Study groups

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|-----------|--|------------|
| <b>3.</b> | <b>Review program content regarding the major work activity of performs common occupational skills.</b>  | <b>n/a</b> |
| <b>4.</b> | <b>Review program content regarding the major work activity of prepares roof and deck.</b>               | <b>n/a</b> |
| <b>5.</b> | <b>Review program content regarding the major work activity of installs low slope roofing.</b>           | <b>n/a</b> |
| <b>6.</b> | <b>Review program content regarding the major work activity of installs steep slope roofing.</b>         | <b>n/a</b> |
| <b>7.</b> | <b>Review program content regarding the major work activity of waterproofs and damp-proofs surfaces.</b> | <b>n/a</b> |
| <b>8.</b> | <b>Review program content regarding the major work activity of assesses, maintains and repairs roof.</b> | <b>n/a</b> |

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