

Atlantic Workforce Partnership



BRICKLAYER

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COUNCIL OF
ATLANTIC PREMIERS
CONSEIL DES PREMIERS
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Employment and
Social Development Canada

Emploi et
Développement social Canada

PLAN OF TRAINING

Atlantic Apprenticeship Curriculum Standard

Bricklayer

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Government of Newfoundland and Labrador
Department of Immigration, Population Growth and Skills
Apprenticeship and Trades Certification Division

Approved by:



Chairperson, Provincial Apprenticeship and Certification Board

Date: January 26 '24

Atlantic Apprenticeship Curriculum Standard

Bricklayer

Preface

This Atlantic Apprenticeship Curriculum Standard is intended to assist instructional staff in the design and delivery of technical, in-class training in support of the Bricklayer program.

This document contains all the technical training elements required to complete the Bricklayer apprenticeship program and has been developed based on the 2021 Red Seal Occupational Standard. The RSOS can be found on the Red Seal website (www.red-seal.ca).

Implementation of this AACs for Apprenticeship training is outlined in the following table.

Level	Implementation Effective
Level 1	2024-2025
Level 2	2025-2026
Level 3	2026-2027

The above implementation schedule was current at time of printing. Please confirm with Apprenticeship Staff prior to commencing training.

Granting of credit or permission to challenge level examinations for pre-employment or pre-apprenticeship training for the Bricklayer trade will be based on the content outlined in this standard. Training providers must contact their provincial apprenticeship authority for more information on the process and requirements for determining eligibility for credit towards an apprenticeship program.

Acknowledgements

The development of the Atlantic Apprenticeship Curriculum Standard (AACS) is an initiative of the Atlantic Apprenticeship Council's Atlantic Apprenticeship Harmonization Project (AAHP) through the Atlantic Workforce Partnership.

The AAHP was created in 2014 and funded through contributions from Employment and Social Development Canada (ESDC) and the four Atlantic Provinces. In 2023, Phase III of the AAHP concluded and the AAHP transitioned to a maintenance office supported by the four Atlantic Provinces. The Atlantic Apprenticeship Council would like to thank ESDC for the financial support provided to harmonize the 23 trades in Phase I, II and III of the AAHP.

Advisory committees, industry representatives, instructors and apprenticeship staff provided valuable input to the development of the trade AACs in 2015 and updating of the trade AACs in 2023. Without their dedication to quality apprenticeship training, this document could not have been produced. The Atlantic Apprenticeship Council wishes to acknowledge the contributions of the industry and instructional representatives who participated in the development of this document.

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User Guide

Atlantic Apprenticeship Curriculum Standards (AACS) are developed based on trade specific national occupational standards, such as the Red Seal Occupational Standard (RSOS), and industry consultation. This document represents the minimum content to be delivered as part of the harmonized Atlantic program for the Bricklayer trade.

The AACSs are deliberately constructed for ease of use and flexibility of structure to adapt to all delivery requirements. They detail units of training, unit outcomes and objectives. They do not impose a delivery model or teaching format.

Jurisdictions and/or training providers will select and develop delivery materials and techniques that accommodate a variety of learning styles and delivery patterns. The AACS does not dictate study materials, textbooks or learning activities to be used in delivery.

The document includes a Level Structure to facilitate mobility for apprentices moving from one jurisdiction to another.

Structure

The content of the AACS is divided into units. Unit codes are used as a means of identification and are not intended to convey the order of delivery. It is at the discretion of the training provider to deliver the content in the required logical sequence of delivery within the level. Jurisdictions are free to deliver units one at a time or concurrently within a level, provided all outcomes are met.

The Learning Outcomes describe what the apprentice should know or be able to do at the end of training. Wording of the Learning Outcomes, “Demonstrate knowledge of...” acknowledges the broad spectrum of ways in which knowledge can be assessed (i.e., practical projects, multiple choice testing, presentations, etc.) by instructional staff within the training.

Summative evaluation will be through a multiple-choice level exam administered through the jurisdictional Apprenticeship Authority.

User Guide (continued)

The Red Seal Occupational Standard (RSOS) to AACS comparison chart outlines the relation between each RSOS sub-task and the AACs units. RSOS references have also been detailed in each unit to highlight the direct link between the unit and relevant sub-tasks in the RSOS.

In the Level Structure section, the document identifies suggested hours to provide an indication of the time it should take to cover the material in the unit and is provided as a guide only. Adjustments to the suggested hours for each unit may be required to account for rate of apprentice learning, statutory holidays, storm days, registration, and examinations. These suggested hours detailed for each unit will represent both theory and practical training (if relevant) and for consistency will be based on a standard of 30 hours per week of training. The true length of time required to deliver an outcome successfully will depend upon the learning activities and teaching methods used.

There are two types of objectives found in the AACS document: theoretical and practical.

The theoretical objectives represent the material that is to be covered during the technical training to convey the required knowledge to the apprentice.

The practical objectives represent the tasks or skills that have been deemed by the Atlantic Trade Advisory Committee as critical for the apprentices to receive exposure to while attending technical training. For example, exposure could be done through instructor demonstration or individual or group performance of the skill or task. Training providers are encouraged to use practical demonstration and opportunities for hands-on learning whenever possible. Practical objectives are not intended to replace the on-the-job training component of the apprentice's program or to mirror or replace the logbook skills that are to be taught and evaluated in the workplace.

Detailed content for each objective has not been developed. Where detail is required for clarity, content has been provided. The AACS should be used in conjunction with the national standard for the trade – the Red Seal Occupational Standard (RSOS).

Glossary of Terms

These definitions are intended as a guide to how language is used in the document.

Adjust	To put in good working order; regulate; bring to a proper state or position.
Application	The use to which something is put and/or the circumstance in which an individual would use it.
Characteristic	A feature that helps to identify, tell apart or describe recognizably, a distinguishing mark or trait.
Component	A part that can be separated from or attached to a system, a segment or unit.
Define	To state the meaning of (a word, phrase, etc.).
Describe	To give a verbal account of; talk about in detail.
Explain	To make plain or clear; illustrate; rationalize.
Identify	To point out or name objectives or types.
Interpret	To translate information from observation, charts, tables, graphs, and written material.
Maintain	To keep in a condition of good repair or efficiency.
Method	A means or manner of doing something that has procedures attached to it.
Operate	How an object works; to control or direct the functioning of.
Procedure	A prescribed series of steps taken to accomplish an end.
Purpose	The reason for which something exists or is done, made or used.

Glossary of Terms (continued)

Service	Routine inspection and replacement of worn or deteriorating parts.
	An act or business function provided to a customer in the course of an individual's profession (e.g., haircut).
Technique	Within a procedure, the manner in which technical skills are applied.
Test	v. To subject to a procedure that ascertains effectiveness, value, proper function, or other quality. n. A way of examining something to determine its characteristics or properties, or to determine whether it is working correctly.

Essential Skills / Skills for Success

Through extensive research, the Government of Canada and other national and international agencies have identified and validated key essential skills for the workplace. These skills are used in nearly every job and at different levels of complexity. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change. In response to the evolving labour market and changing skill needs, in 2021 the Government of Canada launched a new **Skills for Success** model. (QR code #1) or web link below.

<https://www.canada.ca/en/services/jobs/training/initiatives/skills-success/new-model.html>

The Employment and Social Development Canada (ESDC) website provides information about the Skills for Success, including:

- a brief description of the skill;
- why the skill is important;
- tools to help you improve on each of the skills; and
- videos to help you improve on each of the skills.

This information can be found at: (QR code #2) or web link below.

<https://www.jobbank.gc.ca/essentialskills>

Skills for Success training tools can be found at: (QR code #3) or web link below.

<https://www.canada.ca/en/services/jobs/training/initiatives/skills-success/tools.html>

The development and improvement of these Skills for Success is inherent throughout the apprenticeship training program as apprentices work towards achieving journeyperson status.



#1 The new Skills for Success model – Canada.ca



#2 Explore careers by essential skills – Job Bank



#3 Assessment and training tools – Canada.ca

Level Structure

Level 1 – 8 Weeks

Unit Code	Unit Title	Suggested Hours	Page Number
BRK-100	Safety	9	20
BRK-105	Rigging, Lifting, Hoisting and Material Handling Equipment	6	22
BRK-110	Access Equipment	6	24
BRK-115	Tools and Equipment	12	26
BRK-120	Mortars, Concrete, Grouts and Adhesives I	18	28
BRK-140	Laying Brick to Line	48	31
BRK-145	Laying Block to Line	45	34
BRK-150	Anchors, Tie Systems and Joint Reinforcements	12	36
MENT-700	Mentoring I	6	38
BRK-330	Job Planning and Trade Documentation	6	40
BRK-160	Drawings and Specifications	21	42
BRK-165	Building Envelope	15	44
BRK-170	Non-Load-Bearing Walls	36	46

Level 2 – 8 Weeks

Unit Code	Unit Title	Suggested Hours	Page Number
BRK-200	Load-Bearing Walls	48	52
BRK-201	Mortars, Concrete, Grouts and Adhesives II	12	56
BRK-205	Renovation	18	58
BRK-210	Natural Stone Masonry	48	60
BRK-211	Surface-Bonded Masonry Units	18	63
BRK-215	Restoration I	30	65
BRK-220	Glass Block	12	68
BRK-221	Prefabricated Masonry	6	70
BRK-222	Arches	48	72

Level 3 – 8 Weeks

Unit Code	Unit Title	Suggested Hours	Page Number
BRK-305	Chimneys	40	76
BRK-306	Natural Stone Cladding	24	79
BRK-310	Fireplaces	81	81
BRK-315	Steps and Patios (Horizontal Masonry Surfaces)	15	84
BRK-320	Refractory	12	86
BRK-321	Corrosion Resistant Materials	9	88
BRK-322	Restoration II	15	91
BRK-325	Ornamental and Sculpted Masonry	8	94
MENT-701	Mentoring II	6	96
BRK-335	Program Review	30	97

2021 RSOS Sub-Task to AACS Unit Comparison

RSOS Sub-Task		AACS Unit	
Task 1 – Performs safety-related functions.			
1.01	Maintains safe work environment.	BRK-100	Safety
1.02	Uses personal protective equipment (PPE) and safety equipment.	BRK-100	Safety
Task 2 – Uses and maintains tools and equipment.			
2.01	Maintains tools and equipment.	BRK-115	Tools and Equipment
2.02	Uses rigging, hoisting and lifting equipment.	BRK-105	Rigging, Lifting, Hoisting and Material Handling Equipment
2.03	Uses access equipment.	BRK-110	Access Equipment
Task 3 – Uses scaffolding.			
3.01	Erects scaffolding.	BRK-110	Access Equipment
3.02	Dismantles scaffolding.	BRK-110	Access Equipment
3.03	Maintains scaffolding.	BRK-110	Access Equipment
Task 4 – Organizes work.			
4.01	Uses drawings and specifications.	BRK-160	Drawings and Specifications
		BRK-200	Load-Bearing Walls
		BRK-201	Mortars, Concrete, Grouts and Adhesives II
		BRK-205	Renovation
		BRK-210	Natural Stone Masonry
		BRK-211	Surface-Bonded Masonry Units
		BRK-215	Restoration I
		BRK-220	Glass Block
		BRK-221	Prefabricated Masonry
		BRK-222	Arches
		BRK-305	Chimneys
		BRK-306	Natural Stone Cladding
		BRK-310	Fireplaces
		BRK-315	Steps and Patios (Horizontal Masonry Surfaces)
		BRK-320	Refractory
4.02	Plans daily tasks and activities.	BRK-321	Corrosion Resistant Materials
		BRK-322	Restoration II
		BRK-325	Ornamental and Sculpted Masonry
		BRK-330	Job Planning and Trade Documentation

RSOS Sub-Task		AACS Unit	
4.03	Prepares jobsite and materials.	BRK-330	Job Planning and Trade Documentation
4.04	Protects surrounding areas.	BRK-330	Job Planning and Trade Documentation
Task 5 – Uses communication and mentoring techniques.			
5.01	Uses communication techniques.	BRK-155	Communication Techniques
		BRK-175	Mentoring I
		BRK-326	Mentoring II
5.02	Uses mentoring techniques.	BRK-175	Mentoring I
		BRK-326	Mentoring II
Task 6 – Performs substrate preparation.			
6.01	Prepares vertical substrates and foundations.	BRK-170	Non-Load Bearing Walls
6.02	Applies parging.	BRK-120	Mortars, Concrete, Grouts and Adhesives I
		BRK-165	Building Envelope
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
		BRK-201	Mortars, Concrete, Grouts and Adhesives II
6.03	Installs anchoring/tie systems.	BRK-150	Anchors, Tie Systems and Joint Reinforcements
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
		BRK-205	Renovation
6.04	Installs membrane and flashing.	BRK-165	Building Envelope
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
		BRK-222	Arches
		BRK-305	Chimneys
6.05	Installs insulation.	BRK-325	Ornamental and Sculpted Masonry
		BRK-165	Building Envelope
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
Task 7 – Performs fundamental masonry tasks.			
7.01	Lays out wall and coursing.	BRK-140	Laying Brick to Line
		BRK-145	Laying Block to Line
7.02	Finishes joints.	BRK-140	Laying Brick to Line

RSOS Sub-Task		AACS Unit	
		BRK-145	Laying Block to Line
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
		BRK-205	Renovations
7.03	Cleans new masonry surfaces.	BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
7.04	Seals masonry surfaces.	BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls

Task 8 – Uses mortars, concrete, grouts and adhesives.

8.01	Mixes mortar, concrete, grout and adhesives.	BRK-120	Mortars, Concrete, Grouts and Adhesives I
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
		BRK-201	Mortars, Concrete, Grouts and Adhesives II
		BRK-321	Corrosion Resistant Materials
8.02	Uses mortars.	BRK-120	Mortars, Concrete, Grouts and Adhesives I
		BRK-201	Mortars, Concrete, Grouts and Adhesives II
8.03	Uses concrete and grout.	BRK-120	Mortars, Concrete, Grouts and Adhesives I
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
		BRK-201	Mortars, Concrete, Grouts and Adhesives II
		BRK-321	Corrosion Resistant Materials
8.04	Uses adhesives.	BRK-120	Mortars, Concrete, Grouts and Adhesives I
		BRK-201	Mortars, Concrete, Grouts and Adhesives II

Task 9 – Builds masonry walls.

9.01	Builds non-load bearing walls.	BRK-140	Laying Brick to Line
		BRK-145	Laying Block to Line
		BRK-170	Non-Load Bearing Walls
		BRK-315	Steps and Patios (Horizontal Masonry Surfaces)
9.02	Builds load-bearing walls.	BRK-140	Laying Brick to Line

RSOS Sub-Task		AACS Unit	
		BRK-145	Laying Block to Line
		BRK-200	Load Bearing Walls
		BRK-315	Steps and Patios (Horizontal Masonry Surfaces)
Task 10 – Builds horizontal masonry surfaces.			
10.01	Prepares horizontal substrate.	BRK-315	Steps and Patios (Horizontal Masonry Surfaces)
10.02	Lays masonry unit on horizontal surfaces.	BRK-315	Steps and Patios (Horizontal Masonry Surfaces)
Task 11 – Builds and installs prefabricated masonry units.			
11.01	Builds prefabricated masonry.	BRK-221	Prefabricated Masonry
11.02	Erects prefabricated masonry.	BRK-221	Prefabricated Masonry
Task 12 – Installs surface-bonded masonry units.			
12.01	Prepares substrate for surface-bonded masonry units.	BRK-170	Non-Load-Bearing Walls
		BRK-211	Surface-Bonded Masonry Units
12.02	Applies surface-bonded masonry units.	BRK-170	Non-Load-Bearing Walls
		BRK-211	Surface-Bonded Masonry Units
Task 13 – Builds natural stone walls.			
13.01	Prepares natural stone.	BRK-210	Natural Stone Masonry
13.02	Lays natural stone.	BRK-210	Natural Stone Masonry
13.03	Damp cures walls.	BRK-210	Natural Stone Masonry
Task 14 – Performs mechanically-fastened natural stone cladding procedures.			
14.01	Prepares substrate for cladding.	BRK-306	Natural Stone Cladding
14.02	Prepares natural stone for cladding.	BRK-306	Natural Stone Cladding
14.03	Installs natural stone cladding.	BRK-306	Natural Stone Cladding
Task 15 – Builds chimneys.			
15.01	Builds foundation supports for chimneys.	BRK-305	Chimneys
15.02	Lays masonry units to build chimneys.	BRK-305	Chimneys
15.03	Installs flue lining.	BRK-305	Chimneys
15.04	Installs related flashings.	BRK-305	Chimneys
15.05	Installs caps.	BRK-305	Chimneys
Task 16 – Builds fireplaces.			
16.01	Builds foundation for hearth, firebox, backup material and veneer.	BRK-310	Fireplaces
16.02	Builds hearth, firebox and backup.	BRK-310	Fireplaces
16.03	Installs dampers.	BRK-310	Fireplaces

RSOS Sub-Task		AACS Unit	
16.04	Builds smoke chambers.	BRK-310	Fireplaces
16.05	Prepares existing fireplaces for insert.	BRK-310	Fireplaces
16.06	Faces fireplaces and inserts.	BRK-310	Fireplaces
Task 17 – Installs and maintains refractories.			
17.01	Prepares for installation of refractories and accessories.	BRK-320	Refractory
17.02	Prepares mortar for refractories.	BRK-320	Refractory
17.03	Installs refractories.	BRK-320	Refractory
17.04	Removes existing refractories.	BRK-320	Refractory
17.05	Repairs refractories.	BRK-320	Refractory
Task 18 – Installs and maintains corrosion resistant materials.			
18.01	Prepares for installation of corrosion resistant materials and accessories.	BRK-321	Corrosion Resistant Materials
18.02	Prepares mortar for corrosion resistant materials.	BRK-321	Corrosion Resistant Materials
18.03	Installs corrosion resistant materials.	BRK-321	Corrosion Resistant Materials
18.04	Removes existing corrosion resistant materials.	BRK-321	Corrosion Resistant Materials
18.05	Repairs corrosion resistant materials.	BRK-321	Corrosion Resistant Materials
Task 19 – Rebuilds masonry work.			
19.01	Disassembles unit masonry.	BRK-215	Restoration I
19.02	Prepares restoration work area.	BRK-215	Restoration I
19.03	Reinstalls restoration masonry and accessories.	BRK-215	Restoration I
Task 20 – Repairs existing masonry work.			
20.01	Removes deteriorated components.	BRK-215	Restoration I
		BRK-322	Restoration II
20.02	Repaints joints.	BRK-215	Restoration I
		BRK-322	Restoration II
20.03	Repairs masonry units.	BRK-322	Restoration II
20.04	Reinstalls masonry units and accessories.	BRK-215	Restoration I
		BRK-322	Restoration II
20.05	Cleans existing masonry surfaces.	BRK-215	Restoration I
		BRK-322	Restoration II
Task 21– Installs glass blocks.			

RSOS Sub-Task		AACS Unit	
21.01	Prepares work area for installation of glass block.	BRK-220	Glass Block
21.02	Lays glass blocks.	BRK-220	Glass Block
Task 22 – Installs ornamental and sculpted masonry.			
22.01	Prepares for installation of ornamental and sculpted masonry.	BRK-325	Ornamental and Sculpted Masonry
22.02	Installs ornamental and sculpted masonry units.	BRK-325	Ornamental and Sculpted Masonry
Task 23 – Builds arches.			
23.01	Prepares location.	BRK-222	Arches
23.02	Builds template.	BRK-222	Arches
23.03	Places template.	BRK-222	Arches
23.04	Installs arch masonry units.	BRK-222	Arches
		BRK-310	Fireplaces
		BRK-322	Restoration II
23.05	Removes template.	BRK-222	Arches
		BRK-310	Fireplaces

Level 1

Unit Code	Title	Hours	Page
BRK-100	Safety	9	20
BRK-105	Rigging, Lifting, Hoisting and Material Handling Equipment	6	22
BRK-110	Access Equipment	6	24
BRK-115	Tools and Equipment	12	26
BRK-120	Mortars, Concrete, Grouts and Adhesives I	18	28
BRK-140	Laying Brick to Line	48	31
BRK-145	Laying Block to Line	45	34
BRK-150	Anchors, Tie Systems and Joint Reinforcements	12	36
MENT-700	Mentoring I	6	38
BRK-330	Job Planning and Trade Documentation	6	40
BRK-160	Drawings and Specifications	21	42
BRK-165	Building Envelope	15	44
BRK-170	Non-Load-Bearing Walls	36	46

BRK-100 Safety

Learning Outcomes:

- Demonstrate knowledge of safety equipment, its applications and procedures for use.
- Demonstrate knowledge of the procedures to maintain a safe work environment.

2021 Red Seal Occupational Standard Reference:

- 1.01 Maintains safe work environment.
- 1.02 Uses personal protective equipment (PPE) and safety equipment.

Suggested Hours:

9 Hours

Theoretical Objectives:

1. Identify types of personal protective equipment (PPE) and describe their applications.
 - i) clothing
 - ii) equipment
2. Describe the procedures for care and maintenance of PPE.
3. Identify hazards and describe safe work practices and equipment.
 - i) personal
 - ergonomics
 - ii) workplace
 - electrical
 - confined space (awareness of)
 - fire
 - fall protection
 - trenching and excavation (awareness of)
 - hazardous materials
 - iii) environmental
4. Describe the procedures used to install protective materials on a job site.
 - i) fencing
 - ii) tarps
 - iii) plywood
 - iv) caution tape and tagging systems
5. Identify and interpret workplace safety and health regulations.

- i) federal
 - Workplace Hazardous Materials Information System (WHMIS)
 - Material Safety Data Sheets (MSDS)
 - Occupational Health and Safety (OH&S)
- ii) provincial
 - Occupational Health and Safety (OH&S)
 - Workplace Hazardous Materials Information System (WHMIS)
 - Material Safety Data Sheets (MSDS)

6. Describe disposal and recycling procedures associated with masonry work.
7. Describe Safe Operating Procedures (SOP).

Practical Objectives:

N/A

Learning Outcomes:

- Demonstrate knowledge of rigging, lifting and hoisting equipment, their applications, limitations and procedures for use.
- Demonstrate knowledge of material handling equipment, their applications, limitations and procedures for use.
- Demonstrate knowledge of knots, hitches and bends.
- Demonstrate knowledge of regulations pertaining to rigging and hoisting.
- Demonstrate knowledge of the procedures to communicate during rigging, lifting and hoisting operations.

2021 Red Seal Occupational Standard Reference:

2.02 Uses rigging, hoisting and lifting equipment.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with rigging, lifting and hoisting and material handling equipment.
2. Identify hazards and describe safe work practices pertaining to rigging, lifting and hoisting and material handling equipment.
3. Interpret regulations pertaining to rigging, lifting and hoisting and material handling equipment.
 - i) training and certification requirements
4. Identify types of rigging, lifting and hoisting equipment and accessories and describe their applications, limitations and procedures for use.
 - i) shackles
 - ii) spreader bars
 - iii) chain hoists
 - iv) lewis pins
 - v) block and tackle
 - vi) slings
 - vii) come-alongs (ratchet mechanism)
 - viii) bridle hitches

- ix) lifting clamps
- x) winches

5. Identify types of material handling equipment and describe their applications, limitations and procedures for use.
 - i) forklifts
 - ii) pallet jacks
6. Describe the procedures used to inspect, maintain and store rigging, lifting and hoisting equipment and material handling equipment.
7. Identify types of knots, hitches and bends and describe their applications and associated procedures.
8. Describe the procedures used to rig material/equipment for hoisting.
9. Identify the methods of communication used during lifting and hoisting operations and describe their associated procedures.
 - i) hand signals
 - ii) electronic communications

Practical Objectives:

N/A

Learning Outcomes:

- Demonstrate knowledge of access equipment, its applications and procedures for use.
- Demonstrate knowledge of regulations pertaining to access equipment.
- Demonstrate knowledge of the procedures to erect, dismantle and maintain access equipment.

2021 Red Seal Occupational Standard Reference:

- 2.03 Uses access equipment.
- 3.01 Erects scaffolding.
- 3.02 Dismantles scaffolding.
- 3.03 Maintains scaffolding.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with access equipment.
2. Identify hazards and describe safe work practices pertaining to access equipment.
3. Interpret codes, regulations and manufacturers' specifications pertaining to access equipment.
4. Identify types of access equipment and describe their applications, characteristics and limitations.
 - i) scaffolding
 - frame
 - tubular
 - swing stage
 - tower (mast) / mast climber
 - ii) ladders
 - extension
 - step
 - iii) lifts
 - scissor
 - articulated boom
 - telescopic boom

5. Identify access equipment components and accessories and describe their purpose.
6. Describe considerations for installing access equipment.
 - i) code and regulatory requirements
 - ii) site conditions
 - iii) manufacturers' specifications and instructions
7. Perform calculations relating to access equipment.
8. Describe the procedures used to erect and dismantle access equipment.
9. Describe the procedures used to inspect, maintain, and store access equipment.

Practical Objectives:

N/A

Learning Outcomes:

- Demonstrate knowledge of hand and power tools, their applications, maintenance and procedures for use.
- Demonstrate knowledge of powder and gas actuated tools and their applications.
- Demonstrate knowledge of measuring and layout tools and equipment, their applications, maintenance and procedures for use.

2021 Red Seal Occupational Standard Reference:

2.01 Maintains tools and equipment.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Interpret regulations pertaining to tools and equipment.
 - i) hand and power
 - ii) powder and gas actuated
 - iii) fuel
2. Identify hazards and describe safe work practices pertaining to tools and equipment.
3. Identify types of hand tools and describe their applications and procedures for use.
 - i) trowels
 - ii) hammers
 - iii) levels
 - iv) jointers
 - v) chisels
4. Describe the procedures used to inspect and maintain hand tools.
5. Identify types of power tools and equipment and describe their applications and procedures for use.
 - i) electric/battery
 - ii) fuel
6. Describe the procedures used to inspect and maintain power tools and equipment.

7. Identify types of pneumatic and hydraulic tools and equipment and describe their applications and procedures for use.
8. Describe the procedures used to inspect and maintain pneumatic and hydraulic tools.
9. Identify types of powder and gas-actuated tools and describe their applications.
10. Interpret jurisdictional and company training and certification requirements for powder and gas-actuated tools.
11. Identify types of measuring and layout tools and equipment and describe their applications and procedures for use.
12. Describe the procedures used to inspect and maintain measuring and layout tools and equipment.

Practical Objectives:

1. Inspect, use, and maintain hand tools.
2. Inspect, use, and maintain power tools.
3. Inspect, use, and maintain layout and measuring tools.

Learning Outcomes:

- Demonstrate knowledge of mortars, concrete, grouts and adhesives and their applications.
- Demonstrate knowledge of the procedures to mix and apply mortars, concrete, grouts, and adhesives.

2021 Red Seal Occupational Standard Reference:

- 6.02 Applies parging.
- 8.01 Mixes mortar, concrete, grout and adhesives.
- 8.02 Uses mortars.
- 8.03 Uses concrete and grout.
- 8.04 Uses adhesives.

Suggested Hours:

18 Hours

Theoretical Objectives:

1. Define terminology associated with mortars, concrete, grouts and adhesives.
2. Identify hazards and describe safe work practices pertaining to mortars, concrete, grouts and adhesives.
3. Interpret codes, standards and regulations pertaining to mortars, concrete, grouts and adhesives.
4. Interpret information pertaining to mortars, concrete, grouts and adhesives found on drawings and specifications.
5. Identify tools and equipment relating to mortars, concrete, grouts and adhesives and describe their applications and procedures for use.
6. Identify types of mortars (mixes) and describe their properties, characteristics and applications.
 - i) M
 - ii) N
 - iii) S
 - iv) O
 - v) K

7. Identify the components of mortar and describe the effect changing the proportion has on the product.

- i) cement
 - portland
 - masonry
 - mortar
- ii) water
- iii) additives
 - retardants
 - accelerators
 - colouring pigments
 - waterproofing
 - plasticizers
 - chemical air entrainment agents
- iv) sand (aggregate)
- v) lime
 - limestone
 - quick
 - slaked
 - putty
 - hydrated

8. Describe the procedures used to estimate the volume of mortar mixes.

- i) identify ratios
- ii) proportioning mortar by volume

9. Identify methods used to mix mortars and describe their associated procedures.

- i) mechanical batch
- ii) hand

10. Describe the procedures used to apply mortars.

- i) spreading
- ii) parging

11. Explain the effect temperature and weather can have on mortars.

- i) determine the shelf and pot life of mortar

12. Identify types of concrete and grout and describe their properties, characteristics and applications.

13. Identify the components of concrete and grout and describe the effect proportion has on the product.

- i) cement
- ii) hydrated lime

- iii) aggregates
- iv) water

14. Describe the procedures used to mix concrete and grout and adhesive.

- i) required consistency

15. Describe the procedures used to apply grout and grout consistency required to fill masonry cavities.

16. Identify types of adhesives and describe their characteristics and applications.

- i) polymers
- ii) epoxies
- iii) resins
- iv) caulking
- v) latex

17. Identify methods used to apply adhesives and describe their associated procedures.

- i) trowelled
- ii) brushed-on
- iii) injected
- iv) caulked

18. Identify tests used with mortars, concrete, grouts and adhesives and describe their associated procedures.

- i) strength
- ii) slump
- iii) bond

Practical Objectives:

N/A

Learning Outcomes:

- Demonstrate knowledge of the procedures to laying brick to line.
- Demonstrate knowledge of the procedures to lay out wall and coursing.
- Demonstrate knowledge of the procedures to finish joints.
- Demonstrate knowledge of leads and their applications.
- Demonstrate knowledge of the procedures to build leads.

2021 Red Seal Occupational Standard Reference:

- 7.01 Lays out wall and coursing.
- 7.02 Finishes joints.
- 9.01 Builds non-load-bearing walls.
- 9.02 Builds load-bearing walls.

Suggested Hours:

48 Hours

Theoretical Objectives:

1. Define terminology associated with laying brick to line.
2. Identify hazards and describe safe work practices associated with laying brick to line.
3. Interpret codes, standards and regulations pertaining to laying brick to line.
4. Interpret information pertaining to laying brick to line found on drawings and specifications.
5. Identify tools and equipment related to laying brick to line and describe their applications and procedures for use.
6. Identify common positions of laying bricks.
 - i) stretcher
 - ii) header
 - iii) rowlock
 - iv) soldier
 - v) sailor (shiner)
7. Identify types of wall systems and describe their characteristics and applications.
 - i) veneer (cladding)

- ii) non-load bearing
- iii) load bearing

8. Identify types of bond patterns and describe their characteristics and applications.

- i) stretcher (running)
- ii) common (American)
- iii) Flemish
- iv) English
- v) Dutch (English cross)
- vi) stack
- vii) herringbone
- viii) basket weave

9. Describe the procedures used to set up a wall.

- i) establish wall line
- ii) dry lay brick to establish bond
- iii) establish horizontal coursing

10. Describe the procedures used to set up a line.

11. Perform calculations pertaining to laying brick to line.

12. Describe the procedures used to estimate material requirements.

13. Describe the procedures used to laying brick to line.

- i) spread mortar for bed joints
- ii) butter brick
- iii) cut brick
- iv) lay brick to line
- v) lay closure brick

14. Explain the purpose of jointing.

15. Identify types of joint finishes and describe their characteristics and applications.

- i) flush
- ii) concave
- iii) weather
- iv) struck
- v) raked
- vi) extruded
- vii) v-joint
- viii) convex
- ix) grapevine

16. Describe the procedures used to finish joints.
17. Describe the procedures used to clean brick masonry.
18. Identify types of leads and describe their applications.
 - i) outside corner
 - ii) inside corner
 - iii) straight (rackback)
19. Perform calculations pertaining to layout and build leads.
20. Describe the procedures used to build leads.
 - i) establish bond pattern
 - ii) establish horizontal and vertical coursing
 - iii) level, plumb and align

Practical Objectives:

1. Lay brick to the line using various bonds.
2. Construct leads using different bonds and sizes.
 - i) construct (straight) rackback leads
 - ii) construct inside corner leads
 - iii) construct outside corner leads

Learning Outcomes:

- Demonstrate knowledge of the procedures to laying block to line.
- Demonstrate knowledge of leads and their applications.
- Demonstrate knowledge of the procedures to build leads.

2021 Red Seal Occupational Standard Reference:

- 7.01 Lays out wall and coursing.
- 7.02 Finishes joints.
- 9.01 Builds non-load-bearing walls.
- 9.02 Builds load-bearing walls.

Suggested Hours:

45 Hours

Theoretical Objectives:

1. Define terminology associated with laying block to line.
2. Identify hazards and describe safe work practices associated with laying block to line.
3. Interpret codes, standards and regulations pertaining to laying block to line.
4. Interpret information pertaining to laying block to line found on drawings and specifications.
5. Identify tools and equipment related to laying block to line and describe their applications and procedures for use.
6. Identify the common positions of laying blocks.
7. Perform calculations pertaining to laying block to line.
8. Describe the procedures used to estimate material requirements.
9. Describe the procedures used to set up a wall.
 - i) establish wall line
 - ii) establish horizontal coursing
 - with dry layout
 - with tape measure

- iii) establish vertical coursing

10. Describe the procedures used to set up a line.

11. Describe the procedures used to lay block to line.

- i) spread mortar for bed joints
- ii) butter block
- iii) cut block
- iv) lay block to line
- v) lay closure block

12. Explain the purpose of jointing.

13. Identify types of joint finishes and describe their characteristics and applications.

- i) flush
- ii) concave
- iii) raked

14. Describe the procedures used to finish joints.

15. Describe the procedures used to clean block masonry.

16. Identify types of leads and describe their applications.

- i) outside corner
- ii) inside corner
- iii) straight (rackback)

17. Perform calculations pertaining to layout and building leads.

18. Describe the procedures used to build leads.

- i) establish bond pattern
- ii) establish horizontal and vertical coursing
- iii) level, plumb and align

Practical Objectives:

1. Lay block to the line using various bonds and sizes.
2. Construct leads using different bonds and sizes.
 - i) construct (straight) rackback leads
 - ii) construct inside corner leads
 - iii) construct outside corner leads

Learning Outcomes:

- Demonstrate knowledge of anchors, tie systems and joint reinforcement and their applications.
- Demonstrate knowledge of the procedures to install and secure anchors and ties.
- Demonstrate knowledge of the procedures to install joint reinforcement.

2021 Red Seal Occupational Standard Reference:

6.03 Installs anchoring/tie systems.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with anchors, tie systems and joint reinforcement.
2. Identify hazards and describe safe work practices pertaining to anchors, tie systems and joint reinforcement.
3. Interpret codes, standards and regulations pertaining to anchors, tie systems and joint reinforcement.
4. Interpret information pertaining to anchors, tie systems and joint reinforcement found on drawings and specifications.
5. Identify tools and equipment relating to anchors, tie systems and joint reinforcement and describe their applications and procedures for use.
6. Identify types of anchors (fasteners) and describe their applications.
 - i) drop-in
 - ii) pin bolts
 - iii) wedge
 - iv) screws
 - v) self-tapping
7. Identify types of anchor/ties and describe their applications.
 - i) wire
 - ii) adjustable
 - iii) corrugated metal

8. Describe the procedures used to determine anchor and tie locations.
9. Describe the procedures used to install and secure anchors.
10. Describe the procedures used to install and secure ties.
11. Identify types of joint reinforcement and describe their applications.
 - i) truss
 - ii) ladder
12. Describe the procedures used to install joint reinforcement.
13. Describe the procedures used to estimate material requirements.

Practical Objectives:

1. Locate and extract information pertaining to anchors, tie systems and joint reinforcement from drawings and specifications.

Learning Outcomes:

- Demonstrate knowledge of effective communication practices as a learner.
- Demonstrate knowledge of strategies for learning skills in the workplace.

2020 Red Seal Occupational Standard Reference:

5.01 Uses communication techniques.
5.02 Uses mentoring techniques.

Suggested Hours:

6 Hours

Learning Objectives:

1. Describe the importance of one's own individual experiences.
2. Identify behaviours that demonstrate positive learning experiences.
3. Identify the benefits of workplace mentoring for the apprentice, mentor and employer.
4. Identify the partners involved in apprenticeship training.
5. Describe the shared responsibilities for workplace learning in apprenticeship.
6. Identify different learning needs and strategies to address challenges or barriers in the workplace.
 - i) learning disabilities
 - ii) language
 - iii) underrepresentation
7. Identify the components that create a positive and inclusive workplace culture.
 - i) workplace characteristics
 - ii) individual behaviours
8. Identify various learning styles and determine one's own learning preferences.

9. Explain how learning preferences impact learning new skills.
10. Identify different learning strategies to meet individual learning needs.
11. Describe the importance of adapting to a variety of teaching and learning methods in the workplace.
12. Identify techniques for effective communication as a learner.
 - i) verbal and non-verbal
 - ii) active listening
13. Identify and describe personal responsibilities and attitudes that contribute to on-the-job success.
 - i) self advocating
 - ii) asking questions
 - iii) accepting constructive feedback
 - iv) working safely
 - v) employing time management techniques and being punctual

Practical Objectives:

N/A

Learning Outcomes:

- Demonstrate knowledge of the procedures to plan and organize jobs.
- Demonstrate knowledge of trade related documentation and its use.
- Demonstrate knowledge of planning daily tasks and activities.
- Demonstrate knowledge of protecting surrounding areas specific to the work site.

2021 Red Seal Occupational Standard Reference:

- 4.02 Plans daily tasks and activities.
- 4.03 Prepares job site and materials.
- 4.04 Protects surrounding areas.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Identify sources of information relevant to job planning.
 - i) documentation
 - ii) drawings
 - iii) related professionals
 - iv) clients
2. Interpret codes, standards and regulations pertaining to job planning.
 - i) jurisdictional requirements
3. Identify considerations for determining job requirements and describe their associated procedures.
 - i) hazard and environmental assessment
 - ii) personnel
 - iii) tools and equipment
 - iv) materials
 - v) material management
 - vi) permits and documentation
4. Describe the procedures used to plan job tasks.
5. Describe the procedures used to organize and store tools, equipment and materials on-site.

6. Describe hording, its characteristics, applications and limitations.
 - i) tarp systems
 - ii) types of heaters
 - iii) heater power sources
7. Identify types of trade-related documentation and describe their applications and procedures for use.
 - i) manufacturers' specifications
 - ii) codes and standards
 - National Building Code (NBC)
 - provincial/municipal codes
 - Canadian Standards Association (CSA)
 - iii) environmental protection regulations and guidelines
 - iv) safety manuals
 - policies and procedures
 - v) permits
8. Identify considerations for protection of surrounding areas on a job site.
 - i) finished work
 - ii) vegetation
 - iii) personal property
 - iv) airborne debris
 - dust
 - materials

Practical Objectives:

1. Use the National Building Code (NBC).

BRK-160 Drawings and Specifications

Learning Outcomes:

- Demonstrate knowledge of drawings and specifications and their use.
- Demonstrate knowledge of the procedures to interpret and extract information from drawings.
- Demonstrate knowledge of basic sketching techniques.

2021 Red Seal Occupational Standard Reference:

4.01 Uses drawings, blueprints and specifications.

Suggested Hours:

21 Hours

Theoretical Objectives:

1. Define terminology associated with drawings and specifications.
2. Describe metric and imperial systems of measurement.
3. Perform conversions.
 - i) metric to imperial
 - ii) imperial to metric
 - iii) fractions to decimals
 - iv) decimals to fractions
4. Identify types of drawings and describe their applications.
 - i) architectural
 - ii) mechanical
 - iii) structural
 - iv) electrical
5. Identify drawing-related documentation and describe their applications.
 - i) change orders
 - ii) addenda
 - iii) as-builts
 - iv) specifications
 - v) sketches
6. Identify drawing projections and views and describe their applications.
 - i) projections

- orthographic
- oblique
- isometric

ii) views

- plan
- section
- detail
- elevation
- cross section

7. Interpret information found on drawings.

- i) lines
- ii) legend
- iii) symbols and abbreviations
- iv) notes and specifications
- v) schedules
- vi) scales

8. Demonstrate basic sketching techniques.

9. Interpret details of masonry construction found on drawings and specifications.

- i) foundation and footings
- ii) walls
- iii) doors
- iv) windows

Practical Objectives:

1. Extract information from drawings and specifications.

- i) legends
- ii) symbols
- iii) lines
- iv) dimensions
- v) details

Learning Outcomes:

- Demonstrate knowledge of building envelope components, their purpose and application.
- Demonstrate knowledge of the procedures to install building envelope components.

2021 Red Seal Occupational Standard Reference:

- 6.02 Applies parging.
- 6.04 Installs membrane and flashing.
- 6.05 Installs insulation.

Suggested Hours:

15 Hours

Theoretical Objectives:

1. Define terminology associated with building envelope related to masonry applications.
2. Identify hazards and describe safe work practices related to building envelope related to masonry applications.
3. Interpret codes, regulations and manufacturers' specifications pertaining to building envelope related to masonry applications.
4. Identify tools and equipment related to building envelope related to masonry applications and describe their applications and procedures for use.
5. Identify components of building envelope related to masonry applications and describe their purpose and applications.
 - i) insulation
 - ii) membrane
 - iii) flashing
 - iv) parging
6. Identify types of insulation and describe their characteristics and applications.
7. Describe the procedures used to install insulation.
8. Identify types of membranes and describe their characteristics and applications.

9. Describe the procedures used to install membranes.
10. Describe the effects of ultraviolet rays and moisture on membranes.
11. Identify types of flashing and describe their characteristics and applications.
12. Describe the procedures used to install flashing.
13. Identify types of counter flashing and step flashing and describe their characteristics and applications.
14. Identify types of parging and describe their characteristics and applications.
15. Identify additivities used in parging, and describe their characteristics and applications.
 - i) bonding agents
 - ii) waterproofing
16. Describe the procedures used to apply parging.

Practical Objectives:

1. Install / apply building envelope components.
 - i) membrane
 - ii) flashings
 - iii) insulation
 - iv) parging
2. Locate and extract information pertaining to the building envelope components from drawings and specifications.

Learning Outcomes:

- Demonstrate knowledge of non-load-bearing walls and their applications.
- Demonstrate knowledge of the procedures to construct non-load-bearing walls.
- Demonstrate knowledge of the procedures to prepare substrates and foundations.
- Demonstrate knowledge of the procedures to clean masonry surfaces.
- Demonstrate knowledge of the procedures to seal masonry surfaces.
- Demonstrate knowledge of the procedures to construct openings in non-load-bearing walls.
- Demonstrate knowledge of the procedures to install door and window frames in non-load-bearing walls.
- Demonstrate knowledge of concrete masonry units and their applications.
- Demonstrate knowledge of clay masonry units and their applications.

2021 Red Seal Occupational Standard Reference:

- 6.01 Prepares vertical substrates and foundations.
- 6.02 Applies parging.
- 6.03 Installs anchoring/tie systems.
- 6.04 Installs membrane and flashing.
- 6.05 Installs insulation.
- 7.02 Finishes joints.
- 7.03 Cleans new masonry surfaces.
- 7.04 Seals masonry surfaces.
- 8.01 Mixes mortar, concrete and grout and adhesives.
- 8.03 Uses concrete and grout.
- 9.01 Builds non-load-bearing walls.
- 12.01 Prepares substrate for surface-bonded masonry units.
- 12.02 Applies surface-bonded masonry units.

Suggested Hours:

36 Hours

Theoretical Objectives:

1. Define terminology associated with the non-load-bearing walls.
2. Identify hazards and describe safe work practices associated with non-load-bearing walls.
3. Interpret codes, standards and regulations pertaining to non-load-bearing walls.

4. Interpret information pertaining to non-load-bearing walls found on drawings and specifications.
5. Identify tools and equipment used to construct non-load-bearing walls and describe their applications and procedures for use.
6. Identify types of non-load-bearing walls and describe their applications.
 - i) veneer
 - ii) partition
 - iii) curtain
 - iv) garden
 - v) rain screen
 - vi) surface-bonded
7. Identify types of bond patterns used for non-load-bearing walls and describe their applications.
8. Identify types of movement joints used in building non-load-bearing walls.
 - i) contraction
 - ii) expansion
 - iii) control
9. Describe the procedures used to construct openings in non-load-bearing walls.
10. Describe the procedures used to install door and window frames in non-load-bearing walls.
11. Perform calculations pertaining to layout and construction of non-load-bearing walls.
12. Describe the procedures used to estimate material requirements.
13. Describe substrate conditions prior to foundation preparation.
14. Identify jurisdictional and national codes and regulations associated with substrate and foundation preparation.
15. Identify materials used to prepare vertical substrates for non-load-bearing walls and describe their purpose.
 - i) flashing
 - ii) membranes
 - iii) insulation
 - iv) parging
 - v) metal lath
 - vi) drainage and ventilation systems

vii) anchoring/tie systems

16. Describe the procedures used to prepare vertical substrates for non-load-bearing walls.
17. Describe the procedures used to construct non-load-bearing walls.
18. Describe the procedures used to install surface-bonded masonry units.
19. Identify environmental hazards and describe their associated safety measures.
20. Identify types of cleaners and describe their characteristics and applications.
 - i) acids
 - ii) alkali-based
 - iii) water
 - iv) detergent
21. Determine the mixing sequence and mixing ratio for cleaning materials.
22. Describe the procedures used to clean masonry after wall construction.
23. Identify types of waterproofing and damp proofing materials and describe their characteristics and applications.
24. Describe the procedures used to seal masonry surfaces after wall construction.
25. Identify types and grades of clay masonry units and describe their characteristics and applications.
 - i) clay brick
 - ii) sand-lime brick
26. Identify types of concrete masonry units and describe their characteristics and applications.
 - i) concrete brick
 - ii) concrete block
 - iii) manufactured stone
27. Describe common shapes and sizes of concrete masonry units.
 - i) stretcher
 - ii) breaker
 - iii) half
 - iv) ashlar
 - v) corner
 - vi) pier
 - vii) pier sash

- viii) slab
- ix) lintel
- x) pilaster
- xi) column
- xii) bullnose
- xiii) knock-out

Practical Objectives:

1. Build a non-load-bearing veneer wall system.
2. Locate and extract information pertaining to non-load-bearing walls from drawings and specifications.

Level 2

Unit Code	Title	Hours	Page
BRK-200	Load-Bearing Walls	48	52
BRK-201	Mortars, Concrete, Grouts and Adhesives II	12	56
BRK-205	Renovation	18	58
BRK-210	Natural Stone Masonry	48	60
BRK-211	Surface-Bonded Masonry Units	18	63
BRK-215	Restoration I	30	65
BRK-220	Glass Block	12	68
BRK-221	Prefabricated Masonry	6	70
BRK-222	Arches	48	72

Learning Outcomes:

- Demonstrate knowledge of load-bearing walls and their applications.
- Demonstrate knowledge of the procedures to build load-bearing walls.
- Demonstrate knowledge of the procedures to construct openings in load-bearing walls.
- Demonstrate knowledge of the procedures to install door and window frames in load-bearing walls.
- Demonstrate knowledge of concrete masonry units and their applications.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 6.02 Applies parging.
- 6.03 Installs anchoring/tie systems.
- 6.04 Installs membrane and flashing.
- 6.05 Installs insulation.
- 7.02 Finishes joints.
- 7.03 Cleans new masonry surfaces.
- 7.04 Seals masonry surfaces.
- 8.01 Mixes mortar, concrete and grout and adhesives.
- 8.03 Uses concrete and grout.
- 9.02 Builds load-bearing walls.

Suggested Hours:

48 Hours

Theoretical Objectives:

1. Define terminology associated with load-bearing walls.
2. Identify hazards and describe safe work practices associated with load-bearing walls.
3. Interpret codes, standards and regulations pertaining to load-bearing walls.
4. Interpret information pertaining to load-bearing walls found on drawings and specifications.
5. Identify tools and equipment used to construct load-bearing walls and describe their applications and procedures for use.
6. Identify types of masonry units and describe their characteristics and applications.

- i) concrete brick
- ii) concrete block
- iii) clay brick
- iv) sand-lime brick

7. Identify types of load-bearing walls and describe their applications.

- i) reinforced masonry
- ii) cavity
- iii) foundation
- iv) retaining
- v) sheer
- vi) composite
- vii) wind-load

8. Identify types of mortars (mixes) and describe their consistencies, characteristics and applications.

- i) M
- ii) N
- iii) S
- iv) O
- v) K

9. Identify load-bearing wall components and describe their purpose and applications.

- i) offsets
- ii) pilasters
- iii) chases
- iv) reinforcement
- v) columns
- vi) buttresses

10. Identify types of structural bond and patterns used for load-bearing walls and describe their applications.

11. Identify types of movement joints used to build load-bearing walls and describe their purpose and applications.

- i) control
- ii) expansion

12. Describe the procedures used to construct movement joints.

13. Describe the procedures used to reinforce load-bearing walls and their specifications and regional requirements.

- i) rebar
- ii) grout

- iii) horizontal joint reinforcement

14. Identify cleanouts and describe their characteristics and applications.
15. Describe the procedures used to construct openings in load-bearing walls.
16. Describe the procedures used to install door and window frames in load-bearing walls.
17. Perform calculations pertaining to layout and construction of load-bearing walls.
18. Describe the procedures used to estimate material requirements.
19. Identify materials used to prepare vertical substrates for load-bearing walls and describe their purpose.
 - i) flashing
 - ii) membranes
 - iii) insulation
 - iv) parging
 - v) drainage systems and ventilation
 - vi) anchoring/tie systems
20. Identify types of waterproofing and damp proofing materials and describe their characteristics and applications.
21. Describe the procedures used to prepare vertical substrates for load-bearing walls.
22. Describe the procedures used to construct load-bearing walls.
23. Explain the purpose and applications of piers.
24. Describe the procedures used to construct piers.
25. Describe the procedures used to clean and finish masonry after wall construction.
26. Identify types of concrete masonry units and describe their characteristics and applications.
 - i) concrete brick
 - ii) concrete block
 - iii) manufactured stone
27. Describe common shapes and sizes of concrete masonry units.
 - i) stretcher
 - ii) breaker
 - iii) half

- iv) ashlar
- v) corner
- vi) pier
- vii) pier sash
- viii) slab
- ix) lintel
- x) pilaster
- xi) column
- xii) bullnose
- xiii) knock-out

Practical Objectives:

1. Construct a load-bearing cavity wall system.
2. Locate and extract information pertaining to load-bearing walls from drawings and specifications.

Learning Outcomes:

- Demonstrate knowledge of mortars, concrete, grouts and adhesives and their applications.
- Demonstrate knowledge of the procedures to mix and apply mortars, concrete, grouts and adhesives.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 6.02 Applies parging.
- 8.01 Mixes mortar, concrete and grout and adhesives.
- 8.02 Uses mortars.
- 8.03 Uses concrete and grout.
- 8.04 Uses adhesives.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Identify the components of mortar and describe the effect changing the proportion has on the product.
 - i) cement
 - portland
 - masonry
 - mortar
 - ii) water
 - iii) additives
 - retardants
 - accelerators
 - colouring pigments
 - waterproofing
 - plasticizers
 - chemical air entrainment agents
 - iv) sand (aggregate)
 - v) lime
 - limestone
 - quick
 - slaked

- putty
- hydrated

2. Describe the procedures used to estimate the volume of mortar mixes.
 - i) identify ratios
 - ii) proportioning mortar by volume
3. Describe the procedures used to estimate the volume of concrete and grout.
 - i) identify ratios
 - ii) proportioning concrete and grout by volume
4. Identify types of admixtures and describe their applications.
 - i) accelerators
 - ii) retardants
 - iii) dyes
 - iv) waterproofing
 - v) chemical air entrainment agents
 - vi) plasticizers
5. Identify reinforcing materials and describe their characteristics, applications and reinforcing requirements.
 - i) fibre
 - ii) rebar
6. Identify tests used with mortars, concrete, grouts and adhesives and describe their associated procedures.
 - i) strength
 - ii) slump
 - iii) bond

Practical Objectives:

1. Locate and extract information pertaining to mortar, concrete, grouts and adhesives from specifications.

Learning Outcomes:

- Demonstrate knowledge of the procedures to cut openings in existing masonry walls.
- Demonstrate knowledge of the procedures to install door and window frames in existing masonry walls.
- Demonstrate knowledge of the procedures to construct wall extensions.
- Demonstrate knowledge of the procedures to close openings using brick and/or block.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 6.03 Installs anchoring/tie systems.
- 7.02 Finishes joints.

Suggested Hours:

18 Hours

Theoretical Objectives:

1. Define terminology associated with renovations.
2. Identify hazards and describe safe work practices associated with renovations.
3. Interpret codes, standards and regulations pertaining to renovations.
4. Interpret information pertaining to renovations found on drawings and specifications.
5. Identify tools and equipment used to cut openings and build frames in existing masonry walls and describe their applications and procedures for use.
6. Perform calculations pertaining to renovation work.
7. Describe the procedures used to estimate material requirements.
8. Describe the procedures used to cut openings in existing masonry walls.
9. Describe the procedures used to install door and window frames in existing masonry walls.
10. Describe the procedures used to construct wall extensions.

11. Describe the procedures used to close openings using brick and/or block.

Practical Objectives:

1. Install an opening in an existing masonry wall.
2. Close an opening in a masonry wall using brick and/or block.

BRK-210 Natural Stone Masonry**Learning Outcomes:**

- Demonstrate knowledge of natural stone masonry and its applications.
- Demonstrate knowledge of the procedures to lay natural stone walls.
- Demonstrate knowledge of the procedures to damp cure walls.
- Demonstrate knowledge of the procedures to damp cure walls.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 13.01 Prepares stone.
- 13.02 Lays stone.
- 13.03 Damp cures walls.

Suggested Hours:

48 Hours

Theoretical Objectives:

1. Define terminology associated with natural stone masonry.
2. Identify hazards and describe safe work practices associated with natural stone masonry.
3. Interpret codes, standards and regulations pertaining to natural stone masonry.
4. Interpret information pertaining to natural stone masonry found on drawings and specifications.
5. Identify tools and equipment related to natural stone masonry and describe their applications and procedures for use.
6. Identify rigging and hoisting equipment and describe their characteristics and procedures for use.
7. Identify types of caulking, epoxies and other bonding agents and describe their characteristics and applications.
8. Identify bedding planes and describe their characteristics and applications.
9. Describe the purpose of supporting back up walls.

10. Identify types of natural stone and describe their characteristics and applications.
 - i) field
 - igneous
 - sedimentary
 - metamorphic
 - ii) manufactured cut stone
11. Describe the properties of natural stone.
 - i) density
 - ii) porosity
 - iii) permeability
 - iv) absorption
 - v) strength
 - vi) abrasion resistance
12. Identify considerations for selecting natural stones and mortars for specific applications.
13. Identify types of natural stone walls and describe their applications.
 - i) veneers
 - ii) multi-wythe (load-bearing)
 - iii) garden walls
 - iv) retaining walls
 - v) monolithic
14. Identify types of natural stone bonds and patterns and describe their characteristics and applications.
 - i) rubble
 - ii) roughly squared
 - iii) ashlar (dimensioned)
15. Perform calculations pertaining to natural stone masonry.
16. Describe the procedures used to estimate material requirements.
17. Describe the procedures used to lay natural stone walls.
 - i) prepare stone
 - ii) lay stone
 - iii) damp cure walls
 - iv) flashing materials
 - v) anchoring systems
18. Identify cleaning materials for natural stone and describe their characteristics and applications.

19. Describe the procedure to clean natural stone.

Practical Objectives:

1. Install a natural stone wall.
2. Locate and extract information pertaining to natural stone masonry walls from drawings and specifications.

Learning Outcomes:

- Demonstrate knowledge of the procedures to prepare substrate for surface-bonded masonry units.
- Demonstrate knowledge of the procedures to install surface-bonded masonry units.

2021 Red Seal Occupational Standard Reference:

4.01 Uses drawings and specifications.
12.01 Prepares substrate for surface-bonded masonry units.
12.02 Applies surface-bonded masonry units.

Suggested Hours:

18 Hours

Theoretical Objectives:

1. Define terminology associated with surface-bonded masonry units.
2. Identify jurisdictional and national codes, standards and regulations pertaining to surface-bonded masonry units.
3. Interpret information pertaining to surface-bonded masonry units found on drawings and specifications.
4. Identify tools and equipment pertaining to surface-bonded masonry units and describe their applications and procedures for use.
 - i) buttering trowels
 - ii) slickers
 - iii) jointers
 - iv) brushes
 - v) grout bag
5. Identify types of mortar and bonding agents and describe their characteristics and applications.
6. Identify types of material and describe their characteristics and applications.
 - i) brick
 - ii) stone
 - iii) concrete products

7. Identify types of bonds and patterns and describe their characteristics and applications.
8. Describe layout dimensions and associated calculations and applications.
9. Describe the procedures used to prepare substrates for installing surface-bonded masonry units.
10. Describe the procedures used to install surface-bonded masonry units.

Practical Objectives:

1. Build a surface-bonded masonry wall.
2. Locate and extract information pertaining to surface-bonded masonry walls from drawings and specifications.

Learning Outcomes:

- Demonstrate knowledge of the procedures to rebuild masonry work.
- Demonstrate knowledge of the procedures to disassemble unit masonry.
- Demonstrate knowledge of the procedures to prepare restoration area.
- Demonstrate knowledge of the procedures to reinstall masonry and accessories.
- Demonstrate knowledge of the procedures to remove deteriorated masonry units.
- Demonstrate knowledge of the procedures to repoint joints.
- Demonstrate knowledge of the procedures to clean existing masonry surfaces.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 19.01 Disassembles unit masonry.
- 19.02 Prepares restoration work area.
- 19.03 Reinstalls masonry and accessories.
- 20.01 Removes deteriorated masonry units.
- 20.02 Repoints joints.
- 20.04 Reinstalls masonry units and accessories.
- 20.05 Cleans existing masonry surfaces.

Suggested Hours:

30 Hours

Theoretical Objectives:

1. Define terminology associated with rebuilding masonry.
2. Describe historical and current masonry construction techniques.
3. Identify hazards and describe safe work practices associated with rebuilding masonry.
4. Interpret environmental regulations pertaining to removal and disposal of masonry units.
5. Interpret codes, standards and regulations pertaining to rebuilding masonry.
6. Interpret information pertaining to rebuilding masonry found on drawings and specifications.

7. Identify tools and equipment related to rebuilding masonry and describe their applications and procedures for use.
8. Identify rigging and hoisting equipment and describe their procedures for use when rebuilding masonry.
9. Describe the procedures used to colour match existing masonry.
10. Describe documentation used in rebuilding masonry work.
 - i) photography
 - ii) tagging
 - iii) sketches
11. Perform calculations pertaining to rebuilding masonry.
12. Describe the procedures used to estimate material requirements.
13. Identify causes of failures in masonry.
14. Describe the procedures used to rebuild masonry work.
 - i) disassemble unit masonry
 - ii) preserve salvageable material
 - iii) shore surrounding masonry
 - iv) masonry load patterns
 - v) anchoring systems
 - vi) prepare restoration work area
 - vii) repair backup wall and existing membrane
 - viii) reinstall masonry and accessories
 - ix) damp curing
15. Describe the materials used for refacing and describe their characteristics and applications.
 - i) epoxies
 - ii) acrylics
 - iii) plastics
 - iv) dispersed dehydrated lime (DHL)
16. Identify cleaning agents and tools and describe their applications and procedures for use.
17. Identify sealants and coatings used to protect masonry surfaces and describe their characteristics and applications.
18. Describe the procedures used to clean and seal masonry surfaces.

- i) cleaning soils and stains
- ii) using micro -abrasive materials
- iii) application of cleaners
- iv) protecting surrounding environment

19. Identify masonry materials that may be affected by cleaning, sealing, waterproofing or damp proofing processes.

Practical Objectives:

1. Disassemble and rebuild an existing wall.

Learning Outcomes:

- Demonstrate knowledge of glass block and its applications.
- Demonstrate knowledge of the procedures to install glass block walls.

2021 Red Seal Occupational Standard Reference:

4.01 Uses drawings and specifications.
21.01 Prepares work area for installation of glass block.
21.02 Lays glass blocks.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with glass block.
2. Identify hazards and describe safe work practices associated with glass block.
3. Interpret codes, standards and regulations pertaining to glass block.
4. Interpret information pertaining to glass block found on drawings and specifications.
5. Identify tools and equipment used to construct glass block walls and describe their applications and procedures for use.
6. Describe the properties of glass block.
 - i) appearance
 - ii) light diffusion
 - iii) fire ratings
 - iv) impact resistance
 - v) thermal insulation
7. Describe common shapes and sizes of glass block.
8. Identify glass block related components and accessories and describe their purpose.
 - i) mortars
 - ii) additives
 - iii) types of reinforcement and anchors
 - iv) spacers and expansion strips

9. Perform calculations pertaining to installing a glass block panel.
10. Describe the procedures used to estimate material requirements.
11. Describe the procedures used to install and joint glass block walls.
12. Describe the procedures used to clean and finish glass block walls after construction.

Practical Objectives:

1. Install a glass block panel.
2. Locate and extract information pertaining to the installation of glass block panels from drawings and specifications.

Learning Outcomes:

- Demonstrate knowledge of the procedures to build and install prefabricated masonry units.
- Demonstrate knowledge of the procedures to erect prefabricated masonry units.

2021 Red Seal Occupational Standard Reference:

4.01 Uses drawings and specifications.
11.01 Builds prefabricated masonry.
11.02 Erects prefabricated masonry.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Define terminology associated with building, installing and erecting prefabricated masonry.
2. Identify tools and equipment used to build and erect prefabricated masonry units.
3. Identify rigging and hoisting equipment and describe their characteristics, applications and procedures for use.
4. Interpret information pertaining to prefabricated masonry found on drawings and specifications.
5. Identify types of form release agents and describe their characteristics and applications.
6. Describe techniques used to store, stack and prepare prefabricated masonry units for transport.
7. Describe the effects of temperature and humidity on the prefabrication curing process.
8. Identify types of fastening and anchoring systems and describe their characteristics and applications.
9. Identify types of grouting and caulking and describe their characteristics and applications.

10. Describe the procedures used to build prefabricated masonry units.
11. Describe the procedures used to erect prefabricated masonry units.
12. Describe the procedures used to colour match and inspect materials for installation.
13. Describe the procedures used to clean and finish prefabricated masonry after construction.

Practical Objectives:

N/A

BRK-222 Arches

Learning Outcomes:

- Demonstrate knowledge of arches and their applications.
- Demonstrate knowledge of the procedures to construct, place and remove a template.
- Demonstrate knowledge of the procedures to prepare and install arches.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 6.04 Installs membrane and flashing.
- 23.01 Prepares location for installation of arch.
- 23.02 Builds template.
- 23.03 Places template.
- 23.04 Installs arch masonry units.
- 23.05 Removes template.

Suggested Hours:

48 Hours

Theoretical Objectives:

1. Define terminology associated with arches.
2. Identify hazards and describe safe work practices associated with arches.
3. Interpret codes, standards and regulations pertaining to arches.
4. Interpret information pertaining to arches found on drawings and specifications.
5. Identify tools and equipment used to construct arches and describe their applications and procedures for use.
6. Identify types of arches and describe their characteristics.
 - i) jack
 - ii) segmental
 - iii) elliptical
 - iv) roman
 - v) parabolic
 - vi) gothic
 - vii) tudor

7. Perform calculations pertaining to span, rise, depth and materials related to arches.
8. Describe the procedures used to estimate material requirements.
9. Describe the procedures used to construct and install templates for arches.
 - i) template materials
 - ii) support system for template
 - iii) place template
10. Describe the procedures used to layout and install arches.
 - i) prepare location
 - ii) install reinforcing
 - iii) cut voussoirs and creepers
11. Describe the procedures used to install flashing on arches.
 - i) tray
 - ii) step

Practical Objectives:

1. Layout and construct an arch.
2. Locate and extract information pertaining to arches from drawings and specifications.

Level 3

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BRK-305 Chimneys

Learning Outcomes:

- Demonstrate knowledge of chimneys and their components.
- Demonstrate knowledge of the procedures to build chimneys and their components.
- Demonstrate knowledge of the procedures to construct single and multiple-flue chimneys.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 6.04 Installs membrane and flashing.
- 15.01 Builds foundation supports for chimneys.
- 15.02 Lays masonry units to build chimneys.
- 15.03 Installs flue linings.
- 15.04 Installs related flashings.
- 15.05 Installs caps.

Suggested Hours:

40 Hours

Theoretical Objectives:

1. Define terminology associated with chimneys.
2. Identify hazards and describe safe work practices associated with chimneys.
3. Interpret codes, standards and regulations pertaining to chimneys.
4. Interpret information pertaining to chimneys found on drawings and specifications.
5. Identify tools and equipment used to construct chimneys and describe their applications and procedures for use.
6. Identify foundation materials and describe their characteristics and applications.
 - i) concrete
 - ii) concrete blocks
 - iii) mortars
 - iv) reinforcement steel
 - v) angle iron

7. Describe the operation of a chimney.
8. Describe expansion and contraction of installation materials.
9. Identify the materials to lay chimneys and describe their characteristics and applications.
 - i) fireclay or refractory mortar
 - ii) bricks
 - iii) blocks
 - iv) stones
 - v) flue liners
10. Identify types of chimneys and describe their applications.
 - i) single flue
 - ii) multiple flue
11. Identify chimney components and describe their purpose.
 - i) clean outs
 - ii) flue liners
 - iii) caps
 - iv) thimbles
 - v) insulated thimbles
 - vi) flashing
 - vii) breech pipe
 - viii) high temperature mortar
 - ix) brick
 - x) roof saddle (cricket)
12. Perform calculations pertaining to dimensions of chimneys.
13. Describe the procedures used to estimate material requirements.
14. Describe the procedures used to construct chimneys.
 - i) foundation supports
 - ii) lay masonry units
 - iii) install flue liners
 - iv) install flashings
 - v) install caps
15. Identify flashing materials and describe their characteristics and applications.
 - i) caulking
 - ii) fasteners
 - iii) metal flashing

16. Identify chimney cap materials and describe their characteristics and applications.
 - i) precast or cast concrete
 - ii) caulking
 - iii) insulation
 - iv) flashings
17. Identify types of flashing used in chimneys and describe their applications.
 - i) step
 - ii) counter
18. Identify types of caps and describe their characteristics and applications.

Practical Objectives:

1. Construct a chimney.
 - i) single flue
 - ii) multiple flue
2. Locate and extract information pertaining to chimneys from drawings and specifications.

Learning Outcomes:

- Demonstrate knowledge of natural stone cladding.
- Demonstrate knowledge of the procedures to prepare substrate for natural stone cladding.
- Demonstrate knowledge of the procedures to prepare natural stone for cladding.
- Demonstrate knowledge of the procedures to install natural stone cladding.

2021 Red Seal Occupational Standard Reference:

4.01 Uses drawings and specifications.
14.01 Prepares substrate for cladding.
14.02 Prepares natural stone for cladding.
14.03 Installs natural stone cladding.

Suggested Hours:

24 Hours

Theoretical Objectives:

1. Define terminology associated with natural stone cladding systems.
2. Identify hazards and describe safe work practices associated with natural stone cladding.
3. Interpret codes, standards and regulations pertaining to natural stone cladding.
4. Interpret information pertaining to natural stone cladding found on drawings and specifications.
5. Identify tools and equipment used for natural stone cladding and describe their applications and procedures for use.
6. Identify rigging and hoisting equipment and describe their characteristics and procedures for use.
7. Identify types of caulking, epoxies and other bonding agents and describe their characteristics and applications.
8. Describe the purpose of supporting back up walls.

9. Identify types of natural stone cladding and describe their characteristics and applications.
 - i) granite
 - ii) marble
 - iii) limestone
10. Describe the properties of stone.
 - i) density
 - ii) porosity
 - iii) mass
11. Identify types of stone cladding wall systems and describe their characteristics and applications.
12. Identify cleaning materials for natural stone and describe their characteristics and applications.
13. Describe the procedure to clean natural stone cladding.
14. Identify stone cladding anchoring systems and describe their characteristics and applications.
15. Identify flashing materials for stone cladding and describe their characteristics and applications.
16. Describe the procedures used to install stone cladding.
 - i) prepare substrate for cladding
 - ii) prepare stone for cladding
 - iii) install flashing
 - iv) anchoring systems

Practical Objectives:

1. Install natural stone cladding.
2. Locate and extract information pertaining to natural stone cladding from drawings and specifications.

BRK-310 Fireplaces

Learning Outcomes:

- Demonstrate knowledge of fireplaces and their components.
- Demonstrate knowledge of the procedures to construct fireplaces and their components.
- Demonstrate knowledge of outdoor fireplaces and barbecues and their components.
- Demonstrate knowledge of the procedures to construct outdoor fireplaces and barbecues.
- Demonstrate knowledge of the procedures to maintain fireplaces.
- Demonstrate knowledge of the procedures to prepare and install inserts into existing fireplaces.
- Demonstrate knowledge of the procedures to face fireplaces and inserts.
- Demonstrate knowledge of the procedures to construct, place and remove a template.
- Demonstrate knowledge of the procedures to prepare and install arches.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 16.01 Builds foundation for hearth, firebox, backup material and veneer.
- 16.02 Builds hearth, firebox and backup.
- 16.03 Installs damper.
- 16.04 Builds smoke chamber.
- 16.05 Prepares existing fireplace for insert.
- 16.06 Faces fireplaces and inserts.
- 23.04 Installs arch masonry units.
- 23.05 Removes template.

Suggested Hours:

81 Hours

Theoretical Objectives:

1. Define terminology associated with fireplaces.
2. Identify hazards and describe safe work practices associated with fireplaces.
3. Interpret codes, standards and regulations pertaining to fireplaces.
4. Interpret information pertaining to fireplaces found on drawings and specifications.

5. Identify tools and equipment used to construct fireplaces and describe their applications and procedures for use.
6. Identify types of fireplaces and describe their applications.
 - i) single opening
 - raised hearth
 - inside corner
 - prefabricated built-in
 - air-circulating
 - ii) multiple opening
 - projected corner
 - three-way
 - see-through
7. Describe fireplace operation.
 - i) firebox materials
 - ii) backup and veneer materials
8. Identify types of fireplace designs and describe their characteristics and applications.
 - i) Rumford
 - ii) conventional
 - iii) outdoor fireplaces and barbecues
 - iv) bread/pizza oven
9. Identify fireplace components and describe their purpose.
 - i) ash pit
 - ii) fresh air intake
 - iii) throat
 - iv) smoke shelf
 - v) dampers
 - vi) fire box
 - vii) backup
 - viii) hearth
 - ix) lintel
 - x) smoke chamber
 - xi) mantle
 - xii) liners
 - xiii) insulation
10. Identify insert components and describe their characteristics and applications.
 - i) fans
 - ii) vents
 - iii) clean-outs
 - iv) doors

v) intake

11. Perform calculation of dimensions pertaining to fireplaces.

- i) size of opening required for the room
- ii) size of flue liner based on opening

12. Describe the procedures used to estimate material requirements.

13. Identify types and sizes of inserts and describe their characteristics and applications.

- i) electric
- ii) gas
- iii) wood

14. Describe the procedures used to layout and construct fireplaces.

- i) build foundation
- ii) build hearth
- iii) build firebox
- iv) install damper
- v) build smoke chamber
- vi) install backup material
- vii) build veneer facing
- viii) smoke shelf
- ix) install mantels

15. Describe the procedures used to install fireplace inserts and accessories.

- i) new installation
- ii) conversion of existing fireplace

16. Describe the procedures used to construct, install, and remove templates for arches.

- i) template materials
- ii) support system for template
- iii) place template

17. Describe the procedures used to layout and install arches.

- i) prepare location
- ii) install reinforcing
- iii) cut voussoirs and creepers

Practical Objectives:

1. Construct a fireplace.
2. Locate and extract information pertaining to fireplaces from drawings and specifications.

Learning Outcomes:

- Demonstrate knowledge of preparing and building horizontal substrates.
- Demonstrate knowledge of laying masonry units on horizontal surfaces.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 9.01 Builds non-load bearing walls.
- 9.02 Builds load-bearing walls.
- 4.01 Uses drawings and specifications.
- 10.01 Prepares horizontal substrate.
- 10.02 Lays masonry units on horizontal surfaces.

Suggested Hours:

15 Hours

Theoretical Objectives:

1. Define terminology associated with laying steps, patios and other horizontal masonry surfaces.
2. Identify hazards and describe safe work practices associated with steps, patios and other horizontal masonry surfaces.
3. Interpret codes, standards and regulations pertaining to laying steps, patios and other horizontal masonry surfaces.
4. Interpret information found on drawings and specifications pertaining to laying steps, patios and other horizontal masonry surfaces.
5. Identify tools and equipment used to lay steps, patios and other horizontal masonry surfaces and describe their applications and procedures for use.
6. Identify bond patterns used to build steps, patios and other horizontal masonry surfaces.
 - i) running
 - ii) basket weave
 - iii) herringbone
7. Identify step and patio components and describe their purpose.

8. Identify materials used to prepare horizontal substrates for laying steps, patios and other horizontal masonry surfaces and describe their purpose.
9. Describe the procedures used to prepare horizontal substrates for laying steps, patios and other horizontal masonry surfaces.
 - i) soil conditions
 - ii) drainage systems
 - iii) excavation methods
 - iv) membranes
 - v) slope and grade
10. Perform calculations pertaining to slope, grade, angle, rise and run.
11. Describe the procedures used to estimate material requirements.
12. Describe the procedures used to layout and construct steps, patios and other horizontal masonry surfaces.
 - i) types of masonry units
 - mortared (rigid)
 - mortarless (flexible)
 - ii) types of mortar
 - iii) types of bonding agents and additives
 - iv) excavation methods
 - v) membranes
 - vi) slope and grade
13. Describe the procedures used to apply sealants and membranes on horizontal masonry units.

Practical Objectives:

1. Layout and construct steps, patios and other horizontal masonry surfaces using various patterns.
2. Locate and extract information pertaining to laying steps, patios and other horizontal masonry surfaces from drawings and specifications.

BRK-320 Refractory

Learning Outcomes:

- Demonstrate knowledge of refractory and their applications.
- Demonstrate knowledge of the procedures to install and repair refractory materials.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 17.01 Prepares for installation of refractories and accessories.
- 17.02 Prepares mortar for refractories.
- 17.03 Removes existing refractories.
- 17.04 Installs refractories.
- 17.05 Repairs refractories.

Suggested Hours:

12 Hours

Theoretical Objectives:

1. Define terminology associated with refractory.
2. Identify hazards and describe safe work practices associated with refractory.
 - i) PPE
 - ii) lockout
 - iii) confined space
 - iv) fall arrest
 - v) Field Level Risk Assessment (FLRA)
 - vi) emergency evacuation
 - vii) temporary bracing
 - viii) clean up and dispose of materials
3. Interpret codes, standards and regulations pertaining to refractory.
4. Interpret information pertaining to refractory found on drawings and specifications.
5. Identify tools and equipment used to install and repair refractory and describe their applications and procedures for use.
6. Identify types of refractory mortars and admixtures, and describe their characteristics and applications.
 - i) heat setting

- needles

7. Identify types and classes of refractory firebrick and describe their applications.
 - i) wedge
 - ii) straight
 - iii) curved / arched
 - iv) half
 - v) split
 - vi) double split
 - vii) standard
8. Identify types of refractory materials and describe their purpose.
 - i) gunite
 - ii) plastic
 - iii) castable
 - iv) board insulation
 - v) accessories and blankets
 - vi) bricks
 - insulating
 - carbon
9. Describe the procedures used to apply refractory linings.
10. Describe the procedures used to install refractory and their accessories.
 - i) install forms and arches
 - ii) sequence of installation of brick and tile according to number
11. Describe the procedures used to remove and repair refractory and their accessories.

Practical Objectives:

N/A

Learning Outcomes:

- Demonstrate knowledge of corrosion resistant materials and their applications.
- Demonstrate knowledge of the procedures to install, maintain and repair corrosion resistant materials.
- Demonstrate knowledge of the procedures to apply grout.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 8.01 Mixes mortar, concrete and grout and adhesives.
- 8.03 Uses concrete and grout.
- 18.01 Prepares for installation of corrosion resistant materials and accessories.
- 18.02 Prepares mortar for corrosion resistant materials.
- 18.03 Removes existing corrosion resistant materials.
- 18.04 Installs corrosion resistant materials.
- 18.05 Repairs corrosion resistant materials.

Suggested Hours:

9 Hours

Theoretical Objectives:

1. Define terminology associated with corrosion resistant materials.
2. Identify hazards and describe safe work practices associated with corrosion resistant materials.
 - i) PPE
 - ii) lockout
 - iii) confined space
 - iv) fall arrest
 - v) Field Level Risk Assessment (FLRA)
 - vi) emergency evacuation
 - vii) temporary bracing
 - viii) clean up and dispose of materials
 - ix) exposure to fumes
 - x) skin exposure
 - xi) respiratory hazard
3. Interpret codes, standards and regulations pertaining to corrosion resistant materials.

4. Interpret information pertaining to corrosion resistant materials found on drawings and specifications.
5. Identify tools and equipment used to install, maintain and repair corrosion resistant materials and describe their applications and procedures for use.
6. Identify types of corrosion resistant mortars and admixtures, and describe their characteristics and applications.
 - i) air setting
 - resins
 - epoxies
7. Identify types and classes of corrosion resistant brick and describe their applications.
 - i) wedge
 - ii) straight
 - iii) curved / arched
 - iv) half
 - v) split
 - vi) double split
 - vii) standard
8. Identify types of corrosion resistant materials and describe their purpose.
 - i) tile
 - ii) corrosion resistant units
 - silica / alumina
 - iii) mortars
 - iv) membranes
 - v) accessories
 - viewport
 - tank level
 - doors
 - manways
 - vi) grout
9. Describe the procedures used to prepare mortar for corrosion resistant materials.
10. Describe the procedures used to apply corrosion resistant linings.
11. Describe the procedures used to install and maintain corrosion resistant materials and their accessories.
 - i) install forms and arches
 - ii) sequence of installation according to number

12. Describe the procedures used to remove and repair corrosion resistant materials and their accessories.
13. Identify the causes of corrosion.
 - i) friction
 - ii) chemicals
 - iii) gasses
14. Identify causes of failures in corrosion resistant materials.
 - i) chemical action
 - ii) expansion
 - iii) contraction
 - iv) slag attacks
 - v) abrasion

Practical Objectives:

N/A

Learning Outcomes:

- Demonstrate knowledge of the procedures to remove deteriorated masonry units.
- Demonstrate knowledge of the procedures to repoint joints.
- Demonstrate knowledge of the procedures to repair existing masonry work.
- Demonstrate knowledge of the procedures to reinstall masonry and accessories.
- Demonstrate knowledge of the procedures to clean existing masonry surfaces.
- Demonstrate knowledge of the procedures to prepare and install arches.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 20.01 Removes deteriorated components.
- 20.02 Repoints joints.
- 20.03 Repairs masonry units.
- 20.04 Reinstalls masonry units and accessories.
- 20.05 Cleans existing masonry surfaces.
- 23.04 Installs arch masonry units.

Suggested Hours:

15 Hours

Theoretical Objectives:

1. Define terminology associated with cleaning and repairing masonry work.
2. Identify hazards and describe safe work practices associated with cleaning and repairing masonry work.
3. Interpret environmental regulations pertaining to cleaning and repairing masonry work.
4. Interpret codes, standards and regulations pertaining to cleaning and repairing masonry work.
5. Interpret information pertaining to cleaning and repairing masonry work found on drawings and specifications.
6. Identify tools and equipment used when cleaning and repairing masonry work and describe their applications and procedures for use.
7. Describe documentation used when cleaning and repairing masonry work.

- i) photography
- ii) tagging
- iii) sketches

8. Identify types of mortars, admixtures and associated additives and equipment and describe their characteristics and applications.
9. Perform calculations pertaining to cleaning and repairing masonry work.
10. Describe the procedures used to estimate material requirements.
11. Describe the procedures used to repair existing masonry work.
 - i) remove deteriorated components
 - ii) prepare repair compound
 - iii) repoint joints
 - iv) repair masonry units
 - v) retrofit ties, flashing and shelf angles
 - vi) mechanical repair techniques
 - vii) non-mechanical repair techniques
 - viii) damp curing
 - ix) reinstall masonry units and accessories
12. Describe the materials used for refacing and describe their characteristics and applications.
 - i) epoxies
 - ii) acrylics
 - iii) plastics
 - iv) dispersed dehydrated lime (DHL)
 - v) reinforcement / anchoring systems
13. Describe the procedures used to clean masonry surfaces.
 - i) cleaning soils and stains
 - ii) using micro -abrasive materials
 - iii) application of cleaners and restoration cleaning agents
 - iv) use cleaning methods to avoid damage
 - v) protecting surrounding environment during and after cleaning
14. Identify masonry materials that may be affected by cleaning, sealing, waterproofing or damp proofing processes.
15. Describe the procedures used to install flashing on arches.
 - i) tray
 - ii) step

Practical Objectives:

1. Repoint a section of an existing wall.

Learning Outcomes:

- Demonstrate knowledge of ornamental and sculpted masonry and its applications.
- Demonstrate knowledge of the procedures to prepare and install ornamental and sculpted masonry units.

2021 Red Seal Occupational Standard Reference:

- 4.01 Uses drawings and specifications.
- 6.04 Installs membrane and flashing.
- 22.01 Prepares for installation of ornamental and sculpted masonry.
- 22.02 Installs ornamental and sculpted masonry units.

Suggested Hours:

8 Hours

Theoretical Objectives:

1. Define terminology associated with ornamental and sculpted masonry.
2. Identify hazards and describe safe work practices pertaining to ornamental and sculpted masonry.
3. Interpret codes, standards and regulations pertaining to ornamental and sculpted masonry.
4. Interpret information pertaining to ornamental and sculpted masonry found on drawings and specifications.
5. Identify tools and equipment relating to ornamental and sculpted masonry and describe their applications and procedures for use.
6. Identify unique anchoring systems associated with ornamental and sculpted masonry.
7. Describe factors affecting durability of ornamental and sculpted masonry.
 - i) weather
 - ii) expansion joints
 - iii) flashing
 - iv) capping

8. Describe the procedures used to prepare ornamental and sculpted masonry for installation.
 - i) determine placement and pattern
 - ii) verify size, shape and weight of units
 - iii) prepare surface area
9. Describe the procedures used to install ornamental and sculpted masonry units.

Practical Objectives:

1. Locate and extract information pertaining to ornamental and sculpted masonry from drawings and specifications.

MENT-701**Mentoring II****Learning Outcomes:**

- Demonstrate knowledge of effective communication practices as a mentor.
- Demonstrate knowledge of strategies for teaching workplace skills.

2020 Red Seal Occupational Standard Reference:

- 5.01 Uses communication techniques.
- 5.02 Uses mentoring techniques.

Suggested Hours:

6 Hours

Theoretical Objectives:

1. Identify the different roles played by a workplace mentor.
2. Identify strategies to create a supportive learning environment.
3. Identify techniques for effective communication as a mentor.
 - i) constructive feedback
 - ii) active listening
 - iii) leading meetings and one-on-one sessions
4. Describe the steps in teaching a skill.
 - i) identifying the point of lesson
 - ii) linking the lesson
 - iii) demonstrating the skill
 - iv) providing practice
 - v) giving feedback
 - vi) assessing skill and progress
5. Identify strategies to assist in teaching a skill while meeting individual learning needs.
 - i) principles of instruction
 - ii) coaching skills
6. Explain how to adjust a lesson for various situations.

Practical Objectives:

N/A

Learning Outcomes:

- Demonstrate knowledge of the Red Seal Occupational Standard and its relationship to the Red Seal Examination.
- Demonstrate knowledge of overall comprehension of the trade in preparation for the Red Seal Examination.

2021 Red Seal Occupational Standard Reference:

Entire Red Seal Occupational Standard (RSOS)

Suggested Hours:

30 Hours

Theoretical Objectives:

1. Define terminology associated with a RSOS.
 - i) major work activity
 - ii) levels
 - iii) tasks
 - iv) sub-tasks
2. Explain how an RSOS is developed and the link it has with the Red Seal Examination.
 - i) development
 - ii) validation
 - iii) level and task weightings
 - iv) examination breakdown (pie-chart)
3. Identify Red Seal products and describe their use for preparing for the Red Seal Examination.
 - i) Red Seal website
 - ii) examination preparation guide
 - iii) sample questions
 - iv) Red Seal exam breakdown
 - v) self-assessment
4. Explain the relationship between the RSOS and the AACs.
5. Review Common Occupational Skills for the Bricklayer trade as identified in the RSOS.
 - i) safety
 - ii) tools and equipment

- iii) scaffolding
- iv) organize work
- v) communication and mentoring

6. Review General Masonry Practices for the Bricklayer trade as identified in the RSOS.

- i) substrate preparation
- ii) fundamental masonry tasks
- iii) mortars, concrete, grouts and adhesives

7. Review Masonry Systems for the Bricklayer trade as identified in the RSOS.

- i) masonry walls
- ii) horizontal masonry surfaces
- iii) prefabricated masonry
- iv) surface-bonded masonry units

8. Review Natural Stone Systems for the Bricklayer trade as identified in the RSOS.

- i) natural stone walls
- ii) mechanically-fastened natural stone cladding

9. Review Chimneys and Fireplaces for the Bricklayer trade as identified in the RSOS.

- i) chimneys
- ii) fireplaces

10. Review Refractories and Corrosion Resistant Materials for the Bricklayer trade as identified in the RSOS.

- i) refractories
- ii) corrosion resistant materials

11. Review Restoration for the Bricklayer trade as identified in the RSOS.

- i) rebuild masonry work
- ii) repair and clean existing masonry work

12. Review Additional Masonry topics for the Bricklayer trade as identified in the RSOS.

- i) glass block
- ii) ornamental and sculpted masonry
- iii) arches

Practical Objectives:

N/A

Feedback and Revisions

This AACs will be amended periodically; comments or suggestions for improvements should be directed to:

New Brunswick:

Apprenticeship and Occupational
Certification
Post-Secondary Education, Training and
Labour
470 York St., Rm. 110, PO Box 6000
Fredericton, NB E3B 5H1
Tel: 506-453-2260
Toll Free in NB: 1-855-453-2260
www.gnb.ca

Prince Edward Island:

Apprenticeship, Training and Certification
Workforce and Advanced Learning
176 Great George St., PO Box 2000
Charlottetown, PE C1A 7N8
Tel: 902-368-4460
www.apprenticeship.pe.ca

Newfoundland and Labrador:

Apprenticeship and Trades Certification
Immigration, Population Growth and Skills
Confederation Building, West Block
Prince Philip Dr., PO Box 8700
St. John's, NL A1B 4J6
Toll Free: 877-771-3737
<https://www.gov.nl.ca/atcd/>

Nova Scotia:

Nova Scotia Apprenticeship Agency
1256 Barrington St.
Halifax, NS B3J 1Y6
Tel: 902-424-5651
Toll Free in NS: 1-800-494-5651
www.nsapprenticeship.ca

Any comments or suggestions received will be reviewed and considered to determine the course of action required. If the changes are deemed to be minor, they will be held for implementation during the next review cycle. If immediate change is deemed appropriate and approved by the Atlantic Trade Advisory Committee, it will result in a revision to this version of the AACs and will be detailed in the following section.

Version Changes

Revision Date	Section	Description of Change
2023	All sections	Update to align with national occupational standard