Apprenticeship Manitoba

Manitoba

Bricklayer
Level 1

Rev. August 2022

Apprenticeship Manitoba

Bricklayer

Unit: A1 Learning About Work

Level: One

Duration: 7 hours

Theory: 7 hours

Practical: 0 hours

Overview:

A sign that an apprentice has become competent in a task or technique is to be asked to share this knowledge. Worksite skills-exchange has long been fundamental to trade-learning. Even trade veterans rely on peers to refine their knowledge and skill. The opportunity to benefit from this process, however, is shaped by complex factors that include worksite 'politics' and job deadlines. As adult trade-learners, apprentices at all levels of training must use their observational, listening, and interpersonal skills to benefit from the journeyperson's knowledge and experience. This requires understanding the trade's dynamics, as well as the roles and responsibilities which determine work-life.

This unit profiles the trade's structure and scope as determined by The Apprenticeship and Certification Act, Apprenticeship and Certification Board, Sector Committees, and Industry Working Groups using the occupational standards from which the technical training is derived. This unit also includes short- and long-term career progression and social competencies. This includes information about major areas of working knowledge, activities and interactions at work, and expansive and restrictive workplaces, stressing their application to apprenticeship on-the-job training.

A sound grasp of the roles, workplace relationships, and possibilities introduced in this unit are part of 'learning to learn' in Manitoba's apprenticeship system. Senior apprentices are later offered information about the transfer of knowledge and skills in this system. Please refer to unit C1 Journeyperson Trainer which explores the central and time-honoured foundation of trades journeywork.

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 structure and scope of the Bricklayer trade.** **n/a**
   a. The Apprenticeship and Certification Act
      - Apprenticeship and Certification Board
      - Sector Committees and Industry Working Groups (IWG)
      - General regulation, and specific trade regulations/by-laws
      - Policies regarding attendance, evaluation procedures, conduct, and progression requirements (Apprenticeship Manitoba, training provider)
   b. Uses of the Red Seal Occupational Standard (RSOS)
      - Apprenticeship Manitoba technical training standards
      - On-the-job report of hours
      - Examinations (unit tests, final certification examinations)
   c. Opportunities and future career options

- Generalists and specialists. The move toward specialization is well known to modern tradespeople. Some prefer to specialize and others want to do it all. Supervisory positions require a broad scope.
- Lead hands and other immediate supervisors. Apprentices need to know how to become a lead-hand as much as they need to know the benefits and pit-falls of leadership between management, journeypersons, tradespersons, and other workers.
- Geographic mobility. What does it mean to a tradesperson to have to travel to find work? Are there more opportunities if they do? What are they? What are the drawbacks to being away from home for several weeks at a time?
- Job hierarchies and innovations. What trade specific special training opportunities are available in the trade? Is there travel involved? How do these opportunities affect work assignments and career progression?

2. Describe two levels of workplace competency. **n/a**

a. Job competencies related to workplace culture
   - Knowledge of workplace equipment and materials
   - Skills and techniques

b. Social competencies related to workplace culture
   - Language of work
   - Workplace belief systems
   - Rules and meanings
   - Equity, diversity, and inclusion in the workplace

3. Describe accommodation for apprentices with accessibility requirements. **n/a**

a. Awareness of the *Accessibility for Manitobans Act*
   - Customer service accessibility standard
   - Employment accessibility standard
   - Information and communications accessibility standard
   - Built environment
   - Transportation

b. Technical training
   - Requirements
   - Roles and responsibilities
   - Services and information required by persons with accessibility requirements

c. On-the-job
   - Requirements
   - Roles and responsibilities
   - Services and information required by persons with accessibility requirements

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Unit: A2 Trade Safety Awareness

Level: One
Duration: 7 hours
Theory: 7 Hours
Practical: 0 Hours

Overview:

Safe working conditions, injury prevention, and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers, supervisors, and workers. It is imperative to be familiar and apply the Manitoba Workplace Safety and Health Act and Regulations. Safety education is an integral part of apprenticeship training both in school and on-the-job. This unit is an overview of occupational safety and health best practices in Manitoba and covers Personal Protective Equipment, the Workplace Hazardous Materials Information System, and Safe Work Procedures. The unit also describes injury prevention and response. Finally, the unit reinforces these best practices by navigating the SAFE Work Manitoba website through each objective to apply Manitoba's most current safety and health standards. Additional trade safety awareness related resources are located on the Apprenticeship Manitoba website link below. Trade specific hazards and safe work practices are supplemented and delivered in-context within technical training units.

- **SAFE Work Manitoba website:** https://www.safemanitoba.com/
- **Safety resources:** https://www.gov.mb.ca/aesi/apprenticeship/generalinfo/instructoreducators.html

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. Define and describe Manitoba safety and health requirements.	**n/a**

a. Overview of the *Workplace Safety and Health Act and Regulations*
   - Rights and responsibilities of workers under the *Act*
   - Rights and responsibilities of supervisors under the *Act*
   - Rights and responsibilities of employers under the *Act*

b. Public agencies
   - Workplace Safety and Health (Enforcement)
   - SAFE Work Manitoba (Prevention)
   - Other

c. Codes of practice, guidelines, policies, and standards (differences)

d. Worker rights
   - Right to know, participate, refuse
   - Protection from reprisal

e. Workplace safety and health program (worker's involvement)
   - Workplace safety and health committee
   - Participation in investigation and inspection process

2. Identify and describe personal protective equipment (PPE) requirements and standards in the workplace. **n/a**

a. Employer, supervisor, and worker responsibilities
b. Hierarchy of control measures
c. Personal protective equipment (PPE)
   - Eye and face protection
   - Hearing protection
   - Foot, head, hand and skin protection
   - Respiratory protection
   - Protective clothing (including Hi-Visibility/Hi-Vis)
   - Fall protection (trade specific)

3. Identify and describe the Workplace Hazardous Material Information System (WHMIS) and procedures. **n/a**

a. Hazard identification
b. Product labels, symbols, and classification
   - Supplier
   - Workplace
c. Safety Data Sheets (SDS)
d. Chemical and biological hazards
   - Emergency washing
   - Transportation of dangerous goods
   - Storage and handling

4. Identify and describe Safe Work Procedures (SWP). **n/a**

a. Hazard identification
b. Uncontrolled risk
c. SWP development

5. Identify and describe injury prevention.

a. Hazard recognition, evaluation, and control (SAFE acronym)
b. Occupational disease and illness
c. Musculoskeletal
   - Ergonomics
d. Psychological health and safety
   - Harassment and violence
   - Working alone
e. Young workers
f. Physical hazards
g. Chemical and biological hazards and exposures
   - Dust and fibres
   - Fumes, aerosols, gases and vapours
h. Confined space entry
i. Electrical safety
   - Lockout/tagout procedures
j. Fire types, fire extinguisher classifications and applications

6. Identify and describe injury response. **n/a**

a. Control the scene
b. Incident investigation
   - Near miss
   - Incident
   - Serious incident

c. Corrective actions
d. Follow-up
e. Reporting an injury (Workers Compensation Board of Manitoba (WCB))

7. Demonstrate navigation and retrieval of key content areas from SAFE Work Manitoba's website and apply resources directly to unit objectives. **n/a**

a. Legislation
b. Bulletins
c. Templates
d. Shop talk
e. Other resources

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Unit: A3 Tools and Equipment

Level: One
Duration: 21 hours
Theory: 15 hours
Practical: 6 hours

Overview:

This unit is designed to provide the apprentice with the knowledge and skills for using and maintaining tools and equipment. Topics will include: hand, power, hydraulic, pneumatic, powder-actuated tools, layout tools, and material handling equipment and their applications, maintenance and procedures for use. Apprentices will perform various practice activities to increase tool and equipment awareness and better understand their safe work procedures.

Objectives and Content:	Percent of Unit Mark (%)
1. Define terminology associated with tools and equipment.	**5%**
2. Identify hazards and describe safe work practices pertaining to tools and equipment. a. Safety and training requirements b. Condition of tool or equipment c. Safe work procedures	**15%**
3. Identify tools and equipment, and describe their selection, application, and procedures for use. a. Hand b. Power c. Hydraulic d. Pneumatic e. Powder-actuated f. Layout g. Material handling	**40%**
4. Describe and demonstrate the procedures used to inspect, maintain, and store tools and equipment.	**20%**
5. Perform various practice activities using tools and equipment to increase awareness and better understand their safe work procedures.	**20%**

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Unit: A4 Trade Related Communications

Level: One
Duration: 14 hours
Theory: 14 hours
Practical: 0 hours

Overview:

This unit is designed to provide the apprentice with the knowledge and skills required to elevate trade related communications. Beginning with the ability to recognize effective verbal and non-verbal communication practices, apprentices will describe how they are applied differently to multiple stakeholders. This unit will also build on those fundamental face-to-face practices, adding the procedures required for different communication devices used in the industry for worksite tasks and directions. This unit continues to build on these skills by applying learned techniques to various digital platforms used on the worksite. Finally, apprentices will perform these various communication skills while practicing active listening and response.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Identify and describe effective verbal and non-verbal communication practices. a. Customers b. Co-workers c. Site management d. Suppliers e. Journeypersons/apprentices f. Authorities having jurisdiction (AHJ)	**15%**
2. Identify and describe types of communication devices and their operating procedures for worksite tasks and directions.	**20%**
3. Apply communication techniques using various digital platforms used on the worksite.	**25%**
4. Demonstrate and perform various communication skills and practice active listening and response. a. Verbal b. Non-verbal (body language) c. Personal responsibilities and attitudes d. Discrimination e. Diversity	**40%**

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Unit: A5 Trade Related Mathematics

Level: One
Duration: 21 hours
Theory: 21 hours
Practical: 0 hours

Overview:

This unit provides a review of foundational math concepts in the bricklayer trade. The application of these concepts will help apprentices develop problem solving and critical thinking skills. Finally, this unit will prepare students to apply math concepts, problem solving, and critical thinking skills to solve trade related problems in future units of technical training in the bricklayer trade.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Solve trade related foundational math problems. a. Proper, improper, or mixed fractions b. Multiply, divide, reduce, and expand common fractions c. Decimal and common fractions, standard operations, and conversions d. Roots and exponents e. Order of operations f. Tolerances and margins of error g. Percentage	**20%**
2. Solve trade related problems between metric and customary measurement systems. a. Linear measures b. Area	**20%**
3. Solve trade related problems using calculations for simple and complex geometric shapes. a. Perimeter, circumference, and area of polygons • Triangle • Rectangle • Circle • Quadrilateral and parallelogram b. Pythagorean theorem c. Volume	**25%**
4. Solve trade related problems using ratio and proportion. a. Direct b. Indirect	**25%**

5. Solve trade related algebraic problems involving simple equations and formulas. 10%

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Unit: A6 Worksite Activities and Organization

Level: One
Duration: 28 hours
Theory: 21 hours
Practical: 7 hours

Overview:

This unit is designed to provide the apprentice with the knowledge and skills of worksite activities and organization. Beginning with terminology and safe work practices, the unit introduces basic trade documents required to plan daily tasks, prepare the worksite and protect surrounding areas. This introduction to basic trade document interpretation builds the basic skills necessary that will be directly applied to future units of instruction and in the masonry trade. Additional formal trade document use will be explored in greater depth in the Level 2 unit, Blueprint Reading and Quantity Surveying. This unit will also give apprentices an understanding of the different masonry units and materials found on the worksite. Apprentices will plan the requirements for the protection of these materials, the work area, finished work and surrounding areas while being able to safely heat spaces where masonry installation occurs. Finally, apprentices will demonstrate the procedures to prepare and protect the worksite.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with worksite activities and organization. a. Worksite types • Residential • Industrial • Commercial • Institutional	**10%**
2. Identify hazards and describe safe work practices of worksite activities and organization. a. Worksite specific safety documentation and procedures b. Electrical power lines (underground and overhead) c. Material handling and storage d. Environmental considerations e. Risk assessment • Soil Stability • Excavation and trenching • Backfilling	**10%**
3. Identify, describe and demonstrate document use to plan daily tasks, prepare worksite and materials and to protect surrounding areas. a. Types • Sketches • Drawings	**20%**

- Manufacturers' specifications
- Change orders (awareness)
- Addendums (awareness)

4. Identify and describe materials included in worksite activities and organization. 30%

a. Masonry units (brick, block, stone)
   - Types
   - Sizes
   - Characteristics
   - Classification
   - Location (position)

b. Masonry materials
   - Sand
   - Cements
   - Sealants
   - Membranes
   - Insulation
   - Masonry accessories

5. Identify and describe the protection of materials, work area, finished work, and surrounding areas pertaining to worksite activities and organization and their selection, characteristics, and applications. 10%

a. Protection types
   - Insulated tarps
   - Debris screens
   - Shrink wrap
   - Safety netting
   - Barriers
   - Coverings
   - Other

6. Identify and describe heating of the installation area pertaining to worksite activities and organization. 10%

a. Heater types
b. Fuels
c. Ventilation
d. Risks

7. Describe and demonstrate the procedures to prepare and protect the worksite. 10%

a. Work area
b. Jobsite
c. Surrounding areas

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Unit: A7 Scaffolding, Hoisting, Lifting and Rigging

Level: One
Duration: 21 hours
Theory: 14 hours
Practical: 7 hours

Overview:

This unit is designed to provide the apprentice with the knowledge and skills of scaffolding, hoisting, lifting and rigging. Beginning with terminology, safe work practices and safety systems, the unit covers the use and application of scaffolding systems. The unit also covers the application, calculations, and operation of hoisting, lifting and rigging equipment, applying their jurisdictional codes and regulations. Finally, apprentices will erect scaffolding and perform hoisting, lifting and rigging techniques.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with scaffolding, hoisting, lifting and rigging.	**5%**
2. Identify hazards and describe safe work practices when scaffolding, hoisting, lifting and rigging. a. Fall arrest systems b. Fall prevention systems c. Communication techniques (including hand signals)	**10%**
3. Interpret jurisdictional codes and regulations pertaining to scaffolding, hoisting, lifting and rigging.	**5%**
4. Identify and describe the use and applications of scaffolding systems. a. Tube and clamp b. Frame c. Mast climber d. Swing stage	**5%**
5. Identify and describe the use and applications of hoisting, lifting and rigging equipment. a. Sling types • Rope • Chain b. Classifications c. Weights d. Selection e. Considerations	**20%**

6. Perform calculations associated with hoisting, lifting and rigging requirements. 20%

a. Loads
b. Weights
c. Sling angles
d. Other

7. Describe and demonstrate the operation of hoisting, lifting and rigging equipment. 20%

a. Equipment selection
b. Applications for use
c. Manufacturers' specifications
d. Load calculations
e. Operational procedures

8. Perform scaffolding erection and hoisting, lifting and rigging techniques. 15%

a. Worksite evaluation
b. Frame scaffolding
c. Setup procedures
d. Maintenance and inspection
e. Load calculations
f. Load distribution
g. Sling configuration and considerations
h. Lifting of loads
i. Reconfiguration
j. Dismantling procedures
k. Other considerations
    - Tie-in
    - Outriggers

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Unit: A8 Substrate Preparation

Level: One
Duration: 14 hours
Theory: 9 hours
Practical: 5 hours

Overview:

This unit is designed to provide the apprentice with the knowledge and skills of substrate preparation. Beginning with terminology and safe work practices, the unit covers substrate preparation for walls and foundations. The unit also covers building envelope assemblies including the types, installation procedures, maintenance and repair, applying jurisdictional codes and manufacturers' specifications. Finally, apprentices will demonstrate the procedures to prepare the membrane surface to complete the building envelope.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with substrate preparation and building envelope.	**10%**
2. Identify hazards and describe safe work practices when preparing substrates and building envelope.	**10%**
3. Interpret jurisdictional codes and manufacturers' specifications pertaining to substrate preparation and building envelope. a. Selection b. Installation c. Maintenance d. Repair	**10%**
4. Identify and describe substrate preparation for walls and foundations. a. Masonry b. Concrete c. Wood d. Gypsum panel e. Other	**20%**
5. Identify and describe building envelope assemblies. a. Types • Anchoring/tie systems • Membrane and flashing • Insulation • Parging b. Characteristics c. Installation procedures	**25%**

d. Maintenance
e. Repair

6. Describe and demonstrate membrane surface preparation procedures to complete building envelope. 25%

a. Tools and equipment selection
b. Material selection
c. Manufacturers' specifications
d. Installation techniques
e. Testing considerations
f. Code requirements

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Unit: A9 Fundamental Masonry Tasks

Level: One
Duration: 91 hours
Theory: 21 hours
Practical: 70 hours

Overview:

This unit is designed to provide the apprentice with knowledge and skills of fundamental masonry tasks. Beginning with terminology and safe work practices, the unit covers fundamental masonry tasks and procedures including wall and coursing layout, finishing joints, cleaning, and sealing new masonry surfaces. Finally, apprentices will perform the application and sequence of these tasks and techniques on various masonry projects.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with fundamental masonry tasks.	**5%**
2. Identify hazards and describe safe work practices of fundamental masonry tasks. a. Cutting b. Handling c. Mixing d. Storage e. Environmental	**5%**
3. Interpret jurisdictional codes and manufacturers' specifications pertaining to fundamental masonry tasks.	**5%**
4. Identify and describe fundamental masonry tasks. a. Wall and coursing layout • Wall system types • Location (grade) • Module unit • Size • Bond pattern • Spacing b. Finishing Joints • Types • Tooling section • Filling voids • Mortar readiness • Tooling sequence • Brushing	**25%**

- Retooling

c. Cleaning new masonry surfaces
   - Types
   - Characteristics
   - Selection
   - Mix ratios
   - Mixing sequence
   - Procedures

d. Sealing masonry surfaces
   - Types
   - Location
   - Selection
   - Surface protection
   - Methods

5. Describe and demonstrate the application and sequence of fundamental masonry tasks. 20%

a. Wall and coursing layout
b. Finishing joints
c. Cleaning new masonry surfaces
d. Sealing masonry surfaces

6. Perform fundamental masonry tasks using various projects and techniques. 40%

a. Types
   - Leads (corners)
   - Wall sections (both line and level)
   - Piers (columns)
   - Other

b. Execution
   - Layout and accuracy
   - Plumb, level, gauged
   - Joint size (consistency)
   - Joint tooling
   - Preparation for cleaner and sealer
   - Efficiency

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Unit: A10 Mortars, Grouts, and Adhesives

Level: One
Duration: 21 hours
Theory: 17 hours
Practical: 4 hours

Overview:

This unit is designed to provide the apprentice with introductory knowledge and skills of mortars, grouts, and adhesives. Beginning with terminology and safe work practices, the unit covers types, admixtures, and mixing procedures. The unit will also cover the selection, preparation, and application procedures of mortars, grouts, and adhesives. Finally, apprentices will calculate mix ratios and demonstrate these procedures to safely mix and handle standard mortars, grouts and adhesives. Specific product, material types and applications are embedded as a learning objective and will be covered in-context in the Level 2 and Level 3 units of instruction.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with mortars, grouts, and adhesives.	**10%**
2. Identify hazards and describe safe work practices when working with mortars, grouts, and adhesives. a. Handling b. Mixing c. Storage	**10%**
3. Identify and describe mortars, grouts, and adhesives. a. Types b. Characteristics c. Applications d. Mixing procedures e. Admixtures f. Curing time	**15%**
4. Describe and demonstrate the selection, preparation and applications of mortars, grouts, and adhesives. a. Considerations • General • Special applications • Restoration work • Curing procedures b. Procedures for ordering c. Procedure for handling, shipment, storage d. Testing (sampling)	**25%**

e. Troubleshooting
   - Deterioration
   - Mortar failure
   - Other

5. Perform calculations associated with mortar usage. 20%

a. Mix ratios
b. Quantities
   - Volume
   - Area coverage

6. Demonstrate mixing and handling of mortars, grouts, and adhesives. 20%

a. Selection
b. Mix ratio
c. Mixing techniques
d. Application
e. Testing considerations (sampling)
f. Troubleshooting

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Unit: A11 Masonry Walls I

Level: One
Duration: 70 hours
Theory: 15 hours
Practical: 55 hours

Overview:

This unit is designed to provide the apprentice with the knowledge and skills of masonry walls. Beginning with terminology and safe work practices, the unit covers the types, characteristics and applications of non-load bearing masonry walls and their components. The unit also covers layout, building methods and installation procedures, applying their codes and regulations. Finally, apprentices will construct various types of non-load bearing walls to meet industry standards. Apprentices will apply these principles and techniques into the Level 2 unit, Masonry Walls II, which focuses on load bearing walls.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with masonry walls. a. Load bearing b. Non-load bearing	**5%**
2. Identify hazards and describe safe work practices when working with masonry walls. a. Non-load bearing	**5%**
3. Interpret jurisdictional codes and regulations pertaining to non-load bearing masonry walls. a. Anchorage b. Building envelope • Moisture control • Insulation • Ventilation c. Construction joints d. Foundation and supports	**5%**
4. Identify and describe non-load bearing masonry walls. a. Types • Curtain walls (veneers) • Partition walls • Cavity walls • Single- and multi-wythe • Columns • Fire walls	**15%**

b. Characteristics
   - Bonds
   - Bond patterns
   - Joints

c. Related components
   - Construction joints
   - Lintels
   - Accessories

5. Identify and describe the applications of non-load bearing masonry walls. 15%

a. Considerations
   - Drainage
   - Mortar joints
   - Moisture control
   - Other

b. Properties (layout)
   - Height
   - Length

c. Location

d. Procedures and techniques for ordering

e. Procedures for handling, shipment, storage

f. Testing (sampling)

g. Troubleshooting
   - Deterioration
   - Mortar failure
   - Other

6. Demonstrate layout and building methods for non-load bearing masonry walls. 15%

a. Procedures
   - Material selection
   - Base preparation
   - Related calculations
   - Layout
   - Coursing
   - Mortar spreading
   - Build leads
   - Wall completion
   - Jointing
   - Quality assurance

b. Types
   - Curtain walls (veneers)
   - Partition walls
   - Cavity walls
   - Single- and multi-wythe
   - Columns

7. Perform layout and construction of non-load bearing masonry walls to meet industry standards. 40%

a. Material selection

b. Base preparation

c. Related calculations

d. Layout

e. Coursing
f. Mortar spreading
g. Build leads
h. Wall completion
i. Jointing

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