Apprenticeship Manitoba

Manitoba

Roofer
Level 3

Rev. November 2006

Apprenticeship Manitoba

Roofer

Unit: A3 Orientation II: The Job of Journeywork

Level: Three

Duration: 21 hours

Theory: 21 hours

Practical: 0 hours

Overview:

Roofer Technical Training offers an entry-level orientation to the challenges of apprenticeship learning. The present unit introduces senior apprentices to the responsibilities of workplace *teaching* that they will assume as supervising journeypersons. Tradeworkers have a particularly rich tradition of refreshing and sharing their skills from one generation of practitioners 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 themselves become certified journeypersons.

The journeyperson's obligation to assist trade learners 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, 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 dialogue with their instructor. The detailed descriptors under each unit objective reflect Manitoba and Canadian standards prescribed for journey-level supervisory capabilities, as well as key topics in current research on the importance of workplace teaching and learning in trades-apprenticeship systems. Thus, descriptors represent suggested focal points or guidelines for potentially-worthwhile exploration. Delivery of this content will vary with the discretion of individual instructors, and with the experiences senior apprentices bring forward for group/individual reflection on the skills-stewardship dimension of their own future practice as journeypersons.

Objectives and Content: **Percent of Unit Mark (%)**

1. Describe the scope, substance, and significance of journey-level status. 10%

a. Historical background and trade traditions
- Origin, definition, and examples of journey-level status
- Obligations to employers, trade clients, and apprentices
- Concept of skills stewardship, and its rationale
- Customary responsibilities of journeyperson as workplace trainer/supervisor
- Overview development of formal systems for regulating/recognizing journey-level competence in designated apprenticeable trades
- Contributions of 'unticketed journeymen' and other informally-qualified Roofers to workplace trade-learning
- Achievements/limitations of informal systems for workplace training
- Canadian/other trends (e.g. succession planning in the trades; recognition of credentials and prior learning; defined standards for on-the-job trades education and training)

b. Regulatory/legal dimensions of journey-level status in designated trades
   - Rights and obligations re: Canada's Interprovincial 'Red Seal' program (Red Seal rationale, scope, and products, including the National Occupational Analysis [NOA], and Interprovincial examinations
   - Manitoba provincial requirements [e.g. *Apprenticeship and Trades Qualifications Act; General Regulation*; the *Roofer Trade Regulation*; relevant policies of the Apprenticeship and Trades Qualifications Board of Manitoba]
   - Trade-specific requirements re: Practical Training supervision and documentation; importance of quality assurance and broad-scope coverage of prescribed task-content; ratios, etc.

c. Other (as may be specified by instructor)

2. Compare/contrast role-options and responsibilities of the supervising journeyperson. 15%

a. Recognizing the variability of supervision assignments, situations, and roles
b. Source and specification of the supervision assignment
c. Formal vs. informal roles (e.g. mandated by an employer's succession plan)
d. Implicit vs. explicit standards and content: training goals are/are not codified; assessment measures are/are not used,
e. Accountability for results: subject/not subject to third-party notification; completion of supervision assignment itself is/is not assessed by third party; journeyperson is/is not required to prepare performance evaluation that could affect apprentice's employability or wage-rate, etc.
f. General vs. task- or job-specific supervision assignments: e.g. scope of expectations re: content of supervisory task(s)
g. Long-term vs. short-run supervision assignments – e.g., considerable latitude/little latitude for apprentice to learn from mistakes
h. 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
i. Typology of common supervisory role-options and what is implied by each:
   - Coach role: is 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
   - Managerial role(s): can shade over into hire/fire issues as lead-hand or site-boss
   - 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
j. Possibilities, perils, and likelihood of role-overlap in 'real-life' trade practice
k. Importance of clarifying all roles, expectations, and implications involved in accepting a supervision assignment
l. Role of Apprenticeship Training Coordinator (ATC), Manitoba Apprenticeship Branch
m. Resources for developing skills and knowledge re: providing journey-level supervision
   - Books and journals (not always trade-specific)
   - Websites
   - Conversation with trade instructors, journeypersons, and peers
   - Workshops
n. Other (as may be specified by instructor

3. Describe/demonstrate common requirements re: providing journey-level supervision. 25%

a. Review Unit A0.1 content re: challenges/opportunities opportunities of Apprenticeship learning adapted to journey-level supervision assignments and a journey-level standpoint
   - Application of adult education concepts to trades teaching/learning (e.g. responsibilities and expectations of adult learners)
   - Practical significance of 'styles' of adult learning and teaching
   - Helping apprentices to integrate Technical Training (in school) and Practical Training (on-the-job) learning experiences
   - Providing help and guidance re: new tasks and skills
   - Providing help and guidance re: fixing mistakes
   - Learning/teaching "the ropes" – socialization of learner within a community of trade practice (e.g. how to borrow a tool, interrupt a journeyperson, 'recruit' an advisor)

- Coverage/documentation of prescribed tasks and subtasks (Roofer NOA), including responsibility re: logbook sign-off (where applicable)
- Consultation with Apprenticeship Training Coordinator (ATC), Manitoba Apprenticeship Branch
- Communicating with apprentices and employers about supervision assignments and assignment specifications, including the limits of the trainers' own responsibilities and competence (e.g. substance-abuse intervention)
- Benefits of maintaining a personal record of achievements, ideas, and needs as a workplace trainer

b. Individual reflection and guided group discussion re: personal experiences of workplace learning as an apprentice
- Identification of best and worst practices of supervising journeypersons
- Assessment of personal experiences (if any) to date in supervising, coaching, or guiding other people to learn or improve their skills (e.g. entry-level apprentices, members of athletic team, younger family members, etc.), and how this might compare/contrast with the journey-level support of apprenticeship learning
- Identification of workplace and other factors that can contribute to good and bad trades teaching/learning experiences
- Development of personal standards re: responsibility to share one's knowledge and skill with others in the workplace (e.g., use/misuse of humour, rigour, discretion, craft-pride, etc.)

c. Comparison/contrast of discussion results with current knowledge/resources re: workplace skills coaching methods as applicable to journey-level supervision assignments
- Qualities of a good workplace coach
- Components of workplace skills coaching
- Processes and recommended practices re: workplace coaching
- Troubleshooting problems re: supervision assignments

d. Other (as may be specified by instructor)

4. Complete Modules 1 to 3, *Workplace Coaching Skills* (or equivalent). 25%

a. Identifying purpose of the lesson
- explaining the point of the lesson
- role of the coach in specific coaching situation
- Other (specified by instructor)

b. Linking the lesson
- Learner needs
- Lesson sequence
- Focus on learner
- Selection/timing of coaching opportunities

c. Demonstration of skill/task to be learned
- Starting the coaching session
- Demonstration
- Hands-on trial
- Recap for learner

5. Complete Modules 4 to 6, *Workplace Coaching Skills* (or equivalent). 25%

a. Practice of skill/task to be learned
- Nature and importance of practice
- Setting up for learner practice
- Types of practice
- Recycling and reinforcing skill/task learning

b. Providing feedback to the learner
- Value of feedback
- Kinds of feedback
- Guidelines and tips

c. Assessment
- Value of assessing learner progress
- Assessing level of skill
- Planning further steps toward skill/task mastery

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Apprenticeship Manitoba

Roofer

Unit: A4 Certification Exam Preparation Review

Level: Three

Duration: 77 hours

Theory: 77 hours

Practical: 0 hours

Overview:

This unit offers senior apprentices a systematic review of skills and knowledge required to pass the Interprovincial (IP) 'Red Seal' Examination. It promotes a purposeful personal synthesis between on-the-job learning and the content of in-school technical training. The unit includes pertinent information about the broad significance of Red Seal Interprovincial certification and the main features of the Interprovincial exam. Trade-specific content is enriched with information about practical strategies/resources for mastering study materials. It is intended that apprentices who seriously tackle the objectives of this unit should be able to approach the IP exam with well-founded confidence. But the unit also promotes a consolidation of study practices, trade knowledge, and self-awareness to help meet the longer-term requirements of further learning throughout one's working life as a certified journeyperson.
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.

Objectives and Content: **Percent of Unit Mark (%)**

1. **Describe the significance, format, and general content of the Interprovincial (Red Seal) Examination for the trade of Roofer.**
   a. Scope and aims of Red Seal system; value of certification
   b. Obligations/entitlements of candidates for IP certification
      - Relevance of IP Examination to current, accepted trade practices; industry-based national validation of test items
      - Supplementals Policy (retesting) of the Apprenticeship Branch
      - Confidentiality of examination content; the certified journeyperson's own stake in examination security (value of credential)
      - Limitations on use of calculators (e.g. dedicated, pre-programmed builders' calculator not allowed)
   c. Multiple-choice (four-option) item format; Red Seal/Apprenticeship Branch standards for acceptable test items (e.g. no "trick"-type questions; specifications for use of metric/Imperial units)
   d. Important government materials relevant to the IP Examination for apprentice Roofers
      - National Occupational Analysis (NOA); prescribed scope of the skills and knowledge which comprise the trade
      - NOA "Pie-chart" and its relationship to content-distribution of IP Examination items
      - Special significance of subtask-level NOA descriptors re: exam content
      - Manitoba Apprentice Program materials
      - National Building Code's relationship to examination content; availability of Code excerpts to IP candidates during examination

2. **Identify resources, strategies, and other key considerations for maximizing successful completion of written exams used in certifying tradeworkers.**

a. Personal preparedness
   - Proper rest/nutrition; eye-testing
   - Making room for a personal study regimen: appropriate prior communication with family members, friends, and employers about exam-related commitments/needs; identifying – and concluding – all necessary arrangements for minimizing distractions/disruptions
   - Focused reflection on prior experience – good and bad -- in test situations (e.g. Unit Tests), especially with respect to what the apprentice already has learned re: personal characteristics, learning styles, exam anxiety, and strategies (e.g. time management) for effective performance in test situations.

b. Self-assessment, consultation, and a Personal Study Plan
   - Preliminary self-assessment of individual strengths/weaknesses in trade-related skills and knowledge; usefulness of old tests and Apprenticeship Program materials; personal reflection re: in-school and on-the-job components of the Program, as well as the relationship between these two components; usefulness of consultation with journeypersons, appropriate peers, the Apprenticeship Training Coordinator (ATC), and/or personal mentors
   - Use(s) of approved textbooks, chapter tests, study guides, and note-taking in preparing for an examination
   - Study groups: perils and possibilities
   - Formulation, and submission for instructor's comments, of a personal study plan, including an approximate timetable, which describes/schedules a course of action for reviewing all relevant material(s) and for strengthening areas of deficient skills/knowledge in anticipation of the Red Seal Examination

c. Other (specified by instructor)

3. Review program content re: Roofer trade foundations.
   a. Structure and scope of the Roofer trade
   b. Trade safety awareness
   c. Workplace skills-coaching of apprentices

4. Review program content re: Roofer trade mathematics, documents, and design.
   a. Applications of basic math skills in Roofer trade practice
   b. Roof design and technical drawing
   c. Use of blueprints and other trade documents
   d. Estimating for roof construction projects

5. Review program content re: Roofer trade tools, equipment, and materials.
   a. Using Roofer tools and equipment
   b. Using hot-process, propane-fuelled, and motorized equipment
   c. Roofing materials and products

6. Review program content re: low-slope and flat roof projects.
   a. Flat-roof construction principles and components
   b. BUR installation techniques
   c. Membrane installation techniques

7. Review program content re: shingle, tile, and pre-formed metal roof projects.
   a. Steep-roof construction principles and components
   b. Shingled roofwork
   c. Tiled roofwork
   d. Pre-formed metal roofwork

8. Review program content re: maintenance, troubleshooting, and other specialties.
   a. Maintaining and waterproofing roof structures
   b. Analyzing and troubleshooting roof failures
   c. Practical roof repair techniques

9. Review program content re: maintenance, troubleshooting, and other specialties.
   a. Jobsite maintenance and inspection
   b. Scaffolding and access structures
   c. Lifting, rigging, and hoisting
   d. Jobsite coordination and maintenance

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Apprenticeship Manitoba

Roofer

Unit: B4 Estimating Materials for Roofing Projects

Level: Three

Duration: 35 hours

Theory: 35 hours

Practical: 0 hours

Overview:

This unit offers senior apprentices the opportunity to apply their knowledge of roofing materials, technical drawings, trade math, and construction details to solve practical problems involving estimates and quantity surveys. Unit content also includes information about typical challenges, methods, and resources (e.g. Building Codes and other industry standards) associated with roof-material estimating. The scope of the unit includes materials-estimation practices in both the flat-roof and steep-roof sectors of the Roofer trade market.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Apply/review trade-math concepts and calculator use to perform commonly-required roofing-project calculations.	**15%**
a. Practical problems requiring measurement/calculation re: lineal dimensions	
b. Practical problems requiring measurement/calculation re: area and volume	
c. Practical problems requiring measurement/calculation re: ratios, proportions	
d. Practical problems requiring measurement/calculation re: percentages and rates	
e. Other (specified by instructor)	
2. Estimate materials using technical drawings and blueprints.	**5%**
3. Estimate materials using information from building codes, manufacturer specifications (e.g. coverage of standard bundle, panel, length, litre, etc.), and other industry standards.	**15%**
a. Practical problems requiring measurement/calculation re: lineal dimensions	
b. Practical problems requiring measurement/calculation re: area and volume	
c. Practical problems requiring measurement/calculation re: ratios, proportions	
d. Practical problems requiring measurement/calculation re: percentages and rates	
e. Other (specified by instructor)	
4. Estimate materials for low-slope and flat-roof projects.	**15%**
a. Practical problems requiring measurement/calculation re: lineal dimensions	
b. Practical problems requiring measurement/calculation re: area and volume	
c. Practical problems requiring measurement/calculation re: ratios, proportions	
d. Practical problems requiring measurement/calculation re: percentages and rates	
e. Other (specified by instructor)	
5. Estimate materials for steep-roof projects.	**15%**
a. Asphalt roofing materials and accessories, including	
• Shingle and roll roofing	
• Underlayment	
• Starter strips	

- Drip edges
- Valley flashing
- Hip and ridge shingles

b. Estimating for shed, gable, and gambrel roofs
c. Calculations using slope/pitch
   - Using a pitch card
   - Using a folding carpenter's rule re: reading point conversions to pitch and slope
d. Projected horizontal areas, including
   - Allowances for valleys, dormers, and ridges at different elevations
   - Calculation for deduction of differently-sloped areas from net projected area of main roof
e. Factoring in duplicated areas (e.g. where dormer/main eaves overhang)
f. Translating the calculated, total projected horizontal areas for each roof slope into actual areas using area/rake conversion factors
g. Other (specified by instructor)

6. Complete Materials Estimating Assignment *per* instructor's specifications and requirements. 25%

a. Identifying/synthesizing relevant information from drawings, codes, and other sources
b. Interpreting product information and industry standards
c. Applying math formulas re: length, area, and volume for rectilinear as well as irregular and curved details.
d. Making allowances for overlaps, architectural features, and project-specific factors affecting estimate of materials
e. Revising original calculations to minimize waste and optimize utilization
f. Revising original calculations to reflect unforeseen event or characteristic of jobsite (e.g. a damaging ice-storm half way through the project)
g. Perform all calculations/estimates using both Imperial and metric units
h. Other (specified by instructor)

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Apprenticeship Manitoba

Roofer

Unit: F2 Analyzing & Troubleshooting Roof Failures

Level: Three

Duration: 35 hours

Theory: 35 hours

Practical: 0 hours

Overview:

This unit offers senior apprentices an opportunity to expand their understanding of the repair and maintenance of roof systems/components to maintain the integrity of built structures. Expertise in detecting, analyzing, and effectively troubleshooting roof failures is a highly valued trade specialty. It requires thorough understanding of roof construction details, including the characteristics of roofing materials both old and new, as well as a good grasp of the way roof components interact over time with such impacts as building-movement, wind, and water in all of its forms. Anticipating and troubleshooting roof failures also requires the ability to detect and solve problems in a systematic, efficient manner that reflects industry standards and client expectations. This unit focuses on troubleshooting procedures required in roof maintenance and repair. A companion unit provides a chance to practice applying this knowledge to common problems and targets of roof maintenance/repair projects.

Objectives and Content: **Percent of Unit Mark (%)**

1. **Describe procedure and other considerations for inspecting the condition and performance of roof systems/components.** **30%**
   a. Comparison and contrast(s) re: typical inspection and repair requirements as they vary with type of roof system/components
      - Review common sources of roof-system problems, including building movement, substandard design, materials, and building practices; age, exposure, etc.
      - BUR systems/components
      - Single-ply roofs
      - Steep roofs
   b. Factors influencing quality and effectiveness of inspection
      - Roofer's technical knowledge re: industry standards, roof-system construction details, and materials that apply to specific project (e.g. BUR vs. shingled system)
      - Roofer's general and specific familiarity with symptoms/significance of roof failures
      - Roofer's attitude toward ongoing, cumulative learning from personal experiences, conversation with other tradeworkers, and other sources of knowledge re: predictable as well as unanticipated cases/causes of roof failure
      - Proper consideration of client-reported problems and expectations re: history of structure and anticipated future requirements
      - Thoroughness and suitability of roof inspection criteria (e.g. seasonal timing)
      - Accuracy of observation
      - Testing/confirmation of initial observations *via* trial-and-error, cut-tests, consultation with other construction specialists), and other methods
      - Documentation of inspection results
      - Analysis/verification of inspection results (e.g. specification of problem area)
      - Identification and consideration of options (e.g. costs/benefits; required durability) for roof repair/maintenance project

- Selection, planning/prioritization, and specification of best option(s) for repair/maintenance project

2. Describe procedure for performing a cut test, and analyzing/documenting the results. **20%**

a. Cut-test specifications
   - Rationale, including location(s)
   - Order of operations
   - Adapting procedure to reflect composition of roof and purpose of test
   - Documenting and analyzing results of test

b. Hazards and precautions
   - Selecting/applying temporary sealant
   - Patching of cut-test area (temporary; permanent)
   - Adapting procedure to reflect composition of roof and purpose of test

c. Other (specified by instructor)

3. Describe procedure and other considerations for specifying the area of a roof that requires repair/maintenance. **30%**

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a. Important considerations re: or specifying problem area(s), including:
   - Consultation with clients re: location of problem area and initial identification of problem(s) and/or potential solution(s)
   - Identification of potential cause(s) and contributing factors (e.g. HVAC, plumbing, or other mechanical system defects)
   - Compatibility of repair/maintenance materials, tie-ins, etc. with original construction
   - Implications of roof-system type re: repair/maintenance requirements (e.g. asphalt vs. single-ply)
   - Extent of damaged roof area and/or area at risk of failure
   - Equipment and technical aids for locating leaks (e.g. thermographic; infrared)
   - Exterior and interior inspection, including identification/marking of reference points
   - Other (specified by instructor)

b. Common areas and symptoms of failing/ failed roof systems
   - Roof penetrations, parapets, and sidewalls
   - Separation/splitting of felts in relation to flashings, flashing joints, and/or base flange of roof jacks
   - Improperly bonded seams
   - Improperly installed valleys and roof jacks
   - Deteriorated caulking (e.g. around pipes)
   - Alligator cracks, and or spongy blistering/buckling of BUR system materials
   - Extruded fasteners
   - Cracked/torn membrane
   - Fishmouths along rolled-felt edges
   - Ridges along deck/insulation joints
   - Scouring of ballast and/or granular surfaces
   - Accumulated debris (e.g. in eavestrough)
   - Separated flashings, eavestroughing, and other metal components
   - Ceiling stains (condensation and other causes)
   - Intrusion of snowdrift into attic
   - Missing shingle tabs
   - Mechanical system connections and transitions (HVAC connections; plumbing fixtures, etc)

c. Other (specified by instructor)

4. Describe procedure and other considerations for specifying the kind of repair/maintenance that a roof's 'problem area' requires. **20%**

a. Variability of repair/maintenance requirements re:
   - Roof-system type (e.g. asphalt vs. single-ply)
   - Preferred techniques (coating, caulking, re-securement, refilling, etc.)
   - Building's past, present, and future uses
   - Feasibility of maintenance/repair option (e.g. due to specifications re: cost, materials, timeframes, durability, etc.)
   - Other (specified by instructor)

b. General procedure for maintenance/repair of BURs.
   - Cut open membrane and remove wet insulation
   - Replace damaged vapour barrier
   - Install new, compatible insulation
   - Spud off flood-coated or gravel-covered roof surface to specified new width
   - Install new felts and ballast (including laps and staggered placement as required)
   - Install curb, cant-strips and tie-ins with felts/flashings as required
   - Construct expansion joint(s) as required
   - Adapt procedure to special requirements of scoured areas (e.g. apply floodcoat, felts, gravel, fascia, scuppers, drain pipes, etc.)
   - Assist in setting up a preventive maintenance schedule for repaired BUR.
   - Other (specified by instructor)

c. General procedure for maintenance/repair of single-ply roofs.
   - Cut open membrane and remove wet insulation
   - Replace damaged vapour barrier
   - Install new, compatible insulation
   - Reseal flaps; clean an area around the cut to dimensions specified by standards
   - Install membrane over cleaned/cut area
   - Apply metal flashing or sealant to cap compromised walls and parapets
   - Other (specified by instructor)

d. General procedure for maintenance/repair of steep roofs.
   - Replace curled/degranulated/split shingles and/or shakes.
   - Insulate exhaust pipe and cap any pipe that contains a damper to control condensation
   - Verify and/or ensure adequate venting on roof, soffit, or both
   - Other (specified by instructor)

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Apprenticeship Manitoba

Roofer

Unit: F3 Practicum: Roof Maintenance & Repair Techniques

Level: Three

Duration: 28 hours

Theory: 0 hours

Practical: 28 hours

Overview:

This unit offers senior apprentices an opportunity for hands-on practice applying Roofer trade techniques to repair and maintain roof systems/components under the supervision of a qualified instructor. Unit objectives may be satisfied, at the instructor's discretion, by completion of a demonstration project that verifies the senior apprentice's procedural and practical capability in all of the specified content areas.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Demonstrate procedure for maintaining drains and scuppers.	**25%**
a. Verify sealing of scuppers and drains b. Inspection for defects c. Dismantling/disassembly of drains d. Cleaning e. Resealing of membrane to drains and scuppers f. Other (specified by instructor)	
2. Demonstrate procedure for refilling pitch pockets.	**10%**
a. Applying two-part pourable sealer and/or mastic b. Determining required volume and curing times of sealer/mastic c. Crowning the mastic in pitch pocket d. Determining temperature of penetration e. Ensuring securement of pitch pocket f. Assessing requirements for refill/replacement g. Other (specified by instructor)	
3. Demonstrate procedure for replacing deteriorated caulking and sealant(s).	**10%**
a. Selection of product(s) to suit application and environmental conditions b. Removing deteriorated caulking and cleaning substrate c. Techniques/standards for application of caulking f. Other (specified by instructor)	
4. Demonstrate procedure (hot-process and cold-process) for repairing membrane defects.	**25%**
a. Preparing surface for membrane repair. b. Installation techniques, including significant variations *per* product and process	

c. Application of gravel, coatings, and ballast to resurface membrane *per* industry standards
d. Other (specified by instructor)

5. Demonstrate procedure for applying surfacing and ballast to bare areas. 10%
[10% *of Unit Mark*]

a. Selection of ballast product
b. Selection of surfacing product
c. Selection/use of application method
d. Preparation of surfaces
e. Other (specified by instructor)

6. Demonstrate procedure for securing loosened/separated metal fittings. 20%

a. Specifying type and quantity of fasteners required
b. Forming and fitting of replacement flashings (cap, counter, and through-wall)
c. Matching colour and gauge of flashings
d. Removal/reinstallation of salvageable flashings
e Caulking seams of flashings
f. Other (specified by instructor)

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Apprenticeship Manitoba

Roofer

Unit: G4 Roofer Jobsite Coordination and Maintenance

Level: Three

Duration: 14 hours
Theory: 7 hours
Practical: 7 hours

Overview:

The coordination and maintenance of Roofer trade jobsites in 'real time' are essential to the safety, efficiency, and successful completion of roof construction projects. Specific requirements vary widely with the complexity, scale, and seasonality of particular projects. But some of these requirements are common to most jobsites. They include the need to move, handle and store roofing materials and equipment in a secure, orderly manner. They also involve the need to position personnel as well as materials so that the installation of roofing materials can proceed according to project plans and industry standards. As well, jobsite coordination requires Roofers to dovetail their efforts with those of other jobsite personnel in accord with the project sequence and timetable. The latter is so important that it is often entrusted to a hierarchy of jobsite coordination specialists that may include lead hands, site bosses, and superintendents, depending on project size and complexity.
This unit of instruction explores is intended to help Roofer program senior apprentices assume increasing responsibilities as members of a coordinated jobsite team. Content may be of particular interest to those apprentices who hope eventually to specialize as project supervisors themselves. The immediate focus, however, is on understanding the scope and nature of jobsite coordination/maintenance requirements that apply to apprentices and journeypersons, including the way these vary with the seasons – for example, with respect to the need for hoardings and other weather-related practices.

Objectives and Content: **Percent of Unit Mark (%)**

1. **Describe the coordination and maintenance of roof construction jobsites as a system.** **30%**

   a. Goals, rationale, and major concepts re: jobsite coordination/maintenance
   b. Jobsite planning re: coordination/maintenance requirements
      - 'Macro'-level
      - 'Micro'-level
   c. Variation in jobsite coordination/maintenance requirements and provisions
      - Jobsite safety assessments
      - Roles an responsibilities (including apprentices)
      - Chains of responsibility and accountability
      - Scale and complexity of projects
      - Sequencing and scheduling of project phases
      - Composition of project workforce (including other trades) and its significance
      - Impacts of seasonality and climate
      - Revision of schedules
      - Regulatory and other relevant considerations (including environmental)
   d. Career ladders and opportunities within and beyond the trade
   e. Symptoms/consequences of faulty coordination/maintenance
   f. Other (specified by instructor)

2. Describe/demonstrate jobsite coordination and maintenance techniques in general. **30%**

a. Planning and organization of roofing project jobsite
   - Schedules (including procurement/delivery of materials)
   - Layout of physical areas re: materials and equipment
   - Temporary utilities, including sources of electrical power, light, and water.

b. Consultation and communication, including jobsite documentation, inventory-keeping, and signage

c. Handling, storage, and use re: roofing materials and equipment
   - Lifting and shifting
   - Riggins and hoisting
   - Safety and security

d. Access and temporary structures (OHS/environmental considerations)
   - Guardrails
   - Ramps
   - Ladders
   - Shoring
   - Hoardings (environmental; weather related; engineered hoarding equipment)
   - Stages and swings
   - Scaffolding and scaffold systems

e. Troubleshooting tips and techniques re: roof-project jobsite coordination/maintenance

f. Other (specified by instructor)

3. Describe/demonstrate coordination and maintenance techniques re: winter conditions. **40%**

a. Scope of roof project-related requirements re: winter conditions
   - Implications re: regulatory requirements and employer policy (e.g. shutdowns)
   - Implications re: scheduling, sequencing, and intensity of on-site activity
   - Implications re: jobsite conditions (e.g. length of stints; hypothermia/frostbite hazards, etc.)
   - Implications re: site and access-structure conditions (e.g. icing and other special hazards)
   - Implications re: specific roofing products and materials
   - Implications re: required tools and equipment (e.g. heaters)

b. Use/selection and hazards/precautions re: materials and equipment for winterizing roofer jobsite
   - Tarpaulin and tarpaulin systems (including insulated/engineered varieties)
   - Tie wire and other fasteners
   - Lumber and wood products
   - Electrical supply (including electrical cords)
   - Ventilation hazards and precautions
   - Generators
   - Propane tanks
   - Heaters (electrical and gas-burning)

c. Practical procedure/techniques re: covering work and storage/supply areas
   - Relevant standards and technical requirements
   - Special safety hazards and precautions, including regulatory requirements
   - Installation and securement of tarpaulins
   - Construction/inspection of hoarding(s) and other temporary structures

d. Practical procedure/techniques re: heating work and storage/supply areas
   - Relevant standards and technical requirements
   - Special safety hazards and precautions, including regulatory requirements
   - Installation, operation, and monitoring of electrical heaters
   - Installation, operation, and monitoring of gas heaters
   - Ventilation and fresh-air supply

e. Other (specified by instructor)

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