PROGRAM OUTLINE

Concrete Finisher
(Cement Mason)
CONCRETE FINISHER (CEMENT MASON)

PROGRAM OUTLINE

November 2010

Developed By
Industry Training Authority
Province of British Columbia
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Section 1

INTRODUCTION

Concrete Finisher (Cement Mason)
FOREWORD

This revised Concrete Finisher (Cement Mason) Program Outline is intended as a guide for instructors, apprentices, and employers of apprentices as well as for the use of industry organizations, regulatory bodies and provincial and federal governments. It reflects updated standards based on British Columbia industry and instructor subject matter experts.

Practical instruction by demonstration and student participation should be integrated with classroom sessions. Safe working practices, even though not always specified in each operation or topic, are an implied part of the program and should be stressed throughout the apprenticeship.

This Program Outline includes a list of recommended reference textbooks that are available to support the learning objectives and the minimum shop requirements needed to support instruction.

The Program Outline was prepared with the advice and assistance of the Concrete Finisher (Cement Mason) Review Committee and will form the basis for further updating of the British Columbia Concrete Finisher (Cement Mason) Program and learning resources by the Construction Industry Training Organization on behalf of the Industry Training Authority.

Each competency is to be evaluated through the use of written examination in which the learner must achieve a minimum of 70% in order to receive a passing grade for that competency. The types of questions used on these exams must reflect the cognitive level indicated by the learning objectives and the learning tasks listed in the related competencies.

Achievement Criteria are included for those competencies that require a practical component. The intent of including Achievement Criteria in the program outline is to ensure consistency in training across the many training institutions in British Columbia. Their purpose is to reinforce the theory and to provide a mechanism for evaluation of the learner’s ability to apply the theory to practice. It is important that these performances be observable and measureable and that they reflect the skills spelled out in the competency as those required of a competent journeyperson. The conditions under which these performances will be observed and measured must be clear to the learner as well as the criteria by which the learner will be evaluated. The learner must also be given the level of expectation of success.

The performance spelled out in the Achievement Criteria is a suggested performance and is not meant to stifle flexibility of delivery. Training providers are welcome to substitute other practical performances that measure similar skills and attainment of the competency. Multiple performances may also be used to replace individual performances where appropriate.

SAFETY ADVISORY

Be advised that references to the WorkSafeBC safety regulations contained within these materials do not/may not reflect the most recent Occupational Health and Safety Regulation. The current Standards and Regulation in BC can be obtained on the following website: http://www.worksafebc.com. Please note that it is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulation pertaining to his/her work.
ACKNOWLEDGEMENTS

This Program Outline was prepared with the advice and direction from the Concrete Finisher (Cement Mason) Review Committee with funding support from the Industry Training Authority.

The Industry Training Authority would like to acknowledge the dedication and hard work of the industry representatives appointed to identify the training requirements of the Concrete Finisher (Cement Mason) trade:

Alex Musso
Brandon Bevans
Robert Ruggiero
Josh Towsley
Ron Adamson
Chris Feller
Dan Bruno
Tracy Burrows
Fred Boonstra
Daryl Bowers
Section 2

PROGRAM OVERVIEW

Concrete Finisher (Cement Mason)
<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Apply Safe Work Practices</strong></td>
<td><strong>Apply Shop and Site Safety Practices</strong> A1</td>
<td><strong>Use Hand Tools</strong> B1</td>
<td><strong>Select and Use Cement</strong> C1</td>
<td><strong>Place and Finish Concrete With Hand Tools</strong> D1</td>
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<tr>
<td><strong>Apply Personal Safety Practices</strong> A2</td>
<td><strong>Use Power Tools and Equipment</strong> B2</td>
<td><strong>Select and Use Aggregate</strong> C2</td>
<td><strong>Select and Use Admixtures</strong> C3</td>
<td><strong>Explain Construction Practices</strong> D2</td>
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<tr>
<td><strong>Use Workplace Hazardous Materials Information System (WHMIS)</strong> A3</td>
<td><strong>Use Ladders, Scaffolds and Elevating Work Platforms</strong> A5</td>
<td><strong>Batch and Convey Concrete</strong> C4</td>
<td><strong>Place and Finish Horizontal Flatwork Using Power Equipment and Hand Tools</strong> D3</td>
<td><strong>Place and Finish Vertical Concrete</strong> D4</td>
</tr>
<tr>
<td><strong>Use Fire Safety Procedures</strong> A4</td>
<td><strong>Follow Concreting Practices for Adverse Weather Conditions</strong> C6</td>
<td><strong>Use Concrete Curing and Sealing Procedures</strong> C5</td>
<td><strong>Perform Roadwork</strong> D5</td>
<td><strong>Strip Formwork for Finishing Procedures</strong> D6</td>
</tr>
<tr>
<td><strong>Use Tools and Equipment</strong></td>
<td><strong>Use Fire Safety Procedures</strong> A4</td>
<td><strong>Use Ladders, Scaffolds and Elevating Work Platforms</strong> A5</td>
<td><strong>Use Concrete Curing and Sealing Procedures</strong> C5</td>
<td><strong>Follow Concreting Practices for Adverse Weather Conditions</strong> C6</td>
</tr>
<tr>
<td><strong>Design and Control Concrete Mixtures</strong></td>
<td><strong>Use Fire Safety Procedures</strong> A4</td>
<td><strong>Use Ladders, Scaffolds and Elevating Work Platforms</strong> A5</td>
<td><strong>Use Concrete Curing and Sealing Procedures</strong> C5</td>
<td><strong>Follow Concreting Practices for Adverse Weather Conditions</strong> C6</td>
</tr>
<tr>
<td><strong>Describe Quality Control Tests</strong> C7</td>
<td><strong>Use Fire Safety Procedures</strong> A4</td>
<td><strong>Use Ladders, Scaffolds and Elevating Work Platforms</strong> A5</td>
<td><strong>Use Concrete Curing and Sealing Procedures</strong> C5</td>
<td><strong>Follow Concreting Practices for Adverse Weather Conditions</strong> C6</td>
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<tr>
<td><strong>Place and Finish Concrete</strong></td>
<td><strong>Use Fire Safety Procedures</strong> A4</td>
<td><strong>Use Ladders, Scaffolds and Elevating Work Platforms</strong> A5</td>
<td><strong>Use Concrete Curing and Sealing Procedures</strong> C5</td>
<td><strong>Follow Concreting Practices for Adverse Weather Conditions</strong> C6</td>
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<tr>
<td><strong>Achieve Architectural Finishes</strong> D7</td>
<td><strong>Use Fire Safety Procedures</strong> A4</td>
<td><strong>Use Ladders, Scaffolds and Elevating Work Platforms</strong> A5</td>
<td><strong>Use Concrete Curing and Sealing Procedures</strong> C5</td>
<td><strong>Follow Concreting Practices for Adverse Weather Conditions</strong> C6</td>
</tr>
</tbody>
</table>

The number in a cell below each competency is the level of technical training in which the competency is covered.
Program Overview

CONCRETE FINISHER (CEMENT MASON) INDUSTRY TRAINING MODEL

Apprenticeship Pathway

This graphic provides an overview of the Concrete Finisher (Cement Mason) apprenticeship pathway.

C of Q = Certificate of Qualification
C of A = Certificate of Apprenticeship
C of C = Certificate of Completion
WBT = Work-Based Training

RECOMMENDATION FOR CERTIFICATION

Cement Mason Level 3
Technical Training: 120 hours (4 weeks*)
Work-Based Training: 3,240 hours total
Interprovincial Red Seal Exam

Cement Mason Level 2
Technical Training: 120 hours (4 weeks*)
Work-Based Training: Accumulate hours
ITA Standardized Written Exam

Cement Mason Level 1
Technical Training: 120 hours (4 weeks*)
Work-Based Training: Accumulate hours
ITA Standardized Written Exam

* Suggested duration based on 30-hour week

CROSS-PROGRAM CREDITS
Individuals who hold the credentials listed below are entitled to receive partial credit toward the completion requirements of this program

None
## Program Overview

Suggested Schedule of Time Allotment for Concrete Finisher (Cement Mason)

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Theory %</th>
<th>Practical %</th>
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<tr>
<td><strong>Line A</strong> Apply Safe Work Practices</td>
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<tr>
<td>A-1 Apply Shop and Site Safety Practices</td>
<td>20</td>
<td>16</td>
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<tr>
<td>A-2 Apply Personal Safety Practices</td>
<td>20</td>
<td>18</td>
<td>18</td>
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<tr>
<td>A-3 Use Workplace Hazardous Materials Information System (WHMIS)</td>
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<tr>
<td>A-4 Use Fire Safety Procedures</td>
<td>20</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>A-5 Use Ladders, Scaffolds and Elevating Work Platforms</td>
<td>20</td>
<td>24</td>
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<tr>
<td><strong>Line B</strong> Use Tools And Equipment</td>
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<tr>
<td>B-1 Use Hand Tools</td>
<td>100</td>
<td>26</td>
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<tr>
<td><strong>Line C</strong> Design and Control Concrete Mixtures</td>
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<td>C-1 Select and Use Cement</td>
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<td>C-2 Select and Use Aggregate</td>
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<tr>
<td>C-3 Select and Use Admixtures</td>
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<td>C-4 Batch and Convey Concrete</td>
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<td>C-5 Use Concrete Curing and Sealing Procedures</td>
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<td>C-6 Follow Concreting Practices for Adverse Weather Conditions</td>
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<td>C-7 Describe Quality Control Tests</td>
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<tr>
<td><strong>Line D</strong> Place and Finish Concrete</td>
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<td>D-1 Place and Finish Concrete With Hand Tools</td>
<td>100</td>
<td>✔️</td>
<td>35</td>
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<tr>
<td><strong>Line G</strong> Plan and Organize Work</td>
<td></td>
<td></td>
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<tr>
<td>G-1 Use Communication Skills</td>
<td>100</td>
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The composite level mark is to consist of 50% Theory and 50% Practical. The final exam counts for 20% of the final mark.
### SUGGESTED SCHEDULE OF TIME ALLOTMENT FOR CONCRETE FINISHER (CEMENT MASON)

<table>
<thead>
<tr>
<th>Level 2</th>
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<tbody>
<tr>
<td><strong>Line B</strong></td>
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</tr>
<tr>
<td>Use Tools and Equipment</td>
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<tr>
<td>Use Power Tools and Equipment</td>
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<tr>
<td><strong>Line D</strong></td>
<td></td>
<td></td>
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<tr>
<td>Place and Finish Concrete</td>
<td>55%</td>
<td>75%</td>
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<td>D-2 Explain Construction Practices</td>
<td>10%</td>
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<td>D-3 Place and Finish Horizontal Flatwork Using Power Equipment and Hand Tools</td>
<td>40%</td>
<td>✓</td>
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<tr>
<td>D-4 Place and Finish Vertical Concrete</td>
<td>10%</td>
<td></td>
<td>44</td>
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<tr>
<td>D-5 Perform Roadwork</td>
<td>30%</td>
<td>✓</td>
<td>46</td>
</tr>
<tr>
<td>D-6 Strip Formwork for Finishing Procedures</td>
<td>10%</td>
<td></td>
<td>47</td>
</tr>
<tr>
<td><strong>Line E</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repair Concrete</td>
<td>35%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>E-1 Repair Concrete Surface Defects</td>
<td>35%</td>
<td>✓</td>
<td>48</td>
</tr>
<tr>
<td>E-2 Repair Internal Concrete Defects</td>
<td>32%</td>
<td>✓</td>
<td>50</td>
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<tr>
<td>E-3 Install Concrete Toppings and Self Levelling Underlayments</td>
<td>33%</td>
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</table>

**Total Percentage for Level 2**

100%  

The composite level mark is to consist of 35% Theory and 65% Practical. The final exam counts for 20% of the final mark.
## SUGGESTED SCHEDULE OF TIME ALLOTMENT FOR
## CONCRETE FINISHER (CEMENT MASON)

<table>
<thead>
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<th>LEVEL 3</th>
<th>Theory %</th>
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<tr>
<td>Line D Place and Finish Concrete</td>
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<td>53</td>
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<td>D-5 Perform Roadwork</td>
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<td></td>
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<tr>
<td>D-7 Achieve Architectural Finishes</td>
<td>70</td>
<td>✔</td>
<td>54</td>
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<tr>
<td>Line F Install Grout</td>
<td>20</td>
<td>15</td>
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<tr>
<td>F-1 Install Grout</td>
<td>80</td>
<td>✔</td>
<td></td>
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<tr>
<td>F-2 Perform Quality Control Tests</td>
<td>20</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>Line G Plan and Organize Work</td>
<td>15</td>
<td>15</td>
<td>59</td>
</tr>
<tr>
<td>G-2 Read Prints, Specifications and Industry Standards</td>
<td>70</td>
<td>✔</td>
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<tr>
<td>G-3 Plan and Supervise Projects</td>
<td>30</td>
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**Total Percentage for Level 3**

<table>
<thead>
<tr>
<th>Theory %</th>
<th>Practical %</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>100%</td>
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</tbody>
</table>

The composite level mark is to consist of 40% Theory and 60% Practical. The final exam counts for 20% of the final mark.
SECTION 3

PROGRAM CONTENT

Concrete Finisher (Cement Mason)
CONCRETE FINISHER
(CEMENT MASON)

LEVEL 1
LINE A: APPLY SAFE WORK PRACTICES

COMPETENCY: A-1 Apply Shop and Site Safety Practices

Learning Objectives:
1. The learner will be able to locate applicable sections of the WorkSafeBC Regulation used in the Concrete Finisher (Cement Mason) trade.
2. The learner will be able to apply the safe work practices used in the Concrete Finisher (Cement Mason) trade.

LEARNING TASKS

1. Explain applicable parts of the Workers Compensation Act.

   • Jurisdiction of WorkSafeBC
     - Make regulations
     - Inspect workplaces
     - Issue orders
     - Impose penalties

   • Compensation to workers and dependants

2. Describe general core requirements of the WorkSafeBC Regulation.

   • Building and equipment safety
   • Emergency preparedness
   • Preventing violence
   • Working alone
   • Ergonomics
   • Illumination and indoor air quality
   • Lunchrooms

3. Describe rights and responsibilities.

   • Employer
     - Provide a safe worksite
     - Provide training
     - Provide safety equipment
     - Perform job hazard analysis
     - Provide MSDSs
     - Reporting incidents and accidents
     - Safety meetings
     - Occupation Health and Safety Program

   • Supervisor
     - Ensure the health and safety of all workers under their direct supervision
     - Reporting incidents and accidents
     - Safety meetings

   • Worker
     - Right to receive safety training
     - Young and new worker orientation
     - Right to refuse unsafe work
     - Protection of other workers
     - Must follow WorkSafeBC Regulations
     - Right to compensation for workplace accidents
     - Reporting unsafe conditions
     - Reporting incidents and accidents
     - Safety meetings
Describe general safety hazards and precautions.

- Safety attitude
- Housekeeping
- Awareness of potential hazards of jobsite
- Hazards of loose clothing and jewellery
- Inspecting condition of tools
- Fall Protection
- Mobile equipment
- Energized power lines
- Guards and barriers
- Dust control measures
- Asbestos hazards
- Silica hazards
- Using hazardous materials and harmful substances
- Flammable and explosive hazards
- Electrical hazards
- Lockout procedures
- Entering confined spaces
- Location of emergency response items
- Personal protective equipment
- Ladders, scaffolds and aerial work platforms
- Traffic control
- Disposal of hazardous materials
  - Toxic waste
  - Volatile or reactive materials
LINE A: APPLY SAFE WORK PRACTICES

COMPETENCY: A-2 Apply Personal Safety Practices

Learning Objectives:
1. The learner will be able to select and use personal protective equipment (PPE).
2. The learner will be able to select and use fall protection systems.
3. The learner will be able to select and use respiratory protection.
4. The learner will be able to use correct lifting techniques.
5. The learner will be able to use precautions when working in a variety of weather conditions.

LEARNING TASKS CONTENT

1. Describe personal protective equipment requirements.
   - WorkSafeBC regulations
   - Fall protection
     - Fall restraint
     - Fall arrest
     - Harnesses, lanyards, lifelines
   - Safety footwear
     - CSA Standards
   - Eye protection
     - Glasses
     - Goggles
     - Face shields
   - Hearing protection
     - Hearing testing
     - Earplugs and canal caps
     - Earmuffs
     - Class/grade selection based on exposure level
   - Head protection
     - CSA and ANSI types
   - Clothing
     - High visibility
     - Fire retardant
     - Hazard/product specific
   - Hand protection
     - Gloves
     - Barrier creams
   - Skin protection
     - Protection from caustic materials
     - Preventing dermatitis
   - Knee protection

2. Use personal protective equipment.
   - Selection
   - Purpose
   - Training requirements
   - Inspection
   - Maintenance
   - Storage
3 Select and use respiratory protection.  
- Dust control measures
- Respirator types
- Protection factors
- Positive and negative seal checks
- Fit testing
- Types of respiratory illnesses
  - Acute
  - Chronic
- Filters and cartridges
- Warning signs of respirator failure
- Hazard/product specific

4 Lift and move objects safely.  
- Techniques for lifting and moving objects
  - Manual and mechanically moving and handling
  - Common signals for moving and handling materials
  - Number of people need to lift the object
  - Physical limitations
- Procedures for lifting objects
  - Bagged materials
  - Plywood
  - Planks and beams
  - Steel pipe
  - Ladders
  - Shoveling
  - Barrels and drums
  - Small pails
  - Boxes

5 Use fall protection systems.  
- Fall protection systems
- Guardrails and toeboards
- Life preservers
- Fall restraint systems
- Fall arrest
- Rope grabs and shock limiting devices
- Using safety harness, lanyard, and lifeline
- Safety equipment inspection
- Safety monitor
- Control zones

6 Follow safe work procedures for the site environment.  
- Site specific orientation
- Working in warm and hot environments
  - Preventing heat stress
  - Symptoms of heat stress
- Working in cold environments
- Lightning precautions
- Illumination for night work
**LINE A: APPLY SAFE WORK PRACTICES**

**COMPETENCY:** A-3 Use Workplace Hazardous Materials Information System (WHMIS)

**Learning Objectives:**
1. The learner will be able to describe the purpose of the (WHMIS) Regulations.
2. The learner will be able to understand the contents of Material Safety Data Sheets (MSDS).
3. The learner will be able to understand the contents of a WHMIS label.
4. The learner will be able to apply WHMIS regulations.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1 Describe Federal WHMIS legislation. | - Hazardous Product Act  
- Controlled Products Regulations  
- Ingredient Disclosure List  
- Hazardous Materials Information Review Act  
- Purpose of WHMIS  
- Responsibilities  
- Workers  
- Employers  
- Supervisors  
- Suppliers  
- Regulators |
| 2 Describe Provincial WHMIS legislation. | - Use of hazardous materials in the workplace |
| 3 Describe the key elements of WHMIS. | - Material safety data sheets (MSDSs)  
- Labelling of containers of hazardous materials  
- Worker education programs |
| 4 Describe the responsibilities of suppliers under WHMIS. | - Providing MSDSs  
- Providing supplier labels |
| 5 Describe the responsibilities of employers under WHMIS. | - Providing worker access to MSDSs  
- Work education programs in the workplace  
- Ensure proper storage and handling of materials |
| 6 Describe the responsibilities of workers. | - Understand information on MSDSs and labels  
- Informing employers of missing or illegible labels |
| 7 Describe information disclosed on a MSDS. | - Hazardous ingredients  
- Preparation information  
- Product information  
- Physical data  
- Fire or explosion  
- Reactivity data  
- Toxicological properties  
- Preventive measures  
- First-aid measures |
8 Identify symbols found on WHMIS labels and their meaning.
   - Compressed gases
   - Flammable and combustible materials
   - Oxidizing materials
   - Poisonous and infectious materials
     - Materials causing immediate and serious toxic effects
     - Materials causing other toxic effects
     - Biohazardous infectious materials
   - Corrosive materials
   - Dangerously reactive materials

9 Identify symbols on consumer product labels used in the workplace and their meaning.
   - Toxic
   - Corrosive
   - Flammable
   - Explosive

10 Apply WHMIS regulations as they apply to hazardous materials used on the jobsite.
    - Use, storage and disposal of hazardous materials
LINE A: APPLY SAFE WORK PRACTICES

COMPETENCY: A-4 Use Fire Safety Procedures

Learning Objectives:
1. The learner will be able to explain the theory of fires.
2. The learner will be able to extinguish fires.
3. The learner will be able to handle and store fuels and solvent based products.
4. The learner will be able to install and maintain temporary heating.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1. List the three components that must be present before a fire can occur. | • Fuel  
• Oxygen  
• Heat  
  – Open flame  
  – Sparks  
  – Welding and cutting processes  
  – Static discharge  
  – Electrical equipment |
| 2. Identify classes of fires Class A, B, C and D fires and extinguishing methods. | • Class A, B, C and D fires  
• Types of extinguishers  
• Welding blanket  
• Emergency fire blanket |
| 3. Describe the procedure for using a fire extinguisher. | • P.A.S.S.  
  – Pull  
  – Aim  
  – Squeeze  
  – Sweep |
| 4. Describe the considerations and steps to take prior to fighting a fire. | • Warning others  
• Phoning fire department  
• Personal method of egress |
| 5. Identify combustible and flammable materials. | • WHMIS symbols  
• Flash point  
• Ignition temperature  
• Fuels  
  – Diesel  
  – Gasoline  
  – Propane  
  – Natural gas  
• Solvents  
• Lubricants  
• Oily rags  
• Combustible metals  
• Aerosols |
6. Use preventative fire safety procedures.
   - Training requirements
   - Handling and storing
     - Flammable liquids and gases
     - Combustible materials
   - Working near electrical apparatus
   - Responsibilities
   - Pre-planning
   - Evacuation procedures
   - Hot work permit (site specific)
   - Handling and storage of flammable materials
   - Ventilation
   - Electrical wiring and equipment
   - Static electricity
   - Controlling spills
   - Storage

7. Describe the safe installation of temporary heating.
   - Propane heaters
   - Diesel heaters
   - Electric heaters
   - Exhaust
   - Fumes
   - Proximity to flammables and combustibles
   - Pilot lights
LINE A: APPLY SAFE WORK PRACTICES

COMPETENCY: A-5 Use Ladders, Scaffolds and Elevating Work Platforms

Learning Objectives:
1. The learner will be able to describe construction access equipment.
2. The learner will be able to use construction access equipment.
3. The learner will be able to build construction access equipment.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Describe temporary ramps, runways and stairs.</td>
<td>WorkSafeBC Regulations, Slopes, Guards</td>
</tr>
<tr>
<td>2 Use portable and fixed ladders.</td>
<td>WorkSafeBC Regulations, Portable ladder safety, Ladder types, Carrying, erecting, and using ladders, Job-built ladder construction, Ladder jacks</td>
</tr>
<tr>
<td>3 Describe scaffold erection procedures.</td>
<td>WorkSafeBC Regulations, Scaffold design, Construction and use, Erection, Mud sills, Members plumb and level, Stability, Guardrails and toe-boards, Scaffold planks, Work platforms, Plank support, Scaffold loads, Ladder access to scaffolds, Tagging systems</td>
</tr>
<tr>
<td>4 Erect steel frame scaffolds.</td>
<td>WorkSafeBC Regulations, Welded steel frame scaffold</td>
</tr>
<tr>
<td>5 Describe tube and clamp scaffolds.</td>
<td>WorkSafeBC Regulations, Tube and clamp components</td>
</tr>
<tr>
<td>6 Describe all-round and cup-lock scaffolds.</td>
<td>WorkSafeBC Regulations, Cup-lock components, All-round components</td>
</tr>
<tr>
<td>7 Describe swing stages and suspended power platforms.</td>
<td>WorkSafeBC Regulations, Training requirements, Types, Swing stage, Spider, Components</td>
</tr>
</tbody>
</table>
8 Describe elevating work platforms.

- WorkSafeBC Regulations
- Training requirements
- Types
  - Scissor lifts
  - Boom lifts
## LINE B: USE TOOLS AND EQUIPMENT

### Competency: B-1 Use Hand Tools

#### Learning Objectives:
1. The learner will be able to understand the types and functions of hand tools used in the Concrete Finisher (Cement Mason) trade.
2. The learner will be able to use hand tools used in the Concrete Finisher (Cement Mason) trade.
3. The learner will be able to maintain hand tools.

#### LEARNING TASKS

<table>
<thead>
<tr>
<th>Task</th>
<th>Content</th>
</tr>
</thead>
</table>
| 1 Describe types of hand tools used in the Concrete Finisher (Cement Mason) trade. | • Measuring and layout  
|                                                                      | • Cutting and fastening  
|                                                                      | • Dismantling and demolition  
|                                                                      | • Chipping and abrading |
| 2 Use measuring and layout tools.                                     | • Steel tape measure  
|                                                                      | • Levels  
|                                                                      | – Laser  
|                                                                      | – Builders  
|                                                                      | • Chalk line  
|                                                                      | • Mason’s line  
|                                                                      | • Spirit level  
|                                                                      | • Grading rod  
|                                                                      | • Importance of precise measurements  
|                                                                      | • Basic math |
| 3 Use cutting and fastening tools.                                    | • Safety  
|                                                                      | • Hand saws  
|                                                                      | • Utility knives  
|                                                                      | • Pliers  
|                                                                      | • Bolt cutters  
|                                                                      | • Claw hammers  
|                                                                      | • Tool maintenance |
| 4 Use striking and prying tools.                                      | • Safety  
|                                                                      | • Nail puller  
|                                                                      | • Sledge hammer  
|                                                                      | • Dead blow hammer  
|                                                                      | • Goose-neck bar  
|                                                                      | • Dismantling procedures  
|                                                                      | • Tool maintenance |
| 5 Use chipping hammers and abrading tools.                            | • Safety  
|                                                                      | • Cold chisel  
|                                                                      | • Toothed bush hammer  
|                                                                      | • Chipping hammer  
|                                                                      | • Rub brick  
|                                                                      | • Tool maintenance |
| 6 Select and use conveying and distributing tools.                   | • Spade  
|                                                                      | • Concrete rake/come-along  
|                                                                      | • Square-ended shovel |
7 Select and use the appropriate sizes and types of consolidating tools.
   - Rods
   - Spades
   - Screed board
   - Jitterbug

8 Select and use striking tools.
   - Aluminum screed board
   - Wooden screed board

9 Select and use floats and darbies.
   - Bull float
   - Magnesium hand float
   - Rubber float
   - Darby
   - Wood float
   - Resin float

10 Select and use cement finishing tools.
    - Trowels
    - Edgers
    - Jointers
    - Bull trowel/Fresno
    - Sweep trowels
LINE C: DESIGN AND CONTROL CONCRETE MIXTURES

Competency: C-1 Select and Use Cement

Learning Objectives:
1. The learner will be able to identify the types of Portland cements, their characteristics and applications.
2. The learner will be able to determine the amount of water to be added to concrete mixtures.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 History of cement production.</td>
<td>• Origin</td>
</tr>
<tr>
<td></td>
<td>• Evolution</td>
</tr>
<tr>
<td></td>
<td>• Impact on humanity</td>
</tr>
<tr>
<td></td>
<td>• Environmental impact</td>
</tr>
<tr>
<td>2 Describe Portland cements.</td>
<td>• Production</td>
</tr>
<tr>
<td></td>
<td>• Types</td>
</tr>
<tr>
<td></td>
<td>• Characteristics</td>
</tr>
<tr>
<td></td>
<td>• Applications</td>
</tr>
<tr>
<td>3 Describe common types of concrete and applications.</td>
<td>• Types</td>
</tr>
<tr>
<td></td>
<td>– Regular weight</td>
</tr>
<tr>
<td></td>
<td>– Light weight</td>
</tr>
<tr>
<td></td>
<td>– Self-consolidating</td>
</tr>
<tr>
<td></td>
<td>– Cellular</td>
</tr>
<tr>
<td></td>
<td>– Pervious</td>
</tr>
<tr>
<td></td>
<td>– Pervious</td>
</tr>
<tr>
<td></td>
<td>– Roller compact</td>
</tr>
<tr>
<td></td>
<td>– Non-shrink concrete</td>
</tr>
<tr>
<td></td>
<td>• Functions</td>
</tr>
<tr>
<td></td>
<td>• Properties</td>
</tr>
<tr>
<td></td>
<td>• Applications</td>
</tr>
<tr>
<td></td>
<td>– Industrial</td>
</tr>
<tr>
<td></td>
<td>– Commercial/Institutional</td>
</tr>
<tr>
<td></td>
<td>– Residential</td>
</tr>
<tr>
<td></td>
<td>• Advantages and disadvantages</td>
</tr>
<tr>
<td>4 Determine appropriate water/cement ratios and concrete mix design.</td>
<td>• Purpose and effect of mix water</td>
</tr>
<tr>
<td></td>
<td>• Importance of the water/cement ratio</td>
</tr>
<tr>
<td></td>
<td>• Hydration</td>
</tr>
<tr>
<td></td>
<td>• Mixing procedures</td>
</tr>
<tr>
<td></td>
<td>• Problems caused by excessive water in the mix</td>
</tr>
</tbody>
</table>
## LEARNING TASKS CONTENT

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1 Identify types of aggregates. | • Types  
  - Characteristics  
  - Advantages and disadvantages  
  • Sizes  
  • Shapes |
| 2 Select appropriate aggregates. | • Importance of gradation  
  • Desirable properties for specific applications  
  • Aggregate effects on concrete quality  
  • Tests to determine silt and clay content |
LINE C: DESIGN AND CONTROL CONCRETE MIXTURES

Competency: C-3 Select and Use Admixtures

Learning Objectives:
1. The learner will be able to identify types of admixtures.
2. The learner will be able to select and use admixtures for various applications.

LEARNING TASKS

1. Identify types of admixtures.
   - Types
     - Accelerators
     - Retarders
     - Air entrainers
     - Corrosion inhibitors
     - Integral hardeners
     - Water reducers
     - Fly ash
     - Silica fume
     - Blast furnace slag
     - Integral colours
     - Fibres
   - Characteristics
   - Advantages and disadvantages

2. Describe the selection and use of admixtures.
   - Technical and economic advantages of admixtures
   - Admixtures for specific situations
   - Preliminary tests
   - Quantity to be used
   - Procedures for adding admixtures to concrete mixtures
   - Manufacturer’s instructions
LINE C: DESIGN AND CONTROL CONCRETE MIXTURES

Competency: C-4 Batch and Convey Concrete

Learning Objectives:
1. The learner will be able to understand batching and conveying of concrete.
2. The learner will be able to understand the time restrictions of concrete.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Explain the time limitations of concrete.</td>
<td>• Time batched</td>
</tr>
<tr>
<td></td>
<td>• Admixtures</td>
</tr>
<tr>
<td></td>
<td>• Properties of mix design</td>
</tr>
<tr>
<td></td>
<td>• Weather</td>
</tr>
<tr>
<td>2  Batch concrete.</td>
<td>• Proportioning</td>
</tr>
<tr>
<td></td>
<td>– Aggregates</td>
</tr>
<tr>
<td></td>
<td>– Portland cement and water</td>
</tr>
<tr>
<td></td>
<td>• Batching methods</td>
</tr>
<tr>
<td></td>
<td>– Redi-mix plants</td>
</tr>
<tr>
<td></td>
<td>– Portable redi-mix plants</td>
</tr>
<tr>
<td></td>
<td>– Small mechanical mixer</td>
</tr>
<tr>
<td></td>
<td>– Hand mix</td>
</tr>
<tr>
<td>3  Convey concrete.</td>
<td>• Equipment</td>
</tr>
<tr>
<td></td>
<td>– Redi-mix truck</td>
</tr>
<tr>
<td></td>
<td>– Dump truck</td>
</tr>
<tr>
<td></td>
<td>– Concrete pump</td>
</tr>
<tr>
<td></td>
<td>– Crane and bucket</td>
</tr>
<tr>
<td></td>
<td>– Power buggy</td>
</tr>
<tr>
<td></td>
<td>– Wheel barrow</td>
</tr>
<tr>
<td></td>
<td>– Helicopter</td>
</tr>
<tr>
<td></td>
<td>– Conveyor belt</td>
</tr>
</tbody>
</table>
LINE C: DESIGN AND CONTROL CONCRETE MIXTURES

Competency: C-5 Use Concrete Curing and Sealing Procedures

Learning Objectives:
1. The learner will be able to explain the purpose of concrete curing and sealing.
2. The learner will be able to select the proper cure for given situations.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1 Explain the process of curing concrete. | ● Cycle of cement hydration  
 ● Maintaining favourable temperature and humidity |
| 2 Select and use sealers. | ● Applications  
 ● Safety precautions  
 ● Types  
   -- Acrylic  
   -- Epoxy  
   -- Urethane  
   -- Cure and seal |
| 3 Explain the purpose of curing concrete. | ● Preventing shrinkage and curling |
| 4 Describe the main curing methods. | ● PPE requirements  
 ● Safety precautions  
 ● Polyethylene sheeting  
 ● Specialty curing paper  
 ● Waterproof paper  
 ● Liquid membrane  
   -- Fugitive dye  
   -- Dissipating dye  
 ● Wet burlap  
 ● Fogging  
 ● Spraying  
   -- Spray can  
   -- Mechanical  
   -- Spray patterns  
 ● Ponding |
| 5 Select and use the appropriate cure. | ● With water  
 ● Without water  
 ● Importance of proper cure  
 ● Consequences of improper curing |
LINE C: DESIGN AND CONTROL CONCRETE MIXTURES

Competency: C-6 Follow Concreting Practices for Adverse Weather Conditions

Learning Objectives:
1. The learner will be able to follow hot and cold weather concrete procedures.
2. The learner will be able to monitor concrete while it cures.

LEARNING TASKS

1. Describe how weather affects concrete.
   - Sunlight/shade
     - Inconsistent areas of setting
   - Hot
     - Increases the rate of hydration
     - Use of evaporation retarders
   - Cold
     - Decreases or stops the rate of hydration
   - Windy
     - Varies the rate of surface evaporation
   - Humidity
     - Affects setting time
   - Rain
     - Weakens the surface
     - Colour variations

2. Follow hot weather concreting procedures to ensure proper curing.
   - Monitoring
   - Special measures
   - Night work

3. Follow cold weather concreting procedures to ensure proper curing.
   - Monitoring
   - Special measures
LINE C: DESIGN AND CONTROL CONCRETE MIXTURES

Competency: C-7 Describe Quality Control Tests

Learning Objectives:
1. The learner will be able to describe quality control tests.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe quality control tests.</td>
<td>• Purpose and importance of quality control tests</td>
</tr>
<tr>
<td></td>
<td>• Types of tests</td>
</tr>
<tr>
<td></td>
<td>- Slump</td>
</tr>
<tr>
<td></td>
<td>- Cylinder</td>
</tr>
<tr>
<td></td>
<td>- Flexural</td>
</tr>
<tr>
<td></td>
<td>- Air test using air indicator</td>
</tr>
<tr>
<td></td>
<td>- Air test using volumetric method</td>
</tr>
<tr>
<td></td>
<td>- Temperature</td>
</tr>
</tbody>
</table>
LINE D: PLACE AND FINISH CONCRETE

Competency: D-1 Place and Finish Concrete With Hand Tools

Learning Objectives:
1. The learner will perform sub-base preparation and compaction.
2. The learner will place and finish concrete with hand tools.
3. The learner will be able to describe types of joints.

LEARNING TASKS

1. Prepare sub-base and compact.
   - Grading the sub-base to uniform and correct elevation and thickness
   - Slope calculations
   - Compacting to specifications
   - Installing vapour barriers when required
   - Reinforcing
     - Rebar
     - Wire mesh
     - Fibre mesh

2. Describe types of concrete placement.
   - Slab on ground
   - Suspended slab
   - Vertical formwork
   - Slip form
   - Shotcrete walls

3. Establish elevations.
   - Benchmarks
   - Set screeds
   - Laser transit
   - Builder's level
   - Chalk lines
   - Stakes and string lines

   - Wheel barrow
   - Truck and chute

5. Placing concrete procedures.
   - Shoveling
   - Raking
   - Spreading
   - Consolidating concrete
   - Setting of elevations
   - Rodding off concrete to elevations
   - Float and bullfloat
Section Content
Level 1

6  Finish concrete with hand tools.
   • Edging
   • Jointing
     – Construction
       ➢ Keyed
       ➢ Doweled
     – Isolation/expansion
     – Control/contraction
       ➢ Zip strips
       ➢ Zinc strips
       ➢ Tooled
       ➢ Saw cut
   • Caulking
   • Backer rod
   • Floating
   • Hand trowelling
   • Applying specified finish

7  Cure and protect concrete.
   • According to specifications

Achievement Criteria:
Performance  The learner will build forms and place concrete to a specified finish.

Conditions  The learner will be given:
Specifications
Instruction sheet
Materials
Tools and Equipment
PPE

Criteria  The learner will score 70% or better on a rating sheet that reflects the following criteria:
Following safety procedures
Use of PPE
Selection and correct use of tools
Quality of finish
Proper sequence of forming, placing and finishing
Completed within specified time
Cleanup of work area and tools
LINE: G PLAN AND ORGANIZE WORK

Competency: G-1 Use Communication Skills

Learning Objectives:
1. The learner will be able to describe the cement mason trade.
2. The learner will be able to describe methods of communication used in the cement mason trade.
3. The learner will be able to use appropriate communication methods for completing a given task.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe the Concrete Finisher (Cement Mason) trade.</td>
<td>• History</td>
</tr>
<tr>
<td></td>
<td>• Scope</td>
</tr>
<tr>
<td></td>
<td>- Industrial</td>
</tr>
<tr>
<td></td>
<td>- Commercial</td>
</tr>
<tr>
<td></td>
<td>- Residential</td>
</tr>
<tr>
<td></td>
<td>- Historical buildings</td>
</tr>
<tr>
<td></td>
<td>• Evolution of cement masonry</td>
</tr>
<tr>
<td>2. Describe methods of communication used in the Concrete Finisher (Cement Mason) trade.</td>
<td>• Trade terminology</td>
</tr>
<tr>
<td></td>
<td>• Listening/ talking</td>
</tr>
<tr>
<td></td>
<td>• Written</td>
</tr>
<tr>
<td></td>
<td>• Hand signals</td>
</tr>
<tr>
<td></td>
<td>• Interpersonal skills</td>
</tr>
<tr>
<td>3. Understand proper use of electronic communication media.</td>
<td>• Use of:</td>
</tr>
<tr>
<td></td>
<td>- Cell phones</td>
</tr>
<tr>
<td></td>
<td>- Safety</td>
</tr>
<tr>
<td></td>
<td>- Emergency purposes</td>
</tr>
<tr>
<td></td>
<td>- Company/site policy</td>
</tr>
<tr>
<td></td>
<td>- Restricted use</td>
</tr>
<tr>
<td></td>
<td>- Two-way radios</td>
</tr>
<tr>
<td></td>
<td>- Computers</td>
</tr>
<tr>
<td>4. Recognize signage used in the Concrete Finisher (Cement Mason) trade.</td>
<td>• Men working above</td>
</tr>
<tr>
<td></td>
<td>• Tapes (yellow, red)-associated hazards</td>
</tr>
<tr>
<td>5. Use appropriate communication methods for completing a given task.</td>
<td>• Other trades</td>
</tr>
<tr>
<td></td>
<td>• Industry people</td>
</tr>
<tr>
<td></td>
<td>• Customers</td>
</tr>
<tr>
<td></td>
<td>• Public</td>
</tr>
<tr>
<td></td>
<td>• Safety authorities</td>
</tr>
<tr>
<td></td>
<td>• Suppliers and manufacturers</td>
</tr>
<tr>
<td></td>
<td>• Apprentices (mentoring)</td>
</tr>
<tr>
<td></td>
<td>• General respect for others</td>
</tr>
<tr>
<td></td>
<td>• Barriers to effective communication</td>
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<tr>
<td></td>
<td>- Body language</td>
</tr>
<tr>
<td></td>
<td>- Tone of voice</td>
</tr>
<tr>
<td></td>
<td>- Facial expression</td>
</tr>
<tr>
<td></td>
<td>- Accent/language differences</td>
</tr>
<tr>
<td></td>
<td>- Site noise</td>
</tr>
<tr>
<td></td>
<td>- PPE</td>
</tr>
</tbody>
</table>
CONCRETE FINISHER
(CEMENT MASON)

LEVEL 2
**LINE B: USE TOOLS AND EQUIPMENT**

**Competency: B-2 Use Power Tools and Equipment**

**Learning Objectives:**
1. The learner will be able to describe the use of construction power tools.
2. The learner will be able to use, adjust, and maintain construction power tools.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1 Describe the safe use of power tools. | • Safety precautions  
• Guards in place  
• PPE  
• Avoiding common injuries  
• Recognition of worn and damaged tools  
• Awareness of embedded utilities and objects  
• WorkSafeBC regulations  
• Maintenance and storage  
• Manufacturer’s recommendations |
| 2 Use electrical tools. | • Ground fault interrupters (GFCIs)  
• Grounding  
• Double insulated  
• Correct gauge extension cords  
• Types  
• Mixers  
• Grinders  
• Drills  
• Saws  
• Coring/cutting  
• Battery powered tools |
| 3 Use and maintain compressors. | • Air pressure  
• Securing hose connections  
• Avoiding damage of hoses  
• Size and lengths of hoses  
• Oiling  
• Condition of hoses and fittings  
• Safety precautions  
• Fuel, oil and coolant monitoring |
| 4 Use and maintain pneumatic tools. | • Pneumatic tools  
• Drills  
• Saws  
• Pneumatic hammers  
• Vibrators  
• Scarifiers  
• Grinders  
• Scabblers  
• Applications  
• Adjustments  
• Safety precautions  
• Operating procedures |
5 Use and maintain gas powered equipment.
   - Gas/diesel powered equipment
     - Pressure washers
     - Generators
     - Power trowels
     - Scarifiers
     - Grinders
     - Concrete saws
     - Vibrating screeds
     - Vibrators
   - Operation of 2-stroke and 4-stroke cycle engines
   - Applications
   - Safety precautions
   - Operating procedures

6 Use and maintain hydraulic tools.
   - Hydraulic tools
     - Roller screeds
     - Wall saws
     - Power trowels
     - Coring
   - Applications
   - Safety precautions
   - Operating procedures

7 Describe the use of powder actuated fasteners.
   - Applications
   - Safety precautions
   - Training requirements
### LINE D: PLACE AND FINISH CONCRETE

**Competency:** D-2 Explain Construction Practices

**Learning Objectives:**
1. The learner will be able to explain construction practices relevant to the cement mason trade.

#### LEARNING TASKS

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Explain construction practices relevant to the cement mason trade.</td>
<td>• Slab on ground construction</td>
</tr>
<tr>
<td></td>
<td>• Suspended slab construction</td>
</tr>
<tr>
<td></td>
<td>• Q-deck construction</td>
</tr>
<tr>
<td></td>
<td>• Concrete high rise construction</td>
</tr>
<tr>
<td></td>
<td>• Tilt-up construction</td>
</tr>
<tr>
<td></td>
<td>• Slip form construction</td>
</tr>
<tr>
<td></td>
<td>• Slip forms for silos</td>
</tr>
<tr>
<td></td>
<td>• Bridge construction</td>
</tr>
<tr>
<td></td>
<td>• Tunnel construction</td>
</tr>
<tr>
<td></td>
<td>• Pre-cast construction</td>
</tr>
<tr>
<td></td>
<td>• Dam construction</td>
</tr>
<tr>
<td></td>
<td>• Segmental</td>
</tr>
</tbody>
</table>
**LINE D: PLACE AND FINISH CONCRETE**

**Competency:** D-3  Place and Finish Horizontal Flatwork Using Power Equipment and Hand Tools

**Learning Objectives:**
1. The learner will be able to place and finish horizontal concrete using power equipment and hand tools.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1  Prepare for concrete placing and finishing. | • Tools and equipment required  
• Selecting and aligning placing equipment  
• Setting up elevation/screeds if applicable  
  – GPS  
  – Builder’s level  
  – Laser level  
  – Set screeds  
  – Stakes and string lines |
| 2  Describe the functions, applications and principles of conveying equipment. | • Crane and bucket  
• Concrete truck and chute  
• Concrete conveyors  
• Power buggies  
• Boom pumps  
• Line pumps  
• Placing booms  
• Wheelbarrows |
| 3  Place concrete. | • Distribution of concrete  
• Avoiding segregation and cold joints |
| 4  Consolidate concrete. | • Spading  
• Vibrating  
• Jitterbugging |
| 5  Strike off concrete. | • Rodding off according to elevations  
• Vibra screed  
• Operating screeding equipment  
  – Laser  
  – Power/Truss  
  – Roller |
| 6  Use floating/trowelling equipment. | • Singles/walk-behinds  
• Double ride-ons  
• Triples ride-ons  
• Types of attachments  
  – Pans  
  – Float blades  
  – Combination blades  
  – Trowel blades |
Section Content
Level 2

7 Install a high tolerance slab.
   - Definition
   - Special methods of placement
   - Low slump
   - Skill level required
   - Frequent rechecking of elevation and flatness
   - Restraightening when required
     - Highway straight edge
   - Curing requirements
   - Protection of surface

8 Apply surface hardeners
   - Applications
     - Integral
     - Broadcast mechanically
     - Broadcast by hand

Achievement Criteria:
Performance  The learner will demonstrate the safe and competent operation of power trowels and power screeds.

Conditions  The learner will be given:
   Instruction sheet
   Tools and Equipment
   PPE

Criteria  The learner will score 70% or better on a rating sheet that reflects the following criteria:
   Following safety procedures
   Maintenance inspection of tools and equipment
   Use of PPE
   Correct use of tools and equipment
   Cleanup of work area and tools
**LINE D: PLACE AND FINISH CONCRETE**

**Competency:** D-4 Place and Finish Vertical Concrete

**Learning Objectives:**
1. The learner will be able to place and finish vertical concrete using power equipment and hand tools.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1 Describe types of vertical formwork. | • Walls  
• Columns  
• Slipform  
• Shotcrete  
• Silos |
| 2 Describe formwork systems. | • Recognition of sound formwork  
• Snap ties  
• Cam locks  
• Tie rods/taper ties  
• Peri system  
• Gang forms  
• Steel forms  
• Sono tubes  
• Slip form systems |
| 3 Place concrete in vertical formwork. | • Installing concrete and distributing at recommended pour rates  
• Mix design  
• Slump  
• Consolidating  
• Striking and finishing to specification |
| 4 Cure concrete. | • Weather conditions  
• Specifications |
| 5 Use slipforms. | • Applications  
• Mix design  
• Slump  
• Purpose  
  − Continuous pour to eliminate construction joints  
  − Cost effectiveness  
  − Productivity  
• Curing requirements  
• Protection of surface |
| 6 Place shotcrete. | • Specialized applications  
  − Restrictive work space  
  − Wall construction  
• Curing requirements  
• Protection of surface |
7. Place stairs.

- Installing concrete and distributing at recommended pour rates
- Mix design
- Slump
- Consolidating
- Striking and finishing to specification
- Curing requirements
- Protection of surface
LINE D: PLACE AND FINISH CONCRETE

Competency: D-5 Perform Roadwork

Learning Objectives:
1. The learner will be able to place and finish curb and gutters using hand form construction.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1. Layout and construct forms for curb and gutters. | • Selecting form material  
| | - Steel  
| | - Plywood  
| | - Plastic  
| | • Setting elevations  
| | - String line  
| | - Existing curb  
| | • Setting forms to specifications  
| | • Layout of isolation joints  
| | • Setting of catch basins and other objects in curb  
| | • Lay out of letdowns  
| 2. Place curb and gutters. | • Tools and equipment  
| | • Desired slump  
| | • Place, consolidate and finish to specifications  
| | • Curing requirements  
| | • Protection of surface  

Achievement Criteria:
Performance: The learner will place and finish curb and gutters using hand form construction.
Conditions: The learner will be given:
- Specifications  
- Instruction sheet  
- Material  
- Tools and equipment  
- PPE  
Criteria: The learner will score 70% or better on a rating sheet that reflects the following criteria:
- Following safety procedures  
- Use of PPE  
- Selection and correct use of tools  
- Proper sequence timing  
- Quality of finish  
- Cleanup of work area and tools
LINE D: PLACE AND FINISH CONCRETE
Competency: D-6 Strip Formwork for Finishing Procedures

Learning Objectives:
1. The learner will be able to strip forms for finishing procedures.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dismantle formwork.</td>
<td>- Checking concrete setting (suitable for stripping)</td>
</tr>
<tr>
<td></td>
<td>- Safety precautions</td>
</tr>
<tr>
<td></td>
<td>- Tools</td>
</tr>
<tr>
<td>2. Maintain form material.</td>
<td>- Clean</td>
</tr>
<tr>
<td></td>
<td>- Repair</td>
</tr>
<tr>
<td></td>
<td>- Application of form release</td>
</tr>
<tr>
<td></td>
<td>- Form oil</td>
</tr>
<tr>
<td></td>
<td>- Lithium grease</td>
</tr>
<tr>
<td></td>
<td>- Wax</td>
</tr>
<tr>
<td></td>
<td>- Environmentally safe products</td>
</tr>
<tr>
<td></td>
<td>- Remove nails</td>
</tr>
</tbody>
</table>
LINE E: REPAIR CONCRETE

Competency: E-1 Repair Concrete Surface Defects

Learning Objectives:
1. The learner will be able to explain types of concrete surface defects and remedies.
2. The learner will be able to repair surface concrete defects.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1 Recognize concrete surface defects and the causes. | • Crazing  
• Dusting  
• Scaling  
• Spalling  
• Cracking  
• Blistering  
• Bugholes  
• Pitting  
• Popouts  
• Curling  
• Blowouts  
• Efflorescence  
• Delamination |
| 2 Prepare surface for repair. | • Abrading  
• Chipping  
• Degreasing  
• Steam cleaning  
• Sand blasting  
• Grinding  
• Cleaning  
• Measuring substrate moisture transmission  
  - Calcium chloride moisture test  
• Pre-soaking to Surface Saturated dry (SSD) state when required  
• Bonding agent application  
  - Latex  
  - Cementitious slurry  
  - Epoxy |
| 3 Use methods to repair concrete surface defects. | • Grinding  
• Chipping  
• Scarifying  
• Water blasting  
• Patching  
• Parging/sacking  
• Patch  
• Dry pack  
• Formed repair |
Achievement Criteria:

Performance  The learner will assess and repair concrete surface defects.

Conditions  The learner will be given:
- Instruction sheet
- Material
- Tools and equipment
- PPE

Criteria  The learner will score 70% or better on a rating sheet that reflects the following criteria:
- Following safety procedures
- Use of PPE
- Proper surface preparation
- Quality of finish
- Completed within specified time
LINE E: REPAIR CONCRETE

Competency: E-2 Repair Internal Concrete Defects

Learning Objectives:
1. The learner will be able to recognize and repair internal concrete defects.

LEARNING TASKS

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Recognize internal concrete defects.</td>
</tr>
<tr>
<td>2</td>
<td>Use methods to repair internal concrete defects.</td>
</tr>
</tbody>
</table>

CONTENT

- Methods of detection
  - Visual
  - Audio
  - Non-destructive
  - Destructive
- Types
  - Cracks
  - Voids
  - Honeycomb
- Epoxy injection
- Polyurethane injection
- Dry pack
- Pressure grouting
- Pour-backs
- Curing requirements
- Protection of surface

Achievement Criteria:

Performance: The learner will detect and repair concrete internal defects.

Conditions: The learner will be given:
- Instruction sheet
- Material
- Tools and equipment
- PPE

Criteria: The learner will score 70% or better on a rating sheet that reflects the following criteria:
- Following safety procedures
- Use of PPE
- Preparation of substrate
- Quality of repair
- Completed within specified time
LINE E: REPAIR CONCRETE

Competency: E-3 Install Concrete Toppings and Self Levelling Underlayments.

Learning Objectives:
1. The learner will be able to install concrete toppings and self-levelling underlayments.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1 Describe purpose of concrete resurfacing. | • Repairing surface defects  
|                                | • Levelling of floor         |
|                                | • Restoration                |
| 2 Prepare surface for concrete resurfacing. | • Abrading surface           |
|                                | • Cleaning surface           |
|                                | • Applying bonding agents    |
| 3 Install topping material.     | • Tools and equipment        |
|                                | • Mix design to specifications|
|                                | • Placing procedures         |
|                                | • Finishing requirements     |
|                                | • Curing requirements        |
|                                | • Protection of surface      |
## LINE D: PLACE AND FINISH CONCRETE

### COMPETENCY: D-5 Perform Roadwork

**Learning Objectives:**
1. The learner will be able to interpret curb and gutter prints to layout work.
2. The learner will finish an extruded curb.
3. The learner will install catch basins and control/expansion materials.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1 Interpret information found in curb and gutter prints. | • Location  
• Dimensions  
• Letdowns |
| 2 Layout and set lines. | • Layout materials  
• Set string line to elevation and offset from hub station |
| 3 Finish extruded concrete to specifications. | • Tools and equipment  
• Awareness of slump  
• Catch basins  
• Control/expansion joints  
• Let downs  
• Curing requirements  
• Protection of surface |

**Achievement Criteria:**

- **Performance**
  - The learner will set string line for an extruded curb.

- **Conditions**
  - The learner will be given:
    - Specifications
    - Instruction sheet
    - Material
    - Tools and equipment
    - PPE

- **Criteria**
  - The learner will score 70% or better on a rating sheet that reflects the following criteria:
    - Following safety procedures
    - Use of PPE
    - Accuracy of string line according to plans
    - Completed within specified time
LINE D: PLACE AND FINISH CONCRETE

COMPETENCY: D-7 Achieve Architectural Finishes

Learning Objectives:
1. The learner will be able to describe types of architectural finishes.
2. The learner will achieve architectural finishes.

LEARNING TASKS

1. Describe design mix requirements.
   - Size and quantity of aggregate
   - Slump
   - Admixtures

2. Describe special architectural concrete finishes.
   - Functions and effects of architectural finishes
     - Parged
     - Sacked
     - Exposed aggregate
     - Terrazzo
       - Polished
       - Rustic
     - Colour
       - Integral
       - Dry shake
     - Decorative overlayment
     - Polished surface
     - Stained
       - Water
       - Acid
       - Dyes
     - Stamped
       - Mats
         * Rubber
         * Metal
         * Roller
       - Release agents
         * Powder
         * Liquid
     - Stencil
     - Sandblasted
     - Tyne
     - Herring bone
     - Burlap finish
     - Epoxy overlayments

3. Achieve architectural finishes.
   - Surface preparation
   - Tools and equipment
   - Specifications
   - Procedures
   - Curing requirements
   - Protection of surface
Achievement Criteria:

Performance  The learner will build forms and place concrete to a specified finish.

Conditions   The learner will be given:
Specifications
Instruction sheet
Materials
Tools and Equipment
PPE

Criteria     The learner will score 70% or better on a rating sheet that reflects the following criteria:
Following safety procedures
Use of PPE
Selection and correct use of tools
Quality of finish
Proper sequence of forming, placing and finishing
Completed within specified time
Cleanup of work area and tools
LINE F: INSTALL GROUT

COMPETENCY: F-1 Install Grout

Learning Objectives:
1. The learner will be able to identify types of grouts and applications.
2. The learner will be able to install grouts.

LEARNING TASKS

1. Identify types of grouts and their application.
   - Cementitious
     - Dry pack
     - Flowable grout
     - Polymeric grouts
     - Expanding
     - Non shrinking
   - Epoxy

2. Prepare surfaces for grout.
   - Abrading
   - Cleaning
   - Saturation when applicable
   - Bonding agent requirements
   - Manufacturer’s recommendations

3. Mix and install dry pack.
   - Mixing techniques
   - Tools and equipment
   - Consistency of grout
   - Installation
   - Curing requirements
   - Protection of surface
   - Manufacturer’s recommendations

4. Mix and install flowable grout.
   - Mixing techniques
   - Tools and equipment
   - Flow test
   - Installation
     - Strapping
     - Rodding
     - Chaining
     - Head box
     - Grout pump
   - Curing requirements
   - Protection of surface
   - Manufacturer’s recommendations
Achievement Criteria:

Performance  The learner will mix and install drypack.

Conditions  The learner will be given:
Specifications
Instruction sheet
Material
Tools and equipment
PPE

Criteria  The learner will score 70% or better on a rating sheet that reflects the following criteria:
Following safety procedures
Use of PPE
Consistency of mix
Installation
Quality of finish
Curing procedures
Completed within specified time
LINE F: INSTALL GROUT

COMPETENCY: F-2 Perform Quality Control Tests

Learning Objectives:
1. The learner will be able to explain quality control tests.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describe quality control tests.</td>
<td>• Identifying relevant specifications</td>
</tr>
<tr>
<td></td>
<td>• Flow test</td>
</tr>
<tr>
<td></td>
<td>• Cube test</td>
</tr>
<tr>
<td></td>
<td>• Pull test</td>
</tr>
<tr>
<td></td>
<td>• Density test</td>
</tr>
<tr>
<td></td>
<td>• Compression test</td>
</tr>
<tr>
<td></td>
<td>• Testing equipment</td>
</tr>
<tr>
<td></td>
<td>• Testing procedures</td>
</tr>
<tr>
<td>2. Perform flow test.</td>
<td>• Flow test cone</td>
</tr>
<tr>
<td></td>
<td>• Stop watch</td>
</tr>
</tbody>
</table>
LINE G: PLAN AND ORGANIZE WORK

COMPETENCY: G-2  Read Prints, Specifications and Industry Standards

Learning Objectives:
1. The learner will be able to interpret documents related to the concrete finisher (cement mason) trade.
2. The learner will be able to interpret prints and specifications.
3. The learner will be able to layout concrete work.
4. The learner will be able to calculate project costs.

LEARNING TASKS

1. Interpret documents related to the concrete finisher (cement mason) trade.
   - Canadian Standards Association (CSA)
   - American Concrete Institute (ACI)
   - American Society for Testing and Materials (ASTM)
   - Portland Cement Association (PCA)
   - Manufactures documentation

2. Describe lines, symbols and abbreviations used in drawings.
   - Lines
   - Symbols
   - Abbreviations

3. Describe the scales used in drawings.
   - Architect’s scale
   - Metric scale
   - Engineer’s scale

4. Describe drawing parts.
   - Title block
   - Revisions
   - Elevations
   - Schedules
   - Legends

5. Describe specifications.
   - Types and quality of materials
   - Construction procedures

6. Estimate project costs.
   - Metric system
   - Imperial system
   - Calculate area, volume and linear measurement of concrete members

7. Describe basic layout.
   - Importance of precise layout
   - Surveying and layout terms
   - Layout tools
   - Levelling methods to set batter boards, edge forms and screeds
   - Measuring tools
   - 3-4-5 calculations
8 Perform basic layout.

- Benchmarks
- Measuring and setting elevations
- Setting stakes to finish elevation
- Using hand signals
- Establishing base lines
- Establishing corners
- Erecting batter boards
- Setting edge forms
- Setting screeds

**Achievement Criteria:**

- **Performance**
  The learner will interpret prints and follow specifications for layout.

- **Conditions**
  The learner will be given:
  - Specifications
  - Instruction sheet
  - Materials
  - Tools and Equipment
  - PPE

- **Criteria**
  The learner will score 70% or better on a rating sheet that reflects the following criteria:
  - Following safety procedures
  - Use of PPE
  - Selection and correct use of tools
  - Proper sequence of forming
  - Accuracy of layout
  - Completed within specified time
  - Cleanup of work area and tools
LINE G: PLAN AND ORGANIZE WORK

COMPETENCY: G-3 Plan and Supervise Projects

Learning Objectives:
1. The learner will understand supervisory skills.

LEARNING TASKS
1. The learner will understand the skills and responsibilities required to supervise a project.

CONTENT
- Due diligence
- Management and personnel liaison
- Assessing site conditions
  - Site problems
  - Location of onsite services
  - Optimum site conditions
- Scheduling
- Determining crew composition
- Cost control measures
- Public relations
- Interpersonal skills
- Overseeing the work of employees
- Knowledge of roles and duties of foreman
- Knowledge of roles and duties of certified inspectors
- Ensuring correct type and amount of materials are delivered
- Ensuring tools and equipment in good working order are on hand
- Ensuring deficiencies are corrected
- Maintaining records and reports
- Performing quality control
- Storage and handling of material, tools and equipment
SECTION 4

FACILITY REQUIREMENTS AND EXPERIENCE REQUIREMENTS
FACILITY REQUIREMENTS

Classroom Areas

- Comfortable seating and tables suitable for learning
- Compliance with the local and national fire code and occupational safety requirements
- Overhead and multimedia projectors with a projection screen
- 700 square feet classroom space per class of 16 students
- Whiteboard with marking pens and erasers
- Lighting controls to allow easy visibility of the projection screen while allowing students to take notes
- Heating/Air conditioning for comfort all year round
- In-room temperature control to ensure comfortable room temperature
- Acoustics in the room must allow audibility of the instructor
- Library complete with reference material for instructor use

Shop Areas

- 3000 square feet of workshop space per class of 16 students with a minimum ceiling height of 16 feet. This includes space for a tool crib
- 2000 square feet exterior material storage area including practical training area
- Adequate lighting and lighting control
- Ventilation as per WorkSafeBC standards
- Refuse and recycling bins for used shop materials
- First-aid facilities

Student Facilities

- Adequate lunch room as per WorkSafeBC requirements
- Adequate washroom facilities as per WorkSafeBC requirements
- Personal storage lockers

Instructor’s Office Space

- Desk and filing space
- Computer
### Section 4

#### TOOLS AND EQUIPMENT

**Personal Protective Equipment**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrier creams</td>
<td>High-visibility vest</td>
</tr>
<tr>
<td>Dust masks</td>
<td>Gloves</td>
</tr>
<tr>
<td>Half face respirators</td>
<td>Hard hats</td>
</tr>
<tr>
<td>Disposable coveralls</td>
<td>Hearing protection</td>
</tr>
<tr>
<td>Face shield</td>
<td>Knee boards and pads</td>
</tr>
<tr>
<td>Fall arrest equipment</td>
<td>Safety glasses</td>
</tr>
<tr>
<td>First aid kit</td>
<td>Safety goggles</td>
</tr>
</tbody>
</table>

**Hand Tools**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backing rod installation tool</td>
<td>Mule (dozer)</td>
</tr>
<tr>
<td>Broom</td>
<td>Pointer trowel</td>
</tr>
<tr>
<td>Brooms</td>
<td>Pry bar</td>
</tr>
<tr>
<td>Buckets</td>
<td>Rakes</td>
</tr>
<tr>
<td>Bull float</td>
<td>Roller bug</td>
</tr>
<tr>
<td>Caulking gun</td>
<td>Round nosed shovel</td>
</tr>
<tr>
<td>Chipping hammer</td>
<td>Rubbing stone</td>
</tr>
<tr>
<td>Claw hammer</td>
<td>Scraper</td>
</tr>
<tr>
<td>Cold chisels</td>
<td>Sledge hammer</td>
</tr>
<tr>
<td>Concrete rake</td>
<td>Socket set</td>
</tr>
<tr>
<td>Cove base tool</td>
<td>Spiked roller</td>
</tr>
<tr>
<td>Crowbar</td>
<td>Sponge/rubber float</td>
</tr>
<tr>
<td>Darby</td>
<td>Sprayers</td>
</tr>
<tr>
<td>Edger</td>
<td>Square nose shovel</td>
</tr>
<tr>
<td>Epoxy injection gun</td>
<td>Squeegee</td>
</tr>
<tr>
<td>File</td>
<td>Stamp rollers</td>
</tr>
<tr>
<td>Fresno trowel</td>
<td>Stamping tool</td>
</tr>
<tr>
<td>Hand brushes</td>
<td>Stamps</td>
</tr>
<tr>
<td>Hand saw</td>
<td>Two pound hammer</td>
</tr>
<tr>
<td>Hand stone (grinder)</td>
<td>Tyning tool</td>
</tr>
<tr>
<td>Hand trowels</td>
<td>Utility knife</td>
</tr>
<tr>
<td>Hand trowels</td>
<td>Water brush</td>
</tr>
<tr>
<td>Handled border edger</td>
<td>Water hose</td>
</tr>
<tr>
<td>Highway straightedge</td>
<td>Wheelbarrow</td>
</tr>
<tr>
<td>Jitter bug tamper</td>
<td>Wood bull float</td>
</tr>
<tr>
<td>Jointer</td>
<td>Wood float</td>
</tr>
</tbody>
</table>
Section 4

Power Tools

- Chipping gun and bits
- Compaction rollers
- Compressor
- Conveyors
- Core drill and bits
- Cut-off saw
- Electric cutter
- Extension cords
- Generator
- Laser screed
- Lights
- Mechanical spreader
- Plaster mixer
- Power buggy
- Power bush hammer
- Power disk machine
- Power drill/mixer
- Power edger
- Power grinder
- Power planer
- Power saw and blades
- Power screed
- Power sprayers
- Power trowel
- Power washer
- Pressure pump
- Sand/shot blaster
- Scabbler
- Scarifier
- Specialized concrete saw
- Tamper (compaction)
- Vented heater
- Vibrators
- Wet/dry vacuum

Measuring Equipment

- Builder’s level
- Calculator
- Chalk line
- Flow cone
- Hand level
- Laser level
- Slump cone
- Square
- Straightedge
- String line
- Tape measure
- Thermometer
- Torpedo level
- Transit
FACULTY CREDENTIAL AND EXPERIENCE REQUIREMENTS

The instructor must possess:

- A BC Certificate of Qualification.
- Certificate of Qualification from another Canadian jurisdiction complete with Red Seal Endorsement.
- A minimum of 5 years' experience working in the industry as a journeyperson.

It is preferred that the instructor also possesses one or more of the following:

- An Instructors Diploma or equivalent
- A Bachelors Degree in Education
- A Masters Degree in Education
SECTION 5

REQUIRED AND RECOMMENDED RESOURCES
RECOMMENDED REFERENCES AND TEXTBOOKS

Design and Control of Concrete Mixtures
   By: Canadian Portland Cement Association
   1995 Edition

Concrete Materials and Methods of Concrete Construction
   CAN/CSA – A2.1 – 2 – 94
   By: Canadian Standards Association

Stamped Concrete
   By: Bob Harris

Concrete Overlays and Toppings
   By: Bob Harris

ACI Certification: Specialty Commercial/Industrial Concrete Flatwork Finisher

PCA: Concrete Floors on Ground
   By: Scott M. Tarr and James A. Farny

Occupational Health and Safety Regulation
   By: WorkSafeBC
Appendices
Appendix A
Assessment Guidelines
# Grading Sheet: Subject Competency and Weightings

**Program:** Concrete Finisher (Cement Mason) Apprenticeship  
**Level:** 1  
**Code:** 0030CMBL01

<table>
<thead>
<tr>
<th>Line</th>
<th>Subject Competencies</th>
<th>Theory Weighting</th>
<th>Practical Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Apply Safe Work Practices</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>B</td>
<td>Use of Tools and Equipment</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>C</td>
<td>Design and Control Concrete Mixtures</td>
<td>30%</td>
<td>0%</td>
</tr>
<tr>
<td>D</td>
<td>Place and Finish Concrete</td>
<td>35%</td>
<td>100%</td>
</tr>
<tr>
<td>G</td>
<td>Plan and Organize Work</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**In-school theory / practical subject competency weighting**  
50% / 50%

**Final in-school percentage score**  
IN-SCHOOL %

<table>
<thead>
<tr>
<th>In-school Percentage Score</th>
<th>Combined theory and practical subject competency multiplied by</th>
<th>80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Level Exam Percentage Score</td>
<td>The exam score is multiplied by</td>
<td>20%</td>
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</table>

**Final Percentage Score**  
FINAL%
## PROGRAM: IN-SCHOOL TRAINING:
### Concrete Finisher (Cement Mason) Apprenticeship LEVEL 2
### ITA DIRECT ACCESS CODE: 0030CML02

<table>
<thead>
<tr>
<th>LINE</th>
<th>SUBJECT COMPETENCIES</th>
<th>THEORY WEIGHTING</th>
<th>PRACTICAL WEIGHTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Use Tools and Equipment</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>D</td>
<td>Place and Finish Concrete</td>
<td>55%</td>
<td>75%</td>
</tr>
<tr>
<td>E</td>
<td>Repair Concrete</td>
<td>35%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**In-school theory / practical subject competency weighting**

<table>
<thead>
<tr>
<th></th>
<th>35%</th>
<th>65%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final in-school percentage score</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN-SCHOOL %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**In-school Percentage Score**
Combined theory and practical subject competency multiplied by 80%

**Standard Level Exam Percentage Score**
The exam score is multiplied by 20%

**Final Percentage Score**

<table>
<thead>
<tr>
<th></th>
<th>80%</th>
<th>20%</th>
<th>FINAL%</th>
</tr>
</thead>
</table>

Appendix A
Assessment Guidelines
## Assessment Guidelines

### Concrete Finisher (Cement Mason) Apprenticeship Level 3

**ITAD ACCESS CODE:** 0030CM03  
**IN-SCHOOL TRAINING:** Concrete Finisher (Cement Mason) Apprenticeship Level 3

<table>
<thead>
<tr>
<th>LINE</th>
<th>SUBJECT COMPETENCIES</th>
<th>THEORY WEIGHTING</th>
<th>PRACTICAL WEIGHTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Place and Finish Concrete</td>
<td>65%</td>
<td>70%</td>
</tr>
<tr>
<td>F</td>
<td>Install Grout</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>G</td>
<td>Plan and Organize Work</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**In-school theory / practical subject competency weighting**  
40%  
60%

**Final in-school percentage score**  
Apprentices must achieve a minimum 70% as the final in-school percentage score to be eligible to write the Interprovincial Red Seal.  

**All apprentices who complete Level 3 of the Concrete Finisher (Cement Mason) Apprenticeship program with a FINAL level percentage score of 70% or greater will write the Interprovincial Red Seal examination as their final assessment.**

**ITA will enter the apprentices’ Concrete Finisher (Cement Mason) Apprenticeship Interprovincial Red Seal examination percentage score in ITA Direct Access.**

**A minimum percentage score of 70% on the examination is required for a pass.**