curriculum standard

apprenticeship

NOVA SCOTIA APPRENTICESHIP AGENCY

BRICKLAYER 2015

Based on the Atlantic Apprenticeship Curriculum Standard
(pg. 10 for Program Structure)

NOVA SCOTIA

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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 2011 National Occupational Analysis. The NOA 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	2015-2016
Level 2	2016-2017
Level 3	2017-2018

** *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. Programs which have been deemed acceptable by the provincial apprenticeship authority will be identified in transfer credit matrix developed through the Atlantic Apprenticeship Harmonization Project.

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 and Employment and Social Development Canada.

The Atlantic Apprenticeship Council wishes to acknowledge the contributions of the following industry and instructional representatives on the Atlantic Trade Advisory Committee (ATAC) who participated in the development of this document in December 2014.

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Table of Contents

User Guide

Atlantic Apprenticeship Curriculum Standards (AACS) are developed based on National Occupational Analyses (NOA), Interprovincial Program Guides (IPG) (if available) and extensive industry consultation. This document represents the minimum content to be delivered as part of the harmonized Atlantic program for the Bricklayer trade.

The AACS's are deliberately constructed for ease of use and flexibility of structure in order 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 Program/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 at the level-level will be through a multiple-choice level examination administered through the jurisdictional apprenticeship authority.

User Guide *(continued)*

The 2011 National Occupational Analysis References (NOA) to AACS Comparison chart outlines the relation between each NOA sub-task and the AACS units. NOA References have also been detailed in each unit to highlight the direct link between the unit and relevant sub-tasks in the NOA.

In the Program/Level Structure section, the document identifies suggested hours in order to provide an indication of the time it should take to cover the material in the unit and is intended 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 actual 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 in order 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 mandatory 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.

Detailed content for each objective has not been developed. Where detail is required for clarity, content has been provided.

Glossary of Terms

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

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; tell 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.
PROCEDURE	A prescribed series of steps taken to accomplish an end.
PURPOSE	The reason for which something exists or is done, made or used.
TECHNIQUE	Within a procedure, the manner in which technical skills are applied.

Essential Skills Profiles

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.

Essential Skills Profiles describe how workers in various occupations use each of the key essential skills. They include:

- a brief description of the occupation;
- examples of tasks that illustrate how each essential skill is applied; and,
- complexity ratings that indicate the level of difficulty of the example tasks.

Essential Skills profiles can be found on the Employment and Social Development Canada (ESDC) website at www.esdc.gc.ca/eng/jobs/les/profiles/index.shtml

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

Profile Chart

COMMON OCCUPATIONAL SKILLS			
BRK-100 Safety	**BRK-105** Rigging and Hoisting	**BRK-110** Access Equipment	**BRK-115** Tools and Equipment
BRK-155 Trade Documentation and Communication	**BRK-160** Drawings	**BRK-330** Job Planning	
GENERAL MASONRY PRACTICES			
BRK-120 Mortars, Grouts and Adhesives	**BRK-140** Laying Brick to Line	**BRK-145** Laying Block to Line	**BRK-150** Anchors, Ties and Joint Reinforcement
BRK-170 Non-Load Bearing Walls	**BRK-200** Load Bearing Walls	**BRK-205** Renovation	**BRK-215** Restoration
BRK-300 Arches	**BRK-305** Chimneys	**BRK-325** Ornamental and Sculpted Masonry	**BRK-165** Building Envelope
MASONRY SYSTEMS			
BRK-125 Clay Masonry Units	**BRK-130** Concrete Masonry Units	**BRK-135** Leads	**BRK-140** Laying Brick to Line
BRK-145 Laying Block to Line	**BRK-170** Non-Load Bearing Walls	**BRK-200** Load Bearing Walls	**BRK-210** Stone Masonry
BRK-315 Steps and Patios			
STONE SYSTEMS			
BRK-210 Stone Masonry			
CHIMNEYS AND FIREPLACES			
BRK-305 Chimneys	**BRK-310** Fireplaces		

Profile Chart *(continued)*

REFRACTORIES AND CORROSION RESISTANT MATERIALS			
BRK-320 Refractory and Corrosion Resistant Materials			
RESTORATION			
BRK-215 Restoration			
ADDITIONAL MASONRY			
BRK-220 Glass Blocks	**BRK-300** Arches	**BRK-325** Ornamental and Sculpted Masonry	

Program Structure

Level 1 - 8 Weeks

Unit Code	Unit Title	Suggested Hours	Page Number
MENT-1801	Workplace Mentoring I (NS Specific)	Throughout	17
BRK-100	Safety	9	18
BRK-105	Rigging and Hoisting	3	20
BRK-110	Access Equipment Awareness	6	22
BRK-115	Tools and Equipment	12	24
BRK-120	Mortars, Grouts and Adhesives	30	26
BRK-125	Clay Masonry Units	3	30
BRK-130	Concrete Masonry Units	3	32
BRK-135	Leads	48	34
BRK-140	Laying Brick to Line	24	36
BRK-145	Laying Block to Line	24	39
BRK-150	Anchors, Ties and Joint Reinforcement	12	41
BRK-155	Trade Documentation and Communication	6	43
BRK-160	Drawings	18	45
BRK-165	Building Envelope	12	48
BRK-170	Non-Load-Bearing Walls	30	50

Level 2 - 6 Weeks

Unit Code	Unit Title	Suggested Hours	Page Number
BRK-200	Load-Bearing Walls	45	54
BRK-205	Renovation	18	57
BRK-210	Stone Masonry	63	59
BRK-215	Restoration	42	62
BRK-220	Glass Block	12	64

Program Structure (*continued*)

Level 3 - 8 Weeks

Unit Code	Unit Title	Suggested Hours	Page Number
MENT-1802	Workplace Mentoring II (NS Specific)	Throughout	67
BRK-300	Arches	48	68
BRK-305	Chimneys	36	70
BRK-310	Fireplaces	81	73
BRK-315	Steps and Patios	12	76
BRK-320	Refractory and Corrosion Resistant Materials	21	78
BRK-325	Ornamental and Sculpted Masonry	6	81
BRK-330	Job Planning	6	83
BRK-335	Program Review	30	85

2011 NOA Sub-task to AACS Unit Comparison

NOA 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 and Hoisting
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, blueprints and specifications.	BRK-160	Drawings
4.02	Plans daily tasks and activities	BRK-155	Trade Documentation and Communication
4.03	Prepares job site and materials.	BRK-330	Job Planning
4.04	Protects surrounding areas.	BRK-330	Job Planning
Task 5 – Performs substrate preparation.			
5.01	Prepares vertical substrates and foundations.	BRK-170	Non-Load Bearing Walls
5.02	Applies parging.	BRK-120	Mortars, Grouts and Adhesives
		BRK-165	Building Envelope
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
5.03	Installs anchoring/tie systems.	BRK-150	Anchors, Ties and Joint Reinforcement
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
		BRK-205	Renovation
5.04	Installs membrane and flashing.	BRK-165	Building Envelope
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
		BRK-215	Restoration
		BRK-300	Arches
		BRK-305	Chimneys
		BRK-325	Ornamental and Sculpted Masonry
5.05	Installs insulation.	BRK-165	Building Envelope
		BRK-170	Non-Load Bearing Walls

NOA Sub-task		AACS Unit	
		BRK-200	Load Bearing Walls
Task 6 – Constructs masonry.			
6.01	Lays out wall and coursing.	BRK-140	Laying Brick to Line
		BRK-145	Laying Block to Line
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
6.02	Finishes joints.	BRK-140	Laying Brick to Line
		BRK-145	Laying Block to Line
		BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
		BRK-205	Renovations
6.03	Cleans new masonry surfaces.	BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
6.04	Seals masonry surfaces.	BRK-170	Non-Load Bearing Walls
		BRK-200	Load Bearing Walls
Task 7 – Uses mortars, grouts and adhesives.			
7.01	Mixes mortar, concrete and grout.	BRK-120	Mortars, Grouts and Adhesives
7.02	Uses mortars.	BRK-120	Mortars, Grouts and Adhesives
7.03	Uses concrete and grout.	BRK-120	Mortars, Grouts and Adhesives
7.04	Uses adhesives	BRK-120	Mortars, Grouts and Adhesives
Task 8 – Builds masonry walls.			
8.01	Builds non-load-bearing walls.	BRK-125	Clay Masonry Units
		BRK-130	Concrete Masonry Units
		BRK-135	Leads
		BRK-140	Laying Brick to Line
		BRK-145	Laying Block to Line
		BRK-170	Non-Load Bearing Walls
8.02	Builds load-bearing walls.	BRK-135	Leads
		BRK-140	Laying Brick to Line
		BRK-145	Laying Block to Line
		BRK-200	Load Bearing Walls
Task 9 – Builds horizontal masonry surfaces.			
9.01	Builds non-load bearing walls.	BRK-315	Steps and Patios
9.02	Builds load-bearing walls.	BRK-315	Steps and Patios
Task 10 – Builds and installs prefabricated masonry units. (NOT COMMON CORE)			
10.01	Builds prefabricated masonry. (NOT COMMON CORE)	n/a	
10.02	Erects prefabricated masonry. (NOT COMMON CORE)	n/a	
Task 11 – Installs surface-bonded masonry units.			
11.01		BRK-170	Non-Load Bearing Walls

NOA Sub-task		AACS Unit	
	Prepares substrate for surface-bonded masonry units.	BRK-210	Stone Masonry
11.02	Applies surface-bonded masonry units.	BRK-170	Non-Load Bearing Walls
		BRK-210	Stone Masonry
Task 12 – Builds stone walls.			
12.01	Prepares stone.	BRK-210	Stone Masonry
12.02	Lays stone.	BRK-210	Stone Masonry
12.03	Damp cures walls.	BRK-210	Stone Masonry
Task 13 – Installs stone cladding.			
13.01	Prepares substrate for cladding.	BRK-210	Stone Masonry
13.02	Prepares stone for cladding.	BRK-210	Stone Masonry
13.03	Installs stones.	BRK-210	Stone Masonry
Task 14 – Builds chimneys.			
14.01	Builds foundation supports for chimneys.	BRK-305	Chimneys
14.02	Lays masonry units to build chimneys.	BRK-305	Chimneys
14.03	Installs flue lining.	BRK-305	Chimneys
14.04	Installs related flashings.	BRK-305	Chimneys
14.05	Installs caps.	BRK-305	Chimneys
Task 15 - Builds fireplaces.			
15.01	Builds foundation for hearth, firebox, backup material and veneer.	BRK-310	Fireplaces
15.02	Builds hearth, firebox and backup.	BRK-310	Fireplaces
15.03	Installs dampers.	BRK-310	Fireplaces
15.04	Builds smoke chambers.	BRK-310	Fireplaces
15.05	Prepares existing fireplaces for insert.	BRK-310	Fireplaces
15.06	Faces fireplaces and inserts.	BRK-310	Fireplaces
Task 16 - Installs and maintains refractories.			
16.01	Prepares for installation of refractories and accessories.	BRK-320	Refractory and Corrosion Resistant Materials
16.02	Prepares mortar for refractories.	BRK-320	Refractory and Corrosion Resistant Materials
16.03	Installs refractories.	BRK-320	Refractory and Corrosion Resistant Materials
16.04	Removes existing refractories.	BRK-320	Refractory and Corrosion Resistant Materials
16.05	Repairs refractories.	BRK-320	Refractory and Corrosion Resistant Materials
Task 17 - Installs and maintains corrosion resistant materials.			
17.01	Prepares for installation of corrosion resistant materials and accessories.	BRK-320	Refractory and Corrosion Resistant Materials

NOA Sub-task		AACS Unit	
17.02	Prepares mortar for corrosion resistant materials.	BRK-320	Refractory and Corrosion Resistant Materials
17.03	Installs corrosion resistant materials.	BRK-320	Refractory and Corrosion Resistant Materials
17.04	Removes existing corrosion resistant materials.	BRK-320	Refractory and Corrosion Resistant Materials
17.05	Repairs corrosion resistant materials.	BRK-320	Refractory and Corrosion Resistant Materials
Task 18 - Rebuilds masonry work.			
18.01	Disassembles unit masonry.	BRK-215	Restoration
18.02	Prepares restoration work area.	BRK-215	Restoration
18.03	Reinstalls masonry and accessories.	BRK-215	Restoration
Task 19 - Repairs existing masonry work.			
19.01	Removes deteriorated components.	BRK-215	Restoration
19.02	Repoints joints.	BRK-215	Restoration
19.03	Repairs masonry units.	BRK-215	Restoration
19.04	Reinstalls masonry units and accessories.	BRK-215	Restoration
Task 20 - Cleans and seals masonry surfaces.			
20.01	Prepares surfaces.	BRK-215	Restoration
20.02	Cleans existing masonry surfaces.	BRK-215	Restoration
20.03	Applies sealants and coatings for restoration work.	BRK-215	Restoration
Task 21 - Installs glass blocks.			
21.01	Prepares work area.	BRK-220	Glass Blocks
21.02	Lays glass blocks.	BRK-220	Glass Blocks
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-300	Arches
23.02	Builds template.	BRK-300	Arches
23.03	Places template.	BRK-300	Arches
23.04	Installs arch masonry units.	BRK-300	Arches
23.05	Removes template.	BRK-300	Arches

Level 1

MENT-1801 Workplace Mentoring I

(Nova Scotia Unit of Instruction)

Learning Outcomes:

- Identify and explain strategies for learning workplace skills.
- Demonstrate strategies to assist in learning skills in the workplace.

Objectives and Content:

1. Describe the importance of your own experiences.

2. Identify the partners involved in apprenticeship.

3. Describe the shared responsibilities for workplace learning.

4. Determine your own learning preferences and explain how these relate to learning new skills.

5. Describe the importance of different types of skills in the workplace.

6. Describe the importance of essential skills in the trade.

7. Identify different ways of learning.

8. Identify your learning preferences.

9. Identify different learning needs and strategies to meet learning needs.

10. Identify techniques for effective communication.

11. Identify strategies to assist in learning a skill.

Resource:

- Recommended resource to use in the delivery of this unit: www.apprenticeship.nscc.ca/mentoring/apprentice.htm

BRK-100 Safety

Learning Outcomes:

- Demonstrate knowledge of safety equipment, its applications and procedures for use.
- Demonstrate knowledge of safe work practices.
- Demonstrate knowledge of regulations pertaining to safety and the environment.

2011 National Occupational Analysis Reference:

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

Suggested Hours:

9 Hours

Objectives and Content:

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. Identify considerations for protection of surrounding areas on a job site.
   i) finished work
   ii) vegetation
   iii) personal property
   iv) airborne debris
      - dust
      - materials

5. Describe the procedures used to install protective materials on a job site.
   i) fencing
   ii) tarps
   iii) plywood

6. 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)

Practical Objectives

None

BRK-105 Rigging and Hoisting Awareness

Learning Outcomes:

- Demonstrate knowledge of rigging and hoisting 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 and hoisting operations.

2011 National Occupational Analysis Reference:

2.02 Uses rigging, hoisting and lifting equipment.

Suggested Hours:

3 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with rigging and hoisting.

2. Identify hazards and describe safe work practices pertaining to rigging and hoisting.

3. Interpret regulations pertaining to rigging, hoisting and lifting.
   i) training and certification requirements

4. Identify types of rigging, hoisting and lifting 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) chain dogs
viii) come-alongs (ratchet mechanism)

5. Describe the procedures used to inspect, maintain and store rigging, hoisting and lifting equipment.

6. Identify types of knots, hitches and bends and describe their applications and associated procedures.

7. Describe the procedures used to rig material/equipment for hoisting.

8. Identify the methods of communication used during hoisting and lifting operations and describe their associated procedures.
   i) hand signals
   ii) electronic communications

Practical Objectives

None

BRK-110 Access Equipment Awareness

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.

2011 National Occupational Analysis Reference:

3.01 Erects scaffolding.
3.02 Dismantles scaffolding.
3.03 Maintains scaffolding.

Suggested Hours:

6 Hours

Objectives and Content:

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.
   i) scaffolding
      - frame
      - tubular
      - hydraulic
      - swing stage

- jack-up
- tower (mast)
- roof jack

ii) ladders
- extension
- step
- job built

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 pertaining to access equipment.

8. Describe the procedures used to erect and dismantle access equipment.

9. Describe the procedures used to inspect and maintain access equipment.

Practical Objectives

None

BRK-115 Tools and Equipment

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.

2011 National Occupational Analysis Reference:

2.01 Maintains tools and equipment.

Suggested Hours:

12 Hours

Objectives and Content:

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) mixing
   ii) cutting
   iii) alignment
   iv) laying and finishing

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) pneumatic
   iii) fuel

6. Describe the procedures used to inspect and maintain power tools and equipment.

7. Identify types of powder and gas actuated tools and describe their applications.

8. Identify types of measuring and layout tools and equipment and describe their applications and procedures for use.

9. 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.

BRK-120 Mortars, Grouts and Adhesives

Learning Outcomes:

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

2011 National Occupational Analysis Reference:

5.02 Applies parging.
7.01 Mixes mortar, concrete and grout.
7.02 Uses mortars.
7.03 Uses concrete and grout.
7.04 Uses adhesives

Suggested Hours:

30 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with mortars, grouts and adhesives.

2. Identify hazards and describe safe work practices pertaining to mortars, grouts and adhesives.

3. Interpret codes, standards and regulations pertaining to mortars, grouts and adhesives.

4. Interpret information pertaining to mortars, grouts and adhesives found on drawings and specifications.

5. Identify tools and equipment relating to mortars, grouts and adhesives and describe their applications and procedures for use.

6. Identify types of mortars 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
      - stearates (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.

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) lime putty
    iii) hydrated lime
    iv) aggregates
    v) water

14. Describe the procedures used to estimate the volume of concrete and grout.
    i) identify ratios
    ii) proportioning concrete and grout by volume

15. Identify types of admixtures and describe their applications.
    i) accelerators
    ii) retardants
    iii) dyes
    iv) waterproofing
    v) chemical air entrainment agents
    vi) plasticizers

16. Describe the procedures used to mix concrete and grout.

17. Describe the procedures used to apply grout.

18. Identify types of adhesives and describe their characteristics and applications.
    i) polymers
    ii) epoxies
    iii) resins
    iv) caulking
    v) latex

19. Identify methods used to apply adhesives and describe their associated procedures.
    i) trowelled
    ii) brushed on
    iii) injected
    iv) caulked

Practical Objectives

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

BRK-125 Clay Masonry Units

Learning Outcomes:

- Demonstrate knowledge of clay masonry units and their applications.

2011 National Occupational Analysis Reference:

8.01 Builds non-load-bearing walls.
8.02 Builds load-bearing walls.
9.02 Lays masonry units on horizontal surfaces.

Suggested Hours:

3 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with clay masonry units.

2. Identify hazards and describe safe work practices pertaining to clay masonry units.

3. Explain the properties of clay masonry units.
   i) load-bearing capacity
   ii) durability
   iii) compressive strength

4. Describe the processes used in the manufacture of clay masonry units.
   i) soft mud
   ii) stiff mud
   iii) dry-press
   iv) drying and burning

5. Identify types and grades of clay masonry units and describe their characteristics and applications.

6. Describe common shapes and sizes of clay masonry units.

Practical Objectives

None

BRK-130 Concrete Masonry Units

Learning Outcomes:

- Demonstrate knowledge of concrete masonry units and their applications.

2011 National Occupational Analysis Reference:

8.01 Builds non-load-bearing walls.
8.02 Builds load-bearing walls.
9.02 Lays masonry units on horizontal surfaces.

Suggested Hours:

3 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with concrete masonry units.

2. Identify hazards and describe safe work practices pertaining to concrete masonry units.

3. Explain the properties of concrete masonry units.
   i) solidity
   ii) compressive strength
   iii) density
   iv) potential shrinkage

4. Describe the processes used in the manufacture of concrete masonry units.
   i) low pressure steam method
   ii) high pressure steam method

5. Identify types of concrete masonry units and describe their characteristics and applications.
   i) standard

ii) architectural
iii) split-face
iv) prefaced
v) insulated
vi) acoustical
vii) concrete brick
viii) concrete block
ix) landscape
x) manufactured stone

6. 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

None

BRK-135 Leads

Learning Outcomes:

- Demonstrate knowledge of leads and their applications.
- Demonstrate knowledge of the procedures used to build leads.

2011 National Occupational Analysis Reference:

8.01 Builds non-load-bearing walls.
8.02 Builds load-bearing walls.

Suggested Hours:

48 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with building leads.

2. Identify hazards and describe safe work practices associated with building leads.

3. Interpret codes, standards and regulations pertaining to building leads.

4. Interpret information pertaining to building leads found on drawings and specifications.

5. Identify tools and equipment used to build leads and describe their applications and procedures for use.

6. Identify types of leads and describe their applications.
   i) outside corner
   ii) inside corner
   iii) straight (rackback)

7. Perform calculations to layout and build leads.

8. Describe the procedures used to estimate material requirements.

9. 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. Construct leads using different bonds and sizes.
   i) Construct (straight) rackback leads.
   ii) Construct inside corner leads.
   iii) Construct outside corner leads.

BRK-140 Laying Brick to Line

Learning Outcomes:

- Demonstrate knowledge of the procedures used to lay brick to line.

2011 National Occupational Analysis Reference:

6.01 Lays out wall and coursing.
6.02 Finishes joints.
8.01 Builds non-load-bearing walls.
8.02 Builds load-bearing walls.

Suggested Hours:

24 Hours

Objectives and Content:

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 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

8. Describe the procedures used to set up a wall.
   i) establish wall line
   ii) dry lay brick to establish bond
   iii) establish horizontal coursing

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

10. Perform calculations pertaining to laying bricks to line.

11. Describe the procedures used to estimate material requirements.

12. Describe the procedures used to lay brick to line.
   i) spread mortar for bed joints
   ii) butter brick
   iii) cut brick
   iv) lay brick to line
   v) lay closure brick

13. Explain the purpose of jointing.

14. 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

15. Describe the procedures used to finish joints.

16. Describe the procedures used to clean brick masonry.

Practical Objectives

1. Lay brick to the line using various bonds.

BRK-145 Laying Block to Line

Learning Outcomes:

- Demonstrate knowledge of the procedures used to lay block to line.

2011 National Occupational Analysis Reference:

6.01 Lays out wall and coursing.
6.02 Finishes joints.
8.01 Builds non-load-bearing walls.
8.02 Builds load-bearing walls.

Suggested Hours:

24 Hours

Objectives and Content:

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 blocks 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) weather
   iv) struck
   v) raked
   vi) extruded
   vii) v-joint
   viii) convex
   ix) grapevine

14. Describe the procedures used to finish joints.

15. Describe the procedures used to clean block masonry.

Practical Objectives

1. Lay block to the line using various bonds and sizes.

BRK-150 Anchors, Ties and Joint Reinforcement

Learning Outcomes:

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

2011 National Occupational Analysis Reference:

5.03 Installs anchoring/tie systems.

Suggested Hours:

12 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with anchors, ties and joint reinforcement.

2. Identify hazards and describe safe work practices pertaining to anchors, ties and joint reinforcement.

3. Interpret codes, standards and regulations pertaining to anchors, ties and joint reinforcement.

4. Interpret information pertaining to anchors, ties and joint reinforcement found on drawings and specifications.

5. Identify tools and equipment relating to anchors, ties and joint reinforcement and describe their applications and procedures for use.

6. Identify types of anchors and describe their applications.
   i) drop-in

ii) pin bolts
iii) wedge
iv) screws
v) self-tapping

7. Identify anchor components and accessories and describe their purpose.

8. Identify types of ties and describe their applications.
   i) wire
   ii) adjustable
   iii) corrugated metal

9. Describe the procedures used to determine anchor and tie locations.

10. Describe the procedures used to install and secure anchors.

11. Identify tie components and accessories and describe their purpose.

12. Describe the procedures used to install and secure ties.

13. Identify types of joint reinforcement and describe their applications.
   i) truss
   ii) ladder

14. Describe the procedures used to install joint reinforcement.

15. Describe the procedures used to estimate material requirements.

Practical Objectives

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

BRK-155 Trade Documentation and Communication

Learning Outcomes:

- Demonstrate knowledge of effective communication practices.
- Demonstrate knowledge of trade related documentation and its use.

2011 National Occupational Analysis Reference:

4.02 Plans daily tasks and activities.

Suggested Hours:

6 Hours

Objectives and Content:

Theoretical Objectives

1. Describe the importance of effective verbal and non-verbal communication on the job.
   - i) other tradespersons
   - ii) colleagues
   - iii) supervisors
   - iv) clients

2. 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

Practical Objectives

1. Use the National Building Code (NBC).

BRK-160 Drawings

Learning Outcomes:

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

2011 National Occupational Analysis Reference:

4.01 Uses drawings, blueprints and specifications.

Suggested Hours:

18 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with drawings.

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) civil/site/plot
   - ii) architectural
   - iii) mechanical
   - iv) structural
   - v) electrical
   - vi) shop/detail drawings

vii) sketches

5. Identify drawing related documentation and describe their applications.
   i) change orders
   ii) addenda
   iii) as-builts
   iv) specifications

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
   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

BRK-165 Building Envelope

Learning Outcomes:

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

2011 National Occupational Analysis Reference:

5.02 Applies parging.
5.04 Installs membrane and flashing.
5.05 Installs insulation.

Suggested Hours:

12 hours

Objectives and Content:

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. Identify types of flashing and describe their characteristics and applications.

11. Describe the procedures used to install flashing.

12. Identify types of parging and describe their characteristics and applications.

13. 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.

BRK-170 Non-Load-Bearing Walls

Learning Outcomes:

- Demonstrate knowledge of non-load-bearing walls and their applications.
- Demonstrate knowledge of the procedures used to construct non-load-bearing walls.
- Demonstrate knowledge of the procedures used to construct openings in non-load-bearing walls.
- Demonstrate knowledge of the procedures used to install door and window frames in non-load-bearing walls.

2011 National Occupational Analysis Reference:

5.01 Prepares vertical substrates and foundations.
5.02 Applies parging.
5.03 Installs anchoring/tie systems.
5.04 Installs membrane and flashing.
5.05 Installs insulation.
6.02 Finishes joints.
6.03 Cleans new masonry surfaces.
6.04 Seals masonry surfaces.
8.01 Builds non-load-bearing walls.
11.01 Prepares substrate for surface-bonded masonry units.
11.02 Applies surface-bonded masonry units.

Suggested Hours:

30 Hours

Objectives and Content:

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) rain screen
   v) surface-bonded

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

8. Identify types of joints used in building non-load-bearing walls.

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 to layout and construct non-load-bearing walls.

12. Describe the procedures used to estimate material requirements.

13. 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 systems
   vii) anchoring/tie systems

14. Describe the procedures used to prepare vertical substrates for non-load-bearing walls.

15. Describe the procedures used to construct non-load-bearing walls.

16. Describe the procedures used to install surface-bonded masonry units.

17. Describe the procedures used to clean and finish masonry after wall construction.

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.

Block 2

BRK-200 Load-Bearing Walls

Learning Outcomes:

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

2011 National Occupational Analysis Reference:

5.02 Applies parging.
5.03 Installs anchoring/tie systems.
5.04 Installs membrane and flashing.
5.05 Installs insulation.
6.02 Finishes joints.
6.03 Cleans new masonry surfaces.
6.04 Seals masonry surfaces.
8.02 Builds load-bearing walls.

Suggested Hours:

45 Hours

Objectives and Content:

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 load-bearing walls and describe their applications.
   i) reinforced masonry
   ii) cavity
   iii) foundation
   iv) retaining
   v) sheer
   vi) composite
   vii) solid masonry

7. Identify load-bearing wall components and describe their purpose and applications.
   i) offsets
   ii) pilasters
   iii) chases
   iv) collar joints
   v) reinforcement
   vi) columns
   vii) buttresses

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

9. Identify types of movement joints used to build load-bearing walls and describe their purpose and applications.
   i) control
   ii) expansion

10. Describe the procedures used to construct movement joints.

11. Describe the procedures used to reinforce load-bearing walls.
   i) rebar
   ii) grout
   iii) horizontal joint reinforcement

12. Describe the procedures used to construct openings in load-bearing walls.

13. Describe the procedures used to install door and window frames in load-bearing walls.

14. Perform calculations to layout and construct load-bearing walls.

15. Describe the procedures used to estimate material requirements.

16. 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
    vi) anchoring/tie systems

17. Describe the procedures used to prepare vertical substrates for load-bearing walls.

18. Describe the procedures used to construct load-bearing walls.

19. Explain the purpose and applications of piers.

20. Describe the procedures used to construct piers.

21. Describe the procedures used to clean and finish masonry after wall construction.

Practical Objectives

1. Construct a load-bearing cavity wall system.

2. Locate and extract information pertaining to load-bearing walls from drawings and specifications.

BRK-205 Renovation

Learning Outcomes:

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

2011 National Occupational Analysis Reference:

5.03 Installs anchoring/tie systems.
6.02 Finishes joints.

Suggested Hours:

18 Hours

Objectives and Content:

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 relating 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 Stone Masonry

Learning Outcomes:

- Demonstrate knowledge of stone masonry and its applications.
- Demonstrate knowledge of the procedures used to build stone walls.
- Demonstrate knowledge of the procedures used to install stone cladding.

2011 National Occupational Analysis Reference:

11.01 Prepares substrate for surface-bonded masonry units.
11.02 Applies surface-bonded masonry units.
12.01 Prepares stone.
12.02 Lays stone.
12.03 Damp cures walls.
13.01 Prepares substrate for cladding.
13.02 Prepares stone for cladding.
13.03 Installs stones.

Suggested Hours:

63 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with stone masonry.

2. Identify hazards and describe safe work practices associated with stone masonry.

3. Interpret codes, standards and regulations pertaining to stone masonry.

4. Interpret information pertaining to stone masonry found on drawings and specifications.

5. Identify tools and equipment related to stone masonry and describe their applications and procedures for use.

6. Identify types of stone and describe their characteristics and applications.
   i) field
      - igneous
      - sedimentary
      - metamorphic
   ii) artificial
      - manufactured

7. Describe the properties of stone.
   i) density
   ii) porosity
   iii) permeability
   iv) absorption
   v) strength
   vi) abrasion resistance

8. Identify considerations for selecting stones and mortars for specific applications.

9. Identify types of stone walls and describe their applications.
   i) veneers
   ii) multi-wythe (load-bearing)
   iii) garden walls
   iv) retaining walls
   v) monolithic

10. Identify types of stone bonds and patterns and describe their characteristics and applications.
   i) rubble
   ii) roughly squared
   iii) ashlar (dimensioned)

11. Perform calculations relating to stone masonry.

12. Describe the procedures used to estimate material requirements.

13. Describe the procedures used to build stone walls.
   i) prepare stone
   ii) lay stone
   iii) damp cure walls

14. Identify types of stone cladding and describe their applications.
    i) granite
    ii) marble
    iii) limestone

15. Identify stone cladding accessories and describe their purpose and applications.
    i) ties
    ii) cramps

16. Describe the procedures used to install stone cladding.
    i) prepare substrate for cladding
    ii) prepare stone for cladding
    iii) install cladding

Practical Objectives

1. Install a stone veneer wall.

2. Locate and extract information pertaining stone masonry walls from drawings and specifications.

BRK-215 Restoration

Learning Outcomes:

- Demonstrate knowledge of the procedures used to rebuild masonry work.
- Demonstrate knowledge of the procedures used to repair existing masonry work.
- Demonstrate knowledge of the procedures used to clean and seal masonry surfaces.

2011 National Occupational Analysis Reference:

18.01 Disassembles unit masonry.
18.02 Prepares restoration work area.
18.03 Reinstalls masonry and accessories.
19.01 Removes deteriorated components.
19.02 Repoints joints.
19.03 Repairs masonry units.
19.04 Reinstalls masonry units and accessories.
20.01 Prepares surfaces.
20.02 Cleans existing masonry surfaces.
20.03 Applies sealants and coatings for restoration work.

Suggested Hours:

42 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with restoration work.

2. Identify hazards and describe safe work practices associated with restoration work.

3. Interpret codes, standards and regulations pertaining to restoration work.

4. Interpret information pertaining to restoration work found on drawings and specifications.

5. Identify tools and equipment related to restoration work and describe their applications and procedures for use.

6. Describe the procedures used to match existing masonry.

7. Describe documentation used in rebuilding and repairing masonry work.

8. Perform calculations relating to restoration work.

9. Describe the procedures used to estimate material requirements.

10. Identify causes of failures in masonry.

11. Describe the procedures used to rebuild masonry work.
    i) disassemble unit masonry
    ii) preserve salvageable material
    iii) prepare restoration work area
    iv) reinstall masonry and accessories

12. Describe the procedures used to repair existing masonry work.
    i) remove deteriorated components
    ii) repoint joints
    iii) repair masonry units
    iv) retrofit ties, flashing and shelf angles

13. Identify cleaning agents and tools and describe their applications and procedures for use.

14. Identify sealants and coatings used to protect masonry surfaces and describe their characteristics and applications.

15. Describe the procedures used to clean and seal masonry surfaces.

Practical Objectives

1. Restore an existing wall.

BRK-220 Glass Block

Learning Outcomes:

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

2011 National Occupational Analysis Reference:

21.01 Prepares work area.
21.02 Lays glass blocks.

Suggested Hours:

12 Hours

Objectives and Content:

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.

9. Describe the procedures used to estimate material requirements.

10. Describe the procedures used to construct glass block walls.

11. Describe the procedures used to clean and finish glass block walls after construction.

Practical Objectives

1. Construct a glass block panel.

2. Locate and extract information pertaining to glass block panels from drawings and specifications.

Level 3

MENT-1802 Workplace Mentoring II

(Nova Scotia Unit of Instruction)

Learning Outcomes:

- Identify and explain strategies for teaching workplace skills.
- Demonstrate strategies to assist in teaching skills in the workplace

Objectives and Content:

1. Describe the impact of your own experiences in teaching skills.
2. Identify the different roles played by a workplace mentor.
3. Describe the six-step approach to teaching skills.
4. Explain the importance of identifying the point of the lesson.
5. Identify how to choose a good time to present a lesson.
6. Explain the importance of linking the lessons.
7. Identify the components of the skill (the context).
8. Describe considerations for demonstrating a skill.
9. Identify types of skill practice.
10. Describe considerations in setting up opportunities for skill practice.
11. Explain the importance of providing feedback.
12. Identify techniques for giving effective feedback.
13. Describe a skill assessment.
14. Identify methods of assessing progress.
15. Explain how to adjust a lesson to different situations.

Resources:

- Recommended resource to use in the delivery of this unit: www.apprenticeship.nscc.ca/mentoring/apprentice.htm

BRK-300 Arches

Learning Outcomes:

- Demonstrate knowledge of arches and their applications.
- Demonstrate knowledge of the procedures used to construct arches.

2011 National Occupational Analysis Reference:

5.04 Installs membrane and flashing.
23.01 Prepares location.
23.02 Builds template.
23.03 Places template.
23.04 Installs arch masonry units.
23.05 Removes template.

Suggested Hours:

48 Hours

Objectives and Content:

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. Calculate span, rise and depth related to arches.

8. Describe the procedures used to estimate material requirements.

9. Describe the procedures used to construct and install templates for arches.

10. Describe the procedures used to layout and construct arches.

11. Describe the procedures used to install flashing on arches.

12. Describe the procedures used to remove templates from arches.

Practical Objectives

1. Layout and construct an arch.

2. Locate and extract information pertaining to arches from drawings and specifications.

BRK-305 Chimneys

Learning Outcomes:

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

2011 National Occupational Analysis Reference:

5.04 Installs membrane and flashing.
14.01 Builds foundation supports for chimneys.
14.02 Lays masonry units to build chimneys.
14.03 Installs flue lining.
14.04 Installs related flashings.
14.05 Installs caps.

Suggested Hours:

36 Hours

Objectives and Content:

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 types of chimneys and describe their applications.
   i) single flue
   ii) multiple flue

7. Identify chimney components and describe their purpose.
   i) clean outs
   ii) liners
   iii) caps
   iv) thimbles
   v) insulated thimbles
   vi) flashing
   vii) breech pipe
   viii) high temperature mortar
   ix) brick
   x) roof saddle (cricket)

8. Calculate dimensions of chimneys.

9. Describe the procedures used to estimate material requirements.

10. Describe the procedures used to construct foundation supports for chimneys.

11. Describe the procedures used to construct chimneys.
   i) single flue
   ii) multiple flue

12. Identify types of flashing used in chimneys and describe their applications.
   i) step
   ii) counter

13. Describe the procedures used to install flashing in chimneys.

14. Describe the procedures used to install flue lining and caps.

Practical Objectives

1. Construct a chimney.
   i) single flue
   ii) multiple flue

2. Locate and extract information pertaining to chimneys from drawings and specifications.

BRK-310 Fireplaces

Learning Outcomes:

- Demonstrate knowledge of fireplaces and their components.
- Demonstrate knowledge of the procedures used to construct single and multiple-opening fireplaces.
- Demonstrate knowledge of outdoor fireplaces and barbecues and their components.
- Demonstrate knowledge of the procedures used to construct outdoor fireplaces and barbecues.

2011 National Occupational Analysis Reference:

15.01 Builds foundation for hearth, firebox, backup material and veneer.
15.02 Builds hearth, firebox and backup.
15.03 Installs dampers.
15.04 Builds smoke chambers.
15.05 Prepares existing fireplaces for insert.
15.06 Faces fireplaces and inserts.

Suggested Hours:

81 Hours

Objectives and Content:

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. Identify types of fireplace designs and describe their characteristics and applications.
   i) Rumford
   ii) Conventional or Franklin
   iii) outdoor fireplaces and barbecues

8. Identify fireplace components and describe their purpose.
   i) ash pit
   ii) fresh air intake
   iii) throat
   iv) smoke shelf
   v) damper
   vi) fire box
   vii) back up
   viii) hearth
   ix) lintel
   x) smoke chamber
   xi) mantle
   xii) liners

9. Calculate dimensions related to fireplaces.

10. Describe the procedures used to estimate material requirements.

11. 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 facing

12. Describe the procedures used to install fireplace inserts and accessories.
    i) new installation
    ii) conversion of existing fireplace

Practical Objectives

1. Construct a fireplace.

2. Locate and extract information pertaining to fireplaces from drawings and specifications.

BRK-315 Steps and Patios

Learning Outcomes:

- Demonstrate knowledge of steps and patios and their construction.

2011 National Occupational Analysis Reference:

9.01 Builds non-load bearing walls.
9.02 Builds load-bearing walls.

Suggested Hours:

12 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with steps and patios.

2. Identify hazards and describe safe work practices associated with steps and patios.

3. Interpret codes, standards and regulations pertaining to steps and patios.

4. Interpret information pertaining to steps and patios found on drawings and specifications.

5. Identify tools and equipment used to construct steps and patios and describe their applications and procedures for use.

6. Identify bond patterns used to build steps and patios.
   i) running
   ii) basket weave
   iii) herringbone

7. Identify step and patio components and describe their purpose.

8. Calculate slope, grade, angle, rise and run.

9. Describe the procedures used to estimate material requirements.

10. Identify materials used to prepare horizontal substrates for steps and patios and describe their purpose.

11. Describe the procedures used to prepare horizontal substrates for steps and patios.

12. Describe the procedures used to layout and construct steps.

13. Describe the procedures used to layout and construct patios.

Practical Objectives

1. Layout and construct steps using various patterns.

2. Layout and construct patio using various patterns.

3. Locate and extract information pertaining to steps and patios from drawings and specifications.

BRK-320 Refractory and Corrosion Resistant Materials

Learning Outcomes:

- Demonstrate knowledge of refractory and corrosion resistant materials and their applications.
- Demonstrate knowledge of the procedures used to install and repair high-temperature refractory materials.
- Demonstrate knowledge of the procedures used to install and repair corrosion resistant materials.

2011 National Occupational Analysis Reference:

16.01 Prepares for installation of refractories and accessories.
16.02 Prepares mortar for refractories.
16.03 Installs refractories.
16.04 Removes existing refractories.
16.05 Repairs refractories.
17.01 Prepares for installation of corrosion resistant materials and accessories.
17.02 Prepares mortar for corrosion resistant materials.
17.03 Installs corrosion resistant materials.
17.04 Removes existing corrosion resistant materials.
17.05 Repairs corrosion resistant materials.

Suggested Hours:

21 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with refractory and corrosion resistant materials.

2. Identify hazards and describe safe work practices associated with refractory and corrosion resistant materials.

3. Interpret codes, standards and regulations pertaining to refractory and corrosion resistant materials.

4. Interpret information pertaining to refractory and corrosion resistant materials found on drawings and specifications.

5. Identify tools and equipment used to install and repair refractory and corrosion resistant materials and describe their applications and procedures for use.

6. Explain the purpose and applications of refractory and corrosion resistant materials.
   i) high temperature
   ii) corrosion resistance

7. Identify types and classes of refractory firebrick and describe their applications.
   i) wedge
   ii) straight
   iii) curved
   iv) half
   v) split
   vi) double split
   vii) standard

8. Identify types of mortar used to lay high temperature and corrosion resistant materials.

9. Identify types of refractory and corrosion resistant linings and describe their purpose.
   i) gunite
   ii) plastic
   iii) castable

10. Describe the procedures used to apply refractory and corrosion resistant linings.

11. Describe the procedures used to install refractory and corrosion resistant materials and their accessories.

12. Describe the procedures used to remove and repair refractory and corrosion resistant materials and their accessories.

13. Identify causes of failures in refractory and corrosion resistant materials.
    i) chemical action
    ii) expansion
    iii) contraction
    iv) slag attacks
    v) abrasion

Practical Objectives

None

BRK-325 Ornamental and Sculpted Masonry

Learning Outcomes:

- Demonstrate knowledge of ornamental and sculpted masonry and its applications.
- Demonstrate knowledge of the procedures used to construct ornamental and sculpted masonry units.

2011 National Occupational Analysis Reference:

5.04 Installs membrane and flashing.
22.01 Prepares for installation of ornamental and sculpted masonry.
22.02 Installs ornamental and sculpted masonry units.

Suggested Hours:

6 Hours

Objectives and Content:

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 types of ornamental and sculpted masonry.

7. Identify anchoring systems associated with ornamental and sculpted units.

8. Describe factors affecting durability of ornamental and sculpted masonry.
   i) weather
   ii) expansion joints
   iii) flashing
   iv) capping

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

10. Describe the procedures used to construct ornamental and sculpted masonry units.

Practical Objectives

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

BRK-330 Job Planning

Learning Outcomes:

- Demonstrate knowledge of the procedures used to plan and organize jobs.

2011 National Occupational Analysis Reference:

4.03 Prepares job site and materials.
4.04 Protects surrounding areas.

Suggested Hours:

6 Hours

Objectives and Content:

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.
   i) scheduling
   ii) estimating

5. Describe the procedures used to organize and store tools, equipment and materials on-site.

6. Extract information from drawings to produce material take-off lists.

Practical Objectives

None

BRK-335 Program Review

Learning Outcomes:

- Upon successful completion of this unit, the apprentice will complete a study plan based on the National Occupational Analysis.
- Demonstrate knowledge of the National Occupational Analysis and its relationship to the Interprovincial Examination.
- Demonstrate knowledge of overall comprehension of the trade in preparation for the Interprovincial Examination.

2011 National Occupational Analysis Reference:

Entire National Occupational Analysis (NOA)

Suggested Hours:

30 Hours

Objectives and Content:

Theoretical Objectives

1. Define terminology associated with an NOA.
   i) blocks
   ii) tasks
   iii) sub-tasks

2. Explain how an NOA is developed and the link it has with the Interprovincial Red Seal Examination.
   i) development
   ii) validation
   iii) block and task weighting
   iv) examination breakdown (pie-chart)

3. Identify Red Seal products and describe their use for preparing for the Interprovincial Red Seal Examination.
   i) Red Seal website
   ii) examination preparation guide

iii) sample questions
iv) examination counselling sheets

4. Explain the relationship between the NOA and the AACS.

5. Review Common Occupational Skills for the Bricklayer trade as identified in the NOA.
   i) safety
   ii) tools and equipment
   iii) scaffolding
   iv) organize work

6. Review General Masonry Practices for the Bricklayer trade as identified in the NOA.
   i) perform substrate preparation
   ii) construct masonry
   iii) use mortars, grouts and adhesives

7. Review Masonry Systems for the Bricklayer trade as identified in the NOA.
   i) masonry walls
   ii) horizontal masonry surfaces
   iii) surface-bonded masonry units

8. Review Stone Systems for the Bricklayer trade as identified in the NOA.
   i) stone walls
   ii) stone cladding

9. Review Chimneys and Fireplaces for the Bricklayer trade as identified in the NOA.
   i) chimneys
   ii) fireplaces

10. Review Refractories and Corrosion Resistant Materials for the Bricklayer trade as identified in the NOA.
   i) refractories
   ii) corrosion resistant materials

11. Review Restoration for the Bricklayer trade as identified in the NOA.
   i) rebuild masonry work
   ii) repair existing masonry work

iii) clean and seal masonry surfaces

12. Review Additional Masonry topics for the Bricklayer trade as identified in the NOA.
    i) glass block
    ii) ornamental and sculpted masonry
    iii) arches

Practical Objectives

None

Suggested Learning Activities:

1. Conduct a mock certification exam to be used for diagnostic purposes.
2. Review the National Occupational Analysis.
3. Review the Apprentice Logbook.
4. Review the Exam Preparation information found at www.nsapprenticeship.ca under Training | Exams, Exam Preparation.
5. Conduct a final mock certification exam.

Resources:

These are the recommended resources to use in the delivery of this unit:

- Exam Preparation information, including videos, occupational analyses, exam counseling sheets, practice exams and sample questions, and other study materials and resources, can be found at www.nsapprenticeship.ca under Training | Exams, Exam Preparation.
- Apprentice's personal logbook
- Applicable codes and regulations
- Program texts

Evaluation: pass/fail

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Thank you for your interest in the development and revision of this document. Upon review of the document, please record your feedback in relation to the following items:

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