

SKILLED**TRADES**^{BC}

PROGRAM OUTLINE

Construction Craft Worker

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CONSTRUCTION CRAFT WORKER PROGRAM OUTLINE

BASED ON RSOS 2025

**Developed by
SkilledTradesBC
Province of British Columbia**

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Section 1

INTRODUCTION

Construction Craft Worker

Foreword

This 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 Construction Craft Worker 2025 Red Seal Occupational Standard (RSOS). It was developed by 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.

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 in Section 4 for more details.

Achievement Criteria are included for 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. 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 WorkSafe BC 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 themselves about the Occupational Health and Safety Regulation pertaining to their work.

Acknowledgements

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

- Andy Smith Construction and Specialized Workers Union, Local 1611
- Fred Webber Construction and Specialized Workers Union, Local 1611
- Tom Miller Construction and Specialized Workers Union, Local 1611

SkilledTradesBC would like to acknowledge the dedication and hard work of all the industry representatives appointed to identify the training requirements of the Construction Craft Worker occupation.

Previous Contributors

Industry and Instructor Subject Matter Experts retained to assist in the development and review of the 2015 Program Outline:

- Barry Kirton Construction and Specialized Workers Union, Local 1611
- Bob Aeichele Construction and Specialized Workers Union, Local 1611
- Curtis Duke Construction and Specialized Workers Union, Local 1611
- Fred Webber Construction and Specialized Workers Union, Local 1611
- Jeff Anders Construction and Specialized Workers Union, Local 1611
- Mike Bokstrom Construction and Specialized Workers Union, Local 1611
- Miles Cameron Construction and Specialized Workers Union, Local 1611
- Robert Ryl Construction and Specialized Workers Union, Local 1611
- Ron Champagne Construction and Specialized Workers Union, Local 1611
- Tom Miller Construction and Specialized Workers Union, Local 1611

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	Communicates program length and structure, and all pathways to completion	Illustrates the length and structure of the program	Illustrates the length and structure of the program, and pathway to completion	Illustrates the challenger pathway to Certificate of Qualification
OAC	Communicates the competencies that industry has defined as representing the scope of the occupation	Displays the competencies that an apprentice is expected to demonstrate in order to achieve certification	Displays the competencies apprentices will achieve as a result of program completion	Displays the competencies challengers 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	Shows 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	Shows 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	Shows 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, measurable 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
Assessment Guidelines	Shows the general areas of competency covered in each level of technical training, the theory and practical grading weight, and the calculation method for final percentage marks	Shows the general areas of competency covered in the technical training, the grading weight for each GAC, and the percentage of that time spent on theory versus practical application	Shows the general areas of competency covered in each level of technical training, the theory and practical grading weight, and the calculation method for final percentage marks	Shows the relative weightings of various general areas of competency within the occupation on which assessment is based

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 A – Glossary of Acronyms	Defines program specific acronyms	Defines program specific acronyms	Defines program specific acronyms	Defines program specific acronyms
Appendix B – Summary of Achievement Criteria	Summarizes and organizes expected practical assessments by level	Summarizes and organizes expected practical assessments by level	Summarizes and organizes expected practical assessments by level	

Section 2

PROGRAM OVERVIEW

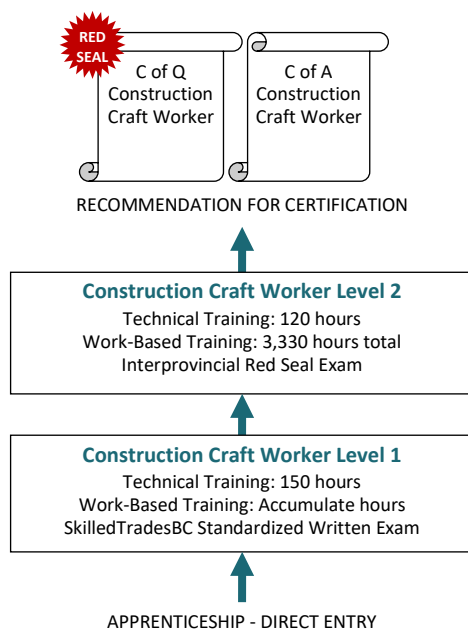
Construction Craft Worker

Program Credentialing Model

Apprenticeship Pathway

This graphic provides an overview of the Construction Craft Worker apprenticeship pathway.

C of Q = Certificate of Qualification
C of A = Certificate of Apprenticeship



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

CONSTRUCTION CRAFT WORKER

Occupation Description: Construction Craft Workers work mostly on construction sites in residential, institutional, commercial, and industrial settings, including pipelines, utilities, hydroelectric dams, roadways, bridges, tunnels, shipyards, mining and railways. Construction Craft Worker tasks include site preparation and cleanup, setting up and removing access equipment, and assisting on concrete, masonry, steel, wood and pre-cast erection projects. They handle materials and equipment and perform demolition, excavation and compaction activities. They may also perform site safety and security checks.

USE SAFE WORK PRACTICES A	Manage workplace hazards A1 1 2	Apply OHS regulations and WorkSafeBC standards A2 1	Use fall protection systems and equipment A3 1	Use personal protective equipment A4 1	Use fire safety procedures A5 1	Use safety committees A6 2
	Perform safety watch A7 1					
USE COMMUNICATION, MENTORING, AND CONTINUOUS LEARNING TECHNIQUES B	Participate in a healthy and respectful work environment B1 1	Use communication techniques B2 1	Use mentoring techniques B3 2	Maintain continuous learning B4 2		
USE TOOLS AND EQUIPMENT C	Use hand tools C1 1	Use power tools C2 1	Use powder-actuated tools C3 1	Use rigging and hoisting equipment C4 1	Use portable equipment C5 1	Use mobile equipment C6 1
	Use sandblasters C7 1	Use packers C8 1				

Section 2 Program Overview

PERFORM ROUTINE TRADE ACTIVITIES D	Install permanent and temporary fencing D1	Erect and dismantle hoarding/enclosures D2	Perform traffic control D3	Establish grades and elevations D4	Handle materials D5	Install membranes D6																																			
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PERFORM CONCRETE WORK G	Form concrete G1	Place and finish concrete G2	Modify concrete G3	Install grout, epoxies, and caulking G4																																					
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Section 2
Program Overview

PERFORM UTILITIES AND PIPELINE TASKS I	Install utility piping					I1
	1	2				
	Perform pipeline activities					I2
		2				
	Perform pipeline maintenance					I3
		2				
PERFORM ROADWORK J	Prepare and build roads					J1
	1	2				
	Install roadwork components					J2
	1					

Training Topics and Suggested Time Allocation

CONSTRUCTION CRAFT WORKER – LEVEL 1

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line A	USE SAFE WORK PRACTICES	10%	80%	20%	100%
A1	Manage workplace hazards		✓		
A2	Apply OHS regulations and WorkSafeBC standards		✓		
A3	Use fall protection systems and equipment		✓	✓	
A4	Use personal protective equipment		✓	✓	
A5	Use fire safety procedures		✓		
A7	Perform safety watch		✓		
Line B	USE COMMUNICATION, MENTORING, AND CONTINUOUS LEARNING TECHNIQUES	5%	100%	0%	100%
B1	Participate in a healthy and respectful work environment		✓		
B2	Use communication techniques		✓		
Line C	USE TOOLS AND EQUIPMENT	8%	70%	30%	100%
C1	Use hand tools		✓		
C2	Use power tools		✓	✓	
C3	Use powder-actuated tools		✓		
C4	Use rigging and hoisting equipment		✓		
C5	Use portable equipment		✓		
C6	Use mobile equipment		✓		
C7	Use sandblasters		✓		
C8	Use packers		✓	✓	
Line D	PERFORM ROUTINE TRADE ACTIVITIES	15%	60%	40%	100%
D1	Install permanent and temporary fencing		✓	✓	
D2	Erect and dismantle hoarding/enclosures		✓		
D3	Perform traffic control		✓		
D4	Establish grades and elevations		✓		
D5	Handle materials		✓		
D6	Install membranes		✓		
D7	Install insulating materials		✓		
D8	Use documentation, blueprints, and specifications		✓	✓	
D9	Use basic trade math		✓	✓	
Line E	PERFORM SITE WORK	15%	100%	0%	100%
E1	Prepare site		✓		
E2	Perform ground work		✓		
E3	Perform demolition		✓		
E4	Apply excavation and shoring practices		✓		
E5	Service site		✓		

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line F	USE SCAFFOLDING AND ACCESS EQUIPMENT	10%	50%	50%	100%
F1	Use scaffolding		✓	✓	
F2	Use access equipment		✓		
Line G	PERFORM CONCRETE WORK	18%	50%	50%	100%
G1	Form concrete		✓	✓	
G2	Place and finish concrete		✓	✓	
G4	Install grout, epoxies, and caulking		✓		
Line H	PERFORM MASONRY WORK	3%	100%	0%	100%
H2	Tend to bricklayers		✓		
Line I	PERFORM UTILITIES AND PIPELINE TASKS	8%	70%	30%	100%
I1	Install utility piping		✓	✓	
Line J	PERFORM ROADWORK	8%	100%	0%	100%
J1	Prepare and build roads		✓		
J2	Install roadwork components		✓		
Total Percentage for Construction Craft Worker Level 1		100%			

Training Topics and Suggested Time Allocation

CONSTRUCTION CRAFT WORKER – LEVEL 2

		% of Time	% of Time Allocated to:		
			Theory	Practical	Total
Line A	USE SAFE WORK PRACTICES	5%	100%	0%	100%
A1	Manage workplace hazards		✓		
A6	Use safety committees		✓		
Line B	USE COMMUNICATION, MENTORING, AND CONTINUOUS LEARNING TECHNIQUES	3%	100%	0%	100%
B3	Use mentoring techniques		✓		
B4	Maintain continuous learning		✓		
Line D	PERFORM ROUTINE TRADE ACTIVITIES	25%	40%	60%	100%
D1	Install permanent and temporary fencing		✓	✓	
D3	Perform traffic control		✓		
D4	Establish grades and elevations		✓	✓	
D5	Handle materials		✓		
D6	Install membranes		✓	✓	
D7	Install insulating materials		✓	✓	
D8	Use documentation, blueprints and specifications		✓	✓	
D9	Use basic trade math		✓	✓	
Line E	PERFORM SITE WORK	15%	50%	50%	100%
E1	Prepare site		✓		
E2	Perform ground work		✓		
E3	Perform demolition		✓	✓	
Line F	USE SCAFFOLDING AND ACCESS EQUIPMENT	7%	40%	60%	100%
F1	Use scaffolding		✓	✓	
Line G	PERFORM CONCRETE WORK	20%	30%	70%	100%
G1	Form concrete		✓	✓	
G2	Place and finish concrete		✓	✓	
G3	Modify concrete		✓	✓	
G4	Install grout, epoxies, and caulking		✓	✓	
Line H	PERFORM MASONRY WORK	4%	100%	0%	100%
H1	Prepare masonry work		✓		
H2	Tend to bricklayers		✓		
Line I	PERFORM UTILITIES AND PIPELINE TASKS	15%	80%	20%	100%
I1	Install utility piping		✓	✓	
I2	Perform pipeline activities		✓		
I3	Perform pipeline maintenance		✓		
Line J	PERFORM ROADWORK	6%	60%	40%	100%
J1	Prepare and build roads		✓	✓	
Total Percentage for Construction Craft Worker Level 2		100%			

Section 3

PROGRAM CONTENT

Construction Craft Worker

Level 1

Construction Craft Worker

Line (GAC):	A	USE SAFE WORK PRACTICES
Competency:	A1	Manage workplace hazards

Objectives

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

- Describe worksite hazards
- Describe working in confined spaces
- Describe the assessment of worksite hazards
- Describe worksite safety policies
- Describe emergency procedures
- Describe the control of workplace hazards
- Describe the removal of hazardous materials
- Describe effective communication

LEARNING TASKS

1. Describe worksite hazards

CONTENT

- Acute and chronic medical conditions
- Sharp objects – glass and metal
- Overhead hazards / moving equipment
- Electrical
- Flammable and explosive materials
- Atmospheres
 - Flammable
 - Explosive
 - Oxygen deficient
- Environmental
 - Weather
 - Work area
- Slips, trips and falls
- Toxic substances
 - Biohazards
 - Heavy metals
 - Asbestos
 - Industry products
 - Mold
- Respiratory illness
 - Silicosis
 - Asbestos related illnesses
- Repetitive strain injuries
- Back injuries
- Excavations
- Working around heavy equipment
- Ladders

LEARNING TASKS

CONTENT

- Work platforms
 - Transportation of dangerous goods
 - Lockout procedures
 - Compressed gas
 - Explosive material (dust)
 - Lifting procedures
 - Personal apparel
 - Clothing
 - Hair and beards
 - Jewellery
 - Housekeeping
 - Horseplay
 - Distractions
 - Headphones
 - Cell phones
 - Respect for the safety of others
 - Constant awareness of surroundings
 - Safe attitude
 - Management of hazards
 - Weather
 - Heat and cold
2. Describe confined spaces
- Confined space definition
 - Legal definition
 - Health and safety definition
 - Hazard classifications
 - Levels of confined space certification
 - Section 9 of Occupational Health and Safety (OHS)
 - Responsibilities of worker and employer
 - Procedures
 - Access / egress
 - Hole/fire watch
 - Air quality testing
 - Lockout and isolation
 - Ventilation
 - Cleaning / purging / venting / inerting
 - Rescue procedures
 - Entry permits
3. Describe equipment used when working in a confined space
- Ventilation systems

LEARNING TASKS

CONTENT

- | | |
|--|--|
| | <ul style="list-style-type: none"> • Ladders • Tripods • Harnesses • Air testers |
| 4. Describe the assessment of worksite hazards | <ul style="list-style-type: none"> • As per job requirements • Field level risk assessment |
| 5. Describe worksite safety policies | <ul style="list-style-type: none"> • Site orientations <ul style="list-style-type: none"> ○ Hazard assessment ○ Conditions ○ Meeting requirements ○ Reporting hazards and incidents ○ Investigations ○ Committees ○ Employee orientation ○ First aid ○ Hearing ○ Records and statistics ○ Non-compliance procedures • First aid facilities • Record keeping • Reporting to first aid attendant • Control zone identification • Minimum standards • Acts and Regulations |
| 6. Describe emergency procedures | <ul style="list-style-type: none"> • Emergency shutoffs • Fire control systems • Eye wash facilities • Emergency exits • Emergency contact / phone numbers • Marshalling / mustering areas • Emergency horn protocol • Emergency rescue procedures |
| 7. Describe the control of workplace hazards | <ul style="list-style-type: none"> • Safety inspection • Equipment inspection • Engineering controls • Administrative controls |

LEARNING TASKS

CONTENT

- | | |
|--|--|
| | <ul style="list-style-type: none"> • Lockout / tag-out • OHS programs <ul style="list-style-type: none"> ○ Regulatory ○ Contractor specific |
| 8. Describe the removal of hazardous materials | <ul style="list-style-type: none"> • Types of hazardous materials • Types of Personal Protective Equipment (PPE) required • WHMIS |
| 9. Describe effective communication | <ul style="list-style-type: none"> • Ability to follow / give instructions • Ability to clarify instructions • Hand signals |

Line (GAC):	A USE SAFE WORK PRACTICES
Competency:	A2 Apply OHS regulations and WorkSafeBC standards

Objectives

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

- Locate Workers' Compensation Act terms under which conditions compensation will be paid
- Locate general duties of employers, employees and other
- Locate the Workers' Compensation Act requirements for the reporting of accidents
- Locate the "Core Requirements" of the Occupational Health and Safety (OHS) Regulation
- Locate the "General Hazard Requirements" of the OHS Regulation
- Describe Occupational Health and Safety information relevant to Construction Craft Workers
- Describe procedures for obtaining safety permits and certificates

LEARNING TASKS	CONTENT
1. Locate terms used in the Workers' Compensation Act	• Definitions, Section 1 of the Act
2. Locate conditions under which compensation will be paid	• Part 1, Division 2 of the Act
3. Locate general duties of employers, employees and others	• Part 3, Division 3, Sections 115-124
4. Locate Workers Compensation Act requirements for the reporting of accidents	• Part 1, Division 5, Sections 53 and 54 of the Act
5. Locate the "Core Requirements" of the OHS Regulation	• Definitions • Application ○ Rights and responsibilities ○ Health and Safety Programs ○ Investigations and reports ○ Workplace inspections ○ Right to refuse unsafe work ○ Recognition, correction and reporting of unsafe work conditions and practices • General conditions ○ Building and equipment safety ○ Emergency preparedness ○ Preventing violence ○ Working alone ○ Ergonomics ○ Illumination ○ Indoor air quality ○ Smoking

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <p>6. Locate the “General Hazard Requirements” of the OHS Regulation</p> | <ul style="list-style-type: none"> • Chemical and biological substances • Substance specific requirements • Noise, vibration, radiation and temperature • Personal protective clothing and equipment • Confined spaces • De-energization and lockout • Fall protection • Tools, machinery and equipment • Ladders, scaffolds and temporary work platforms • Rigging and hoisting equipment • Mobile equipment • Transportation of workers • Traffic control • Electrical safety |
| <p>7. Describe Occupational Health and Safety information that is relevant to the Construction Craft Worker trade</p> | <ul style="list-style-type: none"> • As per documentation |
| <p>8. Describe procedures for obtaining safety permits and certificates</p> | <ul style="list-style-type: none"> • WHMIS certification • Confined space awareness training • Fall protection training • Other certificates and permits |

Line (GAC):	A	USE SAFE WORK PRACTICES
Competency:	A3	Use fall protection systems and equipment

Objectives

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

- Describe fall protection equipment
- Describe fall protection systems
- Describe fall protection plans
- Inspect, assemble and disassemble fall protection equipment and systems
- Use a harness

LEARNING TASKS

1. Describe fall protection equipment

CONTENT

- Fall arrest / restraint / work positioning equipment
 - Beam roller
 - Lanyard
 - Carabiner
 - Shock-absorbing devices
 - Retractable devices
 - Rope grab
 - Vertical and horizontal lines
 - Cable / nylon tie-off slings
 - Harness
- Equipment standards (CSA, ASTM, ANSI)
- Inspection and maintenance
- Worksite awareness
- Occupational Health and Safety (OHS) Regulations, Part 11

2. Describe fall protection systems

- Railings / scaffolds
- Barricades and control zones
- Safety monitor
- Nets
- Hardware
- Anchor points
- Assembly
- Ladder systems
- Vertical and horizontal systems

3. Describe the development of a fall protection plan

- Identification of work area and hazards
- Listing and choosing equipment
- Rescue procedures
- Hierarchy of fall protection procedures
- Requirements for a written plan

LEARNING TASKS

CONTENT

- | | |
|--|---|
| 4. Inspect, assemble and disassemble fall protection equipment and systems | <ul style="list-style-type: none"> • OHS Regulations, Part 11 • Assembly / disassembly • Routine / scheduled inspection and maintenance <ul style="list-style-type: none"> ○ Required reference material |
| 5. Use a harness as per industry standards | <ul style="list-style-type: none"> • Inspection • Proper use • Specifications <ul style="list-style-type: none"> ○ D-ring positioning ○ Proper fit • Buddy system |

Achievement Criteria

- | | |
|-------------|---|
| Performance | <p>The learner will be able to</p> <ul style="list-style-type: none"> • Assemble equipment • Identify anchor point • Put on harness • Perform buddy check • Use equipment |
| Conditions | <p>The learner will be given:</p> <ul style="list-style-type: none"> • PPE • Harness • Connecting devices • Anchoring point |
| Criteria | <p>The learner will be evaluated on</p> <ul style="list-style-type: none"> • Fit of the harness • Performance of all necessary inspections • Correct placement of connections • Effective communication |

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): **A USE SAFE WORK PRACTICES**
Competency: **A4 Use personal protective equipment**

Objectives

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

- Describe personal protective equipment (PPE)
- Demonstrate the use of PPE

LEARNING TASKS

1. Describe PPE

CONTENT

- Types
 - Head protection
 - Footwear
 - Harnesses
 - Hearing protection
 - Respirators
 - Eye protection
 - Face shields
 - Hand protection
- Testing
 - Verification of certification

2. Demonstrate the use of PPE

- Application
- Inspection
- Storage
- Disposal

Achievement Criteria

Performance The learner will be able to

- Select the correct PPE for the task
- Use PPE

Conditions The learner will be given:

- PPE

Criteria The learner will be evaluated throughout the course when performing practical tasks / exercises on their ability to use PPE.

PPE use must be performed within specifications acceptable to industry.

Line (GAC): **A USE SAFE WORK PRACTICES**
Competency: **A5 Use fire safety procedures**

Objectives

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

- Describe preventative fire safety precautions
- Describe considerations and steps to be taken prior to fighting a fire
- Describe the use of fire extinguishers

LEARNING TASKS

1. Describe preventative fire safety precautions

CONTENT

- Classified combustibles
- Flammables
- Explosive materials
- Classes A-D
- Symbols and colours
- National Fire Protection Association (NFPA)
- Safe handling and storage of fuels
 - Diesel
 - Gasoline
 - Compressed gases
 - Chemicals
- Lubricants
- Contaminated rags
- Combustible explosive dusts
- Aerosols
- WHMIS Classifications
- Labelling

2. Describe the considerations and steps to be taken prior to fighting a fire

- PPE
- Exit route identification
- EMS notification procedures
 - Alarm
 - Evacuation
 - Muster area
- Ignition source identification
- Type of fire
 - Wood / paper
 - Electrical
 - Flammable liquids

LEARNING TASKS

3. Describe the use of fire extinguishers

CONTENT

- PPE
- Personal safety
- Knowledge of equipment
 - Inspection / date tags
- Awareness of fire suppression/fighting systems
- PASS
 - Pull
 - Aim
 - Squeeze
 - Sweep

Line (GAC): **A USE SAFE WORK PRACTICES**
Competency: **A7 Perform safety watch**

Objectives

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

- Describe monitoring hazardous gases and atmospheres
- Describe performing spark watch, bottle watch and confined space watch
- Describe monitoring heaters

LEARNING TASKS

1. Describe monitoring hazardous gases and atmospheres

CONTENT

- regulations
- Types and characteristics of gases
 - Hydrogen sulphide (H₂S)
 - Carbon monoxide (CO)
 - Methane (CH₄)
 - Oxygen (O₂)
 - O₂ rich atmosphere
 - O₂ deficient atmosphere
- Areas to be monitored
- Work being performed
- Types of equipment
 - Selection
 - Usage
- Permissible exposure levels
- Time weighted averages
- Evacuation plans
- Readings and alarms on equipment
- Calibration of monitoring equipment
- Recording of readings
- Alert others when atmospheric conditions change
- Governmental and site-specific rules and regulations
- Area where work is being performed
- Work being performed
 - Welding
 - Cutting
 - Grinding
- Combustible and non-combustible materials
- Evacuation plans
- Assessing and responding to conditions
 - Using fire extinguishers

2. Describe performing spark watch

LEARNING TASKS

CONTENT

3. Describe performing bottle watch

- Alerting others to evacuating jobsite
- Calling emergency services
- Governmental and site-specific rules and regulations
- Area where work is being performed
- Work being performed
- Media blasting
- Types of compressed gases that need to be monitored
 - Breathable air
 - Propane
- Meaning of gauge readings
 - When to change bottles
 - When alternate sources need to be activated
- Inform confined space attendee of change or changing conditions

4. Describe performing confined space watch

- Define a confined space according to:
 - Government regulations
 - Site-specific regulations
- Training and certification required
- Types and characteristics of gases
 - Hydrogen sulphide (H₂S)
 - Carbon monoxide (CO)
 - Methane (CH₄)
- Characteristics of the area to be monitored
- Work being performed
- Types of monitoring equipment
- Permissible exposure levels
- Time weighted averages
- Emergency rescue and evacuation plans
- Rescue and evacuation equipment
 - Tripods
 - Harnesses
 - Anklets
 - Lifelines
- Communication methods
 - Hand signals
 - Rope signals
 - Using radios
- Confined space entry equipment

LEARNING TASKS

CONTENT

- Select and use monitoring equipment
 - Interpret readings and alarms on monitoring equipment
 - Zero monitoring equipment
 - Alert others of changes in working conditions
 - Atmospheric changes
 - Environmental changes
 - Hazardous activities around work area
 - Recording readings
 - Assessing and responding to conditions
 - Calling emergency and rescue services

- 5. Describe monitoring heaters
 - Propane tank certification
 - Types of heaters
 - Propane
 - Electric
 - Radiant
 - Governmental regulations and jobsite specific rules
 - Gauge readings
 - Keeping heaters operating
 - Inspection of heaters and their surroundings
 - Recognize hazards
 - Melting tarpaulins
 - Fires
 - Leaks

- 6. Describe worker watch
 - Site specific considerations
 - Location
 - Hazards
 - Isolation
 - Wildlife
 - Risk level of work being performed
 - Safety monitor program

Line (GAC):	B	USE COMMUNICATION, MENTORING, AND CONTINUOUS LEARNING TECHNIQUES
Competency:	B1	Participate in a healthy and respectful work environment

Objectives

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

- Describe techniques to manage personal health and well-being
- Describe aspects of professionalism

LEARNING TASKS

1. Describe personal health and well-being

CONTENT

- Impacts on professional practice and healthy work environment
- Physical and emotional requirements of trade
- Workplace stressors
- Organizational cultures
 - Collaboration
 - Community
- Behaviours that affect physical and mental health
 - Diet
 - Fitness
 - Sleep

Managing stress and emotions

2. Describe techniques to manage personal health and well-being

- Stress management
- Time management
- Supports
- Recognizing effects of substances before, during, and after work

3. Describe aspects of professionalism

- Professional ethics
 - Values
- Codes of conduct

4. Describe work-life balance

- Job satisfaction
 - Working conditions
 - Flexibility
 - Finances

5. Describe workplace equity, diversity, and inclusion

- Workplace free from harassment, discrimination, and violence
 - Gender microaggressions
 - Racial microaggressions

LEARNING TASKS

CONTENT

- Unconscious bias
- Allyship
- Behaviour and conduct
 - Employee rights and responsibilities
 - Employer rights and responsibilities
- Equity
 - Fair recruiting, hiring, and promotion practices
- Acceptance and inclusion
 - Cultural and psychological safety
 - Accommodations
- Anti-harassment/anti-bullying policies

Line (GAC):	B	USE COMMUNICATION, MENTORING, AND CONTINUOUS LEARNING TECHNIQUES
Competency:	B2	Use communication techniques

Objectives

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

- Describe methods of communication
- Demonstrate the role of the apprentice
- Describe the role of a mentor
- Describe workplace equity, diversity, and inclusion

LEARNING TASKS

1. Describe effective, inclusive, and respectful communication

CONTENT

- Professionalism
 - Participation
 - Punctuality
 - Conflict resolution
 - Respect
- Modes of communication
 - Face to face
 - Phone
 - Text-based
- Verbal and written instructions
- Trade terminology
- Etiquette and target audience
 - Coworkers
 - Clients/customers
 - Public
 - Other trades
 - Industry contacts
- Harassment and discrimination
 - Language free from prejudice, stereotype, and discrimination
 - Racism
 - Ageism
 - Sexism
 - Homophobia/Transphobia
 - Religious prejudice
 - Physical or mental disability prejudice
 - Gender inclusive language
 - Cultural misappropriation

2. Describe the role of the apprentice

- Apprenticeship responsibilities

LEARNING TASKS

3. Describe the role of the mentor

CONTENT

- Preparedness
- Setting goals
- Self-advocacy
- Developing capabilities
- Constructive feedback
- Building apprenticeship skills and attributes
 - Active listening
 - Compassion
- Mentorship responsibilities
 - Preparedness
 - Setting apprentice up for success
 - Setting measurable goals
 - Tracking progress
 - Developing capabilities
 - Maintaining confidentiality
 - Apprentice advocacy
- Mentorship skills and attributes
 - Inclusiveness
 - Building trust
 - Fairness
 - Compassion
 - Leading by example

Line (GAC): C USE TOOLS AND EQUIPMENT

Competency: C1 Use hand tools

Objectives

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

- Describe the use of hand tools

LEARNING TASKS

1. Describe the use of hand tools

CONTENT

- Safety
- Types
 - Screwdrivers
 - Hammers
 - Wrenches
 - Pry bars
 - Saws
- Sharpening techniques
- Organization
- Procedures / operations
- Care and maintenance
- Storage
- Inspection

Line (GAC):	C	USE TOOLS AND EQUIPMENT
Competency:	C2	Use power tools

Objectives

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

- Use power tools

LEARNING TASKS

1. Describe the use of power tools

CONTENT

- Purpose
- Types
 - Gas
 - Electric
 - Plug-in
 - Battery-powered
 - Hydraulic
 - Pneumatic
- Parts
- Training requirements
- Tool selection for the task
- Inspection
- Set-up
- Safe procedures / operation
- Care and maintenance
 - Sharpening techniques
 - Monitoring / lubrication of moving parts
 - Charging procedures and battery care
 - Replacement of components
 - Storage

2. Use power tools

- Safety and PPE
- Following manufacturers' specifications
- Tool selection for the task
- Inspection
- Set-up
- Safe procedures / operation
- Storage

Achievement Criteria

Performance The learner will be able to perform a task using a power tool.

Conditions The learner will be given:

- PPE
- Power tool
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Selecting the correct PPE
- Selecting the correct tool
- Adherence to task specifications
- Proficiency

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): C USE TOOLS AND EQUIPMENT
Competency: C3 Use powder actuated tools

Objectives

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

- Describe the use of powder actuated tools

LEARNING TASKS

1. Describe the use of powder actuated tools

CONTENT

- Purpose
- Types
 - Manually operated
 - Trigger operated
- Parts and accessories
- Training requirements / awareness
- Tool selection for the task
- Base materials
- Inspection
- Set-up
- Safe procedures / operation
 - Follow manufacturers' specifications
 - Powder charge
 - Fastener selection
- Care and maintenance
 - Monitor / lubricate moving parts
 - Replace components
 - Storage

Line (GAC):	C	USE TOOLS AND EQUIPMENT
Competency:	C4	Use rigging and hoisting equipment

Objectives

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

- Describe rigging and hoisting equipment
- Describe load weight calculations and considerations
- Describe the use of rigging and hoisting equipment

LEARNING TASKS

1. Describe rigging and hoisting equipment

2. Describe load weight calculations and considerations

3. Describe the use of rigging and hoisting equipment

CONTENT

- Types of rigging equipment
 - Shackles
 - Turnbuckles
 - Slings
- Types of hoisting equipment
 - Come-alongs
 - Chainfalls
 - Grip hoists
- Limitations
- Regulations
- Training and certification requirements
- Load weight calculations
- Types of loads
 - Liquid
 - Reinforcing steel
 - Tilt-up panels
- Load radius and center of gravity
- Rated capacity of hardware
- Safety considerations
- Equipment selection
- Equipment use
- Rating for manual lifts
- Rig loads using components
 - Shackles
 - Softeners
 - Slings
 - Hooks
 - Tag lines
 - Spreader beam
- Inspection
- Maintenance
- Storage
- Hand signals / radio use

Line (GAC):	C	USE TOOLS AND EQUIPMENT
Competency:	C5	Use portable equipment

Objectives

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

- Describe the use of portable equipment

LEARNING TASKS

1. Describe portable equipment

CONTENT

- See tools list in Appendix
- Types
 - Water pumps
 - Electric
 - Hydraulic
 - Fuel-powered
 - Concrete pumps
 - Electric
 - Hydraulic
 - Fuel-powered
 - Heaters
 - Electric
 - Fuel-fired
 - Steam
 - Generators
 - Compressors
 - Light plants
 - Quartz lighting
 - Tower lights
- Safety considerations
 - Recognize hazards
 - Follow manufacturers' specifications
- Operation
- Selecting the right equipment for the task
- Equipment placement
- Set-up and organization
- Inspection
- Monitoring and lubrication
- Maintenance of fluids
- Start-up procedures
 - Diesel engines
 - Gasoline engines
- Clean up and storage

2. Describe the use of portable equipment

Line (GAC):	C	USE TOOLS AND EQUIPMENT
Competency:	C6	Use mobile equipment

Objectives

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

- Describe the use of mobile equipment

LEARNING TASKS

1. Describe the types and function of mobile equipment
2. Describe the safe use of mobile equipment

CONTENT

- Ride-on compactors
- Skid steers
- Forklifts
- Mobile Elevated Work Platforms (MEWPs)
- Telehandlers
- Concrete buggies
- Mini excavators
- PPE
- Certification requirements
- Hazards
- Following manufacturers' specifications
 - No modifications
- Select correct equipment for the task
- Operational procedures
- Pre-trip inspection
 - Documentation
- Periodic inspection
 - Walk around
 - Overhead lines
 - Exhaust
 - Ventilation
- Removal of defective equipment
 - Lockout and tag-out
- Communication
 - Warn others / secure area
 - Conflicting jobs
 - Hazard communication
- Compatibility of components
- Maintenance
 - Fluids
 - Belts, radiators
 - Parking

Line (GAC): C USE TOOLS AND EQUIPMENT
Competency: C7 Use sandblasters

Objectives

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

- Describe the use of sandblasters

LEARNING TASKS

1. Describe types and functions of sandblasters

CONTENT

- Components
 - Compressed air
 - Supplied air
 - Nozzle
 - Mask
- Surface types
 - Metal
 - Concrete
 - Glass
 - Pipe

2. Describe the safe use of sandblasters

- Safety
 - PPE
 - Supplied air
 - Filters
 - Whip checks
 - Kill switch
- Secure area
 - Hoarding
 - Line of Fire
- Safety Data Sheets (SDS)
- Sparks
- Ergonomics
- Type of blasting media
 - Silica sand
 - Ground up glass
 - Nut shells
- Rate of flow
 - Pressure
 - Manufacturer's specs
- Blasting procedures
- Regulatory requirements

3. Describe environmental considerations

- Dust collection
- Reclaiming media
- Containment
- Regulatory requirements

Line (GAC): C USE TOOLS AND EQUIPMENT
Competency: C8 Use packers

Objectives

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

- Use packers

LEARNING TASKS

1. Describe types of packers

2. Describe the safety considerations for the use of packers

3. Use packers

CONTENT

- Types
 - Double drum roller
 - 1000 pounder
 - Plate tamper
 - Jumping jack
 - Pogo
 - Hand tamper
- PPE
 - Safety glasses
 - Safety footwear
 - Earplugs
- Following manufacturers' specifications
 - Fuel selection
- Ground conditions
- Running conditions
- Pinch points
- Safety feature inspection
 - Kill switch
- Site hazards
 - Edges
 - Unsuitable soil
- Starting / stopping procedures
 - Check fluids and maintain levels
 - Start on idle
 - Storage
- Material compaction
 - Lift thickness
 - Number of passes
- Desired density of compacted material
- Direction of operation

Achievement Criteria

Performance The learner will be able to use compactors.

Conditions The learner will be given

- PPE
- Compactor
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Awareness of soil conditions
- Adherence to task specifications

Tasks must be performed within specifications acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D1	Install permanent and temporary fencing

Objectives

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

- Install permanent and temporary fencing no periods)

LEARNING TASKS

1. Describe the installation of permanent and temporary fencing

CONTENT

- Types
 - Snow
 - Chain link
 - Silt
 - Modular
- Applications
 - Limiting access
 - Environmental protection
 - Security purposes

2. Install permanent and temporary fencing

- PPE
- Fence type
 - Silt fence
- Selection and location
- Tool selection
- Installation of posts
 - Wood
 - Metal
- Structures to secure fencing

Achievement Criteria

Performance The learner will be able to install permanent and / or temporary fencing.

Conditions The learner will be given:

- PPE
- Tools and materials
- Task specifications
- Regulations

Criteria The learner will be evaluated on

- PPE
- Tools and materials
- Task specifications
- Regulations

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D2	Erect and dismantle hoarding/enclosures

Objectives

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

- Describe the erection and dismantling of hoarding/enclosures

LEARNING TASKS

1. Describe the types and functions of hoarding/enclosures
2. Describe the erection and dismantling of hoarding/enclosures

CONTENT

- Materials
 - Insulated tarpaulins
 - Polyethylene
 - Plywood
- Applications
 - Temperature control
 - Enclosing scaffolding
 - Concrete formwork
 - Environmental protection
 - Privacy
 - Protection of public
- Safety
 - PPE
 - Hazards
- Framework
 - Scaffolding
 - Existing structures
 - Wood
- Secure
 - Wire
 - Nails
 - Rope
 - Cable
 - Weights
- Access and egress

Line (GAC): **D PERFORM ROUTINE TRADE ACTIVITIES**
Competency: **D3 Perform traffic control**

Objectives

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

- Describe traffic control
-

LEARNING TASKS

1. Describe traffic control

CONTENT

- Safety
 - PPE
 - Hazards
- Training and certification requirements
- Regulations
- Duties of flagperson
- Worksites
 - Roadwork
 - Utility installation
 - Concrete placement
 - Occupied buildings
- Types of travel restrictive systems
 - Barricades
 - Flagging
 - Barriers
 - Guardrails
 - Covered walkways
 - Detours for vehicles and pedestrians
 - Temporary signs, signals and pylons

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D4	Establish grades and elevations

Objectives

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

- Describe grades and elevations

LEARNING TASKS

1. Describe grades and elevations

CONTENT

- Applications
 - Site layout
 - Excavation and grading
 - Roadwork
 - Utilities
 - Concrete placement
- Plans and specifications
- Tools and equipment
 - Metal detectors
 - Builders' and laser levels
 - Theodolites
- Elevations and grades
 - Geodetic
 - Site specific
- Temporary benchmarks
 - Fire hydrants
 - Nail and ribbon
 - Grade stakes
- Permanent benchmarks
 - Monuments
 - Legal property pins

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D5	Handle materials

Objectives

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

- Describe the handling of construction materials

LEARNING TASKS

1. Describe the handling of construction materials

CONTENT

- Types of construction materials
 - Lumber
 - Soil
 - Piping
 - Concrete
 - Masonry units
- Storage
- Environmental exposure
- Chemical exposure
- Lifting procedures
 - Manual
- Hazards for handling / storing
 - Propane tanks
 - Oxy-acetylene tanks
- Secure materials
 - Propane tanks
 - Pipes
 - Lumber

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D6	Install membranes

Objectives

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

- Describe the installation of membranes

LEARNING TASKS

1. Describe preparing for the installation of membranes

CONTENT

- Prepare concrete
 - Roughing up
 - Washing
 - Grinding high spots
 - Parging
 - Priming
- Prepare other surfaces
 - Filling low spots
 - Tight joints
 - Repairing ridges
- Tool selection
- Following manufacturers' specifications
- Types
 - Polyethylene
 - Waterproofing membranes
 - Landscaping fabric
 - Fiberboard (Donnacona, Buffalo board)
- Application methods
 - Gluing
 - Torching
 - Spraying
 - Trowelling
 - Roller
 - Self adhesive sheet
- Locations
 - Below grade
 - On walls
 - Behind masonry units
 - On decks
- Protect with materials
 - Treated wood
 - Styrofoam
- Inspection
- Backfilling procedures

Line (GAC): **D PERFORM ROUTINE TRADE ACTIVITIES**
Competency: **D7 Install insulating materials**

Objectives

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

- Describe the installation of insulating materials

LEARNING TASKS

1. Describe the installation of insulating materials

CONTENT

- Types of insulating materials
 - Styrofoam
 - Fireproofing materials
 - Straw
 - Fibreglass
- Applications
 - Preventing underground piping, sewers, and concrete from freezing
 - Structures
- Following manufacturers' specifications
- Engineering requirements
- Installation process
 - Cutting
 - Securing
 - Adhering
 - Applying

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D8	Use documentation, blueprints, and specifications

Objectives

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

- Describe types and uses of drawings
- Describe the alphabet of lines, symbols, and abbreviations
- Describe the parts of the drawings
- Interpret documents, drawings, and specifications

LEARNING TASKS

CONTENT

1. Describe types and uses of drawings	• Views ○ Plan ○ Section ○ Elevation
2. Describe the alphabet of lines, symbols and abbreviations used in drawings	• Lines • Symbols • Abbreviations
3. Describe the parts of the drawings	• Title block • Insets • Legends • Orientation
4. Interpret documents, drawings, and specifications	• Alphabet of lines • Symbols • Abbreviations • Views

Achievement Criteria

Performance	The learner will be able to interpret a set of drawings / sketches.
Conditions	The learner will be given: • A set of drawings • Task specifications
Criteria	The learner will be evaluated on the transfer of information.

Tasks must be performed within specifications and time frames acceptable to industry and the learner must achieve a minimum grade of 70%.

Line (GAC): **D PERFORM ROUTINE TRADE ACTIVITIES**
Competency: **D9 Use basic trade math**

Objectives

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

- Use decimal fractions and formulas to solve problems
- Solve problems of ratio and proportion
- Convert between metric and imperial measurements

LEARNING TASKS

1. Use decimal fractions to solve problems
2. Solve problems of ratio and proportion
3. Convert between metric and imperial measurements
4. Solve problems using formulas

CONTENT

- Add, subtract, multiply, divide
- Decimal notation
- Ratio
- Proportion
- Unknown quantities
- Metric and imperial conversion
- Use of conversion table
- Volume
- Area

Achievement Criteria

Performance The learner will be able to solve simple problems, including:

- Converting between metric and imperial
- Calculating ratio and proportion
- Calculating volume and area

Conditions The learner will be given:

- Calculators
- Conversion table
- Worksheets

Criteria The learner will be evaluated on accuracy of calculations.

Tasks must be performed within specifications acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): **E PERFORM SITE WORK**
Competency: **E1 Prepare site**

Objectives

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

- Describe clearing sites
- Describe setting up site facilities

LEARNING TASKS

1. Describe clearing sites

2. Describe setting up site facilities

CONTENT

- Regulations & requirements
 - Safety
 - Government regulations
 - Permits
 - Environmental
 - Pre job-hazard assessments
- Pre-existing site conditions
 - Existing utilities
 - Areas to protect prior to work being performed
- Worksite and set-up requirements
 - Locations of temporary buildings and fencing
 - Colour-coded flags and markers used to locate utilities
- Bring site to working condition
 - Removing unusable materials and debris
 - Clearing brush
 - Stripping existing asphalt, concrete, topsoil and rocks
- Temporary fuel storage
- Temporary utilities
 - Water and sewer
 - Electrical systems
- Place and level facilities
 - Laydown area
 - Work and warehouse trailers
 - Lunch rooms
 - Washrooms
 - First aid trailer
- Install stairs and temporary connecting platforms to trailers
- Place safety equipment in specified locations
 - Air horns
 - Fire extinguishers
 - Eye wash stations

LEARNING TASKS

CONTENT

- First aid kits

Line (GAC): **E PERFORM SITE WORK**
Competency: **E2 Perform ground work**

Objectives

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

- Describe locating underground utilities
- Describe excavation, backfill and compaction

LEARNING TASKS

1. Describe locating underground utilities

CONTENT

- Safe work permit requirements
- BC One Call
- Soil conditions
- Pre-existing site conditions and existing utilities
- Expose utilities (daylighting / ground disturbance)
- Interpret colour codes
- Interpret as-built drawings

2. Describe the performance of excavation

- Government regulations
- Types of soil
 - Clay
 - Sand
 - Gravel
 - Silt
 - Organic or disturbed
- Types of sub-grades
- Depth and angle of repose of excavation
- Pre-existing site conditions and existing utilities
- Guide Heavy Equipment Operator to accomplish tasks
 - Digging to required depth and slope
 - Take measurements
- Install temporary access and egress to trenches and other excavations

3. Describe backfill and compaction

- Safety requirements
- Backfill material needed
 - Type
 - Gravel
 - Sand

LEARNING TASKS

CONTENT

- Fillcrete
 - Amount
 - Assessment
- Types and thickness of finished road surface
- Moisture content and compaction rates
 - Use of water during compaction
- Bulking
- Guide Heavy Equipment Operator in operations
 - Finishing roadwork sub-grade
 - Compactable lifts
- Excavation components
 - Weeping tiles
 - Culverts
 - Manholes
 - Piping
- Following backfill and compaction procedures according to applications
 - Covering utilities
 - Installing shoring
 - Preparing to pour concrete

Line (GAC): **E PERFORM SITE WORK**
Competency: **E3 Perform demolition**

Objectives

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

- Describe cutting materials
- Describe dismantling structures and components

LEARNING TASKS

1. Describe cutting materials

2. Describe the dismantling of structures and components

CONTENT

- Tool selection
- Safety
 - Hazards
 - PPE
 - Selection and usage of dust control methods
 - Spark control methods
- Types of materials
- Techniques
 - Dismantling
- Governmental and jobsite rules and regulations
- Turn off utilities
 - Water
 - Electrical
- Test utilities to ensure they are de-energized
- Operating methods
 - Following manufacturers' specifications
 - Oxy-fuel torches
 - Igniting
 - Setting and reading gauges
 - Selecting tip types
 - Extinguishing torch
- Attachments
- Material to be removed from specific job-sites
- Removal techniques
- Sequencing
- Government and jobsite rules and regulations
- Selection of attachments
- Load bearing walls and other structural components
- Set up chutes and bins for disposal
- Selection and usage of dust control methods
- Spark control methods
- Isolation or lockout / tag-out utilities
 - Water
 - Electrical

Line (GAC):	E	PERFORM SITE WORK
Competency:	E4	Apply excavation and shoring practices

Objectives

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

- Describe excavation safety requirements
- Describe the excavation process
- Describe types and construction of trench shoring

LEARNING TASKS

1. Describe excavation safety requirements

CONTENT

- Occupational Health and Safety (OHS) Regulations and WorkSafeBC Standards
 - Sloped trench walls
 - Combined sloping and shoring
 - Shoring
 - Benching
 - Soil types
 - Blasting signals
 - Access and egress
 - General public
 - Trench depth and angle of repose
- Precautions when working around excavation equipment

2. Describe the excavation process

- Call before you dig
- Daylight existing utilities
- Excavation to design grade
- Access to excavations
- Excavated materials
- Backfilling and compaction
- Guiding heavy equipment operators

3. Describe types and construction of trench shoring

- Excavations that require shoring
- Types of shoring
 - Timber
 - Trench shields
 - Sheet pilings
- Sequence for installing and removing shoring
- Certification and inspection requirements

Line (GAC): **E PERFORM SITE WORK**
Competency: **E5 Service site**

Objectives

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

- Describe cleaning a site and job facilities
- Describe controlling water runoff
- Describe the set-up of temporary lighting, power, generators and compressors
- Describe site restoration
- Describe tool crib attendant duties
- Describe recycling materials

LEARNING TASKS

1. Describe cleaning a site

CONTENT

- Materials used in construction
- Company or site-specific procedures for controlled materials
- Material that can be used or reused in other applications
- Store material in identified locations
- Selection and use of dust control methods
- Dispose of materials according to site rules
- Recognize and control hazards by performing actions
 - Removing tripping hazards
 - Cleaning spills
 - Rerouting cords
 - Notifying authority as needed
- Weather conditions
 - Removing snow
 - De-icing
 - Ensuring material is secured in windy conditions
- Control ground contamination by using spill kits

2. Describe cleaning jobsite facilities

- PPE
- Types of facilities and corresponding procedures
- Biohazardous materials
- Hazards associated with cleaning products
- Site-specific requirements
 - Vaccination
 - Hazardous material protection
- Cleaning techniques

LEARNING TASKS

CONTENT

- | | |
|--|---|
| 3. Describe the control of water runoff | <ul style="list-style-type: none"> • Disposal of waste and cleaning products according to established procedures |
| 4. Describe the set-up of portable equipment | <ul style="list-style-type: none"> • Government and site-specific rules and regulations • Preventative measures <ul style="list-style-type: none"> ○ Grass mats ○ Grading ○ Installing environmental fencing ○ Other barriers to prevent environmental contamination ○ Control damage ○ Dig trenches and build berms ○ Settling pond • Temporary lighting and power <ul style="list-style-type: none"> ○ String lights • Generators and compressors |
| 5. Describe site restoration | <ul style="list-style-type: none"> • Demolition procedures • Government and jobsite rules and regulations • Protected areas prior to work being performed • Controlled zones and shielding • Document original conditions of jobsite for restoration and other purposes • Restoration activities <ul style="list-style-type: none"> ○ Replacing landscaping ○ Replacing removed material and equipment |
| 6. Describe tool crib attendant duties | <ul style="list-style-type: none"> • Tools, equipment, supplies and consumables • Security requirements • Inventory control • Sign-out and sign-in tools and equipment • Maintenance and minor repairs on tools and equipment • Organization |
| 7. Describe recycling materials | <ul style="list-style-type: none"> • Government and company-specific rules and regulations • Materials |

LEARNING TASKS

CONTENT

- Sort and store recycled materials
- Prepare recycled materials for shipping
- Identify materials that can be reused onsite
 - Forms
 - Plywood
 - Steel

Line (GAC):	F	USE SCAFFOLDING AND ACCESS EQUIPMENT
Competency:	F1	Use scaffolding

Objectives

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

- Describe the erection, inspection, maintenance and dismantling of frame and brace scaffolding
- Describe tending to scaffold erectors
- Demonstrate the erection of scaffolding
- Demonstrate the dismantling of scaffolding

LEARNING TASKS

1. Describe the erection of scaffolding

CONTENT

- Government codes and regulations
- Jobsite specific rules
- Interpreting engineered drawings
- Types
 - Baker's
 - Frame and brace
 - Mast climber system
 - Tube and clamp
 - System scaffolding
- Components
 - Outriggers
 - Hardware
 - Fasteners
- Brace and platform sizes
- Securing for stability
- Bracing
- Working around obstacles
 - Stairwells
 - Open holes
 - Columns
- Secure and level base
 - Mud sills
 - Bases
 - Shimming
- Raising scaffolding components
 - Hand bombing
 - Rigging
- Counterweights and securing of scaffold systems

2. Describe the inspection of scaffolding

- Government codes and regulations

LEARNING TASKS

CONTENT

- Jobsite specific rules
 - Components
 - Planking
 - Outriggers
 - Fasteners
 - Overhang limitations when working with planking
 - Tagging requirements for access
 - Safety inspection requirements
 - Visual checks
 - Welds
 - Bracing components
 - Planks
 - Visual identification of faults
 - Stress cracks
 - Warps
 - Bent bracing
 - Bent framing
 - Tag components for repair or replacement
 - Removal of defective components and scaffolding from service

- 3. Describe the maintenance of scaffolding
 - Requirements
 - Cleaning
 - Lubrication of screw jacks
 - Platform maintenance
 - Greasing of motorized and mechanical scaffolding

- 4. Describe tending to scaffold erectors
 - Governmental codes and regulations
 - Jobsite requirements
 - Brace and platform sizes
 - Tools, equipment and components to be passed to scaffold erectors
 - Raising scaffolding components
 - Hand bombing
 - Rigging

- 5. Describe dismantling scaffolding
 - Starting point and procedure for dismantling
 - Lowering scaffolding components
 - Hand bombing
 - Rigging

LEARNING TASKS

CONTENT

- | | |
|---|---|
| | <ul style="list-style-type: none"> Organizing scaffolding materials and components |
| 6. Demonstrate the erection of scaffolding | <ul style="list-style-type: none"> Frame and brace <ul style="list-style-type: none"> Safety Components Procedure Tools |
| 7. Demonstrate the dismantling of scaffolding | <ul style="list-style-type: none"> Frame and brace <ul style="list-style-type: none"> Safety Components Procedure Tools |

Achievement Criteria

Performance The learner will be able to erect and dismantle frame and brace scaffolding.

Conditions The learner will be given:

- PPE
- Material and tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Assembly and disassembly
- Plumb and level
- Accuracy
- Storage
- Inventory

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	F	USE SCAFFOLDING AND ACCESS EQUIPMENT
Competency:	F2	Use access equipment

Objectives

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

- Describe the use, inspection and maintenance of ladders
- Describe the use, inspection and maintenance of power-elevated work platforms and access equipment

LEARNING TASKS

1. Describe use, inspection and maintenance of ladders

CONTENT

- Types
 - Extension
 - Platform
 - Stepladders
 - Job built
- Regulations
 - Construction
 - Placement
 - Ratio (1:4)
 - 3-point contact
 - Overhang
 - Kickplates
- Capabilities and applications
- Limitations and hazards
- Assessment and preparation of the ground
- Safety inspection requirements
- Identification of ladder defects
 - Bent rungs
 - Split rails
 - Cracks
- Cleaning of ladder rungs

2. Describe use of mobile elevating work platforms (MEWPs) and access equipment

- Types
 - Scissor lifts
 - Bucket lifts
 - Swing stages
 - Boom lifts
- Training and certification requirements
- Equipment limitations
- Weight capacities
- Assessment and preparation of the ground
- Setting of outriggers and pads

LEARNING TASKS

3. Describe inspection and maintenance of mobile elevating work platforms (MEWPs) and access equipment

CONTENT

- Counterweights for swing stages
- Operating procedures
- Controls
 - Emergency switches
 - Outrigger
 - Gas / propane switches
 - Hydraulic
- Pre-operation and safety inspection
 - Controls
 - Emergency switches
 - Outrigger
 - Gas / propane switches
 - Hydraulic
- Visual examination of components
 - Hydraulic lines
 - Batteries
 - Nuts
 - Bolts
 - Cables
 - Outriggers
 - Emergency shut off
- Identification of faults
 - Cracking
 - Leaks in lines
 - Corrosion
 - Fraying cables
- Tagging of components for repair or replacement
- Greasing of components
- Cleaning of work platforms
- Maintain equipment batteries
 - Charge
 - Water level
- Refuelling of gas and diesel powered work platforms
- Maintain fluids
 - Hydraulic
- Oils

Line (GAC): **G PERFORM CONCRETE WORK**
Competency: **G1 Form concrete**

Objectives

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

- Describe installation of shoring for formwork
- Describe setting up formwork
- Describe inspection and maintenance of formwork
- Describe dismantling formwork
- Demonstrate the setting of edge forms

LEARNING TASKS

1. Describe installation of shoring for formwork

CONTENT

- Types
 - Fixed
 - Telescoping
 - Scaffold
- Hardware
 - Anchor pins
 - Spring clips
 - Base plates
- Ratings and regulations
- Spacing
- Adjustments according to situation
- Ensuring stable ground by installing
 - Mud sills
 - Compacting ground
- Bracing near slab edge
- Plumb shores

2. Describe setting up formwork

- Types
 - Steel
 - Handset (loose)
 - Void
- Components
 - Strongbacks
 - Turnbuckles / form aligners
 - Walers
 - Clamps
 - Wedges
 - Ties and clips
- Setting up
 - Ratings and applications of types
 - Materials used to create
 - Form bracing

LEARNING TASKS

CONTENT

3. Describe inspection and maintenance of formwork

- Ground compaction
- Assembling and fastening components
- Useage of form liners for desired finish
- Modifications as needed

- Inspection
 - Recognize defects
 - Verify elevations and layout
 - Verify forms for the desired finish
- Maintenance
 - Ratings and applications
 - Inspect disassembled components for deficiencies and damage
 - Release agents
 - Components in order to reuse them
 - Tighten fasteners
 - Storage

4. Describe dismantling formwork

- Dismantling
 - Procedures and sequences
 - Prepare plans
 - Organize components for reuse or transport

5. Demonstrate setting edge forms

- Sequencing
- Bracing
- Safety

Achievement Criteria

Performance The learner will be able to set edge forms.

Conditions The learner will be given:

- PPE
- Materials
- Tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Accuracy
- Sequencing
- Bracing

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	G	PERFORM CONCRETE WORK
Competency:	G2	Place and finish concrete

Objectives

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

- Describe mixing and installing concrete
- Describe transporting concrete on site
- Describe controlling concrete curing process
- Place and finish concrete flat work

LEARNING TASKS

1. Describe mixing concrete

CONTENT

- Types of concrete
- Strengths
- Aggregates and their properties
- Admixtures
 - Plasticizers
 - Accelerators
- Following instructions
 - Ratios
 - Mixing times
 - Compatibilities
- Selecting materials for specific use
- Plans for mixing according to
 - Work schedules
 - Weather conditions
 - Air flow
 - Humidity
- Colouring concrete

2. Describe transporting concrete on site

- Access and egress considerations
- Route plan
- Transporting equipment
- Usage of
 - Concrete pumps
 - Conveyors
 - Associated equipment

3. Describe installing components in concrete

- Components
 - Dowels
 - Safety lines
 - Keyways
 - Anchor bolts

LEARNING TASKS

CONTENT

- Steel plates
 - Reinforcing steel
- Component installation methods for freshly placed concrete
 - Wet dowelling
 - Installing anchor bolts
- Cured concrete components installation methods
 - Drilling
 - Chipping
 - Saw cuts
- Measuring and laying out location of components

- 4. Describe placement of concrete
 - Pour rates
 - Concrete transportation and installation
 - Line pumps
 - Boom pumps
 - Height from which concrete may be poured
 - Additives
 - Accelerators
 - Plasticizers
 - Surface preparation requirements
 - Planning and sequencing concrete placement
 - Ensuring level pour
 - Wet screeding
 - Using height sticks (screed bars)
 - Vibrating concrete
 - Raking concrete
 - Screeding concrete
 - Surface irregularities
 - Dips
 - High spots
 - Holes
 - Spraying concrete materials
 - Shotcrete
 - Gunnite

- 5. Describe assisting with finishing concrete
 - Admixtures
 - Accelerators
 - Plasticizers

LEARNING TASKS

CONTENT

- Colours
 - Hardeners
 - Types of finishes
 - Hard float
 - Broomed
 - Polished
 - Exposed aggregate
 - Burn finish
 - Finishing processes
 - Floating
 - Trowelling
 - Edging
 - Types of joints
 - Expansion
 - Control
 - Isolation
 - Construction
 - Timing for finishing processes

- 6. Describe controlling concrete curing process
 - Effects of weather conditions
 - Effects of surrounding areas
 - Fumes
 - Dust
 - Heat
 - Rate and time for cure
 - Usage of soaker hoses and sprinklers
 - Usage of materials for curing
 - Polyethylene
 - Burlap
 - Straw
 - Compounds and sealers

- 7. Demonstrate placing and finishing concrete flat work
 - Safety
 - Sequencing
 - Accuracy
 - Tools

Achievement Criteria

Performance The learner will be able to place and finish concrete flat work.

Conditions The learner will be given:

- PPE
- Materials
- Tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Accuracy
- Sequencing
- Tool usage

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	G	PERFORM CONCRETE WORK
Competency:	G4	Install grout, epoxies and caulking

Objectives

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

- Describe mixing and installing of grout, epoxies and / or caulking

LEARNING TASKS

1. Describe the installation of grout

CONTENT

- Types of products and their applications
- Following manufacturers' specifications
- Achieving required consistency
- Applying to surfaces
- Troweling
- Time constraints
- Shaping
- Colour

2. Describe the installation of epoxies

- Types of products and their applications
 - Liquid
 - Paste
- Following manufacturers' specifications
- Hazards and precautions
- Work planning
- Mixing
- Preparing surfaces by cleaning
- Time constraints
- Use of fillers
 - Insulation
 - Backing rod

3. Describe the installation of caulking

- Types of products and their applications
 - Interior
 - Exterior
- Following manufacturers' specifications
- Product properties and time constraints
- Preparation of exposed surfaces
- Applying a steady bead
- Fillers
 - Insulation
 - Backing rod
- Removal of excess caulking

Line (GAC): **H PERFORM MASONRY WORK**
Competency: **H2 Tend to bricklayers**

Objectives

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

- Describe cutting masonry units
- Describe the installation of lintels and rough bucks
- Describe washing masonry units
- Describe assisting with the installation of refractory materials
- Describe the usage of fireproofing materials

LEARNING TASKS

1. Describe cutting masonry units

2. Describe the application and installation of lintels and rough bucks

3. Describe washing masonry units

4. Describe assisting with the installation of refractory materials

5. Describe the usage of fireproofing materials

CONTENT

- Cutting methods and tools
 - Brick saw
 - Guillotine
 - Chop saw
- Types of lintels
 - Channel iron
 - Wood
 - Pre-cast
 - Poured concrete
- Hazards
 - Inhalation of chemicals
 - Chemical burns
 - Equipment in motion
 - Mixing
- Cleaning agents
 - Muriatic acid
 - Water
- Types
 - Bricks
 - Gunitite
 - Ram
- Locations
 - Boilers
 - Furnaces
 - Kilns
- Hazards

LEARNING TASKS

CONTENT

- Particulates
- Electrical hazards
- Types
 - Mineral wool
 - Caulking
 - Cementitious

Line (GAC):	I	PERFORM UTILITIES AND PIPELINE TASKS
Competency:	I1	Install utility piping

Objectives

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

- Describe the installation of pipe for water systems
- Describe the installation of pipe for sewer systems
- Describe the installation of utility components
- Demonstrate measuring and cutting of pipe

LEARNING TASKS

CONTENT

- | | |
|--|---|
| 1. Describe the installation of pipe for water systems | <ul style="list-style-type: none"> • Types <ul style="list-style-type: none"> ○ Plastic ○ Ductile • Safety <ul style="list-style-type: none"> ○ PPE ○ Rigging ○ Pinch points ○ Pressurized water • Connection methods <ul style="list-style-type: none"> ○ Fused ○ Bell and spigot ○ Primer and glue ○ Mechanical joints • Assisting in directional drilling to avoid disruptions on highways and rivers • Bedding material <ul style="list-style-type: none"> ○ Pea gravel ○ Sand • Insulation • Backfill material • Installation of thrust blocks to eliminate line breaks • Selecting, cutting, and fitting sections according to plans and specifications • Assist in testing and flushing of waterline |
| 2. Describe the installation of pipe for sewer systems | <ul style="list-style-type: none"> • Types of sewer lines <ul style="list-style-type: none"> ○ Sanitary ○ Storm ○ Drainage • Types of pipe <ul style="list-style-type: none"> ○ Plastic |

LEARNING TASKS

CONTENT

- | | |
|--|--|
| | <ul style="list-style-type: none"> ○ Concrete ○ Galvanized • Connecting sewer pipe sections <ul style="list-style-type: none"> ○ Bell and spigot ○ Butt fusion ○ Clamps • Components • Checking for line and grade of pipe • Backfill process <ul style="list-style-type: none"> ○ Bedding material ○ Insulation ○ Compaction ○ Backfill material • Selecting, cutting and fitting sections according to plans and specifications |
| 3. Describe the installation of other utility infrastructure | <ul style="list-style-type: none"> • Types of other utility infrastructure <ul style="list-style-type: none"> ○ Electrical ○ Telecommunication ○ Natural gas • Types of pipe <ul style="list-style-type: none"> ○ Plastic ○ Steel • Connecting sewer pipe sections <ul style="list-style-type: none"> ○ Bell and spigot ○ Glued joints • Components <ul style="list-style-type: none"> ○ Utility vaults ○ Junction boxes ○ Weeping tile • Checking for line and grade of pipe <ul style="list-style-type: none"> ○ Backfill process ○ Bedding material ○ Insulation ○ Compaction ○ Backfill material • Selecting, cutting and fitting sections according to plans and specifications |
| 4. Describe the installation of water and sewer utility components | <ul style="list-style-type: none"> • Types of water pipe components <ul style="list-style-type: none"> ○ Hydrants ○ Restraints |

LEARNING TASKS

CONTENT

- | | |
|---|---|
| | <ul style="list-style-type: none"> ○ Fittings • Types of sewer pipe components <ul style="list-style-type: none"> ○ Manholes ○ Catch basins ○ Lawn basins ○ Fittings • Manhole construction • Establishing and maintaining grades of components • Establishing and installing bases <ul style="list-style-type: none"> ○ Pre-cast concrete ○ Poured concrete • Cutting holes in catch basins and manholes • Level and plumb components • Connecting pipe to components • Attaching rigging equipment for manholes • Assisting in tapping into water mains |
| 5. Demonstrate measuring and cutting pipe | <ul style="list-style-type: none"> • Safety • Sequence • Tools • Materials |

Achievement Criteria

Performance The learner will be able to measure and cut pipe.

Conditions The learner will be given:

- PPE
- Materials
- Tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Accuracy
- Sequence
- Adherence to task specifications
- Tool usage
- Material usage

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	J	PERFORM ROADWORK
Competency:	J1	Prepare and build roads

Objectives

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

- Describe preparing earth for right of way
- Describe road construction before paving
- Describe placement of paving materials
- Describe modification of existing paving materials

LEARNING TASKS

1. Describe preparing earth for right of way
2. Describe road construction before paving
3. Describe placement of paving materials

CONTENT

- Tools and equipment
 - Assisting surveyors
 - Grade stakes
 - Layout boundaries
 - Clearing
 - Assisting heavy equipment operators
-
- Cutting and filling to grade
 - Stake installation
 - Placing gravels
 - Sub-base
 - Base
 - Compaction
 - Elevation checks
-
- Hazards
 - Burns
 - Exposure to chemicals
 - Traffic
 - Heavy duty mobile equipment
 - Chemical additives
 - Location of manholes and catch basins
 - Rake paving to base (sub) and finish-grade
 - Feathering around components
 - Manholes
 - Catch basins
 - Curbs
 - Compaction of paving material
 - Manual
 - Mechanical
 - Applying adhesives, primers and sealers

LEARNING TASKS

CONTENT

4. Describe modification of existing paving materials

- Tools and equipment
- Amount of paving material to remove when repairing
- Cutting asphalt to install utilities and components
- Repairing defects
 - Pot holes
 - Cracks
- Break surface materials and remove debris
- Applying adhesives and primers
- Digging out loose material, replacing with gravel, then compacting

Line (GAC):	J	PERFORM ROADWORK
Competency:	J2	Install roadwork components

Objectives

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

- Describe the installation of barriers, road markings and signs

LEARNING TASKS

1. Describe the installation of barriers

CONTENT

- Types
 - Pedestrian
 - Guard
 - Concrete Retention Barriers (Jersey / No-post)
 - Water-filled / sand-filled
- Materials
 - Concrete
 - Steel
 - Wood
 - Plastic
- Applications
 - Temporary
 - Permanent
- Selecting according to regulations and specifications
- Determining location
- Securing with fasteners

2. Describe the installation of road markings and signs

- Training and certification requirements
- Regulations
- Interpreting project-specific traffic control plan drawings
- Types of road markings
 - Reflective tape
 - Painted lines
- Types of road signs
 - Temporary
 - Permanent
- Securing signage

3. Describe the installation of culverts

- Types
 - Galvanized steel
 - Plastic
 - Concrete

LEARNING TASKS

CONTENT

- Sizes
- Connection methods
 - Bell and spigot
 - Clamped
 - Butt fusion
- Section assembly
- Bedding installation
- Design grade
- Backfill and compaction
- Rip-rap installation

Level 2

Construction Craft Worker

Line (GAC):	A	USE SAFE WORK PRACTICES
Competency:	A1	Manage workplace hazards

Objectives

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

- Describe hazards associated with specialty worksites, including hydroelectric dams, mining, tunnels, bridges, and railways

LEARNING TASKS

1. Describe hazards associated with specialty worksites
2. Describe regulations for specialty sites
3. Describe safety equipment for specialty sites

CONTENT

- Hydroelectric dams
 - Mining / tunnels
 - Cave-ins
 - Derailments
 - Isolation / working alone
 - Communication difficulties
 - Bridges
 - Working around water
 - Fall protection
 - Railways
-
- Specialty Acts (legislation)
 - Emergency protocols
-
- Headlamp
 - Self-rescuer
 - Life jackets
 - Rescue boat
 - Netting

Line (GAC): **A USE SAFE WORK PRACTICES**
Competency: **A6 Use safety committees**

Objectives

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

- Describe participation in safety committees

LEARNING TASKS

1. Describe participation in safety committees

CONTENT

- OHS regulation and WorkSafeBC standards
- Function of committees
- Makeup and size
- Role of members
- Legal responsibilities
- Inspections and investigations
- Meetings and minutes
- Education and training
- Orientation processes
- Toolbox meetings
 - Purpose
 - Content
 - Scheduling
- Site inspections
 - Identification of hazards
 - Recommendations
 - Remedies

**Line (GAC): B USE COMMUNICATION, MENTORING, AND CONTINUOUS
LEARNING TECHNIQUES**

Competency: B3 Use mentoring techniques

Objectives

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

- Describe the role of mentor
- Describe mentoring skills and attributes
- Describe workplace diversity and inclusion

LEARNING TASKS

1. Describe the role of mentor

CONTENT

- Valuing apprentice
- Identifying goals
- Encouraging
- Managing risk
- Providing feedback
- Developing capabilities
- Maintaining confidentiality

2. Describe mentoring skills and attributes

- Inspiration
- Active listening
- Building trust
- Encouragement
- Preparedness
- Approachability
- Objectiveness
- Fairness
- Compassion
- Leading by example

3. Describe workplace diversity and inclusion

- Codes of Conduct
- Fair recruiting and hiring practices
- Equity in promotion
- Acceptance
- Accommodations
- Anti-harassment/anti-bullying policies

Line (GAC):	B	USE COMMUNICATION, MENTORING, AND CONTINUOUS LEARNING TECHNIQUES
Competency:	B4	Maintain continuous learning

Objectives

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

- Identify continuous learning methods
- Identify supports and resources for learning
- Describe personal and professional development plan
- Identify factors that may impact learning needs and goals
- Interpret information about latest advancements and emerging technologies
- Identify information to share with colleagues and management

LEARNING TASKS

1. Identify continuous learning methods

CONTENT

- Performance review processes
 - Seeking feedback
 - Addressing feedback
 - Assessing personal learning needs
- Learning opportunities
 - Seminars
 - Webinars
 - Training courses
 - Podcasts
 - Videos
 - Independent research
- Maintaining required certifications and training
- Upgrading and maintaining computer and technology skills
- Sharing learning outcomes and concepts with others
- Transferring knowledge into practice
 - Link between professionalism and continuous learning
- Importance of staying current on new trade practices and procedures

2. Identify supports and resources for learning

- Professional networks and associations
- Manufacturers' seminars
- Collaboration with colleagues and community members
- Counselling
- Mentoring
- Peer support groups

LEARNING TASKS

CONTENT

- Online resources
 - Individual education plan
 - Language supports
 - Accommodations

- 3. Describe personal and professional development plan
 - Elements of a professional portfolio
 - Resume
 - Certificates
 - Licenses
 - Diplomas
 - Degrees
 - Transcripts
 - Marketable skills
 - Professional accomplishments
 - Work samples
 - Awards
 - References

- 4. Identify factors that may impact learning needs and goals
 - New technology
 - Trade and sector trends and practices
 - Skills updating
 - Legislative and regulatory changes
 - Barriers to learning

- 5. Interpret information about latest advancements and emerging technologies
 - Manufacturer's literature
 - Online resources
 - Trade journals and magazines
 - Tradeshow
 - Conferences

- 6. Identify information to share with colleagues and management
 - Advantages of sharing information
 - Explaining advantages and disadvantages of emerging technology

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D1	Install permanent and temporary fencing

Objectives

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

- Install permanent and temporary fencing

LEARNING TASKS

1. Install permanent and temporary fencing

CONTENT

- PPE
- Fence type
 - Snow fence
- Selection and location
- Tool selection
- Installation of posts
 - Wood
 - Metal
- Structures to secure fencing

Achievement Criteria

Performance The learner will be able to install permanent and / or temporary fencing.

Conditions The learner will be given:

- PPE
- Tools and materials
- Task specifications
- Regulations

Criteria The learner will be evaluated on

- Safety
- Adherence to task specifications
- Tool usage
- Material handling

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): D PERFORM ROUTINE TRADE ACTIVITIES

Competency: D3 Perform traffic control

Objectives

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

- Describe traffic control

LEARNING TASKS

1. Describe traffic control

CONTENT

- Safety
 - PPE
 - Hazards
- Training and certification requirements
- Regulations
- Driving pilot vehicles
- Radio communication
- Enclosures

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D4	Establish grades and elevations

Objectives

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

- Establish grades and elevations

LEARNING TASKS

1. Establish grades and elevations

CONTENT

- Applications
- Plans and specifications
- Tools and equipment
- Elevations and grades
- Temporary benchmarks
- Permanent benchmarks
- Legal property pins
- Sub and finish grades

Achievement Criteria

Performance The learner will be able to establish grades and elevations.

Conditions The learner will be given:

- PPE
- Survey equipment
- Task specifications and drawings

Criteria The learner will be evaluated on

- Safety
- Adherence to task specifications
- Equipment use
- Accuracy

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): **D PERFORM ROUTINE TRADE ACTIVITIES**
Competency: **D5 Handle materials**

Objectives

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

- Describe the handling of construction materials
- Describe the handling of suspected hazardous materials

LEARNING TASKS

CONTENT

- | | |
|---|--|
| 1. Describe the handling of construction materials | <ul style="list-style-type: none"> • Lifting procedures <ul style="list-style-type: none"> ○ Mechanical • Transport • Environmental considerations <ul style="list-style-type: none"> ○ Exposure ○ Sustainability ○ Stewardship practices ○ Net-zero practices • Site Restoration <ul style="list-style-type: none"> ○ Recycling ○ Reclamation |
| 2. Describe the handling of suspected hazardous materials | <ul style="list-style-type: none"> • Handling • Storage • Disposal • Regulatory requirements • Certification requirements • Notification of appropriate authorities |

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D6	Install membranes

Objectives

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

- Install membranes

LEARNING TASKS

1. Prepare for the installation of membranes
2. Install membranes

CONTENT

- Prepare surfaces
- Tool selection
- Following manufacturers' specifications
- Types
- Application methods
- Locations
- Protect with materials
- Inspection
- Backfilling procedures

Achievement Criteria

Performance The learner will be able to install waterproofing membrane.

Conditions The learner will be given:

- PPE
- Tools and materials
- Task specifications
- Regulations

Criteria The learner will be evaluated on

- Safety
- Adherence to task specifications
- Tool usage
- Material handling

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): **D PERFORM ROUTINE TRADE ACTIVITIES**
Competency: **D7 Install insulating materials**

Objectives

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

- Install insulating materials

LEARNING TASKS

1. Install insulating materials

CONTENT

- Applications
- Following manufacturers' specifications
- Engineering requirements
- Installation process
 - Cutting
 - Securing
 - Adhering
 - Applying

Achievement Criteria

Performance The learner will be able to install insulating materials.

Conditions The learner will be given:

- PPE
- Tools and materials
- Task specifications
- Regulations

Criteria The learner will be evaluated on

- Safety
- Adherence to task specifications
- Tool usage
- Material handling

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D8	Use documentation, blueprints, and specifications

Objectives

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

- Describe the use of the parts of the drawings
- Interpret documents, drawings and specifications
- Draw a layout sketch

LEARNING TASKS

1. Describe the use of the parts of the drawings

CONTENT

- Plot plan
- Floor plan
- Elevation
- Sections
- Details
- Title block
- Revisions
- Schedules
- Legends

2. Interpret documents, drawings, and specifications

- Blueprints
- Engineering drawings
- Sketches
- Manufacturers' specifications
- Work orders
- Governmental Codes
- Checking material received against work orders and specifications

3. Draw a layout sketch

- Alphabet of lines
- Scale
- Calculations
- Symbols

Achievement Criteria

Performance The learner will be able to draw a layout sketch.

Conditions The learner will be given:

- Tools
- Materials
- Task specifications

Criteria The learner will be evaluated on

- Accuracy
- Interpretation of specifications

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	D	PERFORM ROUTINE TRADE ACTIVITIES
Competency:	D9	Use basic trade math

Objectives

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

- Use decimal fractions and formulas to solve complex problems
- Solve complex problems of ratio and proportion

LEARNING TASKS

CONTENT

- | | |
|--|---|
| 1. Use decimal fractions to solve complex problems | <ul style="list-style-type: none"> • Add, subtract, multiply, divide • Decimal notation |
| 2. Solve complex problems of ratio and proportion | <ul style="list-style-type: none"> • Ratio • Proportion • Unknown quantities |
| 3. Solve complex problems using formulas | <ul style="list-style-type: none"> • Volume • Area |

Achievement Criteria

Performance	The learner will be able to solve complex problems: • Convert between metric and imperial • Calculate ratio and proportion • Calculate volume and area
Conditions	The learner will be given: • Calculators • Conversion table • Worksheets
Criteria	<i>Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.</i>

Line (GAC): E PERFORM SITE WORK

Competency: E1 Prepare site

Objectives

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

- Describe building of access and egress roads

LEARNING TASKS

1. Describe building of access and egress roads

CONTENT

- Selection and use of tools and equipment
- Assisting in removal of existing material down to hard pan
- Selection of material according to specifications for road base, backfill and grades
- Road compaction according to site specifications
- Guiding road building machinery
 - Installing offset stake lines
 - Installing benchmarks

Line (GAC): **E PERFORM SITE WORK**
Competency: **E2 Perform ground work**

Objectives

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

- Describe assisting in the installation of pilings
- Demonstrate excavation / backfill of a trench for utilities

LEARNING TASKS

1. Describe assisting in the installation of pilings

CONTENT

- Location of pilings
 - On land
 - In water
- Safety and rescue regulations
- Soil types and designations
- Types of machinery
 - Pile drivers
 - Pile drillers
 - Cranes
- Types of pilings
 - Concrete
 - H-beam
 - Sheet
 - Steel
- Rigging requirements
- Setting up and dismantling piling machines
- Setting up machinery by connecting hoses and compressors
- Changing work environments
 - Working on boats and barges
 - Off sheet pilings
- Clearing debris out of piling holes
- Guiding pilings into position
- Measuring, modifying and placing rebar cages in pile holes
- Inspection of piles to ensure they are plumb and in position

2. Demonstrate excavation/backfill of a trench for utilities

- Excavate to grade
- Tools
- Material
- Backfill and compaction procedures

Achievement Criteria (can be combined with I1)

Performance The learner will be able to excavate and / or backfill a trench for utilities to a specific grade.

Conditions The learner will be given:

- PPE
- Materials and tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Tool selection
- Tool usage
- Accuracy
- Adherence to task specifications

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): E **PERFORM SITE WORK**

Competency: E3 Perform demolition

Objectives

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

- Cut material using oxy-fuel torches
- Describe the identification of load bearing walls and other structural components

LEARNING TASKS

1. Cut material using oxy-fuel torches

CONTENT

- Safety
 - Storage and handling
 - Oxy-acetylene
 - Propane torch
-
- Safety
 - Load bearing walls and other structural components
 - Techniques
 - Referring to
 - Drawings
 - Engineer assessment
 - Demolition plan
 - Sequence for removal of structural elements
 - Storage of materials
 - Environmental concerns

2. Describe the demolition process

Achievement Criteria

Performance The learner will be able to cut material using an oxy-fuel torch.

Conditions The learner will be given:

- PPE
- Materials
- Equipment
- Task specifications

Criteria	The learner will be evaluated on
----------	----------------------------------

- Safety
- Accuracy
- Adherence to task specifications
- Equipment use

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	F	USE SCAFFOLDING AND ACCESS EQUIPMENT
Competency:	F1	Use scaffolding

Objectives

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

- Demonstrate erecting and dismantling tube and clamp or system scaffolding

LEARNING TASKS

1. Describe the uses of tube and clamp and system scaffolding
2. Demonstrate the erection and dismantling of scaffolding

CONTENT

- Erection
- Inspection
- Maintenance
- Tending to erectors
- Dismantling
- Tube and clamp
- System scaffolding
- Hoarding enclosure

Achievement Criteria

Performance The learner will be able to erect and dismantle tube and clamp or system scaffolding.

Conditions The learner will be given:

- PPE
- Material
- Tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Assembly and disassembly
- Plumb and level
- Accuracy
- Storage
- Inventory

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): **G PERFORM CONCRETE WORK**
Competency: **G1 Form concrete**

Objectives

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

- Describe forming concrete
- Demonstrate setting forms for pony walls

LEARNING TASKS

1. Describe forming concrete

CONTENT

- Installation
- Setting up
- Inspection
- Maintaining
- Dismantling

2. Demonstrate setting forms for pony walls

- Safety
- Accuracy
- Sequencing
- Bracing

Achievement Criteria

Performance The learner will be able to set forms for pony walls.

Conditions The learner will be given:

- PPE
- Materials
- Tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Accuracy
- Sequencing
- Bracing

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	G	PERFORM CONCRETE WORK
Competency:	G2	Place and finish concrete

Objectives

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

- Place and finish concrete for a pony wall

LEARNING TASKS

1. Describe placing and finishing concrete for a pony wall
2. Demonstrate placing and finishing concrete for a pony wall

CONTENT

- Mixing
 - Installing components
 - Placement
 - Vibration
 - Assisting with finishing concrete
 - Controlling concrete curing process
-
- Safety
 - Accuracy
 - Sequencing
 - Tools

Achievement Criteria

Performance The learner will be able to place and finish a pony wall.

Conditions The learner will be given:

- PPE
- Materials
- Tools
- Task specifications

Criteria	The learner will be evaluated on
----------	----------------------------------

- Safety
- Accuracy
- Tool use
- Sequencing

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): **G PERFORM CONCRETE WORK**
Competency: **G3 Modify concrete**

Objectives

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

- Describe drilling, coring and cutting of concrete
- Describe preparing concrete surface for add-ons
- Describe repairing concrete
- Describe concrete joints
- Describe refinishing concrete surfaces
- Demonstrate remedial finishing

LEARNING TASKS

1. Describe drilling, coring, and cutting of concrete

CONTENT

- Wet and dry drilling procedures
- Types and properties
- Reasons for drilling / coring / cutting concrete
 - Components
 - Running sleeves
 - Fastening items
 - Demolition
- Embedded items
 - Water lines
 - Electrical conduit
 - Rebar
- Laying out and marking
- Dust control

2. Describe preparing concrete surface

- Deficiencies that can be repaired
- Chemical agents
 - Bonding
 - Acids
- Mechanical preparation of surface
 - Grinders
 - Diamond
 - Stone
 - Wire
 - Carbide
 - Jack hammers
 - Chipping hammers
 - Bush hammering
 - Pressure-washing
 - Media blasting

LEARNING TASKS

CONTENT

3. Describe repairing concrete

- Scarifying
- Cleaning surface after abrasion processes
- Identifying deficiencies
 - Honeycombing
 - Voids
 - Cracks
- Products used
 - Bonding agents
 - Epoxies
 - Grout
- Installation of patching
- Finishing requirements

4. Describe installing concrete joints

- Purpose
 - Control cracking
 - Shrinkage
- Types of joints
 - Expansion
 - Control
 - Isolation
 - Construction
- Depth and spacing
- Types of cuts
 - Green
 - Wet
 - Dry
- Plastic strips to control shrinkage cracks

5. Describe refinishing concrete surfaces

- Methods
 - Painting
 - Epoxy coating
 - Acid staining
 - Acid etching
- Products used
 - Bonding agents
 - Patching materials
- Refinishing requirements
- Mechanical refinishing using equipment
- Parging

LEARNING TASKS

6. Demonstrate remedial finishing

CONTENT

- Safety
- Sequencing
- Accuracy

Achievement Criteria

Performance The learner will be able to perform remedial finishing.

Conditions The learner will be given:

- PPE
- Materials
- Tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Accuracy
- Tool use
- Sequencing

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC): **G PERFORM CONCRETE WORK**
Competency: **G4 Install grout, epoxies, and caulking**

Objectives

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

- Mix and install grout, epoxies and / or caulking

LEARNING TASKS

CONTENT

- | | |
|--|---|
| 1. Demonstrate mixing and installation of grout | <ul style="list-style-type: none"> • Safety • Preparation • Installation • Curing |
| 2. Demonstrate mixing and installation of epoxy | <ul style="list-style-type: none"> • Safety • Preparation • Installation • Curing |
| 3. Demonstrate mixing and installation of caulking | <ul style="list-style-type: none"> • Safety • Preparation • Installation • Curing |

Achievement Criteria

Performance The learner will be able to perform mixing and installation of grout, epoxy, or caulking.

Conditions The learner will be given:

- PPE
- Materials
- Tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Accuracy
- Tool use
- Material handling
- Adherence to task specifications

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	H	PERFORM MASONRY WORK
Competency:	H1	Prepare masonry work

Objectives

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

- Describe the set-up of masonry materials
- Describe mixing mortars and grouts

LEARNING TASKS

1. Describe the set-up of masonry materials

CONTENT

- Safety
 - Prepare and organize work area
 - Materials
 - Bricks
 - Keyed
 - Insulating
 - Fire
 - Refractory materials
 - Manufactured stone
 - Tiles
 - Blocks
 - Acoustical
 - Veneer
 - Bullnose
 - Rough-faced
 - Placement of raw materials
 - Distribute materials onto scaffolding
 - Quantity
 - Weight capacity
 - Contain spillage
 - Laying out polyethylene sheets
 - Prepare power tools and equipment
 - Load and unload masonry materials
-
2. Describe mixing mortars and grouts
 - Types
 - Following manufacturers' specifications
 - Ratios
 - Mixing time
 - Compatibilities
 - Mixing required amount for work planned
 - Determining consistency
 - Adjusting mix to weather conditions

LEARNING TASKS

CONTENT

- Continuous working of mortar to maintain desired consistency
- Additives
 - Anti-freezing agents
 - Dyes
 - Admixtures

Line (GAC): **H PERFORM MASONRY WORK**
Competency: **H2 Tend to bricklayers**

Objectives

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

- Describe cutting masonry units
- Describe the installation of lintels and rough bucks
- Describe washing masonry units
- Describe assisting with the installation of refractory materials
- Describe the usage of fireproofing materials

LEARNING TASKS

1. Describe cutting masonry units

CONTENT

- Cutting methods and tools
- Procedures
- Plan cuts to avoid waste

2. Describe the application and installation of lintels and rough bucks

- Types of lintels
- Applications of rough bucks
 - Window
 - Door frames
- Installation of lintels and rough bucks
 - Cutting and forming bracing
 - Securing
 - Measuring
 - Cutting

3. Describe washing masonry units

- Hazards
- Cleaning agents
- Following manufacturers' specifications
- Applications of washing
 - Mortar
 - Efflorescence
 - Epoxy
 - Grout
- Environmental considerations
- Final rinse
 -

4. Describe assisting with the installation of refractory materials

- Types
- Locations
- Mortars used in applications
- Hazards and precautions
- Mixing

LEARNING TASKS

5. Describe the usage of fireproofing materials

CONTENT

- Cleaning up refractory applications (rebound)
- Following manufacturers' specifications
- Hazards
- Types
- Applications
 - Surface penetration
 - Protecting beams
 - Columns
 - Walls
- Mix materials
 - Spray-on
 - Trowel-on
- Repair process

Line (GAC):	I	PERFORM UTILITIES AND PIPELINE TASKS
Competency:	I1	Install utility piping

Objectives

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

- Describe modifying existing pipe
- Describe assisting with testing water and sewer lines
- Demonstrate installation of pipe

LEARNING TASKS

1. Describe modifying existing pipe

CONTENT

- Types of pipe
 - Plastic
 - Ductile
 - Concrete
- Reasons for modification
 - Leaks
 - Repairs
 - Additions
- Repairing water breaks and leaks
 - Foam
 - Coatings
 - Quick set concrete
 - Clamps
 - Mechanical joints
- Isolating sections
 - Bladders
 - Valves
- Tapping pipes for additional lines
- Recognizing hazardous piping materials
 - Asbestos
 - Lead

2. Describe assisting with testing water and sewer lines

- Specifications related to water pressure
- Isolating sections of pipe using shut offs or bladders for testing
- Hydrotesting water and sewer lines
- Video-testing sewer lines
- Locating leaks
- Interpreting gauge readings
- Chemical addition for chlorination

3. Demonstrate installation of pipe

- Types

LEARNING TASKS

CONTENT

- Water systems
- Sewer systems
- Other utility infrastructure
- Safety
- Sequence
- Tools
- Materials

Achievement Criteria (can be combined with E2)

Performance The learner will be able to demonstrate the installation of a sewer pipe.

Conditions The learner will be given:

- PPE
- Materials
- Tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Accuracy
- Sequence
- Adherence to task specifications
- Tool use
- Material usage

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Line (GAC):	I	PERFORM UTILITIES AND PIPELINE TASKS
Competency:	I2	Perform pipeline activities

Objectives

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

- Describe construction of right of ways
- Describe pipeline installation

LEARNING TASKS

1. Describe construction of right of ways

CONTENT

- Safety
- Recognize hazards
 - Animals
 - Insects
 - Falling trees
- Environmental considerations
 - Highways
 - Rivers
 - Farmlands
 - Wetlands
- Regulations
- Jobsite-specific rules
- Installation and interpretation of clearance markers and signage
- Clearing brush
- Setting up cleaning stations
- Water control and soil erosion

2. Describe pipeline installation

- Rigging methods
- Stockpiling
- Cribbing methods
- Coating methods
- Jeeping methods
- Stringing methods
- Directional drilling
- Assisting
 - Bending crew
 - Welding crew
 - Engineer
 - Lowering in
- Excavation, backfilling and compaction

Line (GAC):	I	PERFORM UTILITIES AND PIPELINE TASKS
Competency:	I3	Perform pipeline maintenance

Objectives

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

- Describe pipeline maintenance

LEARNING TASKS

CONTENT

- | | |
|---|---|
| 1. Describe assisting with pipeline testing | <ul style="list-style-type: none"> • Pressure testing • Pigging |
| 2. Describe assisting with locating and exposing defective area | <ul style="list-style-type: none"> • Pigging data • Locating pipe & unknown hazards • Preparation for digging • Digging • Hydrovac truck / excavator • Expose defective area • Access & egress • Manual removal • Dig up procedure • Shoring / Sloping • Unstable fill • Jeeping • X-ray |
| 3. Describe removing existing coating | <ul style="list-style-type: none"> • Scraper • Grinder • Buffer • Sandblasting • Spark hazard • Hammer |
| 4. Describe assisting with pup (sleeve) set up | <ul style="list-style-type: none"> • Guide equipment operator • Place the new section (pup / sleeve) |
| 5. Describe pipe protection | <ul style="list-style-type: none"> • Blasting • Re-coating Jeeping |

Line (GAC):	J	PERFORM ROADWORK
Competency:	J1	Prepare and build roads

Objectives

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

- Set road grades
- Describe repairing concrete roads

LEARNING TASKS

CONTENT

- | | |
|--|---|
| 1. Prepare earth for right of way | <ul style="list-style-type: none"> • Safety • Materials • Tools • Sequence • Accuracy |
| 2. Prepare road for construction before paving | <ul style="list-style-type: none"> • Safety • Materials • Tools • Sequence • Accuracy |
| 3. Describe repairing concrete roads | <ul style="list-style-type: none"> • Dowel installation <ul style="list-style-type: none"> ○ Cleaning ○ Drilling ○ Epoxy |

Achievement Criteria

Performance The learner will be able to establish sub-grade, sub-base, and base gravel elevations.

Conditions The learner will be given:

- PPE
- Materials
- Tools
- Task specifications

Criteria The learner will be evaluated on

- Safety
- Accuracy
- Sequence
- Adherence to task specifications
- Tool use
- Material usage

Tasks must be performed within specifications and time frames acceptable to industry, and the learner must achieve a minimum grade of 70%.

Section 4

ASSESSMENT GUIDELINES

Assessment Guidelines – Level 1

Level 1 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:		CONSTRUCTION CRAFT WORKER LEVEL 1	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
A	USE SAFE WORK PRACTICES	10%	5%
B	USE COMMUNICATION, MENTORING, AND CONTINUOUS LEARNING TECHNIQUES	3%	0%
C	USE TOOLS AND EQUIPMENT	10%	10%
D	PERFORM ROUTINE TRADE ACTIVITIES	16%	20%
E	PERFORM SITE WORK	18%	0%
F	USE SCAFFOLDING AND ACCESS EQUIPMENT	6%	20%
G	PERFORM CONCRETE WORK	12%	30%
H	PERFORM MASONRY WORK	5%	0%
I	PERFORM UTILITIES AND PIPELINE TASKS	10%	15%
J	PERFORM ROADWORK	10%	0%
	Total	100%	100%
In-school theory/practical subject competency weighting		70%	30%
Final in-school percentage score		IN-SCHOOL %	

In-school Percentage Score Combined theory and practical subject competency multiplied by	80%
Standardized Level Exam Percentage Score The exam score is multiplied by	20%
Final Percentage Score	FINAL%

Assessment Guidelines – Level 2

Level 2 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:		CONSTRUCTION CRAFT WORKER LEVEL 2	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
A	USE SAFE WORK PRACTICES	5%	0%
B	USE COMMUNICATION, MENTORING, AND CONTINUOUS LEARNING TECHNIQUES	3%	0%
D	PERFORM ROUTINE TRADE ACTIVITIES	12%	30%
E	PERFORM SITE WORK	18%	20%
F	USE SCAFFOLDING AND ACCESS EQUIPMENT	10%	12%
G	PERFORM CONCRETE WORK	15%	18%
H	PERFORM MASONRY WORK	7%	0%
I	PERFORM UTILITIES AND PIPELINE TASKS	20%	10%
J	PERFORM ROADWORK	10%	10%
	Total	100%	100%
In-school theory/practical subject competency weighting		50%	50%
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 exam.		IN-SCHOOL %	

All apprentices who complete Level 2 of the Construction Craft Worker program with a FINAL level mark of 70% or greater will write the Interprovincial Red Seal examination as their final assessment.

SkilledTradesBC will enter the apprentices' Construction Craft Worker Interprovincial Red Seal examination mark in SkilledTradesBC Portal. A minimum mark 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
- Whiteboard with marking pens and erasers
- Lighting controls to allow easy visibility of the projection screen while allowing students to take notes
- Windows must have shades or blinds to adjust sunlight
- 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 student and instructor use
- Minimum 500 square feet of class space per class of 16 students with a minimum ceiling height of 8 feet

Shop Area

- 2,400 square feet of workshop space per class of 16 students with a minimum ceiling height of 20 feet
 - This includes space for a tool crib
 - Should be protected from the elements
- Adequate lighting and lighting control
- Ventilation as per WorkSafeBC standards
- Refuse and recycling bins for used shop materials
- First-aid facilities

Lab Requirements

There is no lab requirement for this program.

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

- Outdoor space

Tools and Equipment

SHOP TOOLS AND EQUIPMENT

Standard Safety Equipment

For all levels

- Coveralls (disposable)
- Eye wash station
- Face shield
- Fire extinguisher
- First aid kit
- Fit tester kit
- Flashlight
- Gloves
- Hard hat
- Hearing protection
- High visibility vest
- Knee board and pads
- Respirator (Particles, chemical and vapour)
- Safety goggles / glasses
- Soap
- Spill Kit
- Ladder (Extension, stepladder)

Level 1

- Air horn
- Fall protection equipment (Harness, rope, lanyard, rope grabs, retractable lifeline)
- Chaps (Chain saw)

Level 2

- Leather gloves
- Welding jacket

Hand Tools

For all levels

- Adjustable wrench
- Bar (Wrecking, pin, crow, pry)
- Broom
- Brush
- Bucket / Pail
- Bull float
- Calculator
- Carpenter's pencils
- Edger (Concrete)
- Float (Wood, magnesium, steel, aluminium, rubber)
- Knife (utility, insulation)
- Hammer (Claw, sledge)
- Hand level
- Hand saw
- Hand trowel
- Marker
- Measuring tape (Imperial and metric)
- Mop
- Pliers (Linesmen)
- Rake (Concrete, landscaping, fan)
- Screwdriver (Flat, phillips, robertson)
- Shovel (Square, spade)
- Sidewalk groover
- Sponge
- Square
- Straightedge (Screed)
- Stringline
- Water hose
- Wheelbarrow

Level 1

- Bolt cutter
- File (Flat, round, chain saw)
- Pick axe
- Rubber mallet
- Scraper
- Sprayer

Level 2

- Caulking gun
- Chisel (Brick set)
- Handcart
- Level (Laser, builders')
- Strikers
- Survey rod
- Survey tripod

Power Tools and Portable Equipment

For all levels

- Adjustable wrench
- Bar (Wrecking, pin, crow, pry)
- Broom
- Brush
- Bucket / Pail
- Bull float
- Calculator
- Carpenter's pencils
- Edger (Concrete)
- Float (Wood, magnesium, steel, aluminium, rubber)
- Knife (utility, insulation)
- Hammer (Claw, sledge)
- Hand level
- Hand saw
- Hand trowel
- Marker
- Measuring tape (Imperial and metric)
- Mop
- Pliers (Linesmen)
- Rake (Concrete, landscaping, fan)
- Screwdriver (Flat, phillips, robertson)
- Shovel (Square, spade)
- Sidewalk groover
- Sponge
- Square
- Straightedge (Screed)
- Stringline
- Water hose
- Wheelbarrow

Level 1

- Chain saw
- Powder-actuated tool
- Quick-cut saw
- Reciprocating saw
- Tamper (Vibratory, plate, roller)

Level 2

- Oxy-acetylene cutting equipment
- Pressure Washer
- Wire wheel (Component of grinder)

Portable and Stationary Equipment

For all levels

- Compactor
- Tool box

Rigging Equipment

Level 1

- Chain fall
- Chains
- Clevis
- Come-along (Portable winching equipment)
- Grip hoist (Tirfors)
- Rope (Nylon, steel, natural fibre, polypropylene)
- Shackle
- Sling (Nylon, steel, chain, natural fibre, polypropylene)
- Tag line

Scaffolding Equipment

Level 1

- Gin wheel
 - Rolling scaffold
- Stationary scaffolding (Frame and brace)

Level 2

- Stationary Scaffolding (Tube and clamp
OR Systems)

Recommended Shop Tools and Equipment

For all levels

- | | |
|---|---------------------------------|
| • C-clamp | • Hydraulic jack |
| • Coring machine and bit | • Pavement breaker (Jackhammer) |
| • Diamond or abrasive disc | • Portable concrete mixer |
| • Fire blanket | • Pumps (Electric and gas) |
| • Grease gun | • Jig saw |
| • Grinder (bench) | • Rivet buster (pneumatic) |
| • Hammer stapler | • Socket wrench set |
| • Hand-held and stationary radio | • Spooler (for tie wire) |
| • Impact wrench/gun (electric and
pneumatic) | • Staple gun |
| • Generator | • Tarpaulin |
| • Heater (Blast) | • Tool belt |
| | • Wire brush |

Student Tools and Equipment

Required

- | | |
|----------------------------|-----------------------------------|
| • Safety glasses / goggles | • Hard hat |
| • Hearing protection | • CSA approved Class 1 work boots |

Recommended

- Work gloves

NOTE:

This list of tools and equipment is for training providers. Apprentices should contact their preferred training provider for a list of recommended or required equipment and tools for this program.

Reference Materials

Recommended Resources

- Alberta Laborers' Training Trust Fund, *Construction Craft Labourer Small Tools*.*
- Alberta Laborers' Training Trust Fund, *Construction Craft Labourer Construction Basics*.*
- Alberta Laborers' Training Trust Fund, *Construction Craft Labourer Scaffolding*.*
- Alberta Labourer's Training Trust Fund, *Red Seal Study Guide*.*
- American Concrete Institute, *ACI Manual of Concrete Practice*, available at <https://www.concrete.org/>.
- American Technical Publishers, *Concrete Formwork*, <https://www.atplearning.com/>.
- American Technical Publishers, *Concrete Principles*, available at <https://www.atplearning.com/>.
- Asphalt Institute, *The Asphalt Handbook*, ISBN 13:978-1-934154-27-4.
- *Basic Blueprint Reading and Sketching*, ISBN 1-4018-4878-8.
- BC Industry Training and Apprenticeship Commission; *Use Safe Work Practices*, ISBN 0-7719-1466-0.
- *BC Worker's Compensation Act*, available at www.crownpub.bc.ca/.
- BCCSA, *Traffic Control Person Participant's Manual*, available from <https://www.bccsa.ca/>.
- *Building Trades Blueprint Reading Residential*, ISBN 0-7730-29001.
- Construction Craft Worker Apprenticeship Program: BC Trade Modules www.crownpub.bc.ca/.
- Construction Safety Association of Ontario, *Scaffolds*, ISBN 0-919465-38-2.
- Fahl, Thomas P., *Concrete Principles*, ISBN 0-8269-0500-5.
- *Fundamentals of Industrial Hygiene*, ISBN 0-87912-082-7.
- *Handi-Guide to British Columbia's OHS Regulation*, ISBN 978-0-7798-5543-8.
- ITA, *Erect Ladders and Scaffolds*, ISBN 0-7719-1474-1 available at www.crownpub.bc.ca/.
- ITA, *Oxyacetylene Cut and Weld*, ISBN 0-7719-1475-X, available at www.crownpub.bc.ca/.
- Koel, Leonard, *Concrete Formwork*, ISBN 0-8269-0706-7.
- Mason Contractor's Association of America (MCAA), (Numerous Publications) at <http://www.masoncontractors.org/>.
- Ministry of Transportation and Highways, *Traffic Control Manual for Work on Roadways*, ISBN 0-77264095-5.
- National Concrete Masonry Association (NCMA), (Numerous Publications) <https://ncma.org/>.
- NCCER, *Excavations TG, 2nd Edition*, ISBN-10: 0-13-613603-6/ ISBN-13: 978-0-13-613603-3.
- NCCER, *Pipelayer Trainee Guide*, ISBN 0-13-014258-1.
- NCCER, *Rigging Trainee Guide*, ISBN 0-13-227296-2.
- Portland Cement Association, *Cement Mason's Guide to Building Concrete Walks, Drives, Patios and Steps*, ISBN 10: 0893120928/ ISBN 13: 9780893120924.
- Portland Cement Association, *Design and Control of Concrete Mixtures*, [ISBN 10: 0893120871/ISBN 13: 9780893120870](https://www.pca.org/Products/Books/Design-and-Control-of-Concrete-Mixtures.aspx).
- Proctor, Thomas E., *Building Trades Printreading Part 1*, ISBN 0-8269-0407-6.
- Proctor, Thomas E., *Building Trades Printreading Part 2*, ISBN 0-8269-0423-8.
- Toenjes, Leonard P., *Building Trades Printreading Part 3*, ISBN 0-829-0455-6.
- Worksafe BC, *Back Talk: An Owner's Manual for Backs*, ISBN 1207-1501.

Resources referenced to the Alberta Laborers' Training Trust Fund are available for purchase by calling (780) 423-7722

NOTE:

This list of recommended resources is for training providers. Apprentices should contact their preferred training provider for a list of recommended or required texts for this program.

Instructor Requirements

Occupation Qualification

- Construction Craft Worker SkilledTradesBC Certificate of Qualification with an Interprovincial Red Seal Endorsement
OR
- Construction Craft Worker Certificate of Qualification from another Canadian jurisdiction with an Interprovincial Red Seal Endorsement
OR
- Certificate of Qualification with an Interprovincial Red Seal Endorsement in a related trade (Carpenter, Bricklayer, or Concrete Finisher). This would necessitate a team teaching environment; wherein other tradespeople are brought in as guest instructors to teach the program components that the main instructor doesn't specialize in.

Work Experience

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

Instructional Experience and Education

It is preferred that the instructor also possesses, or be working toward, one of the following:

- BC Provincial Instructor Diploma
- Bachelors degree in education
- Masters degree in education
- Or equivalent

Appendices

Appendix A Acronyms and Abbreviations

ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
CH₄	Methane
CO	Carbon Monoxide
CSA	Canadian Standards Association
EMS	Emergency Medical Services
H₂S	Hydrogen Sulphide
MEWP / MEWPs	Mobile Elevating Work Platform(s)
NFPA	National Fire Protection Association
O₂	Oxygen
OHS	Occupational Health and Safety
PASS	Pull, Aim, Squeeze, Sweep
PPE	Personal Protective Equipment
SDS	Safety Data Sheet
WHMIS	Workplace Hazardous Materials Information System
WorkSafeBC	WorkSafe British Columbia

Appendix B

Summary of Achievement Criteria

Achievement Criteria are included for 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. 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.

The following tables summarize the practical assessments for each level. **For details, please refer to the Achievement Criteria following the competency in the Program Content section.**

CONSTRUCTION CRAFT WORKER – LEVEL 1 SUMMARY OF ACHIEVEMENT CRITERIA	
SUBJECT COMPETENCY	ACHIEVEMENT CRITERIA TASK
A3 Use fall protection systems and equipment	The learner will be able to • Assemble equipment • Identify anchor point • Put on harness • Perform buddy check • Use equipment
A4 Use personal protective equipment	The learner will be able to • Select the correct PPE for the task • Use PPE
C2 Use power tools	The learner will be able to perform a task using a power tool.
C8 Use packers	The learner will be able to use compactors.
D1 Install permanent and temporary fencing	The learner will be able to install permanent and / or temporary fencing.
D8 Use documentation, blueprints, and specifications	The learner will be able to interpret a set of drawings / sketches.
D9 Use basic trade math	The learner will be able to solve simple problems, including: • Converting between metric and imperial • Calculating ratio and proportion • Calculating volume and area
F1 Use scaffolding	The learner will be able to erect and dismantle frame and brace scaffolding.
G1 Form concrete	The learner will be able to set edge forms.
G2 Place and finish concrete	The learner will be able to place and finish concrete flat work.
I1 Install utility piping	The learner will be able to measure and cut pipe.

CONSTRUCTION CRAFT WORKER – LEVEL 2 SUMMARY OF ACHIEVEMENT CRITERIA	
SUBJECT COMPETENCY	ACHIEVEMENT CRITERIA TASK
D1 Install permanent and temporary fencing	The learner will be able to install permanent and / or temporary fencing.
D4 Establish grades and elevations	The learner will be able to establish grades and elevations.
D6 Install membranes	The learner will be able to install waterproofing membrane.
D7 Install insulating materials	The learner will be able to install insulating materials.
D8 Use documentation, blueprints, and specifications	The learner will be able to draw a layout sketch.
D9 Use basic trade math	The learner will be able to solve complex problems: • Convert between metric and imperial • Calculate ratio and proportion • Calculate volume and area
E2 Perform ground work	The learner will be able to excavate and / or backfill a trench for utilities to a specific grade. <i>Note: can be combined with I1</i>
E3 Perform demolition	The learner will be able to cut material using an oxy-fuel torch.
F1 Use scaffolding	The learner will be able to erect and dismantle tube and clamp or system scaffolding.
G1 Form concrete	The learner will be able to set forms for pony walls.
G2 Place and finish concrete	The learner will be able to place and finish a pony wall.
G3 Modify concrete	The learner will be able to perform remedial finishing.
G4 Install grout, epoxies, and caulking	The learner will be able to perform mixing and installation of grout, epoxy, or caulking.
I1 Install utility piping	The learner will be able to demonstrate the installation of a sewer pipe. <i>Note: can be combined with E2</i>
J1 Prepare and build roads	The learner will be able to establish sub-grade, sub-base, and base gravel elevations.