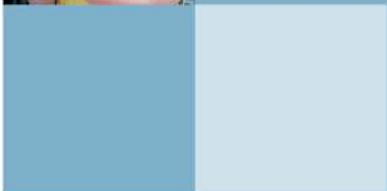
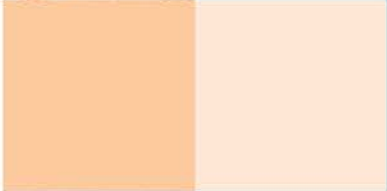


ita
YOUR TICKET.



PROGRAM OUTLINE

Concrete Finisher



The latest version of this document is available in PDF format on the ITA website
www.itabc.ca

To order printed copies of Program Outlines
or learning resources (where available)
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CONCRETE FINISHER HARMONIZED PROGRAM OUTLINE

**APPROVED BY INDUSTRY
NOVEMBER 2017**

**BASED ON
RSOS 2017**

**Developed by
Industry Training Authority
Province of British Columbia**



TABLE OF CONTENTS

Section 1 INTRODUCTION.....	3
Foreword.....	4
Acknowledgements.....	5
How to Use this Document.....	6
Section 2 PROGRAM OVERVIEW	8
Program Credentialing Model.....	9
Occupational Analysis Chart.....	10
Training Topics and Suggested Time Allocation: Level 1	14
Training Topics and Suggested Time Allocation: Level 2	16
Section 3 PROGRAM CONTENT	18
Level 1 Concrete Finisher.....	19
Level 2 Concrete Finisher.....	63
Section 4 ASSESSMENT GUIDELINES	113
Assessment Guidelines – Level 1	114
Assessment Guidelines – Level 2.....	116
Section 5 TRAINING PROVIDER STANDARDS.....	117
Facility Requirements.....	118
Tools and Equipment.....	119
Reference Materials	121
Instructor Requirements	122
Appendices.....	123
Appendix A Glossary of Acronyms.....	124
Appendix B Previous Contributors	125



Section 1

INTRODUCTION

Concrete Finisher



Foreword

This Concrete Finisher 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 the 2017 Red Seal Occupational Standard (RSOS) and was developed by British Columbia industry and instructor subject matter experts. This Program Outline will form the basis for further updating of the British Columbia Concrete Finisher Program by the Industry Training Authority (ITA).

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.

Competencies are to be evaluated through written exams and practical assessments. A passing grade is achieved by getting an overall mark of 70%. See the Assessment Guidelines for more details. 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 assessment. 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 measurable and that they reflect the skills spelled out in the competency as those required of a competent journey person. 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 evaluation criteria.

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

Industry and Instructor Subject Matter Experts retained to assist in the development of Program Outline content:

- Ron Adamson, Instructor, Trowel Trades Training Association
- Marcus Ebert, City of Richmond
- Dave Hill, Journeyperson Mason
- Kareen Martell, Journeyperson Mason

The Industry Training Authority would like to acknowledge the dedication and hard work of all the industry and instructor representatives appointed to identify the training requirements of the Concrete Finisher occupation.



How to Use this Document

This Program Outline has been developed for the use of individuals from several different audiences. The table below describes how each section can be used by each intended audience.

Section	Training Providers	Employers/ Sponsors	Apprentices	Challengers
Program Credentialing Model	Communicate program length and structure, and all pathways to completion	Understand the length and structure of the program	Understand the length and structure of the program, and pathway to completion	Understand challenger pathway to Certificate of Qualification
OAC	Communicate the competencies that industry has defined as representing the scope of the occupation	Understand the competencies that an apprentice is expected to demonstrate in order to achieve certification	View the competencies they will achieve as a result of program completion	Understand the competencies they must demonstrate in order to challenge the program
Training Topics and Suggested Time Allocation	Shows proportionate representation of general areas of competency (GACs) at each program level, the suggested proportion of time spent on each GAC, and percentage of time spent on theory versus practical application	Understand the scope of competencies covered in the technical training, the suggested proportion of time spent on each GAC, and the percentage of that time spent on theory versus practical application	Understand the scope of competencies covered in the technical training, the suggested proportion of time spent on each GAC, and the percentage of that time spent on theory versus practical application	Understand the relative weightings of various competencies of the occupation on which assessment is based
Program Content	Defines the objectives, learning tasks, high level content that must be covered for each competency, as well as defining observable, measureable achievement criteria for objectives with a practical component	Identifies detailed program content and performance expectations for competencies with a practical component; may be used as a checklist prior to signing a recommendation for certification (RFC) for an apprentice	Provides detailed information on program content and performance expectations for demonstrating competency	Allows individual to check program content areas against their own knowledge and performance expectations against their own skill levels



Section	Training Providers	Employers/ Sponsors	Apprentices	Challengers
Training Provider Standards	Defines the facility requirements, tools and equipment, reference materials (if any) and instructor requirements for the program	Identifies the tools and equipment an apprentice is expected to have access to; which are supplied by the training provider and which the student is expected to own	Provides information on the training facility, tools and equipment provided by the school and the student, reference materials they may be expected to acquire, and minimum qualification levels of program instructors	Identifies the tools and equipment a tradesperson is expected to be competent in using or operating; which may be used or provided in a practical assessment
Appendix – Glossary of Acronyms			Defines program specific acronyms	



Section 2

PROGRAM OVERVIEW

Concrete Finisher

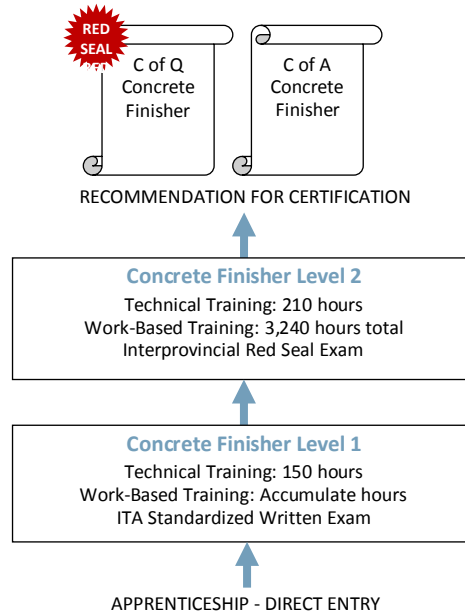


Program Credentialing Model

Apprenticeship Pathway

This graphic provides an overview of the Concrete Finisher apprenticeship pathways.

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



CROSS-PROGRAM CREDITS

Individuals who hold the credentials listed below are entitled to receive partial credit toward the completion requirements of this program
None



Occupational Analysis Chart

CONCRETE FINISHER

Occupation Description: Concrete finishers place, finish, protect and repair concrete surfaces. They work on a variety of vertical and horizontal surfaces such as concrete floors, walls, sidewalks, stairs, driveways, curbs and gutters, and overlays. They work on many types of structures such as buildings, dams, bridges and tunnels. They also texture, chip, grind and cure finished concrete work and repair and restore damaged concrete. They apply architectural finishes to concrete surfaces such as exposed aggregate, acid-stained, patterned-stamped, broomed, smooth finishes and etched concrete surfaces. They install expansion and contraction joints and install fixtures such as anchor bolts, steel plates and other embedments. They also apply membranes and other waterproofing products to concrete. Concrete finishers must possess a sound knowledge of the properties of various types of concrete mixes and how proportions, additives and curing affect concrete strength and durability. Concrete finishers should have a basic knowledge of constructing formwork, preparing subgrades and installing reinforcement.

PERFORM SAFETY-RELATED FUNCTIONS A	Use personal protective equipment (PPE) and safety equipment A1 1	Maintain safe work environment A2 1			
USE TOOLS AND EQUIPMENT B	Use hand tools B1 1	Use power tools B2 2	Use measuring equipment B3 1 2		
ORGANIZE WORK C	Use documentation C1 1 2	Determine material requirements and quantities C2 1 2	Sequence work procedures C3 1 2		
USE COMMUNICATION AND MENTORING TECHNIQUES D	Use communication techniques D1 1 2	Use mentoring techniques D2 2			

HARMONIZED PROGRAM OUTLINE Program Overview



PREPARE SITE E	Inspect site E1 1 2	Prepare sub-grade and elevations E2 1 2			
USE FORMWORK F	Construct concrete formwork F1 1 2	Install reinforcements F2 1 2	Inspect formwork and reinforcement F3 1 2	Install construction, isolation and expansion joints F4 1	Remove forms F5 1 2
PLACE CONCRETE G	Transport concrete on site G1 1 2	Spread concrete G2 1	Consolidate concrete G3 1 2	Place concrete in vertical formwork G4 2	
LEVEL CONCRETE H	Establish elevation H1 1 2	Screed concrete H2 1 2	Bull float concrete H3 1		
FLOAT CONCRETE I	Float concrete by hand I1 1	Float concrete by machine I2 2			
HAND TOOL CONCRETE J	Edge perimeter of slab J1 1	Finish extruded concrete surfaces J2 2	Tool contraction joints J3 1		



TROWEL CONCRETE <div style="text-align: right;">K</div>	Trowel concrete by hand <div style="text-align: right;">K1</div> 1	Trowel concrete by machine <div style="text-align: right;">K2</div> 2			
APPLY SURFACE TREATMENTS TO CONCRETE <div style="text-align: right;">L</div>	Apply dry shake aggregate surface hardeners <div style="text-align: right;">L1</div> 2	Apply exposed aggregate finish <div style="text-align: right;">L2</div> 2	Texture concrete surface <div style="text-align: right;">L3</div> 2	Apply stamped concrete surface finish <div style="text-align: right;">L4</div> 2	Apply evaporation reducers <div style="text-align: right;">L5</div> 2
CURE CONCRETE <div style="text-align: right;">M</div>	Wet-cure concrete <div style="text-align: right;">M1</div> 1	Chemical cure concrete <div style="text-align: right;">M2</div> 1			
CREATE CONTRACTION JOINTS <div style="text-align: right;">N</div>	Saw cut contraction joints <div style="text-align: right;">N1</div> 1	Fill joints <div style="text-align: right;">N2</div> 1			
PROTECT CONCRETE <div style="text-align: right;">O</div>	Protect plastic concrete <div style="text-align: right;">O1</div> 1	Protect hardened concrete <div style="text-align: right;">O2</div> 1			
REPAIR AND RESTORE CONCRETE <div style="text-align: right;">P</div>	Inspect concrete <div style="text-align: right;">P1</div> 1 2	Remove materials <div style="text-align: right;">P2</div> 1 2	Prepare surface for repair or restoration <div style="text-align: right;">P3</div> 1 2	Install repair materials <div style="text-align: right;">P4</div> 1 2	

HARMONIZED PROGRAM OUTLINE Program Overview



APPLY SURFACE TREATMENT TO HARDENED CONCRETE Q	Prepare surface for surface treatments <div style="text-align: right;">Q1</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2					Abrade surface to achieve architectural finish <div style="text-align: right;">Q2</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2					Apply seamless systems <div style="text-align: right;">Q3</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2					Apply bonded and non-bonded toppings to concrete <div style="text-align: right;">Q4</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2					Parge vertical surfaces <div style="text-align: right;">Q5</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2					Apply chemical surface treatment <div style="text-align: right;">Q6</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2				
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GROUT R	Prepare surface for grouting <div style="text-align: right;">R1</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2					Install grout <div style="text-align: right;">R2</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2					Finish exposed grout surface <div style="text-align: right;">R3</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2																						
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PERFORM CUTTING AND CORING S	Perform cutting <div style="text-align: right;">S1</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2					Perform coring <div style="text-align: right;">S2</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table>	2																												
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Training Topics and Suggested Time Allocation: Level 1

CONCRETE FINISHER – LEVEL 1

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line A	PERFORM SAFETY-RELATED FUNCTIONS	12%	60%	40%	100%
A1	Use personal protective equipment (PPE) and safety equipment		✓		
A2	Maintain safe work environment		✓	✓	
Line B	USE TOOLS AND EQUIPMENT	7%	50%	50%	100%
B1	Use hand tools		✓		
B3	Use measuring equipment		✓	✓	
Line C	ORGANIZE WORK	14%	50%	50%	100%
C1	Use documentation		✓		
C2	Determine material requirements and quantities		✓	✓	
C3	Sequence work procedures		✓		
Line D	USE COMMUNICATION AND MENTORING TECHNIQUES	1%	75%	25%	100%
D1	Use communication techniques		✓		
Line E	PREPARE SITE	5%	60%	40%	100%
E1	Inspect site		✓		
E2	Prepare sub-grade and elevations		✓	✓	
Line F	USE FORMWORK	8%	80%	20%	100%
F1	Construct concrete formwork		✓		
F2	Install reinforcements		✓		
F3	Inspect formwork and reinforcement		✓		
F4	Install construction, isolation and expansion joints		✓		
F5	Remove forms		✓		
Line G	PLACE CONCRETE	12%	40%	60%	100%
G1	Transport concrete on site		✓	✓	
G2	Spread concrete		✓	✓	
G3	Consolidate concrete		✓		
Line H	LEVEL CONCRETE	4%	40%	60%	100%
H1	Establish elevation		✓		
H2	Screed concrete		✓	✓	
H3	Bull float concrete		✓		
Line I	FLOAT CONCRETE	5%	20%	80%	100%
I1	Float concrete by hand		✓	✓	



		% of Time	% of Time Allocated to:		
			Theory	Practical	Total
Line J	HAND TOOL CONCRETE	3%	25%	75%	100%
J1	Edge perimeter of slab		✓		
J3	Tool contraction joints		✓		
Line K	TROWEL CONCRETE	8%	25%	75%	100%
K1	Trowel concrete by hand		✓	✓	
Line M	CURE CONCRETE	3%	75%	25%	100%
M1	Wet-cure concrete		✓		
M2	Chemical cure concrete		✓		
Line N	CREATE CONTRACTION JOINTS	2%	25%	75%	100%
N1	Saw cut contraction joints		✓		
N2	Fill joints		✓		
Line O	PROTECT CONCRETE	4%	65%	35%	100%
O1	Protect plastic concrete		✓		
O2	Protect hardened concrete		✓		
Line P	REPAIR AND RESTORE CONCRETE	12%	50%	50%	100%
P1	Inspect concrete		✓	✓	
P2	Remove materials		✓	✓	
P3	Prepare surface for repair or restoration		✓	✓	
P4	Install repair materials		✓	✓	
Total Percentage for Concrete Finisher Level 1		100%			



Training Topics and Suggested Time Allocation: Level 2

CONCRETE FINISHER – LEVEL 2

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line B	USE TOOLS AND EQUIPMENT	10%	40%	60%	100%
B2	Use power tools		✓		
B3	Use measuring equipment		✓	✓	
Line C	ORGANIZE WORK	9%	75%	25%	100%
C1	Use documentation		✓		
C2	Determine material requirements and quantities		✓		
C3	Sequence work procedures		✓		
Line D	USE COMMUNICATION AND MENTORING TECHNIQUES	2%	75%	25%	100%
D1	Use communication techniques		✓		
D2	Use mentoring techniques		✓		
Line E	PREPARE SITE	3%	30%	70%	100%
E1	Inspect site		✓		
E2	Prepare sub-grade and elevations		✓		
Line F	USE FORMWORK	6%	30%	70%	100%
F1	Construct concrete formwork		✓		
F2	Install reinforcements		✓		
F3	Inspect formwork and reinforcement		✓		
F5	Remove forms		✓		
Line G	PLACE CONCRETE	5%	50%	50%	100%
G1	Transport concrete on site		✓		
G3	Consolidate concrete		✓		
G4	Place concrete in vertical formwork		✓		
Line H	LEVEL CONCRETE	9%	40%	60%	100%
H1	Establish elevation		✓	✓	
H2	Screed concrete		✓	✓	
Line I	FLOAT CONCRETE	3%	40%	60%	100%
I2	Float concrete by machine		✓	✓	
Line J	HAND TOOL CONCRETE	1%	60%	40%	100%
J2	Finish extruded concrete surfaces		✓		
Line K	TROWEL CONCRETE	3%	40%	60%	100%
K2	Trowel concrete by machine		✓	✓	



		% of Time	% of Time Allocated to:		
			Theory	Practical	Total
Line L	APPLY SURFACE TREATMENTS TO CONCRETE	11%	30%	70%	100%
L1	Apply dry shake aggregate surface hardeners		✓	✓	
L2	Apply exposed aggregate finish		✓	✓	
L3	Texture concrete surface		✓		
L4	Apply stamped concrete surface finish		✓	✓	
L5	Apply evaporation reducers		✓		
Line P	REPAIR AND RESTORE CONCRETE	13%	30%	70%	100%
P1	Inspect concrete		✓	✓	
P2	Remove materials		✓	✓	
P3	Prepare surface for repair or restoration		✓	✓	
P4	Install repair materials		✓	✓	
Line Q	APPLY SURFACE TREATMENT TO HARDENED CONCRETE	13%	40%	60%	100%
Q1	Prepare surface for surface treatments		✓	✓	
Q2	Abrade surface to achieve architectural finish		✓		
Q3	Apply seamless systems		✓	✓	
Q4	Apply bonded and non-bonded toppings to concrete		✓		
Q5	Parge vertical surfaces		✓		
Q6	Apply chemical surface treatment		✓	✓	
Line R	GROUT	8%	40%	60%	100%
R1	Prepare surface for grouting		✓	✓	
R2	Install grout		✓	✓	
R3	Finish exposed grout surface		✓	✓	
Line S	PERFORM CUTTING AND CORING	4%	50%	50%	100%
S1	Perform cutting		✓	✓	
S2	Perform coring		✓		
Total Percentage for Concrete Finisher Level 2		100%			



Section 3

PROGRAM CONTENT

Concrete Finisher



Level 1

Concrete Finisher



Line (GAC): **A** **PERFORM SAFETY-RELATED FUNCTIONS**
Competency: **A1** **Use personal protective equipment (PPE) and safety equipment**

Objectives

To be competent in this area, the individual must be able to:

- Use PPE and safety equipment.

LEARNING TASKS

1. Describe PPE

CONTENT

- WorkSafeBC regulations
- Fall protection
 - Fall restraint
 - Fall arrest
 - Harnesses, lanyards, lifelines
- Safety footwear
 - Canadian Standards Association (CSA)
- 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 American National Standards Institute (ANSI) types
 - Expiry and condition
- Clothing
 - High visibility
 - Fire retardant
 - Hazard/product specific
- Hand protection
 - Gloves
 - Barrier creams
- Skin protection
 - Protection from caustic materials
 - Preventing dermatitis
- Knee protection



LEARNING TASKS

2. Use respiratory protection

3. Identify warning signs of respiratory failure

4. Use fall protection systems

CONTENT

- Dust control measures
- Respirator types
- Protection factors
- Fit testing
- Positive and negative seal checks
- Filters and cartridges
- Hazard/product specific
- Air monitoring equipment
 - Environments
- Procedure
- Types of respiratory illnesses
 - Acute
 - Chronic
- Guardrails and toeboards
- Fall restraint
- Fall arrest
- Rope grabs and shock limiting devices
- Safety harness, lanyard, lifeline and accessories
- Safety equipment inspection
- Safety monitor
- Control zones
- Life preservers



Line (GAC): **A** **PERFORM SAFETY-RELATED FUNCTIONS**
Competency: **A2** **Maintain safe work environment**

Objectives

To be competent in this area, the individual must be able to:

- Describe safe work practices and procedures.
- Maintain safe work environment.

LEARNING TASKS

1. Explain applicable parts of the Workers Compensation Act

2. Describe general core requirements of the WorkSafeBC Regulation

3. Describe rights and responsibilities

CONTENT

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

- Compensation to workers and dependants

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

- Employer
 - Provide a safe worksite
 - Provide training
 - Provide safety equipment
 - Perform job hazard analysis
 - Provide Safety Data Sheets (SDS)
 - Reporting incidents and accidents
 - Perform safety meetings
 - Implement Occupation Health and Safety (OHS) Program

- Supervisor
 - Communicate with workers to ensure a safe environment
 - Ensure the health and safety of all workers under their direct supervision
 - Reporting incidents and accidents
 - Safety meetings



LEARNING TASKS

CONTENT

4. Describe hazards and precautions

- Worker
 - Right to receive safety training
 - 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
 - Field Level Risk Assessment (FLRA)
- Attend safety meetings
- Types of hazards
 - Loose clothing and jewellery
 - Mobile equipment
 - Energized power lines
 - Electrical
 - Asbestos
 - Silica
 - Carbon monoxide
 - Confined space
 - Flammable and explosive environments
 - Heights
 - Vehicular traffic
 - Other trade workers onsite
 - Weather
 - Slips, trips and falls
 - Heavy lifting
- Safety attitude
 - Housekeeping
 - Awareness of potential hazards of jobsite
- Precautions
 - Inspecting condition of tools
 - Guards and barriers
 - Dust control measures
 - Worksite illumination
 - Lockout procedures
 - Traffic control



LEARNING TASKS

CONTENT

- | LEARNING TASKS | CONTENT |
|---|--|
| 5. Lift and move objects safely | <ul style="list-style-type: none"> ○ Signage <ul style="list-style-type: none"> - Overhead hazard - Tapes (yellow, red)- associated hazards ● Procedures for lifting and moving objects <ul style="list-style-type: none"> ○ Manual and mechanically moving and handling ● Common signals for moving and handling materials |
| 6. Apply Workplace Hazardous Materials Information System (WHMIS) | <ul style="list-style-type: none"> ● Purpose ● Responsibilities ● SDS <ul style="list-style-type: none"> ○ Information disclosed ○ Symbols ● First aid measures |
| 7. Describe fire safety | <ul style="list-style-type: none"> ● Types of fires ● Prevention <ul style="list-style-type: none"> ○ Types of fuels ○ Material storage and use ● Fire suppression equipment ● Response |
| 8. Use portable and fixed ladder | <ul style="list-style-type: none"> ● Ladder types ● Carrying, erection, and use of ladders ● Job-built ladders |
| 9. Use scaffolding | <ul style="list-style-type: none"> ● Scaffold types and use <ul style="list-style-type: none"> ○ Steel frame ○ Tube and clamp ○ Baker's scaffold ● Components <ul style="list-style-type: none"> ○ Mud sills ○ Guardrails and toe-boards ○ Scaffold planks ○ Work platforms ○ Plank support ○ Braces ○ Accessories ● Erection <ul style="list-style-type: none"> ○ Members plumb and level ○ Stability ○ Ladder access to scaffolds ○ Scaffold load limits |



LEARNING TASKS

CONTENT

10. Describe suspended work platforms

- Tagging systems
- Restrict access to work area
- Daily inspection
- Housekeeping

- Training and certification requirements
- Types
 - Swing stage
 - Spider
- Use of suspended work platforms
- Components
- Inspection

11. Describe aerial work platforms

- Training and certification requirements
- Types
 - Scissor lifts
 - Boom lifts
 - Boseman chair
- Use of aerial work platforms
- Components
- Inspection



Line (GAC): B USE TOOLS AND EQUIPMENT
Competency: B1 Use hand tools

Objectives

To be competent in this area, the individual must be able to:

- Use hand tools.

LEARNING TASKS

1. Describe cutting and fastening tools

2. Describe striking and prying tools

3. Describe abrading tools

4. Describe conveying and spreading tools

5. Describe consolidating tools

6. Describe striking tools

7. Describe floats

8. Describe concrete finishing tools

CONTENT

- Hand saws
- Utility knives
- Pliers
- Bolt cutters
- Claw hammers
- Nail puller
- Sledge hammer
- Goose-neck bar
- Cold chisel
- Chipping hammer
- Hand stone
- Spade
- Concrete rake/come-along
- Square-ended shovel
- Rods
- Spades
- Jitterbug
- Aluminum screed board
- Wood screed board
- Bull float
- Channel float
- Magnesium hand float
- Darby
- Wood float
- Resin float
- Rubber float
- Trowels
 - Sweep trowels
 - Margin trowels
 - Swimming pool trowels
 - Pointer trowels
 - Steel finishing trowels



LEARNING TASKS

9. Use hand tools

CONTENT

- Bull trowel/Fresno
- Mule
- Cove tool
- Edgers
 - Bull-nose edgers
 - Safety step edgers
 - Cylinder edgers
- Jointers/skates
- Finishing brooms
- Procedures
- Maintenance



Line (GAC): **B** **USE TOOLS AND EQUIPMENT**
Competency: **B3** **Use measuring equipment**

Objectives

To be competent in this area, the individual must be able to:

- Use measuring and layout tools.

LEARNING TASKS

1. Describe measuring and layout tools

2. Use measuring and layout tools

CONTENT

- Measuring devices
 - Scale
 - Measuring vessel
 - Measuring wheel
 - Measuring tape
 - Laser range meter
 - Slump test cone
- Levels
 - Spirit/torpedo level
- Grading rod
- String and chalk line
- Framing square
- Calculator
- Procedures
- Accuracy and precision when measuring
- Maintenance



Line (GAC): C ORGANIZE WORK
Competency: C1 Use documentation

Objectives

To be competent in this area, the individual must be able to:

- Interpret building code.
- Interpret safety documentaion.

LEARNING TASKS

1. Interpret documentation relating to concrete standards and building code
2. Interpret safety documentation

CONTENT

- CSA Concrete Standards (A23.1)
- OHS Regulations
- WHMIS
- SDS
- Site specific safety documentation
 - FLRA



Line (GAC): C **ORGANIZE WORK**
Competency: C2 **Determine material requirements and quantities**

Objectives

To be competent in this area, the individual must be able to:

- Describe the characteristics of concrete.
- Describe concrete mix design.
- Perform slump test.

LEARNING TASKS

1. Describe history of cement production

2. Describe the Concrete Finisher trade

3. Describe Portland cements

4. Describe common types of concrete and applications

CONTENT

- Origin
- Evolution
- Impact on humanity
- Environmental impact

- History
 - Evolution of cement masonry
- Restoration
- Scope
 - Industrial
 - Commercial
- Residential
- Production
- Types
 - GU (General use)
 - MS (Moderate sulfate resistant)
 - HE (High early)
 - LH (Low heat of hydration)
 - HS (High sulfate resistant)
- Characteristics
- Applications

- Types
 - Regular weight
 - Light weight
 - Self-consolidating
 - Cellular
 - Pervious
 - Roller compact
 - Non-shrink concrete

- Functions
- Properties
- Applications



LEARNING TASKS

CONTENT

5. Describe water/cement ratios and concrete mix design

- Industrial
- Commercial/Institutional
- Residential
- Advantages and disadvantages
- Purpose and effect of mix water
- Importance of the water/cement ratio
- Hydration
- Measure procedures
- Mixing procedures
- Batching procedures
- Timeline
 - Wet delivery
 - Dry delivery

6. Describe aggregates

- Types
 - Characteristics
 - Advantages and disadvantages
- Importance of gradation
- Desirable properties for specific applications
- Aggregate effects on concrete quality and workability

7. Describe admixtures

- Types
 - Fly ash
 - Silica fume
 - Blast furnace slag
 - Super plasticizers
 - Accelerators
 - Retarders
 - Air entrainers
 - Corrosion inhibitors
 - Integral hardeners
 - Integral colours
 - Fibres
 - Metal shards (for increased tensile strength)

8. Describe batching concrete

- Selection and application
- Proportioning
 - Cements
 - Admixtures
 - Aggregates
 - Water



LEARNING TASKS

9. Describe quality control tests.

10. Perform slump test.

CONTENT

- Batching methods
 - Redi-mix plants
 - Portable redi-mix plants
 - Small mechanical mixer
- Hand mix
- Purpose and importance of quality control tests
- Types of tests
 - Slump
 - Cylinder
 - Flexural
 - Entrained air content
- Temperature
- Purpose
- Equipment
- Procedure
- Measurement

Achievement Criteria

Performance The learner will perform a slump test.

Conditions The learner will be given:

- Instructions
- Concrete
- Equipment

Criteria The learner will be evaluated on:

- Procedure
- Accuracy of measurement



Line (GAC): C ORGANIZE WORK
Competency: C3 Sequence work procedures

Objectives

To be competent in this area, the individual must be able to:

- Adjust concreting and curing procedures according to environmental conditions.
- Describe the sequence of work.

LEARNING TASKS

1. Describe time limitations of concrete

2. Adjust concreting and curing procedures according to environmental conditions

3. Describe the sequence of work for plastic concrete

CONTENT

- Time batched
- Admixtures
- Properties of mix design
- Adverse weather conditions
 - Hot/cold
 - Sunlight/shade
 - Windy/rainy
 - Humidity
- Monitoring
- Special procedures
- Curing
- Tool selection
- Inspect formwork
- Install vapour barrier when required
- Install/inspect reinforcement when required
- Transporting
- Placing
- Consolidation
- Strike off
- Floating
- Finishing
- Curing



Line (GAC): D **USE COMMUNICATION AND MENTORING TECHNIQUES**
Competency: D1 **Use communication techniques**

Objectives

To be competent in this area, the individual must be able to:

- Describe communication methods.

LEARNING TASKS

1. Describe communication methods

CONTENT

- Trade terminology
- Hand signals
- Eye contact
- Listening/ talking
- Written communication
- Interpersonal skills
 - Other trades
 - Clients
 - Public
 - Suppliers and manufacturers
 - Apprentices (mentoring)



Line (GAC): E **PREPARE SITE**
Competency: E1 **Inspect site**

Objectives

To be competent in this area, the individual must be able to:

- Describe site inspection before site preparation.

LEARNING TASKS

1. Describe site inspection before site preparation

CONTENT

- Site conditions
 - Drainage
 - Vegetation
 - Grade
- On-site services
 - Water
- Power



Line (GAC): F **USE FORMWORK**
Competency: F1 **Construct concrete formwork**

Objectives

To be competent in this area, the individual must be able to:

- Describe concrete formwork.

LEARNING TASKS

1. Describe concrete formwork

CONTENT

- Types
 - Slab on grade
 - Suspended slab
 - Vertical formwork
 - Slip form
 - Curb and gutter
 - Insulated concrete forming (ICF)
 - Steel
 - Dimensional lumber
- Shotcrete walls



Line (GAC): F **USE FORMWORK**
Competency: F2 **Install reinforcements**

Objectives

To be competent in this area, the individual must be able to:

- Describe the purpose of concrete reinforcements.

LEARNING TASKS

1. Describe the purpose of concrete reinforcements

CONTENT

- Increasing tensile strength
- Deflection



Line (GAC): **F USE FORMWORK**
Competency: **F3 Inspect formwork and reinforcement**

Objectives

To be competent in this area, the individual must be able to:

- Inspect formwork for defects prior to concrete placement.

LEARNING TASKS

1. Identify defects in formwork

2. Check the finish grade of formwork

CONTENT

- Defects
 - Inadequate bracing
 - Crooked/unlevel formwork
 - Improper grading
 - Deterioration
 - Splinters
 - Debris
- Supports/shoring
- Keyway location
- Ensure correct slope
- Drainage/runoff



Line (GAC): F **USE FORMWORK**
Competency: F4 **Install construction, isolation and expansion joints**

Objectives

To be competent in this area, the individual must be able to:

- Describe construction and isolation/expansion joints.

LEARNING TASKS

1. Describe construction and isolation/expansion joints

CONTENT

- Requirements
- Installation
- Locations
- Construction
 - Keyed
 - Doweled
- Isolation/expansion



Line (GAC): **F** **USE FORMWORK**
Competency: **F5** **Remove forms**

Objectives

To be competent in this area, the individual must be able to:

- Describe form removal.

LEARNING TASKS

1. Describe form removal from hardened concrete

2. Describe form removal from green or plastic concrete

3. Describe housekeeping related to removal of formwork

CONTENT

- Considerations during construction
- Process for wood form removal
 - Reverse construction sequence
 - Wedged removal
 - Denail
- Process for steel form removal
- Determine concrete set point
- Considerations during construction
- Scrape formwork
- Denail
- Storage
- Disposal



Line (GAC): **G** **PLACE CONCRETE**
Competency: **G1** **Transport concrete on site**

Objectives

To be competent in this area, the individual must be able to:

- Transport concrete for small projects.

LEARNING TASKS

1. Transport concrete for small projects

CONTENT

- Applications and methods
 - Chain gang (pails)
- Equipment
 - Truck and chute
 - Wheelbarrows
 - Power buggies
- Line pumps



Line (GAC): **G** **PLACE CONCRETE**
Competency: **G2** **Spread concrete**

Objectives

To be competent in this area, the individual must be able to:

- Place and spread concrete.

LEARNING TASKS

1. Place and spread concrete

CONTENT

- Determining starting location of placement
- Distribution of concrete
- Establishing rough elevations
- Methods
 - Shoveling
 - Raking
- Avoiding segregation and cold joints
- Continuous placement/ timeliness



Line (GAC): **G** **PLACE CONCRETE**
Competency: **G3** **Consolidate concrete**

Objectives

To be competent in this area, the individual must be able to:

- Describe consolidating concrete by hand methods.

LEARNING TASKS

1. Describe consolidation
2. Describe consolidating concrete by hand methods

CONTENT

- Purpose
 - Trapped air removal
 - Densification
- Methods
 - Hand
 - Jitterbug
 - Spading
 - Rodding
- Mechanical
- Spading form edges
- Tapping forms
- Hand rodding
- Limitations of hand consolidation
 - Size of project
- Depth



Line (GAC): **H LEVEL CONCRETE**
Competency: **H1 Establish elevation**

Objectives

To be competent in this area, the individual must be able to:

- Describe establishing elevations.

LEARNING TASKS

1. Describe establishing elevations

CONTENT

- Benchmarks
- Set screeds
 - Wet screed
 - Screed rails
 - Monuments
 - Bulkhead
- Equipment
 - Laser transit
 - Builder's level
 - Chalk lines
 - Stakes and string lines
 - Screed pipe
- Story pole



Line (GAC): H LEVEL CONCRETE
Competency: H2 Screed concrete

Objectives

To be competent in this area, the individual must be able to:

- Screed concrete by hand.

LEARNING TASKS

1. Screed concrete by hand

CONTENT

- Purposes
 - Surface elevation
 - Surface contour
- Procedure
 - Grasp screed board
 - Slice concrete
- Reverse pulling method



Line (GAC): **H LEVEL CONCRETE**
Competency: **H3 Bull float concrete**

Objectives

To be competent in this area, the individual must be able to:

- Describe bull floating concrete.

LEARNING TASKS

1. Describe bull floating concrete

CONTENT

- Types of bull floats
 - Magnesium
 - Wooden
 - Resin
- Purposes
 - Flatten surface
 - Seal surface paste
- Procedure
 - Working perpendicular to screeded surface
 - Push, then pull with pitch
 - Overlapping
 - Embed larger aggregates



Line (GAC): **I** **FLOAT CONCRETE**
Competency: **I1** **Float concrete by hand**

Objectives

To be competent in this area, the individual must be able to:

- Float concrete by hand.

LEARNING TASKS

1. Float concrete by hand

CONTENT

- Types of floats
 - Magnesium
 - Wood
 - Resin
 - Darby
- Purposes
 - Flatten surface
 - Seal surface paste
 - Consolidate concrete surface
 - Embed larger aggregates
- Procedure
 - Assessing surface conditions
 - Arching pattern
 - Float position
- Direction of work

Achievement Criteria

Performance The learner will float concrete by hand.

Conditions The learner will be given:

- Instructions
- Tools
- Materials

Criteria The learner will be evaluated on:

- Technique
- Quality



Line (GAC): **J** **HAND TOOL CONCRETE**
Competency: **J1** **Edge perimeter of slab**

Objectives

To be competent in this area, the individual must be able to:

- Edge perimeter of slab.

LEARNING TASKS

1. Finish concrete with hand tools

CONTENT

- Types of edging tools
 - Safety step
 - Bull nose
 - Walking edger
- Purposes
 - Establish edges
 - Contour edges
 - Decorative edges
 - Densifying
 - Aids in formwork removal
- Procedures
 - Individual preferences (art form)
 - Order of movements
 - Application of force
 - Direction of work
 - Deficiencies



Line (GAC): **J** **HAND TOOL CONCRETE**
Competency: **J3** **Tool contraction joints**

Objectives

To be competent in this area, the individual must be able to:

- Locate and install control/contraction joints.

LEARNING TASKS

1. Perform concrete jointing

CONTENT

- Types of jointing tools
 - Hand groover
 - Pole groover
 - Skate attachment
- Purposes
 - Controlling location of cracking
 - Architectural
- Methods of installation
 - Location and depth
 - Zip strips
 - Zinc strips
- Tooled



Line (GAC): **K TROWEL CONCRETE**
Competency: **K1 Trowel concrete by hand**

Objectives

To be competent in this area, the individual must be able to:

- Trowel concrete to specified finish.

LEARNING TASKS

1. Finish concrete with hand tools

CONTENT

- Types of trowels
 - Steel
 - Blue
 - Conventional
 - Plastic (epoxy trowel)
 - Swimming pool
 - Fresno/bull
 - Sweep/funny
- Purposes
 - Seal and smooth finish
 - Densification
 - Architectural
- Methods/ procedures
 - Assessing surface condition
 - Tool/method selection
 - Hand
 - Pole
 - Pitch and timing

Achievement Criteria (Note: This is a capstone project that contains elements of many competencies)

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 be evaluated on:

- Safety procedures and 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 (GAC): **M** **CURE CONCRETE**
Competency: **M1** **Wet-cure concrete**

Objectives

To be competent in this area, the individual must be able to:

- Describe wet-curing concrete.

LEARNING TASKS

1. Describe the process of curing concrete

2. Describe the purpose of curing concrete

3. Describe the main curing methods

CONTENT

- Cycle of cement hydration
- Maintaining temperature and moisture retention

- Preventing shrinkage and curling
- Strengthens
- Increases durability

- With water
 - Specialty curing paper
 - Wet burlap
 - Fogging
 - Ponding
 - Sprinklers/soaker hose
- Without water
 - Polyethylene sheeting
- Waterproof paper



Line (GAC): **M** **CURE CONCRETE**
Competency: **M2** **Chemical cure concrete**

Objectives

To be competent in this area, the individual must be able to:

- Describe chemical curing of concrete.

LEARNING TASKS

1. Describe the purpose of curing concrete

2. Describe the process of curing concrete

3. Describe the tools and equipment for chemical curing

4. Describe chemical curing methods of application

CONTENT

- Preventing shrinkage and curling
- Strengthens
- Increases durability
- Cycle of cement hydration
- Maintaining temperature and moisture retention
- Timing and application objective
- Overlapping
- Spray cans
- Airless sprayers
- Rollers
- PPE and safety considerations
 - SDS/WHMIS
- Selection of material
- Liquid membrane
 - Fugitive dye
 - Dissipating
 - Water-based
- Solvent-based



Line (GAC): **N** **CREATE CONTRACTION JOINTS**
Competency: **N1** **Saw cut contraction joints**

Objectives

To be competent in this area, the individual must be able to:

- Describe saw cut contraction joints installation procedures.

LEARNING TASKS

1. Describe saw cut contraction joints installation procedures

CONTENT

- Tools and equipment
 - Saws
 - Walk behind
 - Cut-off
 - Wet
 - Early entry
 - Grinders
 - Lines
 - Chalk
 - String
- Purposes
 - Controlling cracking caused by drying shrinkage
 - Architectural
- Methods and procedures
 - Locations
 - Depth
- Spacing



Line (GAC): **N** **CREATE CONTRACTION JOINTS**
Competency: **N2** **Fill joints**

Objectives

To be competent in this area, the individual must be able to:

- Describe installation of joint filling materials.

LEARNING TASKS

1. Describe installation of joint filling materials

CONTENT

- Tools, equipment and materials
 - Caulking gun
 - Compressed air
 - Backing rod
 - Joint filler
 - Joint sealant
- Purposes
 - Keeping joints clean
 - Protecting joint edges
- Methods/procedures
 - PPE and safety considerations
 - Assess environmental conditions
 - Clean out joint
 - Install backer rod if needed
 - Mix filler/sealant according to manufacturers' specifications
 - Fill joint
- Disposal



Line (GAC): **O PROTECT CONCRETE**
Competency: **O1 Protect plastic concrete**

Objectives

To be competent in this area, the individual must be able to:

- Describe methods of protecting plastic concrete.

LEARNING TASKS

1. Describe purpose of protecting concrete

2. Describe methods of protecting concrete

CONTENT

- Purpose
 - Protecting concrete from damage during setting and curing
 - Improve durability
- Environmental conditions
 - Precipitation
 - Humidity
 - Solar radiation
 - Adverse weather (temperature variations)
 - Wind velocity
- Physical damage
- Tenting/hoarding
 - Fans
 - Sun shades
 - Misterters/fogging
- Heating/cooling
 - Safety considerations
 - Exhaust
 - Ventilation
 - Insulated blankets
 - Hay
 - Electrical
 - Glycol
 - Water/crushed ice
 - Surface evaporation reducer
 - Heaters
 - Propane
 - Diesel
 - LNG
- Barriers/barricades
 - Caution tape
 - Delineators
 - Fencing



HARMONIZED PROGRAM OUTLINE
Program Content
Level 1



LEARNING TASKS

3. Protect and cure concrete

CONTENT

- According to specifications



Line (GAC): **O** **PROTECT CONCRETE**
Competency: **O2** **Protect hardened concrete**

Objectives

To be competent in this area, the individual must be able to:

- Describe methods of protecting hardened concrete.

LEARNING TASKS

1. Describe purpose of protecting hardened concrete

2. Describe methods of protecting hardened concrete

3. Protect and cure concrete

CONTENT

- Purpose
 - Protecting concrete from damage during curing
 - Improve durability
- Environmental conditions
 - Humidity
 - Adverse weather (temperature variations)
- Physical damage
- Tenting/hoarding
- Heating/cooling
 - Safety considerations
 - Exhaust
 - Ventilation
 - Insulated blankets
 - Hay
 - Electrical
 - Glycol
 - Heaters
 - Propane
 - Diesel
 - LNG
- Barriers/barricades
 - Caution tape
 - Delineators
- Fencing
- According to specifications



Line (GAC): P REPAIR AND RESTORE CONCRETE
Competency: P1 Inspect concrete

Objectives

To be competent in this area, the individual must be able to:

- Describe concrete defects and their causes.

LEARNING TASKS

1. Describe defects

CONTENT

- Construction defects
 - Honeycomb
 - Formwork deficiencies
 - Efflorescence
- Forces defects
 - Impact
 - Seismic
 - Steel corrosion
- Deterioration defects
 - Spalling
 - Delamination
 - Scaling
 - Dusting
- Cracking



Line (GAC): **P** **REPAIR AND RESTORE CONCRETE**
Competency: **P2** **Remove materials**

Objectives

To be competent in this area, the individual must be able to:

- Perform removal for minor repair.

LEARNING TASKS

1. Describe types of repairs

2. Determine removal method for minor repairs

3. Perform removal for minor repairs

CONTENT

- Minor
 - Snap tie
 - Bug holes
 - Minimal honeycomb
- Extensive
 - Segregation
 - Cracks
- Delamination
- Hand
 - Hammer
 - Chisel
- Sledge hammer
- Removal of unsound materials
- Disposal



Line (GAC): P REPAIR AND RESTORE CONCRETE
Competency: P3 Prepare surface for repair or restoration

Objectives

To be competent in this area, the individual must be able to:

- Prepare surface for minor repair, including profile requirement.

LEARNING TASKS

1. Prepare surface for minor repairs

CONTENT

- Dust removal
 - Water
 - Wet/dry Vacuum
- Construction practices/manufacturers' recommendations
 - Profile requirements
 - Bonding agents
- Pre-soaking to surface saturated dry (SSD)



Line (GAC): **P** **REPAIR AND RESTORE CONCRETE**
Competency: **P4** **Install repair materials**

Objectives

To be competent in this area, the individual must be able to:

- Install repair materials for minor repairs.

LEARNING TASKS

1. Describe repair materials for minor repairs

2. Describe installing repair materials for minor repairs

3. Install repair materials for minor repairs

CONTENT

- Non-shrink
 - Cementitious
 - Acrylic-based
- Polymer-modified
- Mixing
 - Manufacturers' instructions
 - Required amounts for task
- Bonding agents application if required
- Procedures
 - Dry-packing
 - Hand-patching
 - Tooling
 - Finishing
 - Curing if required
 - Clean up

Achievement Criteria (Note: this is a capstone project for Line P)

Performance The learner will perform a minor patch for repair, including:

- Assessment of defect
- Removal of materials
- Surface preparation
- Installation of repair materials

Conditions The learner will be given:

- Instructions
- Tools and materials

Criteria The learner will be evaluated on:

- Safety
- Proficiency
- Quality
- Time line
- Cleanliness



Level 2

Concrete Finisher



Line (GAC): B USE TOOLS AND EQUIPMENT

Competency: B2 Use power tools

Objectives

To be competent in this area, the individual must be able to:

- Use and maintain power tools.

LEARNING TASKS

1. Use and maintain electrical/cordless tools

2. Use and maintain gas/diesel powered equipment

3. Use and maintain pneumatic tools

CONTENT

- Types
 - Portable mixers
 - Grinders
 - Hand held
 - Ceiling
 - Chipping guns
 - Drills
 - Hammer
 - Mixing
 - Saws
 - Vibrators
 - Power trowels
- Ground fault circuit interrupters (GFCIs)
- Double insulated
- Correct gauge extension cords
- Types
 - Pressure washers
 - Generators
 - Power trowels
 - Scarifiers
 - Floor grinders
 - Concrete saws
 - Vibrating screeds
 - Backpack vibrators
- Safety precautions
- Applications
- Operation of 2-stroke, 4-stroke cycle and diesel engines
- Operating procedures
- Types
 - Drills
 - Saws
 - Jack hammers
 - Chipping hammers



LEARNING TASKS

CONTENT

4. Use and maintain compressors

- Vibrators
- Scarifiers
- Grinders
- Scabblers
- Compressors
- Safety precautions
- Applications
- Adjustments
- Operating procedures
- Safety precautions and set up
 - Wheel chocks
 - Spill kit
- Inspection and maintenance
 - Fuel, oil and coolant monitoring
 - Condition of hoses and fittings
 - Oiling
 - Securing hose connections
 - Whip checks
 - Wire fittings
- Operation
 - Air pressure
 - Size and lengths of hoses
 - Avoiding damage of hoses
- Shut down procedures
 - Removal of charged air
- Storage
- Types
 - Roller screeds
 - Laser screeds
 - Wall saws
 - Power trowels
 - Coring
- Safety precautions
- Applications
- Operating procedures

5. Describe hydraulic tools and equipment



Line (GAC): B USE TOOLS AND EQUIPMENT
Competency: B3 Use measuring equipment

Objectives

To be competent in this area, the individual must be able to:

- Use measuring and layout tools.

LEARNING TASKS

1. Describe the purpose and applications of measuring equipment

2. Use measuring and layout tools

3. Describe tolerance of slab surfaces

4. Establish string line location and elevation

CONTENT

- Precise measurements
- Concrete placement and finishing procedures
- Establishing high tolerance slabs
- Types of measuring devices
 - Laser level
 - Builder's level
 - Grading rod
- String and chalk line
- Specifications
- Floor profilemeter
- Interpretation
 - Specifications
 - Blueprint drawings
 - Cut and fill sheets
- Flat work
- Extruder machines
- Hub stations
- Global positioning system (GPS)



Line (GAC): **C ORGANIZE WORK**
Competency: **C2 Determine material requirements and quantities**

Objectives

To be competent in this area, the individual must be able to:

- Estimate concrete costs.

LEARNING TASKS

1. Describe design mix requirements

2. Estimate concrete costs

CONTENT

- Type of cement
- Size and quantity of aggregate
- Slump
- Admixtures
- Calculations
 - Area
 - Volume
 - Linear measurement
 - Metric and imperial
- Materials
 - Concrete types
 - Admixtures
- Delivery
 - Standby
 - Wash out
 - Small load
 - Expiry
- Surcharges and levies

Achievement Criteria

Performance The learner will estimate concrete costs.

Conditions The learner will be given:

- Specifications
- Calculator

Criteria The learner will be evaluated on:

- Accuracy



Line (GAC): **C ORGANIZE WORK**
Competency: **C3 Sequence work procedures**

Objectives

To be competent in this area, the individual must be able to:

- Describe sequencing work for self-levelling overlayment installation.

LEARNING TASKS

1. Describe the sequence of work for self-levelling overlayment installation

CONTENT

- Evaluating task
 - Material selection and estimation
- Surface preparation
 - Clean
 - Profile
- Tool and equipment selection
- Mixing station set up
- Mixing materials
- Installation
- Protection
- Clean up and disposal



Line (GAC): D USE COMMUNICATION AND MENTORING TECHNIQUES
Competency: D1 Use communication techniques

Objectives

To be competent in this area, the individual must be able to:

- Demonstrate effective communication.

LEARNING TASKS

1. Demonstrate two-way communication

2. Use active listening

CONTENT

- Verbal and written
- Record keeping
 - Daily journal
 - FLRA

- Open-ended questions
- Clarification



Line (GAC): **D USE COMMUNICATION AND MENTORING TECHNIQUES**
Competency: **D2 Use mentoring techniques**

Objectives

To be competent in this area, the individual must be able to:

- Describe mentoring techniques.

LEARNING TASKS

1. Describe mentoring techniques

CONTENT

- Teaching methods
 - Case studies
 - Explaining objective
 - Demonstrating
 - Encouragement
 - Providing practice
 - Guided
 - Limited independence
 - Full independence
 - Assessment
 - Feedback
- Personal responsibilities and attitudes
 - Working safely
 - Accepting constructive feedback
 - Respect for authority
 - Asking questions
 - Stewardship of materials, tools and property
 - Time management and punctuality
 - Efficient work practices
- Learning needs
 - Learning disabilities
 - Learning preferences
 - Language proficiencies



Line (GAC): E PREPARE SITE
Competency: E1 Inspect site

Objectives

To be competent in this area, the individual must be able to:

- Report on site conditions.

LEARNING TASKS

1. Report on site conditions

CONTENT

- Authorities having jurisdiction
 - Property owners/management
 - Engineering
 - Fish and wildlife
- Utility companies



Line (GAC): **E** **PREPARE SITE**
Competency: **E2** **Prepare sub-grade and elevations**

Objectives

To be competent in this area, the individual must be able to:

- Describe layout for flat work.
- Describe preparing layout for hand-formed curbs and gutter.

LEARNING TASKS

1. Describe basic layout for flat work

2. Describe preparation and compaction for sub-base

3. Describe layout for hand-formed curb and gutter

CONTENT

- Benchmarks
- Measuring and setting elevations
- Setting stakes to finish elevation
- Establishing base lines
- Establishing corners
- Erecting batter boards
- Check final grade of sub-base
- Cut or fill sub-base according to elevation requirements

- Grading the sub-base to achieve slab elevation and uniform thickness
- Compacting to specifications
- Installing vapour barriers when required

- Cut/fill sheets
- Take offs
- Set pins according to offset
- Set and adjust string line according to elevation requirements
- Check final grade of sub-base
- Cut or fill sub-base according to elevation requirements



Line (GAC): **F** **USE FORMWORK**
Competency: **F1** **Construct concrete formwork**

Objectives

To be competent in this area, the individual must be able to:

- Describe the construction of concrete formwork, their uses and components.

LEARNING TASKS

1. Describe the construction and applications of concrete formwork
2. Describe concrete structures
3. Describe concrete formwork systems

CONTENT

- Slip form
- Slip forms for silos
- Gang forms
- Falsework
- Vertical
- High rise
- Bridge
- Tunnel
- Dam
- Q-deck
- Pre-cast
- Segmental
- Tilt-up
- Stairs
- Curbs and gutters
- Walls
- Columns
- Functions
 - Bracing
 - Shoring
 - Supports
- Components
 - Bulkheads
 - Walers
 - Strong backs
 - Snap ties
 - Wedges
 - Shebolts (taper ties)
 - Coil rod
 - Turnbuckles
 - Cleats
 - Sheathing
 - Jack



HARMONIZED PROGRAM OUTLINE
Program Content
Level 2



LEARNING TASKS

CONTENT

- Architectural form liners



Line (GAC): F **USE FORMWORK**
Competency: F3 **Inspect formwork and reinforcement**

Objectives

To be competent in this area, the individual must be able to:

- Inspect reinforcement for defects prior to concrete placement.

LEARNING TASKS

1. Inspect reinforcements

CONTENT

- Adequate concrete coverage
- Chair placement
- Spacing
- Height



Line (GAC): **F USE FORMWORK**
Competency: **F5 Remove forms**

Objectives

To be competent in this area, the individual must be able to:

- Describe the preparation of used forms for reuse.

LEARNING TASKS

1. Describe the preparation of used forms for reuse

CONTENT

- Remove foreign materials
 - Nails
 - Chamfer strips
 - Leftover concrete
 - Keyways
- Clean
- Repair
 - Spalls
 - Surface damage
 - Broken pieces
- Application of form release
 - Form oil
 - Lithium grease
 - Wax
 - Environmentally safe products
- Housekeeping



Line (GAC): **G** **PLACE CONCRETE**
Competency: **G1** **Transport concrete on site**

Objectives

To be competent in this area, the individual must be able to:

- Describe transporting concrete for larger projects.

LEARNING TASKS

1. Describe transporting concrete for larger projects

CONTENT

- Applications and methods
- Equipment
 - Crane and bucket
 - Boom pumps
 - Line pumps
 - Placing booms
 - Conveyors
 - Dump truck
 - Helicopter/bucket



Line (GAC): **G** **PLACE CONCRETE**
Competency: **G3** **Consolidate concrete**

Objectives

To be competent in this area, the individual must be able to:

- Consolidate concrete by mechanical methods.

LEARNING TASKS

1. Describe consolidating concrete by mechanical methods

CONTENT

- Mechanical methods
 - Immersion-type vibrator
 - External-type vibrator
 - Vibra-screed
 - Vibrating tables
- Operation of equipment
 - Rate of insertion/extraction
 - Depth and spacing of penetration
 - Frequency of vibration
 - Field/radius of action
- Defects
 - Form blow out
 - Segregation
 - Honeycomb



Line (GAC): **G** **PLACE CONCRETE**
Competency: **G4** **Place concrete in vertical formwork**

Objectives

To be competent in this area, the individual must be able to:

- Describe concrete placement and consolidation in vertical formwork.
- Describe concrete placement and consolidation in concrete stairs.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Describe concrete placement in vertical formwork
 2. Describe consolidation methods
 3. Describe strike off and finishing

 4. Describe concrete stair placement and finishing | <ul style="list-style-type: none"> • Considerations <ul style="list-style-type: none"> ○ Mix design ○ Slump ○ Delivery rate <ul style="list-style-type: none"> – Interruptions – Cold joints – Weather ○ Pour <ul style="list-style-type: none"> – Rate/speed – Sequence/lifts
 • Immersion-type • External • Rodding • Hand tapping • Formwork inspection <ul style="list-style-type: none"> ○ Alignment ○ Plumb ○ Level ○ Defects • Tools <ul style="list-style-type: none"> ○ Hand floats ○ Bull-nose edgers ○ Trowels • Chamfer strips • Pour strips • Nails • Cleanliness • Considerations <ul style="list-style-type: none"> ○ Formwork <ul style="list-style-type: none"> – Inspection – Construction ○ Mix design ○ Slump |
|--|--|



LEARNING TASKS

CONTENT

- Sequence of placement
- Cleanliness
- Consolidating
- Striking, floating and finishing
- Tools
 - Hand floats
 - Hammers
 - Margin trowels
 - Edgers
 - Hand trowels
- Curing requirements
- Protection of surface



LEARNING TASKS

CONTENT

- Setting of catch basins and other objects in curb
- Lay out of letdowns
- Curb extruder (Gomaco)

Achievement Criteria

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

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

- Criteria** The learner will be evaluated on
- Following safety procedures
 - Use of PPE
 - Accuracy of string line according to plans
 - Completed within specified time



HARMONIZED PROGRAM OUTLINE
Program Content
Level 2



LEARNING TASKS

CONTENT

- Machine speed



Line (GAC): **J** **HAND TOOL CONCRETE**
Competency: **J2** **Finish extruded concrete surfaces**

Objectives

To be competent in this area, the individual must be able to:

- Describe finishing procedures for extruded concrete.

LEARNING TASKS

1. Describe finishing procedures for extruded concrete

CONTENT

- Types
 - Curb and gutter
 - Parapet
 - Sidewalk
 - Highway
- Tools and equipment
 - Curb extruders (Gamaco)
 - Hand mules
 - Walking tools
 - Long-handled mules
- Awareness of slump and timelines
- Installations
 - Catch basins
 - Control/expansion joints
- Let downs
- Curing requirements
- Protection of surface



Line (GAC): **L APPLY SURFACE TREATMENTS TO CONCRETE**
Competency: **L1 Apply dry shake aggregate surface hardeners**

Objectives

To be competent in this area, the individual must be able to:

- Apply dry shake aggregate surface hardeners.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Describe dry shake aggregate surface hardeners
 2. Describe the application of surface hardeners
 3. Describe installation of surface hardeners
 4. Describe factors to consider before dry shake broadcasting
 5. Describe the factors effecting the installation of dry shake aggregate | <ul style="list-style-type: none"> • Types <ul style="list-style-type: none"> ○ Mineral ○ Metallic ○ Blended ○ Natural ○ Pigmented • Purpose <ul style="list-style-type: none"> ○ Structural surface/ wear resistance • Architectural • Safety considerations <ul style="list-style-type: none"> ○ PPE • Application methods <ul style="list-style-type: none"> ○ Integrally mixed ○ Broadcast by hand • Broadcast mechanically • Hand float • Bull float • Power float/pan • Environmental <ul style="list-style-type: none"> ○ Sun ○ Wind ○ Rain • Surface bleeding • Concrete set <ul style="list-style-type: none"> ○ Early ○ Late (Evaporation reducers) • Surface conditions • Improper application <ul style="list-style-type: none"> ○ Inconsistent quantity (shading) ○ Surface delamination • Improper finishing • Surface blistering |
|--|--|



LEARNING TASKS

6. Describe curing procedures
7. Apply dry shake aggregate surface hardeners

CONTENT

- Liquid curing membrane
- Hand application techniques



Line (GAC): **L APPLY SURFACE TREATMENTS TO CONCRETE**
Competency: **L2 Apply exposed aggregate finish**

Objectives

To be competent in this area, the individual must be able to:

- Create exposed aggregate finish.

LEARNING TASKS

1. Describe exposed aggregate finish

2. Describe application of exposed aggregate

3. Describe placing of concrete for exposed aggregate finishes

4. Describe washing concrete surface

5. Describe preparation exposed surface for sealant

CONTENT

- Purpose
 - Architectural
 - Green cutting (structural bonding)
- Types
 - Seeded
 - Integral
 - Colour
- Size
- Vertical
 - Surface form retarders
- Horizontal
- Surface spray
- Mix design
 - Specialized aggregate gradation and selection
- Placing and finishing procedures
 - Planning
 - Vertical
- Horizontal
- Washing methods
 - Hose and nozzle
 - Power washer
 - Push broom
- Timing
 - Firmness/set
 - Bleed water
 - Colouration
 - Consistency of exposure
- Disposal of surface residue
- Pre-wet
- Acid wash
- Rinse



HARMONIZED PROGRAM OUTLINE
Program Content
Level 2



LEARNING TASKS

6. Create exposed aggregate finish

CONTENT

- Place
- Finish
- Tooling
- Wash



Line (GAC): **L APPLY SURFACE TREATMENTS TO CONCRETE**
Competency: **L4 Apply stamped concrete surface finish**

Objectives

To be competent in this area, the individual must be able to:

- Apply stamped concrete finishes.

LEARNING TASKS

1. Describe stamped finishes

2. Apply stamped concrete finishes

CONTENT

- Types
 - Seamless
 - Defined
 - Grouted
 - Stenciled
- Purpose
- Architectural
- Concrete mixture
 - Aggregate size
- Surface design
 - Flexible
 - Urethane
 - Paper
 - Metal
- Colour options/ releases
 - Powdered
 - Liquid
- Timing
- Tools and equipment
 - Tampers
 - Roller
 - Touch up tools



Line (GAC): **L APPLY SURFACE TREATMENTS TO CONCRETE**
Competency: **L5 Apply evaporation reducers**

Objectives

To be competent in this area, the individual must be able to:

- Describe the application of evaporation reducers.

LEARNING TASKS

1. Describe the application of evaporation reducers

CONTENT

- Conditions
 - Solar radiation
 - Wind velocity
 - Low slump
 - Absence of water bleeding
- Purpose
 - Prevention of plastic shrinkage cracking
 - Prevention of crusting of the surface
- Application
- Spray



Line (GAC): P REPAIR AND RESTORE CONCRETE
Competency: P2 Remove materials

Objectives

To be competent in this area, the individual must be able to:

- Describe removal procedures for extensive repairs.

LEARNING TASKS

1. Determine removal methods for extensive repair

2. Remove materials for extensive repair

CONTENT

- Hand
 - Hammer
 - Chisel
 - Sledge hammer
- Mechanical
 - Chipping gun
 - Bush hammer
 - Scarifier
 - Scabblor
 - Media-blasting
- Chemical
 - Acid solution
- Non-explosive demolition agent
- Locating embedded items
 - Electrical conduit
 - Post-tension cables
 - Mechanical
- Protection and isolation of area of demolition
- Operation of removal equipment
- Air compressor
- Skid steer
- Back hoe
- Jack hammer
- Power buggies
- Disposal of debris



Line (GAC): P REPAIR AND RESTORE CONCRETE
Competency: P4 Install repair materials

Objectives

To be competent in this area, the individual must be able to:

- Install repair materials for extensive repairs.

LEARNING TASKS

1. Describe methods of extensive repair

2. Install repair material

CONTENT

- Architectural
 - Patching
 - Parging/sacking
- Structural
 - Patching
 - Dry pack
 - Pour back
 - Epoxy injection
 - Polyurethane injection
- Pressure grouting
- Safety considerations
 - PPE
 - SDS
- Tools and equipment
- Mix material to manufacturers' specifications
- Bonding agents application if required
- Placing procedures
- Finishing requirements
- Curing requirements
- Protection of surface
- Disposal

Achievement Criteria (Note: this is a capstone project for Line P)

- Performance The learner will perform an extensive repair, including:
- Assessment of defect
 - Removal of materials
 - Surface preparation
 - Installation of repair materials



Conditions	The learner will be given: <ul style="list-style-type: none">• PPE• Instructions• SDS• Tools and equipment• Materials
Criteria	The learner will be evaluated on: <ul style="list-style-type: none">• Safety• Proficiency• Quality• Time line• Cleanliness• Disposal of waste materials according to regulations



Line (GAC): Q APPLY SURFACE TREATMENT TO HARDENED CONCRETE

Competency: Q1 Prepare surface for surface treatments

Objectives

To be competent in this area, the individual must be able to:

- Describe methods of remediation for surface defects.
- Describe methods of surface preparation for surface treatments.
- Profile hardened concrete surface.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Describe surface defects

 2. Describe remediation techniques

 3. Identify surface resists and removal options

 4. Profile surface | <ul style="list-style-type: none"> • Scaling • Spalling • Dusting • Delamination • Cracks • Curling • Uneven surface • Overlayments • Repour • Seamless coatings • Toppings <ul style="list-style-type: none"> ○ Bonded ○ Un-bonded • Parging • Chemical surface treatments • Oils • Grease • Sealers • Waxes • Paints • Dust • Sandblast/shotblast • Bush hammer • Grind • Scarify • Vacuum |
|---|---|



Line (GAC): **Q APPLY SURFACE TREATMENT TO HARDENED CONCRETE**

Competency: **Q2 Abrade surface to achieve architectural finish**

Objectives

To be competent in this area, the individual must be able to:

- Describe the procedures to abrade concrete surfaces to achieve an architectural finish.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Describe architectural concrete finishes
 2. Describe abrading methods to achieve architectural concrete finishes
 3. Describe the effects of abrading concrete | <ul style="list-style-type: none"> • Types <ul style="list-style-type: none"> ○ Terrazzo ○ Cementitious ○ Epoxy ○ Polished concrete ○ Sandblasted ○ Bush hammered • Methods <ul style="list-style-type: none"> ○ Sandblasting ○ Grinding/honing/polishing ○ Bush hammering ○ Wash-coating (pressure washing) • Equipment selection • Safety considerations • Environmental • Disposal |
|--|---|



Line (GAC): **Q APPLY SURFACE TREATMENT TO HARDENED CONCRETE**

Competency: **Q3 Apply seamless systems**

Objectives

To be competent in this area, the individual must be able to:

- Install seamless systems for hardened concrete.

LEARNING TASKS

1. Describe seamless systems for hardened concrete

2. Describe requirements for bonding

3. Install seamless systems for hardened concrete

4. Describe the functions of seamless floor systems

CONTENT

- Types
 - Coating
 - Self-levelling
 - Broadcast systems
 - Trowel-down systems
 - Epoxy
 - Non-static floor coating
- Terrazzo
- Bonding requirements
 - Primer
 - Slurry
 - Epoxy
- Methods
 - Trowel-down
 - Bucket
 - Pump
- Equipment selection
- Architectural
- Remedial



Line (GAC): **Q APPLY SURFACE TREATMENT TO HARDENED CONCRETE**

Competency: **Q4 Apply bonded and non-bonded toppings to concrete**

Objectives

To be competent in this area, the individual must be able to:

- Describe application of bonded and non-bonded toppings to concrete.

LEARNING TASKS

1. Describe types of bonded and non-bonded toppings

2. Describe application procedures

CONTENT

- Pre-blended
- Modified concrete
- Grout/mortar
- Bonded (Permanent)
 - Primers
- Non-bonded (Non-permanent)
 - Slip sheet



Line (GAC): **Q APPLY SURFACE TREATMENT TO HARDENED CONCRETE**

Competency: **Q5 Parge vertical surfaces**

Objectives

To be competent in this area, the individual must be able to:

- Describe application of surface mortar to a vertical concrete surface.

LEARNING TASKS

1. Describe application of surface mortar to a vertical concrete surface

CONTENT

- Purpose
- Types
 - Cementitious
 - Acrylic
- Surface preparation
- Application/finish methods
 - Trowel
 - Knock down
 - Dash
 - Sponge
 - Stencil



Line (GAC): **Q APPLY SURFACE TREATMENT TO HARDENED CONCRETE**

Competency: **Q6 Apply chemical surface treatment**

Objectives

To be competent in this area, the individual must be able to:

- Apply chemical surface treatments for architectural applications.

LEARNING TASKS

1. Apply chemical surface treatments for architectural applications

2. Describe chemical surface treatments for structural applications

CONTENT

- Types
 - Reactive stain
 - Dye
- Surface prep and precautions
- Application procedure
- Disposal
- Types
 - Penetrating
 - Silane
 - Siloxane
 - Topical
 - Acrylic
 - Urethane
 - Epoxy
- Surface prep and precautions
- Application procedure
- Disposal



Line (GAC): **R** **GROUT**
Competency: **R2** **Install grout**

Objectives

To be competent in this area, the individual must be able to:

- Mix grout.
- Install dry pack grout.

LEARNING TASKS

1. Describe procedures to grout

2. Mix grout

3. Install dry pack grout

4. Describe procedure to install liquid grout

5. Describe quality control tests for grout

CONTENT

- Select product
- Estimate quantity
- Set up mixing station
- Mix
- Install

- Assemble tools and equipment
- Measure materials
 - Manufacturers instructions
- Mix to ratio to required consistency
- Bonding agent
- Apply grout
- Tightly pack the material
- Level edge surface
- Bonding agent
- Install grout
 - Head box
 - Pump
- Strap/chain
- Flow test
- Cube test



Line (GAC): **R GROUT**
Competency: **R3 Finish exposed grout surface**

Objectives

To be competent in this area, the individual must be able to:

- Finish exposed grout surfaces.

LEARNING TASKS

1. Determine grout set

CONTENT

- Strip required formwork
- Tool surface
- Select cure method
- Apply cure
 - Wet burlap
 - Misting
 - Spraying
 - Chemical curing compound
- Disposal

Achievement Criteria: (note: This is a capstone project for R Line)

Performance The learner will mix and install drypack grout.

Conditions The learner will be given:

- Specifications
- Instruction sheet
- Material
- Tools and equipment
- PPE

Criteria The learner be evaluated on:

- Following safety procedures
- Use of PPE
- Consistency of mix
- Installation
- Quality of finish
- Curing procedures
- Completed within specified time
- Housekeeping



Line (GAC): **S** **PERFORM CUTTING AND CORING**
Competency: **S1** **Perform cutting**

Objectives

To be competent in this area, the individual must be able to:

- Perform cutting.

LEARNING TASKS

1. Perform cutting

CONTENT

- Determine location/depth
- Hazard assessment
 - Conduits
 - Post-tension cables
 - Uncontrolled force
- Cordoning off/barricades
- Wet or dry cut
- Equipment required
 - Cut-off saw
 - Conventional floor saw
 - Early entry saw
 - Wall saw
- Clean up/disposal



Line (GAC): **S** **PERFORM CUTTING AND CORING**
Competency: **S2** **Perform coring**

Objectives

To be competent in this area, the individual must be able to:

- Describe coring procedures.

LEARNING TASKS

1. Describe coring procedures

CONTENT

- Determine location/depth/diameter
- Hazards
 - Conduits
 - Post-tension cables
 - Uncontrolled force
 - Rotating equipment
 - Dust, debris, slurry
- Cordoning off/barricades
- Wet or dry cut
- Equipment required
 - Coring machine
 - Hammer drill
 - Tooling
- Clean up/disposal



Section 4

ASSESSMENT GUIDELINES



Assessment Guidelines – Level 1

Level 1 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:		CONCRETE FINISHER LEVEL 1	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
A	PERFORM SAFETY-RELATED FUNCTIONS	10%	0%
B	USE TOOLS AND EQUIPMENT	7%	0%
C	ORGANIZE WORK	5%	20%
D	USE COMMUNICATION AND MENTORING TECHNIQUES	2%	0%
E	PREPARE SITE	5%	0%
F	USE FORMWORK	5%	0%
G	PLACE CONCRETE	7%	0%
H	LEVEL CONCRETE	8%	0%
I	FLOAT CONCRETE	8%	25%
J	HAND TOOL CONCRETE	8%	0%
K	TROWEL CONCRETE	10%	25%
M	CURE CONCRETE	5%	0%
N	CREATE CONTRACTION JOINTS	5%	0%
O	PROTECT CONCRETE	5%	0%
P	REPAIR AND RESTORE CONCRETE	10%	30%
	Total	100%	100%
In-school theory / practical subject competency weighting		50%	50%
Final in-school mark Apprentices must achieve a minimum 70% for the final in-school mark to be eligible to write the Concrete Finisher Standardized Level exam		IN-SCHOOL %	



<p>In-school Mark Combined theory and practical subject competency multiplied by</p>	<p align="center">80%</p>
<p>Standardized Level Exam Mark The exam score is multiplied by</p>	<p align="center">20%</p>
<p>Final Level Mark</p>	<p align="center">FINAL%</p>



Assessment Guidelines – Level 2

Level 2 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:		CONCRETE FINISHER LEVEL 2	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
B	USE TOOLS AND EQUIPMENT	5%	0%
C	ORGANIZE WORK	5%	20%
D	USE COMMUNICATION AND MENTORING TECHNIQUES	3%	0%
E	PREPARE SITE	5%	0%
F	USE FORMWORK	5%	0%
G	PLACE CONCRETE	8%	0%
H	LEVEL CONCRETE	10%	10%
I	FLOAT CONCRETE	10%	0%
J	HAND TOOL CONCRETE	7%	0%
K	TROWEL CONCRETE	10%	0%
L	APPLY SURFACE TREATMENTS TO CONCRETE	7%	0%
P	REPAIR AND RESTORE CONCRETE	10%	35%
Q	APPLY SURFACE TREATMENT TO HARDENED CONCRETE	7%	0%
R	GROUT	5%	35%
S	PERFORM CUTTING AND CORING	3%	0%
	Total	100%	100%
In-school theory / practical subject competency weighting		45%	65%
Final in-school mark		IN-SCHOOL %	

All apprentices who complete Level 2 of the Concrete Finisher program with a FINAL level percentage score of 70% or greater will write the Interprovincial Red Seal examination as their final assessment. A minimum percentage score of 70% on the examination is required for a pass.



Section 5

TRAINING PROVIDER STANDARDS



Facility Requirements

Classroom Area

- 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

Shop Area

- Compliance with all local and national codes and occupational safety requirements
- Space for a tool crib
- 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

Lab Requirements

- N/A

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

Other

- N/A



Tools and Equipment

Recommended numbers indicated are based on a class of 16 students.

Personal Protective Equipment (PPE) and Safety Equipment– Both Levels

Disposable hearing protection 2 Eye wash station 4 Fire extinguisher 3 First aid kit	16 Gloves 16 Knee pad 16 Safety glasses/goggles/smoggles 4 Spiked footwear
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Hand Tools – Both Levels

Aluminum handles 3 Broom, push 16 Brush, water 16 Bucket Bull float (wood, magnesium) 2 Chalk line 8 Cold chisels 8 Come along 2 Crowbar 4 Darby 16 Edger 12 Extension cords 4 Finishing broom 16 Hammer, claw 16 Hand float, magnesium 8 Hand float, resin	4 Hand level 4 Hand saw 2 Lifting hook 16 Margin trowel 16 Pointing trowel 2 Pry bar 8 Rake 4 Roller applicator 2 Scraper 8 Square shovel 1 Squeegee 8 String line 4 Water hose 1 Wet/dry vacuum 4 Wheelbarrow
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Hand Tools –Level 1 Only

4 Carborundum brick (hand stone) 16 Centre edger 2 Cone wrench 4 Fresno trowel 16 Groover	16 Hand screed 1 Jitterbug/ buggy roller 8 Kneeboard and slider 4 Skate (attachment) 1 Tining tool
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Hand Tools – Level 2 Only

4 Bush hammer 2 Caulking gun 1 Check rod 4 Cove base tool 16 Hand float, sponge 16 Hand trowel 2 Handled smoothers	1 Highway straightedge (bump cutter) 1 Spiked roller 3 Sprayer bottle 2 Tamper 18 Texturing stamp 4 Touch-up roller 3 Watering can
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Power Tools – Both Levels

8	Angle grinder	1	Generator
8	Chipping hammer and bit	6	Portable light
3	Drill with mixing paddle	8	Power bush hammer
2	Floor grinder	1	Pressure washer

Power Tools – Level 1 Only

2 Mortar mixer

Power Tools – Level 2 Only

1	Air compressor	3	Power trowel and blades (finishing blades and float attachments)
4	Hammer drill	1	Sand/shot blaster
1	Power buggy	1	Scarifier/planer
2	Power saw and blades (quick-cut, walk behind, early entry saws)	1	Vibrator
2	Power screed (roller, truss, vibratory)		

Measuring and Testing Equipment – Both Levels

1	Air meter	4	Straight edge
16	Builders' level	16	Tape measure
2	Laser level	4	Thermometer
1	Slump cone and rod	1	Transit
16	Square		



Reference Materials

Required Reference Materials

Kosmatka, S. H., & Wilson, M. L. (2002). *Design and control of concrete mixtures*. Skokie, IL: Portland Cement Association. 7th Canadian edition.

Recommended Resources

Concrete materials and methods of concrete construction: test methods and standard practices for concrete. (2014). Mississauga, Ontario, Canada: CSA Group. A23.1 /A23.2-14

Harris, B. (2004). *Bob Harris guide to stamped concrete*. Douglasville, GA: Decorative Concrete Institute.

Harris, B. (2005). *Bob Harris guide to concrete overlays and toppings*. Douglasville, GA: Decorative Concrete Institute.

Tarr, S. M., & Farny, J. A. (2008). *Concrete floors on ground*. Skokie, IL: Portland Cement Association.

Other Resources

[ACI Certification](#): Specialty Commercial/Industrial Concrete Flatwork Finisher

Occupational Health and Safety Regulation. WorkSafeBC. <https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation>



Instructor Requirements

Occupation Qualification

The instructor must possess:

- A Concrete Finisher BC Certificate of Qualification with Red Seal Endorsement, or
- A Concrete Finisher Certificate of Qualification from another Canadian jurisdiction with Red Seal Endorsement.

Work Experience

- A minimum of 5 years' experience working in the industry as a journeyperson.

Instructional Experience and Education

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

- An Instructors Diploma or equivalent
- A Bachelor's Degree in Education
- A Master's Degree in Education



Appendices



Appendix A Glossary of Acronyms

ANSI	American National Standards Institute
CSA	Canadian Standards Association
FLRA	Field Level Risk Assessment
GFCI	Ground fault circuit interrupters
GPS	Global positioning system
GU	General use (cement)
HE	High early (cement)
HS	High sulfate resistant (cement)
ICF	Insulated concrete forming
LH	Low heat of hydration (cement)
LNG	Liquefied natural gas
MS	Moderate sulfate resistant (cement)
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
SDS	Safety Data Sheet(s)
SSD	Surface saturated dry
WHMIS	Workplace Hazardous Materials Information System



Appendix B Previous Contributors

The previous Program Outline (2010) was prepared with the advice and direction of an industry steering committee. Members included:

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