SKILLEDTRADESBC

PROGRAM OUTLINE

Lather (Interior Systems Mechanic)

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LATHER (INTERIOR SYSTEMS MECHANIC)
PROGRAM OUTLINE

APPROVED BY INDUSTRY

JULY 2022

BASED ON

RSOS 2020

Developed by
SkilledTradesBC
Province of British Columbia

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Section 1

INTRODUCTION

Lather (Interior Systems Mechanic)

Foreword

This Lather (Interior Systems Mechanic) 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 2020 Red Seal Occupational Standard (RSOS) and 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 for more details. The types of questions used on these exams must reflect the cognitive level indicated by the learning objectives and the learning tasks listed in the related competencies.

Achievement Criteria are included for those competencies that require a practical assessment. The intent of including Achievement Criteria in the Program Outline is to ensure consistency in training across the many training institutions in British Columbia. Their purpose is to reinforce the theory and to provide a mechanism for evaluation of the learner's ability to apply the theory to practice. It is important that these performances be observable and measurable and that they reflect the skills spelled out in the competency as those required of a competent journeyperson. The conditions under which these performances will be observed and measured must be clear to the learner as well as the criteria by which the learner will be evaluated. The learner must also be given the 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 him/herself about the Occupational Health and Safety Regulation pertaining to his/her work.

Acknowledgements

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

- Stewart Baird — Finishing Trades Institute of B.C.
- Drew Smith — BC Wall & Ceiling Association
- Kevin Weston — Lathers and Drywall Finishers, Local 163

Industry Subject Matter Experts retained as outline reviewers:

- Jim Gordon — Gordon'N'Gordon
- Scott Hleuka — Gordon'N'Gordon
- Grant Mason — Alpha Drywall
- Jim Paulsen — Peninsula Wall & Ceiling Ltd.
- Brad Popove — BP Interiors Ltd.
- Gary Schwaiger — City Projects Ltd.

SkilledTradesBC would like to acknowledge the dedication and hard work of all the industry representatives appointed to identify the training requirements of the Lather (Interior Systems Mechanic) occupation.

Previous Contributors

Industry and Instructor Subject Matter Experts retained to assist in the development and review of the 2017 Program Outline:

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- Stewart Baird
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- Murray Corey

- Noah Eliasen
- Bert Gerwin
- Dino Gusola
- David Holmes
- Steve Moore
- Larry Robinson
- Kevin Weston

How to Use this Document

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

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

Section	Training Providers	Employers/ Sponsors	Apprentices	Challengers
Achievement Criteria	Defines observable, measureable performance expectations for competencies with a lab component. For this trade, achievement criteria is performed in a lab setting and does not indicate workplace standards	Defines observable, measureable performance expectations for competencies with a lab component. For this trade, achievement criteria is performed in a lab setting and does not indicate workplace standards	Defines observable, measureable performance expectations for competencies with a lab component. For this trade, achievement criteria is performed in a lab setting and does not indicate workplace standards	Defines observable, measureable performance expectations for competencies with a lab component. For this trade, achievement criteria is performed in a lab setting and does not indicate workplace standards
Training Provider Standards	Defines the facility requirements, tools and equipment, reference materials (if any) and instructor requirements for the program	Identifies the tools and equipment an apprentice is expected to have access to; which are supplied by the training provider and which the student is expected to own	Provides information on the training facility, tools and equipment provided by the school and the student, reference materials they may be expected to acquire, and minimum qualification levels of program instructors	Identifies the tools and equipment a tradesperson is expected to be competent in using or operating; which may be used or provided in a practical assessment
Appendix – Glossary of Acronyms	Defines program specific acronyms	Defines program specific acronyms	Defines program specific acronyms	Defines program specific acronyms
Assessment Guidelines	Defines the weighting of theory and practical (lab) marks by GAC to be used to calculate an apprentice's in-school mark for each level. The practical weighting is a reflection of performance on the achievement criteria for each level. Assessment Guidelines also define the weighting of the in-school mark to the standard level exam mark (where applicable) in order to calculate an apprentice's final mark for each level.	Defines the weighting of theory and practical (lab) marks by GAC to be used to calculate an apprentice's in-school mark for each level. The practical weighting is a reflection of performance on the achievement criteria for each level. Assessment Guidelines also define the weighting of the in-school mark to the standard level exam mark (where applicable) in order to calculate an apprentice's final mark for each level.	Defines the weighting of theory and practical (lab) marks by GAC to be used to calculate an apprentice's in-school mark for each level. The practical weighting is a reflection of performance on the achievement criteria for each level. Assessment Guidelines also define the weighting of the in-school mark to the standard level exam mark (where applicable) in order to calculate an apprentice's final mark for each level.	Understand the relative weightings of various competencies of the occupation on which assessment is based

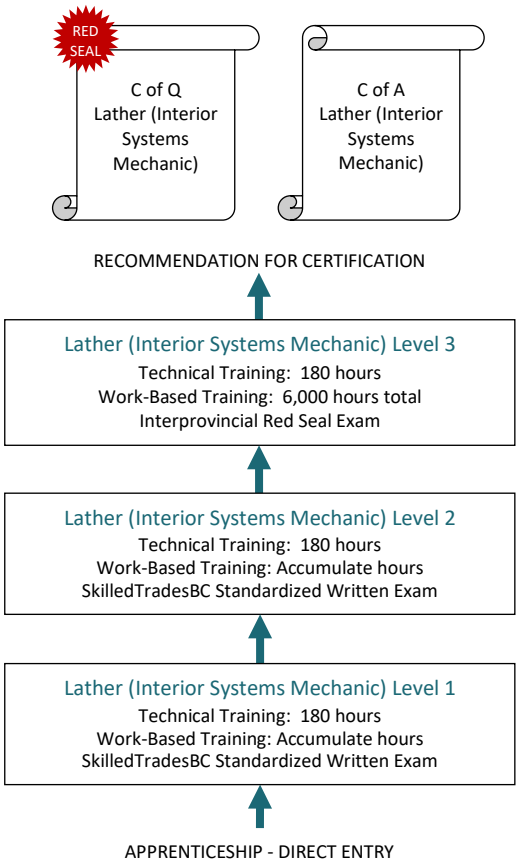
Section 2

PROGRAM OVERVIEW

Lather (Interior Systems Mechanic)

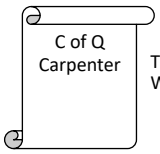
Program Credentialing Model

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

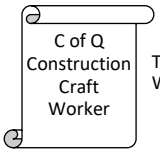


CROSS-PROGRAM CREDITS

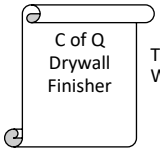
Individuals who hold the credentials listed below are entitled to receive partial credit toward the completion requirements of this program



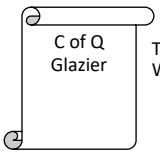
Technical Training: None
Work-Based Training: 1,200 hours*



Technical Training: None
Work-Based Training: 1,200 hours*



Technical Training: None
Work-Based Training: 1,200 hours*



Technical Training: None
Work-Based Training: 1,200 hours*

*Individuals who are holders of one or more certificates will only be awarded credit for 1,200 Work-Based Training hours total.

Occupational Analysis Chart

LATHER (INTERIOR SYSTEMS MECHANIC)

Occupation Description: A Lather (Interior Systems Mechanic) performs job layout using blueprints, and installs, handles, erects and applies materials that are component parts in the construction of ceilings and walls. Lathers install support frameworks for ceiling systems, interior and exterior walls, build interior partitions and install drywall and other sheathing on walls and ceilings. They also install curtain walls, fire and sound systems, acoustical installations, access flooring, demountable partitions, shielded walls, and apply building envelope technologies. Lathers (Interior Systems Mechanic) were previously designated as Wall and Ceiling Installers in BC.

Line	Competency	Code	Levels
APPLY SAFE WORK PRACTICES		**A**	
	Use personal protective equipment (PPE)	A1	1
	Control workplace hazards	A2	1
	Apply GHS 2015 (WHMIS)	A3	1
	Apply OHS regulations and WorkSafeBC standards	A4	1
	Attain first aid certification	A5	W
	Apply fall arrest procedures	A6	1
APPLY CODES, STANDARDS, AND DOCUMENTATION		**B**	
	Apply codes and regulations	B1	2
	Apply fire assembly requirements	B2	2
USE TRADE RELATED SKILLS		**C**	
	Use blueprints and specifications	C1	1, 2, 3
	Apply trade math	C2	1, 2, 3
	Plan a project	C3	3
	Use trade related communication skills	C4	1
	Describe construction trade structure and concepts	C5	1
USE LADDERS, SCAFFOLDS, AND LIFT EQUIPMENT		**D**	
	Use ladders, scaffolds, and aerial lifts	D1	1
	Describe rigging and hoisting practices	D2	1
USE TOOLS AND EQUIPMENT		**E**	
	Use hand tools	E1	1
	Use power tools	E2	1
	Use powder-actuated and gas-actuated tools	E3	1
	Use measurement and layout tools	E4	1

W = Competencies for which knowledge or skills are primarily acquired in the workplace

INSTALL INSULATION **F**	Install thermal and acoustical insulation F1	Install vapour barriers and sealants F2	Control mould F3		
	1	2	1		
INSTALL NON-LOAD-BEARING METAL FRAMING **G**	Build walls, ceilings, and bulkheads G1	Install wood and metal backing G2	Install pressed steel frames G3	Install access panels G4	
	1 2	2	2	2	
INSTALL LOAD-BEARING METAL FRAMING **H**	Build wind load and axial load-bearing walls H1	Install exterior walls and panelized systems H2	Install floor joists H3	Describe roof rafters H4	
	2 3	3	3	3	
INSTALL GYPSUM WALLBOARD PRODUCTS **I**	Install gypsum wallboard I1	Install materials for lead radiation shielding I2	Install security mesh I3		
	1 2	2	2		
INSTALL FIREPROOFING AND SOUNDPROOFING **J**	Install soundproofing materials J1	Install materials for fireproofing and smoke seals J2	Install shaft wall assemblies J3		
	2 3	2	2		
INSTALL ACOUSTICAL CEILINGS **K**	Install basic acoustical ceilings K1	Install specialty acoustical ceilings K2			
	2	3			

W = Competencies for which knowledge or skills are primarily acquired in the workplace

INSTALL SPECIALTY SYSTEMS **L**	Install traditional lath and trims on walls and ceilings L1	Build access floor systems L2	Build demountable partitions L3	Install specialty ceilings L4	
	3	3	3	3	
INSTALL DRYWALL TAPING AND FINISHING **M**	Describe drywall finishing process M1	Install drywall compounds, tape, beads, trims, and expansion joints M2			
	2	2			
APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES **N**	Install air and vapour barriers N1	Install exterior finishes N2	Install rainscreen systems N3		
	2	3	3		

W = Competencies for which knowledge or skills are primarily acquired in the workplace

Training Topics and Suggested Time Allocation

LATHER (INTERIOR SYSTEMS MECHANIC) – LEVEL 1

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
Line A	**APPLY SAFE WORK PRACTICES**	**14%**	**90%**	**10%**	**100%**
A1	Use personal protective equipment (PPE)		✓	✓	
A2	Control workplace hazards		✓		
A3	Apply GHS 2015 (WHMIS)		✓		
A4	Apply OHS regulations and WorkSafeBC standards		✓		
A6	Apply fall arrest procedures		✓	✓	
Line C	**USE TRADE RELATED SKILLS**	**20%**	**90%**	**10%**	**100%**
C1	Use blueprints and specifications		✓	✓	
C2	Apply trade math		✓		
C4	Use trade related communication skills		✓		
C5	Describe construction trade structure and concepts		✓		
Line D	**USE LADDERS, SCAFFOLDS, AND LIFT EQUIPMENT**	**5%**	**80%**	**20%**	**100%**
D1	Use ladders, scaffolds, and aerial lifts		✓	✓	
D2	Describe rigging and hoisting practices		✓		
Line E	**USE TOOLS AND EQUIPMENT**	**10%**	**60%**	**40%**	**100%**
E1	Use hand tools		✓	✓	
E2	Use power tools		✓	✓	
E3	Use powder-actuated and gas-actuated tools		✓		
E4	Use measurement and layout tools		✓	✓	
Line F	**INSTALL INSULATION**	**7%**	**100%**	**0%**	**100%**
F1	Install thermal and acoustical insulation		✓		
F3	Control mould		✓		
Line G	**INSTALL NON-LOAD-BEARING METAL FRAMING**	**26%**	**50%**	**50%**	**100%**
G1	Build walls, ceilings, and bulkheads		✓	✓	
Line I	**INSTALL GYPSUM WALLBOARD PRODUCTS**	**18%**	**60%**	**40%**	**100%**
I1	Install gypsum wallboard		✓	✓	
	Total Percentage for Lather - Level 1	**100%**			

Training Topics and Suggested Time Allocation

LATHER (INTERIOR SYSTEMS MECHANIC) – LEVEL 2

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
Line B	**APPLY CODES, STANDARDS, AND DOCUMENTATION**	**10%**	**100%**	**0%**	**100%**
B1	Apply codes and regulations		✓		
B2	Apply fire assembly requirements		✓		
Line C	**USE TRADE RELATED SKILLS**	**17%**	**70%**	**30%**	**100%**
C1	Use blueprints and specifications		✓	✓	
C2	Apply trade math		✓		
Line F	**INSTALL INSULATION**	**5%**	**100%**	**0%**	**100%**
F2	Install vapour barriers and sealants		✓		
Line G	**INSTALL NON-LOAD-BEARING METAL FRAMING**	**22%**	**50%**	**50%**	**100%**
G1	Build walls, ceilings, and bulkheads		✓	✓	
G2	Install wood and metal backing		✓	✓	
G3	Install pressed steel frames		✓	✓	
G4	Install access panels		✓	✓	
Line H	**INSTALL LOAD-BEARING METAL FRAMING**	**5%**	**100%**	**0%**	**100%**
H1	Build wind load and axial load-bearing walls		✓		
Line I	**INSTALL GYPSUM WALLBOARD PRODUCTS**	**15%**	**50%**	**50%**	**100%**
I1	Install gypsum wallboard		✓	✓	
I2	Install materials for lead radiation shielding		✓		
I3	Install security mesh		✓		
Line J	**INSTALL FIREPROOFING AND SOUNDPROOFING**	**5%**	**80%**	**20%**	**100%**
J1	Install soundproofing materials		✓		
J2	Install materials for fireproofing and smoke seals		✓		
J3	Install shaft wall assemblies		✓	✓	
Line K	**INSTALL ACOUSTICAL CEILINGS**	**12%**	**60%**	**40%**	**100%**
K1	Install basic acoustical ceilings		✓	✓	
Line M	**INSTALL DRYWALL TAPING AND FINISHING**	**6%**	**40%**	**60%**	**100%**
M1	Describe drywall finishing process		✓		
M2	Install drywall compounds, tape, beads, trims, and expansion joints		✓	✓	
Line N	**APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES**	**3%**	**100%**	**0%**	**100%**
N1	Install air and vapour barriers		✓		
	Total Percentage for Lather - Level 2	**100%**			

Training Topics and Suggested Time Allocation

LATHER (INTERIOR SYSTEMS MECHANIC) – LEVEL 3

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
Line C	**USE TRADE RELATED SKILLS**	**15%**	**60%**	**40%**	**100%**
C1	Use blueprints and specifications		✓		
C2	Apply trade math		✓		
C3	Plan a project		✓	✓	
Line H	**INSTALL LOAD-BEARING METAL FRAMING**	**35%**	**45%**	**55%**	**100%**
H1	Build wind load and axial load-bearing walls		✓	✓	
H2	Install exterior walls and panelized systems		✓	✓	
H3	Install floor joists		✓	✓	
H4	Describe roof rafters		✓		
Line J	**INSTALL FIREPROOFING AND SOUNDPROOFING**	**5%**	**100%**	**0%**	**100%**
J1	Install soundproofing materials		✓		
Line K	**INSTALL ACOUSTICAL CEILINGS**	**10%**	**50%**	**50%**	**100%**
K2	Install specialty acoustical ceilings		✓	✓	
Line L	**INSTALL SPECIALTY SYSTEMS**	**25%**	**50%**	**50%**	**100%**
L1	Install traditional lath and trims on walls and ceilings		✓		
L2	Build access floor systems		✓	✓	
L3	Build demountable partitions		✓	✓	
L4	Install specialty ceilings		✓	✓	
Line N	**APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES**	**10%**	**100%**	**0%**	**100%**
N2	Install exterior finishes		✓		
N3	Install rainscreen systems		✓		
	Total Percentage for Lather - Level 3	**100%**			

Section 3

PROGRAM CONTENT

Lather (Interior Systems Mechanic)

Level 1

Lather (Interior Systems Mechanic)

Line (GAC): A APPLY SAFE WORK PRACTICES

Competency: A1 Use personal protective equipment (PPE)

Objectives

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

- Select Personal Protective Equipment (PPE) required for a given task

LEARNING TASKS	CONTENT

1. Describe personal protective work clothes and equipment	• Clothing
	  ○ Personal apparel
	  ○ Interior/exterior environments
	  ○ Weather related gear
	  ○ Hazardous waste suits
	  ○ Disposable coveralls
	• Equipment
	  ○ Safety hard hat
	  ○ Respiratory protection
	  ○ Eye protection/face shields
	  ○ Hearing protection
	  ○ Work gloves
	  ○ Safety footwear
	  ○ Knee pads

2. Select PPE required for a given task	• According to job/site requirements
3. Maintain PPE	• Organization • Storage • Maintenance (according to Manufacturer specifications, WorkSafeBC/OHS)
4. Use personal protective equipment	• According to task

Achievement Criteria

Performance — The learner will select and fit PPE for a given task

Conditions — The learner will be given:

- Instructions
- Equipment

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- Proper selection of PPE for the task
- Proper fit/adjustment of the PPE

Line (GAC): A APPLY SAFE WORK PRACTICES

Competency: A2 Control workplace hazards

Objectives

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

- Identify workplace hazards
- Control workplace hazards

LEARNING TASKS	CONTENT
1. Identify workplace hazards	• Environmental conditions – e.g. proper lighting • Tools and equipment • Slipping and tripping hazards • Waste materials • Surplus materials • Sharp protrusions – e.g. nails • Barricades and warning tape • Footing for scaffolding and ladder equipment • Signage related to hazards • Overhead • Electrical • Seasonal • Improper ventilation • Compressed gas • Adhesives • Powder-actuated charges • Silicosis ○ Cementious products • Wood preservatives • Paints, varnishes, solvents, and primers • Dust and particulates • Fire hazards

2. Maintain a safe work environment	• Employer or Prime/General Contractor
	  ○ Ensure materials and goods are systematically supplied and properly placed
	  ○ Provide safe working equipment as required
	  ○ Ensure sufficient task lighting
	  ○ Provide “Danger” signage and barricades where required
	  ○ Provide “No Smoking” signage where required

LEARNING TASKS	CONTENT
	○ Provide dust barriers and hoarding ○ Guardrail requirements ○ Ensure access ways are kept free from obstructions ○ Ensure fall protection is in place • Employee ○ Be physically and mentally prepared for work ○ Adhere to safety rules and regulations ○ Maintain placement of warning signage, guardrails, and barricades ○ Keep work area free from debris ○ Install materials appropriately and safely ○ Store materials, tools, and equipment in designated areas ○ Use tools, equipment, ladders, and scaffolds appropriately and safely ○ Use personal protective equipment as required
3. Control workplace hazards	• Organized work area • Storage of tools, equipment, and materials • Appropriate signage • Training of new workers • Awareness of safety regulations • Maintain clean work area • Store tools, equipment, and materials • Provide adequate lighting for working • Organize and maintain tools and equipment • Eliminate slipping and tripping hazards • Dispose waste materials properly • Eliminate sharp protrusions –e.g. nails • Use barricades and warning tape to control or prevent traffic • Ensure firm, level ground when using scaffolding and ladder equipment • Training of new workers • Adhere to safety regulations • As per job requirements • As per WorkSafeBC • As per site specifications • As per employer safety manual

Line (GAC): A APPLY SAFE WORK PRACTICES

Competency: A3 Apply GHS 2015 (WHMIS)

Objectives

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

- Interpret Safety Data Sheets (SDS)
- Use GHS 2015 (WHMIS) and related materials

LEARNING TASKS	CONTENT
1. Explain the purpose of GHS 2015 (WHMIS)	• Canada-wide legislated system • Provides information on workplace hazardous materials • How to safely use, store and handle hazardous materials • Although nation-wide, employer GHS 2015 (WHMIS) compliance is regulated and enforced by WorkSafeBC
2. Describe the three elements of the GHS 2015 (WHMIS) system	• WHMIS labels • Safety Data Sheets (SDS) • WHMIS education and training programs

3. Describe supplier, employer and worker responsibilities regarding GHS 2015 (WHMIS)	• Supplier
	  ○ Classify controlled products
	  ○ Supply proper labels and SDS
	  ○ Keep information on labels and SDS current
	• Employer
	  ○ Educate and train workers
	  ○ Provide safe work practices
	  ○ Ensure availability of proper and up-to-date labels and SDS
	• Worker
	  ○ Understand content and significance of labels and SDS
	  ○ Follow safe work procedures
	  ○ Know how to find SDSs
	  ○ Notify employers about problems with labels and SDS

4. Identify the warning labels and symbols on hazardous materials	• Supplier labels must appear on all controlled products received at workplaces in Canada and contain the following information:
	  ○ Product identifier (name of product)
	  ○ Hazard symbols

LEARNING TASKS	CONTENT
	○ Risk phrases (words that describe the main hazards of the product) ○ Precautionary statements ○ First aid measures ○ Reference to SDS ○ Supplier identifier • Labels for the six classes of hazardous materials
5. Describe hazardous materials common to the construction workplace	• Dusts and particulates including fibreglass, drywall, cement, wood • Caulking compounds • Solvents • Adhesives and glue • Compressed gases • Expandable foam insulation • Taping compounds • Concrete curing compounds • Powder-actuated charges • Muriatic acid • Paints/varnishes • Wood preservatives
6. Describe "Routes of Entry" of hazardous materials into the body	• Respiratory • Oral ingestion • Skin absorption
7. Read workplace labels	• Information required on secondary containers: ○ Product name ○ Safe handling procedures ○ Reference to SDS
8. Describe the safety implications of information on SDS	• Product information • Hazardous ingredients • Physical data • Fire and explosion hazards • Reactivity data • Health hazards • First aid measures • Preventative measures • Preparation information

Line (GAC): A APPLY SAFE WORK PRACTICES

Competency: A4 Apply OHS regulations and WorkSafeBC standards

Objectives

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

- Apply OHS regulations and WorksafeBC standards

LEARNING TASKS	CONTENT

1. Describe WorkSafeBC functions and procedures	• Inspection
	• Investigation
	  ○ Accidents
	  ○ Causes of industrial disease
	• Assistance
	  ○ Health and safety programs
	• Rehabilitation and retraining for injured workers
	• Assistance creating a safe place to work

2. Describe employer roles and responsibilities	• Register with WorkSafeBC • Create a safe work environment that allows workers to ask safety questions • Provide training to ensure a safe workplace • Provide required safety equipment (excludes footwear and headgear) • Report workplace injury or disease to WorkSafeBC • Provide transportation to medical provider for injured worker if necessary • Employer receives verbal confirmation of instructions given to employee
3. Describe employee rights and responsibilities	• Receive training in safe work procedures and hazard recognition • Receive safety equipment required to perform work • Right to refuse unsafe work • Right to participate in Health and Safety Committees • Responsibility to adhere to safety rules and regulations • Report workplace injuries • Verbally confirm instructions from employer

LEARNING TASKS	CONTENT
4. Apply regulations	• Interpretation of the National Building Code • Body protection (head, feet, and hands) • Eye and ear protection • Respiratory equipment • Ventilation • Power tool equipment • Ladders and scaffolds • Aerial lift equipment • Completion of safety documentation such as accident reports and hazard assessments
5. Describe injury-reporting procedures	• Identify first aid room • Get first aid • Get medical attention • Notify the supervisor • WorkSafeBC requirements
6. Describe first aid practices	• CPR • Bandaging • Slings • Splints • Compression • 911 protocol

Line (GAC): A APPLY SAFE WORK PRACTICES

Competency: A6 Apply fall arrest procedures

Objectives

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

- Set up fall arrest and restraint systems
- Use fall protection equipment and systems

LEARNING TASKS	CONTENT

1. Describe a fall protection plan	• Employer responsibility
	• Where permanent guardrails are not in place
	• Written plan in place before a risk of falling begins
	  ○ Fall hazards
	  ○ Fall protection system
	  ○ Fall rescue plan and instructions
	  ○ Instructions to workers on how to use safety equipment

2. Set up a fall restraint system	• Fall prevention
	• Use when travel restriction systems of guardrails cannot be utilized
	  ○ Safety belts or full body harness
	  ○ Lanyards
	  ○ Lifelines
	  ○ Rope grabs
	  ○ Anchors

3. Set up a fall arrest system	• Fall protection system
	• Full body harness connected by lanyards to life lines or secure anchors
	  ○ Full body harness
	  ○ Lanyards
	  ○ Lifelines
	  ○ Rope grabs
	  ○ Anchors
	• Use of safety nets

4. Use personal protective equipment	• According to job requirements and safety regulations

Achievement Criteria

Performance — The learner will perform a fit test

Conditions — The learner will be given:

- A 5-point harness with a D-clip at the back

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- D-ring position (between shoulders)
- Snugness of fit

Line (GAC): C USE TRADE RELATED SKILLS

Competency: C1 Use blueprints and specifications

Objectives

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

- Identify purpose of blueprints
- Identify elements of a blueprint

LEARNING TASKS	CONTENT
1. Read an architect's scale	• Imperial • Metric

2. Identify the types of lines, symbols, and abbreviations used in blueprints	• Lines
	  ○ Grid or bay lines
	  ○ Break lines
	  ○ Object line
	  ○ Hidden object lines
	  ○ Symbols and abbreviations
	  ○ Dimension lines
	  ○ Directional lines
	• Symbols
	• Abbreviations

3. Describe purpose of blueprints	• Purpose
	  ○ Communicate work requirements and coordination with all trades
	  ○ Drawings, specifications, and schedules
	  ○ Layout walls and ceilings
	• Installation sequences for various wall and ceiling systems
	• Types of projections
	  ○ Isometric
	  ○ Orthographic
	• Perspective

4. Identify sections and elements of a set of blueprints	• Specifications • Blueprint cover sheet • Working drawings o Architectural • Schedules • Symbols and abbreviations • Scale

Achievement Criteria

Performance	The learner will interpret a print, and answer questions related to measurement, location, and layout
Conditions	The learner will be given: • A print • Instructions • Questions
Criteria	The learner will score 70% or better on a rating sheet that reflects the following criteria: • Accuracy of answers

Line (GAC): C USE TRADE RELATED SKILLS

Competency: C2 Apply trade math

Objectives

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

- Apply trade math concepts
- Apply conversions in the imperial and metric systems

LEARNING TASKS	CONTENT

1. Apply trade math concepts	• Mathematical concepts
	• Operations
	  ○ Multiplication
	  ○ Addition
	  ○ Subtraction
	  ○ Division
	• Fractions
	• Decimals

2. Apply conversions in the imperial and metric systems	• Within the imperial system
	  ○ Feet to inches
	  ○ Square inches to square feet
	• Within the metric system
	  ○ Millimetres to centimetres
	  ○ Centimetres to metres

Line (GAC): C USE TRADE RELATED SKILLS

Competency: C4 Use trade related communication skills

Objectives

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

- Use communication tools and media
- Communicate with others
- Coordinate work with other trades

LEARNING TASKS	CONTENT
1. Describe methods of communication	• Listening • Verbal • Written • Drawings • Trade terminology • Two-way radios • Computers • Interpersonal skills • Signage • Overhead hazards • Control zone - tapes (yellow, red, etc)
2. Communicate with others	• Other trades • Industry people • Apprentices (mentoring) • Completion of work-related documents such as records, time sheets, and deficiency lists

3. Coordinate work with other trades	• Interest groups
	  ○ Architects and engineers
	  ○ General contractor
	  ○ Construction manager
	  ○ Site superintendent
	  ○ Sub-trades
	  ○ Inspectors
	  ○ Crew foreman/supervisor
	  ○ Lead hand
	  ○ Journeypersons
	  ○ Apprentices
	• Sub trade schedules
	• Requirements of other trades on site

LEARNING TASKS	CONTENT
	• Coordinating work through general contractor • Anticipating and solving problems • Communication and cooperation with others
4. Describe types of signals	• Hand signals • Bell/horn signals • Light signals • Radio signals
5. Recognize hand signals used to control hoist operations	• WorkSafeBC Regulations • Raise load • Lower load • Raise boom • Lower boom • Retract/extend boom • Swing boom • Stop • Move slowly • Dog (stop) everything • Dual motion signals

Line (GAC): C USE TRADE RELATED SKILLS

Competency: C5 Describe construction trade structure and concepts

Objectives

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

- Define trade structure and concepts
- Use trade terminology

LEARNING TASKS	CONTENT

1. Describe work performed by Lathers (Interior Systems Mechanic)	• Installation tasks
	• Fire proofing
	• Sound proofing
	• Building envelope technologies
	• Acoustical ceiling systems
	• Wall and Ceiling trades
	  ○ Metal stud framer
	  ○ Gypsum wallboard installer
	  ○ Wire lath installer
	  ○ Ceiling installer
	• Structural metal framing
	• Access flooring
	• Access panels
	• Drywall taping and finishing
	• Lath/wire mesh
	• Security mesh
	• Lath/drywall finishing beads and trims
	• Demountable partitions

2. Describe the construction industry hierarchy	• Owners • Architects • Engineers • Managers • Sub-contractors • Labour contractors
3. Use construction terminology	• According to glossary of terms and definitions as defined in Association of Wall and Ceiling Contractors manual

Line (GAC): D USE LADDERS, SCAFFOLDS, AND LIFT EQUIPMENT

Competency: D1 Use ladders, scaffolds, and aerial lifts

Objectives

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

- Use ladders, scaffolds, and elevated platforms
- Maintain access and hoisting equipment

LEARNING TASKS	CONTENT

1. Describe scaffolding and elevated platforms	• Types and applications
	• Scaffolds
	  ○ Utility
	  ○ Mechanical
	  ○ Ground-based
	  ○ Rolling
	  ○ Stationary
	  ○ Ladder jack
	  ○ Tubular
	  ○ Hydraulic
	  ○ Jack-up
	• Aerial work platforms
	• Swing stages
	• Step ups
	• Stilts
	• Components
	  ○ Stirrups
	  ○ Planks
	  ○ Outriggers and cross braces
	  ○ Hand rails and posts
	  ○ Kick boards
	  ○ Mud sills
	  ○ Adjustable screw jacks/wheels
	  ○ Aluminum and wooden planks
	• Safety
	  ○ Hazard recognition
	  ○ Fall arrest, restraint, and prevention
	  ○ Height restrictions
	  ○ OHS and site-specific
	  ○ Competency to build scaffolds (up to three high) for inspection and erection
	  ○ Maintaining three point contact

2. Describe types of ladders	• Single free standing and extension

LEARNING TASKS	CONTENT
	• Step • Trestle and extension trestle • Job built ladders
3. Use ladders and scaffolding	• Selection • Site hazards • Inspections • Set up, layout, and levelling • Restrictions • Securing • Moving ladders • Competency levels for inspection and erection • Adherence to manufacturer specifications, WorkSafeBC regulations, and/or engineered drawings
4. Use an elevated platform	• Selection • Site hazards • Set up, layout, and levelling • Tie-in to existing wall • Install mud sills • Restrictions
5. Maintain scaffolding and ladders	• Maintenance • As per manufacturer's specifications • Storage • Transportation

Achievement Criteria

Performance	The learner will set up the first lift of a scaffold
Conditions	The learner will be given: • Scaffold and components • Instructions
Criteria	The learner will score 70% or better on a rating sheet that reflects the following criteria: • Safety • Level • Braces in proper spot • Proper base support • Proper use of components

Line (GAC): D USE LADDERS, SCAFFOLDS, AND LIFT EQUIPMENT

Competency: D2 Describe rigging and hoisting practices

Objectives

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

- Describe rigging and hoisting

LEARNING TASKS	CONTENT

1. Describe safe rigging and hoisting practices	• WorkSafeBC Regulations
	• Identify hazards
	  ○ Unknown safe working loads
	  ○ Defective components
	  ○ Unsafe equipment
	  ○ Wind/weather conditions
	  ○ Power lines
	• Personal protective clothing and equipment
	• Housekeeping
	• Handling of loads supported by cranes
	• Correct material storage

Line (GAC): E USE TOOLS AND EQUIPMENT

Competency: E1 Use hand tools

Objectives

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

- Use hand tools
- Maintain hand tools

LEARNING TASKS	CONTENT
1. Describe hand tools	• Types • Purpose • Application • Parts • See Tools and Equipment for complete list of tools
2. Use hand tools	• Safety • According to WorkSafeBC regulations • According to job requirements
3. Maintain hand tools	• Maintenance procedures • Adjustments • According to manufacturer's instructions • Storage

Line (GAC): E USE TOOLS AND EQUIPMENT

Competency: E2 Use power tools

Objectives

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

- Use power and pneumatic tools
- Maintain power and pneumatic tools

LEARNING TASKS	CONTENT
1. Describe power and pneumatic tools	• Types • Components • Purpose • Application • See Tools and Equipment for list
2. Use power and pneumatic tools	• Safety • According to WorkSafeBC regulations • According to job requirements
3. Maintain power and pneumatic tools	• Maintenance procedures • Adjustments • According to manufacturer's instructions • Storage

Line (GAC): E USE TOOLS AND EQUIPMENT

Competency: E3 Use powder-actuated and gas-actuated tools

Objectives

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

- Describe the use of gas and powder-actuated tools
- Describe the maintenance of gas and powder-actuated tools

LEARNING TASKS	CONTENT
1. Describe powder-actuated tools	• Types • Components • Purpose • Application • See Tools and Equipment for list of powder-actuated tools

2. Describe the use of powder-actuated tools	• Safety
	• According to WorkSafeBC regulations
	• According to job requirements
	• Types of charges
	  ○ Low to high velocity
	• Types of fasteners
	• Methods of propulsion
	  ○ Co-acting
	  ○ Impact
	  ○ Contact
	  ○ Electric
	  ○ Gas

3. Describe the maintenance of powder-actuated tools	• Maintenance procedures • Adjustments • According to manufacturer's instructions • Storage
4. Describe gas-actuated tools	• Types • Components • Purpose • Application • See Tools and Equipment for list of gas-actuated tools

LEARNING TASKS	CONTENT
5. Describe the use of gas-actuated tools	• Safety • According to WorkSafeBC regulations • According to job requirements
6. Describe the maintenance of gas-actuated tools	• Maintenance procedures • Adjustments • According to manufacturer's instructions • Storage
7. Describe job restrictions	• Substrate restrictions • Correct equipment for the substrate • Ticketing

Line (GAC): E USE TOOLS AND EQUIPMENT

Competency: E4 Use measurement and layout tools

Objectives

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

- Use measurement and layout tools

LEARNING TASKS	CONTENT
1. Describe types of measurement and layout tools	• Types • Purpose • Application • Parts • See Tools and Equipment section for a complete list of tools
2. Use measurement and layout tools	• Safety • According to WorkSafeBC regulations • According to job requirements
3. Maintain measurement and layout tools	• Maintenance procedures • Adjustments • According to manufacturer's instructions • Storage

Line (GAC): F INSTALL INSULATION

Competency: F1 Install thermal and acoustical insulation

Objectives

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

- Describe the installation of thermal insulation
- Describe the installation of acoustical insulation

LEARNING TASKS	CONTENT

1. Describe principles of thermal insulation	• Preventing heat loss
	• Conduction
	• Convention Radiation
	• Insulating values
	• Causes of heat loss
	  ○ Below grade in foundation walls and slabs
	  ○ Above grade in foundation walls
	  ○ In walls

2. Describe types of thermal insulation	• Flexible fibreglass insulation batts
	• Blown insulation
	• Spray insulation
	• Rigid fibreglass insulation sheathing
	• Semi-rigid fibreglass wall insulation Mineral fibre
	• Extruded polystyrene
	• Fibreglass insulation for commercial construction
	  ○ Acoustical/thermal batts
	  ○ Partition batts
	  ○ Thermal Kraft-face batts
	  ○ Reflective thermal foil-faced batts
	  ○ Fire-resistant batts
	  ○ Extended-flange batts
	  ○ Loose-fill fibreglass

3. Describe the installation of thermal insulation	• Types
	  ○ Flexible
	  ○ Loose fill
	  ○ Rigid
	  ○ Reflective
	  ○ Expandable foam

LEARNING TASKS	CONTENT

	• Fill wall and/or ceilings to specified depth for "R" rating
	• Applications
	  ○ Into wood and metal studs
	  ○ Attachment to various substrates
	• Mechanical fasteners and adhesives (refer to Tools and Equipment section)
	• Select proper width and thickness
	• Install wood supports
	• Install to metal supports
	• To manufacturer's instructions

4. Describe the principles of acoustical insulation	• Noise problems • Airborne sound • Structure borne sound transmissions (floors and ceilings) • Control of airborne sound • Lightweight double-leaf acoustic wall assemblies • Insulation density • Sound flanking • Control of structure borne sound

5. Describe acoustical wall assemblies	• Gypsum board
	  ○ Types
	  ○ Thickness
	  ○ Layers
	• Wall studs
	  ○ Wood
	  ○ Steel
	  ○ Size
	• Resilient channels
	• Insulation materials
	  ○ Mineral fibre
	  ○ Fibreglass insulation
	  ○ Acoustical batts
	  ○ Partition batt
	  ○ Spray foam
	• Shaft wall system
	• High density ceiling tiles and wall panels and sound baffles

LEARNING TASKS	CONTENT

6. Describe types of acoustical insulation	• Types of sound barriers
	  ○ Acoustical batt insulation
	  ○ Plenum baffles
	  ○ Lead sheeting
	  ○ Steel stud and drywall
	• Pre-finished sound panels
	• Acoustical rigid fibreglass board with black facing
	• Acoustical black fibreglass with black surface
	• Acoustical rigid duct board
	• Foil backed rigid duct board
	• Duct liner
	• Acoustical ceiling batts
	• Loose-filled fibreglass insulation
	• Blown insulation
	• Spray on insulation
	• Commercial ceiling systems
	• Panels
	• Sealants
	• Insulation tape and strips

7. Describe the installation of acoustical insulation	• Mechanical fasteners and adhesives (Refer to Tools and Equipment) • Framing assemblies • To manufacturer's instructions • Lead sheeting and approved fastening system

8. Describe applying sealants and gaskets	• Added protection against air infiltration
	• Sound resistance/barrier
	• Importance of surface preparation
	• Proper selection of appropriate compound
	• Sealant type
	  ○ Interior
	  ○ Exterior
	  ○ Typical use
	  ○ Joint application
	• Advantages/disadvantages

Line (GAC): F INSTALL INSULATION

Competency: F3 Control mould

Objectives

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

- Describe mould, its causes, and related issues
- Describe susceptibility to mould
- Describe occupational health and safety requirements
- Describe mould prevention
- Describe mould remediation and mitigation methods

LEARNING TASKS	CONTENT
1. Describe mould	• Form of fungi – many species • Remediation levels (1, 2, 3) • Present indoors and outdoors • Conditions that create ideal breeding: temperature, moisture, and nutrients • Recognition through smell or odour • Colonization on building materials • Professional mould identification and training for mould removal
2. Explain issues related to mould	• Health of workers and occupants • Removal of mould in existing buildings • Construction processes to reduce/prevent mould growth • Lawsuits
3. Describe the building components that are commonly susceptible to mould growth	• Gypsum board • Wood products • Ceiling tiles • Wallpaper • Carpets • Exposed soil in crawl spaces
4. Describe occupational health and safety requirements	• Identify WorkSafeBC and OHS Regulations and guidelines • Training of workers • Reference to SDS for disinfectants and detergents • Personal Protective Equipment (PPE) • Containment of area

LEARNING TASKS	CONTENT
	○ Level 1, 2, 3 remediation • Limited access of others to contaminated area • Prohibition of smoking, drinking, and eating in work area • Decontamination rooms
5. Describe mould prevention	• Worker orientation • Mould prevention plans, reporting, and record keeping • Responsibilities of building designers, manufacturers, builders, and owners • Eliminate wet, moist environments • Use of protective barriers during susceptible building stages • Use of water resistance materials • Proper storage and handling of building materials • Monitor installations and reject wet materials • Drying techniques prior to closing up of building components
6. Describe the application of mould remediation and mitigation methods	• Assessing levels of growth • Rectification of underlying cause of mould growth • Professional determination of removal procedures • PPE ○ Respiratory ○ Remediation/hazmat apparel • Dust suppression methods • Isolation and containment of work area to prevent dust or spore dispersion • Negative air pressure system • Detergents and disinfectants to clean surfaces • HEPA vacuums and air filtration • Storage of materials • Waste disposal • Inspections • Maintaining proper conditions to prevent re- growth • As per job requirements

Line (GAC): G INSTALL NON-LOAD-BEARING METAL FRAMING

Competency: G1 Build walls, ceilings, and bulkheads

Objectives

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

- Frame walls, ceilings, and bulkheads

LEARNING TASKS	CONTENT

1. Describe substrate types and properties	• Structural substrates
	  ○ Concrete
	  ○ CMU masonry
	  ○ Brick
	  ○ Steel
	  ○ Wood
	• Sheathing type substrates
	• Relation to fastening systems

2. Describe types of wall assemblies	• Direct attachment wall furring
	  ○ Furring channel (hat track)
	  ○ Wood furring strips
	  ○ Z-furring channel
	  ○ Resilient channel
	• Free standing wall furring
	  ○ Metal track and studs
	  ○ Pony walls
	  ○ Parapets
	• Metal stud walls
	  ○ Floor-to-ceiling – straight
	  ○ Floor-to-ceiling – curved
	• Freestanding

3. Describe the installation of PSF door and window frames	• Interpret door schedules • Identify/select specified frame • Determine door swing • Check dimensions and throat size ○ Wall schedule • Install 1 piece frames • Install 3 piece frames • Use shims • Level, plumb, and square frames • Anchor, brace, and fasten frame • Temporary spreaders

LEARNING TASKS	CONTENT
	○ Frame defects ○ Removal • Placement of frame in correct location • Jamb stud requirements • Jamb clips
4. Describe types of ceiling assemblies	• Metal stud • Furred • Direct attachment
5. Describe jigs and templates	• Types of jigs ○ Multi-use ○ Single-use • Types of templates ○ Manufactured ○ Job built • Material used for jigs and templates ○ Wood and plywood ○ Drywall, steel studs, and track • Applications of jigs and templates such as building bulkheads • Determining when to build and use jigs and templates • Assemble and square jigs and templates
6. Describe types of bulkhead assemblies	• Curved • Sloped • Flat • Engineered • Angled • Stepped
7. Layout walls, ceilings, and bulkheads	• Read blueprints/specification • Install grid/bay lines • Layout locations of walls • Verify layout • Establish elevations • Establish openings • Mark location of stud • Squaring • Dividing

LEARNING TASKS	CONTENT
	• Establish radius points

8. Frame bulkheads	• Drops/cosmetic bulkheads
	  ○ Vertical
	  ○ Horizontal

9. Frame walls	• Floor-to-ceiling straight walls • Floor-to-ceiling curved walls • Freestanding walls

10. Frame ceilings, drops, and bulkheads	• Metal-stud ceiling
	  ○ Identify and select materials
	  ○ Perform layout
	  ○ Verify layout
	  ○ Install perimeter metal track
	  ○ Cut and install ceiling joists
	  ○ Install inserts, hangers, and carriers as required on long spans
	  ○ Install gypsum wall board
	• Furred ceiling
	  ○ Direct attachment method
	• Cutting and fastening methods

Achievement Criteria

Performance — The learner will frame out an 8 ft. x 10 ft. mock-up of a steel-framed assembly

Conditions — The learner will be given:

- Instructions
- Equipment
- Blueprint
- Partner

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- Safety
- Accuracy
  - Level
  - Square
  - Plumb
- Quality

Note — **This may be combined with the I1 Level 1 Achievement Criteria.**

Line (GAC): I INSTALL GYPSUM WALLBOARD PRODUCTS

Competency: I1 Install gypsum wallboard

Objectives

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

- Install gypsum wallboard

LEARNING TASKS	CONTENT

1. Describe types of gypsum and their uses	• GWB types
	  ○ Standard
	  ○ Fire-resistant
	  ○ Moisture-resistant
	  ○ Backing
	  ○ Vinyl
	  ○ Predecorated
	  ○ Coreboard
	  ○ Exterior sheathing
	  ○ Veneer
	  ○ Controlled-density (CD)
	  ○ Foil-backed
	  ○ Gypsum lath
	  ○ Abuse-resistant
	  ○ Glass mat panels
	  ○ Concrete glass fibre-reinforced backer board
	  ○ Sound-deadening
	  ○ Mould resistant
	  ○ Decorative strips
	• Square edge
	• Tapered edge

2. Install gypsum wallboard	• Lifting and carrying requirements
	• Fastening requirements
	  ○ Specified fastener types
	  ○ Spacing
	• Staggering joints
	• Horizontal application
	• Vertical application

3. Store gypsum materials	• Proper storage of material
	  ○ Preparation of storage area
	  ○ General safety considerations and WorkSafeBC regulations

LEARNING TASKS	CONTENT
	○ Ways to avoid damaging gypsum board ○ Ways to avoid cracking gypsum board ○ Ways to avoid rough edges ○ Determining number of people needed to move drywall ○ Using drywall roller dollies ○ Ensure that proper load-bearing is maintained ○ Weather considerations ○ Inspection of drywall upon delivery • Determining sequence in which materials are to be used

Achievement Criteria

Performance	The learner will install gypsum wallboard on an 8 ft. x 10 ft. mock-up of a steel-framed assembly
Conditions	The learner will be given: • Instructions • Equipment • Blueprint • Partner
Criteria	The learner will score 70% or better on a rating sheet that reflects the following criteria: • Safety • Accuracy/quality ○ Screw spacing ○ Screw depth
Note	**This may be combined with the G1 Level 1 Achievement Criteria.**

Level 2

Lather (Interior Systems Mechanic)

Line (GAC): B APPLY CODES, STANDARDS, AND DOCUMENTATION

Competency: B1 Apply codes and regulations

Objectives

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

- Apply codes, standards, and regulations

LEARNING TASKS	CONTENT

1. Describe building codes	• AWCC Wall & Ceiling Specification Standards
	  ○ Wall framing and stud spacing
	  ○ Ceilings
	  ○ Fire separations
	  ○ Fasteners
	  ○ Insulation
	  ○ Vapour barrier
	  ○ Building envelope
	  ○ Seismic
	• Structural and seismic installations
	  ○ Engineered drawings
	• Fire and sound ratings
	• National Building Code
	• British Columbia Building Code
	• Municipal Building Codes or Bylaws

2. Describe quality control and assurance standards	• Underwriters Laboratories of Canada (ULC) • Canadian Standard Association (CSA) codes • AWCC Wall & Ceiling Specifications Standards Manual • American Standard for Testing Materials (ASTM)

3. Apply codes, standards, and regulations	• As per job requirement
	• Use standards
	  ○ Size of component parts
	  ○ Spans and tolerances of component parts
	  ○ Installation recommendations

Line (GAC): B APPLY CODES, STANDARDS, AND DOCUMENTATION

Competency: B2 Apply fire assembly requirements

Objectives

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

- Apply fire assemblies and their ratings when building walls and ceilings

LEARNING TASKS	CONTENT
1. Describe fire resistance ratings	• Wall and partitions, floor, ceilings, or columns • Resistance of intense heat and flame • Based on individual components of assembly • Based on results of acceptable testing methods • Flame spread ratings • Fire blocking/stopping
2. Describe fire rated wall and ceiling assemblies	• Fire and smoke rated assemblies • Time rated assemblies
3. Apply fire assembly requirements	• Types of systems • Relate system to wall type • Reference to a design number

Line (GAC): C USE TRADE RELATED SKILLS

Competency: C1 Use blueprints and specifications

Objectives

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

- Interpret blueprint elevations, floor plans, cross sections, schedules, and details

LEARNING TASKS	CONTENT

1. Interpret blueprint elevations, floor plans, cross sections, schedules, and details	• Specifications
	• Blueprint cover sheet
	  ○ Title block information
	  ○ Legend
	  ○ Index/table of contents
	• Working drawings
	• Working floor plan
	• Elevation drawings
	  ○ Interior
	  ○ Exterior
	• Cross sections
	• Detail drawings
	  ○ Shop drawings
	• Schedules
	  ○ Window details
	  ○ Door details
	  ○ Wall legend
	  ○ Room finish schedules
	• Views

Achievement Criteria

Performance	The learner will interpret a print and answer questions related to measurement, location, and layout
Conditions	The learner will be given: • A print • Instructions • Questions
Criteria	The learner will score 70% or better on a rating sheet that reflects the following criteria: • Accuracy of answers

Line (GAC): C USE TRADE RELATED SKILLS

Competency: C2 Apply trade math

Objectives

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

- Calculate area and perimeter
- Calculate dimensions using geometry

LEARNING TASKS	CONTENT

1. Calculate area and perimeter for various shapes and combinations of shapes	• Shapes
	  ○ Squares
	  ○ Triangles
	  ○ Circles
	  ○ Parallelogram
	  ○ Trapezoid
	  ○ Multi-step problems involving complex shapes

2. Calculate dimensions of various shapes	• Hypotenuse of a right triangle • Altitude of a right triangle • Base of a right triangle • Radius of a circle

3. Perform calculations on geometric shapes	• Measurement, properties, and relationship
	  ○ Points
	  ○ Lines
	  ○ Angles
	  ○ Curves
	  ○ Planes
	  ○ Shapes
	• Pythagorean theory (3-4-5)
	• Protractor
	• Framing square
	• Bisecting angles
	• Establish radius point
	• Framing arches
	• Establish diameter of circle
	• Layout circle around and within triangle
	• Layout elliptical arch
	• Layout curved wall to connect with given points
	• Layout segmented arch

Line (GAC): F INSTALL INSULATION

Competency: F2 Install vapour barriers and sealants

Objectives

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

- Describe the installation of vapour/air barriers and sealants

LEARNING TASKS	CONTENT

1. Describe the principles of vapour/air barriers and sealants	• Vapour barrier
	  ○ To separate warm and cold environments
	  ○ Usually placed on warm side of insulation
	  ○ Keeps water vapour from cooling and condensing
	  ○ Air movement may transport and deposit moisture laden air through small openings
	• Air barrier
	  ○ Used to prevent infiltration and exfiltration of air
	  ○ Excessive air leakage causes building failures
	• Mechanism of air leakage
	  ○ Stack effect
	  ○ Wind
	  ○ Fan pressurization
	• Air barrier requirements
	  ○ Continuity
	  ○ Structural integrity
	  ○ Air impermeability
	  ○ Durability

2. Describe types of vapour/air barriers and materials	• Foil back gypsum board
	• Two coats of alkyd paint applied to gypsum wallboard
	• Exterior claddings
	  ○ Metal
	  ○ Composite
	  ○ Cementitious
	  ○ Wood
	  ○ Vinyl
	• Polyethylene plastic
	• Aluminum foil
	• Caulks and sealants

LEARNING TASKS	CONTENT

3. Describe vapour/air barrier systems	• Gypsum board
	  ○ Accessible gypsum board approach
	  ○ Non-accessible gypsum board approach
	• Cladding air barrier systems
	• Asphalt impregnated paper
	• Curtain wall systems
	• Sheet metal wall systems
	• Masonry wall systems
	  ○ Thermo fusible membranes
	  ○ Peel and stick membranes

4. Describe the installation of caulking and sealant	• Added protection against air infiltration
	• Importance of surface preparation
	• Proper selection of appropriate compound
	• Sealant type
	  ○ Interior
	  ○ Exterior
	  ○ Typical use
	  ○ Joint application
	  ○ Advantages/disadvantages

5. Describe the installation of vapour and air barriers	• Framing assemblies o Wood and metal • To building code and local municipal standards • Mechanical fasteners and adhesives (Refer to Tools and Equipment)

Line (GAC): G INSTALL NON-LOAD-BEARING METAL FRAMING

Competency: G1 Build walls, ceilings, and bulkheads

Objectives

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

- Frame advanced walls, suspended ceilings, and bulkheads

LEARNING TASKS	CONTENT
1. Describe types of wall assemblies	• Shaft walls • Chase walls • Fire ratings • Sound walls
2. Describe types of ceiling assemblies	• Suspended (independent) • Dependent
3. Describe types of bulkheads assemblies	• Structural (carrying weight) • Decorative
4. Describe interior framing systems	• Interior partitions • Ceiling suspension systems • Column and beam • Fire and sound resistance rated partitions and ceiling systems • Deflection considerations • Bracing
5. Use types of bulkhead assemblies	• Curved • Sloped • Flat • Engineered • Angled • Stepped

6. Install wall and ceiling furring – direct attachment method	• To specifications
	• Install furring channel (hat track)
	  ○ Vertical application
	  ○ Horizontal application
	• Framing/furring outside/inside corners
	• Framing/furring window openings
	• Z-furring channel application

LEARNING TASKS	CONTENT
	• Resilient bar furring channels

7. Describe non-load-bearing jigs and templates	• Types of jigs
	  ○ Multi-use
	  ○ Single-use
	• Types of templates such as manufactured or job built
	• Material used for jigs and templates
	  ○ Wood and plywood
	  ○ Drywall, steel studs, and track
	• Applications of jigs and templates such as building bulkheads
	• Determining when to build and use jigs and templates
	• Assemble and square jigs and templates

8. Frame walls	• Shaft walls
	  ○ To specifications
	  ○ Inspections
	• Chase walls

9. Perform cutting, fitting, and fastening methods for gypsum wallboard ceilings	• Wood, concrete, and steel substrates
	• Inserts
	• Hangers
	  ○ Q-Deck punch
	  ○ Step punch
	  ○ Pole applications
	• Carriers
	  ○ Proprietary systems
	• Tying off

10. Frame ceilings, drops, and bulkheads	• To specifications
	• Proprietary systems
	• Suspended ceiling (dependent/independent)
	  ○ Identify and select materials
	  ○ Perform/verify layout
	  ○ Install inserts
	  ○ Cut and install hangers
	  ○ Secure, install, and level carriers
	  ○ Secure furring channel to carriers

Line (GAC): G INSTALL NON-LOAD-BEARING METAL FRAMING

Competency: G2 Install wood and metal backing

Objectives

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

- Install wood and metal backing

LEARNING TASKS	CONTENT

1. Describe types of wood and metal backing	• Plywood/wood and wide metal strapping
	  ○ Proprietary systems
	  ○ Shop drawings

2. Install wood and metal backing	• Wood and metal backing requirements and placement
	• Metal strapping gauges
	  ○ Metal stud gauges
	• Determining metal backing location
	  ○ As per elevation drawings
	  ○ As per manufacturer's specifications
	  ○ As per shop drawings
	• Cutting and shaping backing
	  ○ Kerf cuts
	• Fastening wood and metal backing
	• Tools and equipment
	  ○ Table saw
	  ○ Pop riveter
	  ○ Circular saw
	  ○ Drill
	• Fasteners

Line (GAC): G INSTALL NON-LOAD-BEARING METAL FRAMING

Competency: G3 Install pressed steel frames

Objectives

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

- Install metal door and window frames
- Install specialty metal door and window frames

LEARNING TASKS	CONTENT
1. Describe types of metal frames	• Transom frames • Sidelight frames • Window frames • Expandable frames • Fire ratings

2. Describe types of metal door frames	• Door frames
	  ○ 1 piece fully welded
	  ○ 3 piece knock down
	  ○ Expandable

3. Install metal door frames	• Interpret door schedules
	• Identify/select specified frame
	• Determine door swing
	• Check dimensions and throat size
	  ○ Wall schedule
	• Install 1 piece frames
	• Install 3 piece frames
	• Use shims
	• Level, plumb, and square frames
	• Anchor, brace, and fasten frame
	• Temporary spreaders
	  ○ Frame defects
	  ○ Removal
	• Placement of frame in correct location
	• Jamb stud requirements
	• Jamb clips

LEARNING TASKS	CONTENT

4. Install specialty metal door and window frames	• Interpret door/window schedules
	• Identify/select specified frame
	• Elevations
	• Check fire ratings of door/wall assemblies
	• Determine door swing
	• Check dimensions and throat size
	• Install 1 piece frames
	• Use shims
	• Level, plumb, and square frames
	• Anchor, brace, and fasten frame
	  ○ Temporary spreaders
	  ○ Frame defects
	  ○ Removal
	• Placement of frame in correct location
	• Determine secure side of window
	  ○ Jamb stud requirements
	• Jamb/shoe clips

Achievement Criteria

Performance — The learner will install a pressed steel metal frame

Conditions — The learner will be given:

- Materials
- Equipment
- Instructions

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- Plumb
- Level
- Square

Line (GAC): G INSTALL NON-LOAD-BEARING METAL FRAMING

Competency: G4 Install access panels

Objectives

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

- Install access panels

LEARNING TASKS	CONTENT

1. Describe types and properties of access panels	• Removable panels/doors
	• Provide utility service in walls/ceilings
	• Fire rated or non-fire rated
	• Requirements for fire-rated access panels
	• Construction:
	  ○ Steel
	  ○ Plastic
	  ○ Gypsum board
	  ○ Wood
	  ○ Composite
	• Combination of materials
	• Panel components
	  ○ Lay in
	  ○ Flush mount
	  ○ Hinged
	  ○ Latch assemblies

2. Install access panels	• Identify and select specified panel • Coordinate panel location with other sub trades and designers • Follow manufacturer's installation instructions • Site specific suppliers • Scheduling of installation • Caution when cutting through drywall ○ Avoiding damage to mechanical/electrical • Install plumb, level, square, and rigid • Adjust doors, latches, and locks • Close and latch once complete • Support frames if required

Line (GAC): H INSTALL LOAD-BEARING METAL FRAMING

Competency: H1 Build wind load and axial load-bearing walls

Objectives

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

- Describe wind load and axial load-bearing walls

LEARNING TASKS	CONTENT
1. Describe load-bearing metal framing construction	• Benefits derived from using light-gauge steel framed buildings • Interior/exterior • Prefabricated and stick-built • Key definitions and terms • Common framing members • Gauge, thickness, and flange sizes
2. Describe types of load-bearing walls	• Interior walls • Exterior walls
3. Describe wall framing methods	• Platform construction • Balloon construction

Line (GAC): I INSTALL GYPSUM WALLBOARD PRODUCTS

Competency: I1 Install gypsum wallboard

Objectives

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

- Install complex gypsum wallboard components

LEARNING TASKS	CONTENT

1. Apply fitting and cutting methods	• Cutting and measuring drywall
	  ○ Gyproc knife
	  ○ Key hole saw
	  ○ Wallboard saw
	  ○ T-square
	  ○ Router
	  ○ Off-angles
	  ○ Board lifter
	  ○ Panel lifter
	• Locate and cut access holes
	  ○ 90° angles (to accept various types of corner beads)

2. Apply fastening methods	• Fasteners
	  ○ Screws
	  ○ Nails
	  ○ Adhesives
	• Securing layers of gypsum board to metal and wood supports
	• Fastening methods
	  ○ Screw spacing: non-fire rated GWB
	  ○ Screw spacing: fire-rated GWB
	  ○ Nailing requirements
	  ○ Fastener penetration: metal to wood supports
	  ○ Fastener head diameter
	  ○ Fire-rated assemblies

3. Apply alternative installation methods	• Advantages and disadvantages
	  ○ Perpendicular method
	  ○ Parallel method
	• Installing gypsum board on ceilings
	• Installation sequence
	  ○ Perpendicular installation
	  ○ Parallel installation
	• Installing gypsum board on walls

LEARNING TASKS	CONTENT
	○ Vertically ○ Horizontally • Correct methods of installing gypsum board on walls and ceilings ○ Single layer ○ Double layer ○ Laminating (two or more layers)
4. Install gypsum wallboard	• Walls • Ceilings • Radius • As per AWCC instructions • Ensuring studs, doors, and window frames are level and plumb during installation of sheets

Achievement Criteria

Performance — The learner will install drywall

Conditions — The learner will be given:

- Materials
- Equipment
- Instructions

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- Screw patterns
- Butt joints
- Bevel joints
- Screw depth
- Proper usage of board
- Minimal waste
- Proper installation procedures around openings

Line (GAC): I INSTALL GYPSUM WALLBOARD PRODUCTS

Competency: I2 Install materials for lead radiation shielding

Objectives

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

- Describe the installation of materials for lead assemblies

LEARNING TASKS	CONTENT

1. Describe lead shielding	• Purposes of lead shielding
	  ○ Sound proofing
	  ○ Radiation protection
	• As per specifications
	• Types, weight, and thicknesses of lead
	• Measure and cut lead
	• Lead installation techniques
	• Seal X-ray conductive perforations in lead panels
	  ○ Fasteners
	  ○ Joints
	  ○ Corners, openings, cut-outs, and frames
	• Ceilings
	• Lead handling precautions

2. Describe the use of shielding techniques	• Material selection • Apply at partition perimeter and all openings such as pipes, electrical outlets, and ductwork

3. Describe the installation of lead radiation shielding	• Cutting tools
	  ○ Drywall knife
	  ○ Aviation (steel) snips
	  ○ Carbide tip carpet knife
	  ○ Shears
	• Fitting methods
	  ○ To manufacturer's instructions
	  ○ Gypsum wallboard
	  ○ Ceilings
	  ○ Walls
	  ○ Ceiling blanket
	  ○ Sheet lead
	• Fastening methods
	  ○ Nails

LEARNING TASKS	CONTENT
	○ Screws ○ Mechanical fasteners ○ Tie on methods ○ Washers ○ To manufacturer's instructions • Minimum 20 gauge steel stud framing • Safety precautions ○ Long sleeves ○ Gloves ○ Disposable suits ○ Breathing apparatus ○ As per job requirements

Line (GAC): I INSTALL GYPSUM WALLBOARD PRODUCTS

Competency: I3 Install security mesh

Objectives

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

- Describe the installation of security mesh

LEARNING TASKS	CONTENT
1. Describe security mesh	• Mesh properties such as gauge, weights, material, composition, and mesh size • Application/intended uses • Penetration barrier
2. Describe the installation of security mesh	• As per specifications • Cutting mesh • Staggered joints • Butting of joints • Fastening of mesh

Line (GAC): J INSTALL FIREPROOFING AND SOUNDPROOFING

Competency: J1 Install soundproofing materials

Objectives

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

- Describe materials for soundproofing assemblies
- Describe the use of caulking equipment

LEARNING TASKS	CONTENT
1. Describe sound control principles	• Measurement of sound • Terminology for sound control • Typical sound control problems • Sound control systems • Building considerations • Sound absorption • Sound isolation • Acoustical material
2. Describe sound control factors in the construction of buildings	• Mass • Isolation • Damping • Leaks • Flanking paths • STC ratings • Measurement of sound
3. Describe types of materials used for soundproofing	• Acoustical tile and panels • Baffles • Gypsum board • Resilient (floating) channel (sound bar) • Sheet lead • Acoustical sealant • Sound attenuation blankets • Sound deadening board
4. Describe processes for soundproofing walls and partitions	• Wall panel mounting methods • Controlling air leakage • Controlling wall vibration • Reducing structure borne sound through wall • Wall assemblies

LEARNING TASKS	CONTENT
5. Describe acoustical ceiling products, panels, and systems	• Acoustical ceiling products • Ceiling suspension systems • Other specialty systems • Standards and approvals • Proprietary ceiling panel systems • Finishes
6. Describe the use of caulking equipment	• Material selection • Caulking gun • Apply at partition perimeter • Airtight seals

Line (GAC): J INSTALL FIREPROOFING AND SOUNDPROOFING

Competency: J2 Install materials for fireproofing and smoke seals

Objectives

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

- Describe the installation of materials for fireproofing assemblies

LEARNING TASKS	CONTENT
1. Describe terms relating to fireproofing	• Fire stopping • Fireproofing • Fire rating • Flame spread rate

2. Describe types of materials used for fireproofing	• Spray-applied fireproofing
	  ○ Cementious products
	  ○ Intumescent materials
	  ○ Fibrous materials
	  ○ Composites
	• Other products used for fireproofing
	  ○ Gypsum wallboard
	  ○ Plaster
	  ○ Cement board
	  ○ Metal framing component parts
	  ○ Fire caulking/spray

3. Describe types of fire protection	• Passive fire protection • Active fire protection • GWB fireproofing • Spray on fireproofing
4. Describe fire rated caulking assemblies	• Stationary joints • Deflection joints

5. Describe fire-resistance and acoustic ratings for cold-formed steel framed floor assemblies	• Refer to Fire Resistance Design Manual (excerpt of AWCC manual)
	• When fire and acoustic ratings are required
	• Fire ratings
	  ○ Outline of tests
	  ○ Description of steel joist assemblies
	  ○ Results
	• Acoustical properties/STC ratings

LEARNING TASKS	CONTENT
	○ Outline of tests ○ Results • Practical application of results
6. Describe the application of fitting and fastening methods	• To manufacturer's instructions • Resilient channel • Gypsum wallboard • Ceilings • Walls • Ceiling blanket • Sheet lead • Cutting tools ○ Drywall knife ○ Aviation (steel) snips ○ Carbide tip arborite knife • Taping compound • Mechanical fasteners • Tie on methods
7. Describe the use of caulking and sealing equipment	• Areas requiring fireproofing • Codes and standards • Specifications • Installation of GWB assemblies ○ Fire ratings • Spray on fireproofing
8. Describe the installation of fireproofing materials	• Areas requiring fireproofing • Codes and standards • Specifications • Installation of GWB assemblies o Fire ratings • Spray on fireproofing

Line (GAC): J INSTALL FIREPROOFING AND SOUNDPROOFING

Competency: J3 Install shaft wall assemblies

Objectives

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

- Install shaft wall assemblies

LEARNING TASKS	CONTENT
1. Describe shaft wall assemblies	• Types of shafts • Fire protection • Non-load-bearing • Typical construction • Tolerances • Limiting heights • Framing thickness and gauge • Anchoring and fastening • Joints • Codes and standards • Manufacturer's technical literature • STC

2. Describe shaft wall system components	• Applicable standards
	  ○ CSA
	  ○ ASTM
	  ○ ULC
	• Shaft wall systems
	  ○ Thickness and gauge
	  ○ Fire rating
	  ○ Thermal and sound insulation
	  ○ Cut outs for service lines
	  ○ Friction fit studs
	  ○ Stud spacing
	• Shaftliners
	  ○ Thickness
	  ○ Moisture resistance
	  ○ Size
	  ○ Installation/fastening
	• Firestop gypsum board
	  ○ Fire rating
	  ○ Layers
	  ○ Attachment procedures
	• Fire stopping materials

LEARNING TASKS	CONTENT
3. Build shaft wall assemblies	• As per specifications • Check tolerances that must be adhered to • Layout as per construction drawings • Install J-track • Install as a progressive system • Erect, insert, and fasten shaftliner panels into I-studs and J-tracks • Refer to details regarding installation around doors, ducts, other openings • Maximum horizontal spans • Firestop caulking/sealant • Add appropriate layers of GWB (gypsum wallboard) as per requirements

4. Install shaft wall firestop gypsum board facing	• As per specifications
	• STC ratings
	• Firestop GWB facing layer(s)
	  ○ 1 hour rating
	  ○ 2 hour rating
	  ○ 3 hour rating
	• Recommended procedure for location of gypsum board joints
	• Caulking properties and procedures

Achievement Criteria

Performance — The learner will install a mock-up of a shaft wall system with all components, to a maximum of 28 sq. ft.

Conditions — The learner will be given:

- Materials
- Equipment
- Instructions

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- As per manufacturer's specifications
- Tightness
- Plumb, level, and square

Line (GAC): K INSTALL ACOUSTICAL CEILINGS

Competency: K1 Install basic acoustical ceilings

Objectives

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

- Install acoustical ceilings

LEARNING TASKS	CONTENT

1. Describe types of acoustical ceilings	• Acoustical terms
	• Direct attachment system (adhesive, stapled)
	• T-bar systems
	  ○ Exposed grid
	  ○ Semi-exposed grid
	  ○ Concealed grid
	  ▪ Glue on tile
	  ▪ Sound panel

2. Describe component parts	• Knowledge of seismic requirements • Inserts • Hanger wire • Perimeter wall moulding • Main tees • Cross tees • Ceiling panels • Adhesive (direct attachment system) ○ Pre-preparation of substrate
3. Use T-bar fitting and fastening tools	• Aviation snips • Circle cutter • Keyhole saw • Utility knife • Whitney punch • Grid punch (knockout punch) • Pop riveter • Laser • Dry line • Wedge lock clip • Pop riveter • Q-Deck punch • Step punch • Pole applications

LEARNING TASKS	CONTENT
	• Hammer drill
4. Build acoustical ceilings	• Apply layout methods • Determine ceiling height • Determine grid layout • Reflected ceiling plan • Location of lights and other openings • Positioning of panels • Perimeter cuts • Location of movable partition • Perform grid layout math calculations • Use laser level • Install perimeter mould • Use dry lines • Hang main tees • Install cross tees

5. Install ceiling panels	• Acoustical ceiling panel products
	  ○ Mineral fibre
	  ○ Fibreglass Membrane
	  ○ Gypsum core
	  ○ Metal faced
	  ○ Vinyl faced
	  ○ Wood fibre
	• Cut and measure
	• Directional
	• Non-directional
	  ○ Handling and storage

Achievement Criteria

Performance — The learner will build an acoustical ceiling (maximum 100 sq. ft.)

Conditions — The learner will be given:

- Tools
- Equipment
- Instructions
- Ceiling plan

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- Safety
- Adherence to ceiling plan
- Level and square

Line (GAC): M INSTALL DRYWALL TAPING AND FINISHING

Competency: M1 Describe drywall finishing process

Objectives

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

- Describe drywall finishing process

LEARNING TASKS	CONTENT

1. Describe drywall finishing level definitions	• Reference AWCC specifications for levels of finish
	  ○ Level 0
	  ○ Level 1
	  ○ Level 2
	  ○ Level 3
	  ○ Level 4
	  ○ Level 5

2. Describe drywall finishing tools	• Tin snips • Mixing drill and paddle • Utility knife all-purpose • Hawk and trowel • Mud pan • Taping knives • Sandpaper • Sanding tools • Eye and respiratory protection

3. Identify drywall finishing materials	• Gypsum board joint compound properties
	  ○ Taping
	  ○ Topping/finishing
	  ○ All purpose
	  ○ Quick setting materials
	• Joint tape
	• Corner beads and trims
	• Perforated paper
	• Reinforcing tape

4. Describe drywall finishing process	• Prepare/mix compounds
	  ○ Ready-mix
	  ○ Fast set powders
	• Select tapes, beads, and trims

LEARNING TASKS	CONTENT

	• Finish drywall joints
	  ○ Prefill joints
	  ○ Spot fastener heads
	  ○ Embedding/taping coat
	  ○ Second coat
	  ○ Topping/finishing coat
	• Drying and curing conditions
	• Sanding drywall
	  ○ Dry sanding
	  ○ Wet sanding
	• Abrasive selection
	• Identification and repair of deficiencies

5. Identify problems and corrective measures related to GWB installation and finishing	• Improper framing
	• Subtrade related issues
	  ○ Improper installation of wood backing
	  ○ Plumbing and electrical
	  ○ HVAC
	• Poor gypsum board installation methods
	• Improper fastening
	• Waves in gypsum wallboard
	• Cracking at joints/mouldings/beads
	• Mould/mildew
	• Face paper defects
	• Warping
	• Fractures
	• Breakage
	• Moisture content
	• Minor variations in dimensional accuracy of gypsum wallboard
	• Gypsum wallboard receiving an excess amount of natural or unnatural light
	• Poor taping, filling and sanding methods
	• Defects apparent due to higher gloss of paint finish

Line (GAC): M INSTALL DRYWALL TAPING AND FINISHING

Competency: M2 Install drywall compounds, tape, beads, trims, and expansion joints

Objectives

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

- Install tapes, beads, and trims
- Install reveals and expansion joints

LEARNING TASKS	CONTENT

1. Describe corner beads	• Function
	• Types of corner beads
	  ○ Metal
	  ○ Plastic
	  ○ Paper
	• Advantages and disadvantages
	  ○ Metal
	  ○ Paper
	  ○ Plastic

2. Describe mouldings and trims	• Function
	• Types of moulding
	  ○ J-bead
	  ○ L-trim
	  ○ F mould
	  ○ J-round
	  ○ Plaster
	  ○ Cove
	  ○ Step
	  ○ Ornamental
	  ○ Shadow mould
	  ○ Paper face EPS

3. Apply fitting and fastening methods	• Tools
	  ○ Aviation snips
	  ○ Hacksaw
	  ○ Mitre saw
	  ○ Bead clincher
	  ○ Mallet
	  ○ Stapler
	  ○ Putty knife
	• Fitting methods
	  ○ Curved openings
	  ○ Straight runs

LEARNING TASKS	CONTENT
	○ Offset angles (inside and outside) ○ 90° angles (inside and outside) ○ Three way angles • Fastening methods ○ Nailing ○ Using screws ○ Clinch ○ Gluing ○ Using joint filler ○ Staples ○ Concrete nails ○ Dabs of plaster
4. Install drywall beads, trims, and moulding	• Available lengths • Beads ○ Metal ○ Paper ○ Plastic • Mouldings ○ Metal ○ Plastic ○ Paper • Trims ○ Metal ○ Plastic ○ Paper ○ Composite
5. Describe types of expansion joints and reveals	• Control joints • Hideaway expansion joint ○ One-piece ○ V shaped ○ Vinyl centre • Two-piece expansion joint ○ Angle “L” trim ○ Paper, metal, or plastic ○ Adjustable dimensions ○ Difficult to install • Shadowline tape-on reveal trim • Reveal abutting ceilings or wood finishes

LEARNING TASKS	CONTENT
6. Install plastic and metal drywall reveals and expansion joints	• One-piece types • Two-piece types • Reveal trim pieces • Refer to AWCC specifications

Achievement Criteria

Performance	The learner will install a horizontal bead, a vertical bead, and a 3-way corner, and replace/repair damaged drywall and bead
Conditions	The learner will be given: • Tools • Equipment • Instructions
Criteria	The learner will score 70% or better on a rating sheet that reflects the following criteria: • Accuracy • Proper mud distribution • Straight, square, level, and plumb

Line (GAC): N APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES

Competency: N1 Install air and vapour barriers

Objectives

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

- Describe the installation of vapour and air barriers
- Describe the application of caulking and sealants

LEARNING TASKS	CONTENT

1. Describe the principles of vapour barriers and air barriers	• Vapour barrier
	  ○ To separate warm and cold environments
	  ○ Usually placed on warm side of insulation
	  ○ Keeps water vapour from cooling and condensing
	  ○ Air movement may transport and deposit moisture laden air through small openings
	• Air barrier
	  ○ Used to prevent infiltration and exfiltration of air
	  ○ Excessive air leakage causes building failures
	• Mechanism of air leakage
	  ○ Stack effect
	  ○ Wind
	  ○ Fan pressurization
	• Air barrier requirements
	  ○ Continuity
	  ○ Structural integrity
	  ○ Air impermeability
	  ○ Durability
	• Sealant selection

2. Describe types of vapour barriers and air barrier systems	• Foil back gypsum board
	• Polyethylene plastic
	• Aluminum foil
	• Asphalt laminated paper
	• Caulks and sealants
	• Spray foam
	• Gypsum board
	  ○ Accessible gypsum board approach
	  ○ Non-accessible gypsum board approach

LEARNING TASKS	CONTENT

	• Metal air barrier systems
	  ○ Exterior cladding
	• Curtain wall systems
	• Sheet metal wall systems
	• Masonry wall systems
	  ○ Thermo fusible membranes
	  ○ Peel and stick membranes

3. Describe the application of caulking and sealants	• Added protection against air infiltration
	• Importance of surface preparation
	• Proper selection of appropriate compound
	• Sealant type
	  ○ Interior
	  ○ Exterior
	  ○ Typical use
	  ○ Joint application
	  ○ Advantages/disadvantages

4. Describe the installation of vapour and air barriers	• To framing members
	  ○ Wood
	  ○ Metal
	• To concrete substrates
	• To building code and local municipal standards
	• Mechanical fasteners and adhesives (Refer to Tools and Equipment)

Level 3

Lather (Interior Systems Mechanic)

Line (GAC): C USE TRADE RELATED SKILLS

Competency: C1 Use blueprints and specifications

Objectives

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

- Interpret engineered shop drawings

LEARNING TASKS	CONTENT

1. Interpret engineered shop drawings	• Engineered drawings
	  ○ Structural
	  ○ Seismic
	  ○ Specifications

Line (GAC): C USE TRADE RELATED SKILLS

Competency: C2 Apply trade math

Objectives

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

- Use trigonometry
- Perform geometric line construction

LEARNING TASKS	CONTENT
1. Perform geometric line construction	• Bisecting • Calculating radius point • Cords and segments • Obtuse and acute line • Compass trammel points

2. Use trigonometry	• Pythagorean theory (3-4-5)
	• Formulas
	• Applications
	  ○ Roof pitches
	  ○ Floors
	  ○ Soffit overhangs

Line (GAC): C USE TRADE RELATED SKILLS

Competency: C3 Plan a project

Objectives

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

- Plan a project

LEARNING TASKS	CONTENT
1. Identify job requirements	• Site conditions and restrictions • Knowledge of available materials • List materials and quantities • Measurement discrepancies (site vs. plan) • Utility requirements • Safety requirements

2. Estimate material quantities	• Typical building construction calculations
	• Walls
	  ○ Interior
	  ○ Exterior
	• Ceilings
	• Roofs
	• Floors
	• Columns and beams
	• Ratio and proportion

3. Plan a project	• Schedules
	• Estimation of daily tasks
	• Sequence of operations
	• Coordination of work with other trades
	  ○ Use time management skills
	  ○ Plan ahead
	  ○ Organize labour, materials and equipment
	  ○ Use time productively
	• Estimate time to complete specific tasks
	• Estimate labour quantity and costs
	• Estimate tools and equipment
	• Estimate material quantities
	• Project scheduling

Achievement Criteria

Performance	The learner will plan a project
Conditions	The learner will be given: • Material take-off (Based on information from the practical exercise in H2 level 3)
Criteria	The learner will score 70% or better on a rating sheet that reflects the following criteria: • Accuracy of estimates within 10% • Understanding of labour and material requirements • Identification of equipment for the tasks • Written plan • Safety requirements • Quantities • Schedule • Tools required

Line (GAC): H INSTALL LOAD-BEARING METAL FRAMING

Competency: H1 Build wind load and axial load-bearing walls

Objectives

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

- Build wind load and axial load-bearing walls
- Coordinate installation of utilities post construction

LEARNING TASKS	CONTENT
1. Describe load-bearing metal framing construction	• Benefits derived from using light-gauge steel framed buildings • Interior/exterior • Prefabricated and stick-built • Key definitions and terms • Common framing members • Gauge, thickness, and flange sizes • Deflection material • Connections/fasteners • Bridging and bracing • Parapet walls
2. Describe types of load-bearing walls	• Interior walls • Exterior walls • Curtain walls • Axial load-bearing
3. Describe steel stud floor, roof, and ceiling assemblies	• Roof framing • Ceiling joists • Floor joists • Manufactured trusses
4. Apply layout procedures for load-bearing metal framing	• Floor joists • Interior walls • Exterior walls • Window openings • Door openings • Wall partitions • Ceiling joists • Roof framing

LEARNING TASKS	CONTENT

5. Apply fitting and fastening methods	• Axial and lateral load
	  ○ Deflection principles
	• Fasteners
	  ○ Size
	  ○ Length
	  ○ Head type
	  ○ Welding
	  • Anchoring
	  ○ Wedge anchors
	  ○ Kwik bolts
	  ○ Masonry
	  ○ Drilling

6. Use shop drawings	• Manufacturers' details
	• Engineered shop drawings
	  ○ Spacing
	  ○ Height
	  ○ Fasteners

7. Build wind load-bearing walls and bulkheads	• Types of bulkheads
	  ○ Store fronts
	  ○ Light coves
	  ○ Canopies
	• Fasteners and connections
	• Wall erection and installation
	  ○ Stick built or panelized
	  ○ Erect true and plumb within
	  ○ Specified tolerances
	  ○ Temporary bracing
	  ○ Cutting of wall members
	  ○ Damaged members
	  ○ Anchoring of top/bottom track
	  ○ Pre-insulation practices
	  ○ Boxed beams and jamb studs
	  ○ Handling of prefabricated panels
	• Adherence to engineering specifications

8. Build axial load-bearing walls and bulkheads	• Layout
	• Wall framing techniques
	  ○ Tilt-up
	  ○ In-place
	• Header framing and assembly

LEARNING TASKS	CONTENT
	○ Lintel ○ Box header ○ Beams • Corner framing • Temporary bracing • Bridging • Shear bracing • Anchorage
9. Attach cladding and sheathing	• Secure exterior trim ○ Adhesive ○ Self-drilling screws ○ Wood nailer/blocks
10. Coordinate installation of utilities	• Plumbing • Electrical • Fire suppression • Backing • Protection of plumbing pipes • Insulation • Batt insulation • Exterior foam

Achievement Criteria

Performance — The learner will build a mock-up including:
- Wall section
- Window section
- Door
- Bulkhead

Conditions — The learner will be given:
- Engineered drawing
- Tools and materials
- Instructions

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:
- Safety
- Adherence to engineered drawing
- Plumb, level, and square

Note — **This may be combined with the H3 Level 3 Achievement Criteria.**

Line (GAC): H INSTALL LOAD-BEARING METAL FRAMING

Competency: H2 Install exterior walls and panelized systems

Objectives

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

- Install exterior walls and panelized systems

LEARNING TASKS	CONTENT

1. Describe types of exterior assemblies and systems	• Wall assemblies
	  ○ Prefabricated
	  ○ Curtain walls (non-load-bearing)
	  ○ Rainscreen walls
	  ○ Stick built walls
	  ○ Shear walls
	• Roof rafters/trusses
	• Floor assemblies
	• Panelized systems
	• Types of membranes
	  ○ Polyethylene films
	  ○ Rubberized non-permeable membrane
	  ○ Aluminum foil
	  ○ Building wrap

2. Describe methods of prefabricating walls and panels	• Built on the job site or employer shop
	  ○ To specifications
	  ○ Built in jigs
	  ○ High production
	  ○ Accurate and cost effective
	• Factory manufactured sections
	• Proprietary systems
	• Transported to site

3. Prefabricate exterior walls and panels	• Engineered shop drawings • Exterior and in-fill panels • Use shop drawings • Finishes • Building substrate

4. Use load-bearing jigs and templates	• Types of jigs
	  ○ Multi-use
	  ○ Single-use

LEARNING TASKS	CONTENT

	• Types of templates such as manufactured or job built
	• Material used for jigs and templates
	  ○ Wood and plywood
	  ○ Drywall, steel studs and track
	• Applications of jigs and templates such as building bulkheads
	• Determining when to build and use jigs and templates
	• Assemble and square jigs and templates

5. Install exterior walls and panels	• To specifications • Installation procedures • Modify panels as per site conditions • Plan sequence and placement of panels • Install temporary braces • Using physical labour • Using material hoist machines • Bolting • Welding • Using screws • Hoisting and rigging regulations

Achievement Criteria

Performance — The learner will build a mock-up of a prefabricated panel (maximum 64 sq. ft.)

Conditions — The learner will be given:

- Engineered drawing
- Tools
- Equipment
- Instructions

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- Safety
- Adherence to engineered drawing
- Plumb, level, and square

Line (GAC): H INSTALL LOAD-BEARING METAL FRAMING

Competency: H3 Install floor joists

Objectives

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

- Install floor joists

LEARNING TASKS	CONTENT
1. Describe components of steel floor joist assemblies	• Header • Joist • Web openings • Fasteners/anchors • Rim track • Web stiffeners • Track splice • Flat strap • Blocking • Cantilever • Joist span • X - bracing • Girder • Foundations • Wall framing • Sheathing • Electrical/mechanical installations • Insulation
2. Describe floor framing methods	• Platform construction • Balloon construction

3. Frame and install floor joists	• Blueprints
	• Foundation size and squareness
	  ○ Adjustments for proper size and squareness
	• Layout of joist locations
	  ○ Perpendicular to floor joists
	  ○ On centre beam
	• Header joists installation
	  ○ Perpendicular
	  ○ Parallel
	• Floor joist installation
	• Jig layout

Achievement Criteria

Performance	The learner will build a mock-up of a floor section.
Conditions	The learner will be given: • Engineered drawing • Tools and materials • Instructions
Criteria	The learner will score 70% or better on a rating sheet that reflects the following criteria: • Safety • Adherence to engineered drawing • Plumb, level, and square
Note	**This may be combined with the H1 Level 3 Achievement Criteria.**

Line (GAC): H INSTALL LOAD-BEARING METAL FRAMING

Competency: H4 Describe roof rafters

Objectives

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

- Describe the installation of roof rafters

LEARNING TASKS	CONTENT
1. Describe roof styles	• Gabled • Shed • Hip • Gambrel • Mansard

2. Describe methods of framing roofs	• Engineered systems
	• Steel framing of roof rafters and trusses
	• Stick built
	• Bearing support
	• Refer to shop drawings for layout and specified fasteners/anchors
	• Complete unit (prefabricated on or off site)
	• Erected with hoists/cranes
	• Terminology
	  ○ Common definitions
	  ▪ Span
	  ▪ Run
	  ▪ Rise
	  ▪ Slope
	  ▪ Pitch
	  ○ Rafter deductions
	  ▪ Theory lines
	  ▪ Rafter plumb cut
	  ▪ Rafter line length
	  ▪ Rafter overhang
	  ▪ Horizontal projection
	  ▪ Ridge beam
	  ▪ Fascia
	  ▪ Soffit
	  ○ Gable end framing

3. Describe installation of roof rafters/truss and ceiling joists	• Rafter and ceiling joist installation ○ Layout of roof framing

LEARNING TASKS	CONTENT
	○ Installing ridge beam and common rafters • Installing common rafters and roof trusses ○ Installing rough fascia ○ Installing soffits ○ Collar beams (ties) ○ Installing rafter bridging

Line (GAC): J INSTALL FIREPROOFING AND SOUNDPROOFING

Competency: J1 Install soundproofing materials

Objectives

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

- Describe the installation of materials for soundproofing assemblies

LEARNING TASKS	CONTENT
1. Describe sound control principles	• Measurement of sound • Terminology for sound control • Typical sound control problems • Sound control systems • Building considerations • Sound absorption • Sound isolation • Acoustical material
2. Describe sound control factors in the construction of buildings	• Mass • Isolation • Damping • Leaks • Flanking paths • STC ratings • Measurement of sound
3. Describe types of materials used for soundproofing	• Acoustical tile and panels • Baffles • Gypsum board • Resilient (floating) channel (sound bar) • Sheet lead • Acoustical sealant • Sound attenuation blankets • Sound deadening board
4. Describe processes for soundproofing walls and partitions	• Wall panel mounting methods • Controlling air leakage • Controlling wall vibration • Reducing structure borne sound through wall • Wall assemblies

LEARNING TASKS	CONTENT
5. Describe acoustical ceiling products, panels, and systems	• Acoustical ceiling products • Ceiling suspension systems • Other specialty systems • Standards and approvals • Proprietary ceiling panel systems • Finishes
6. Describe the selection of materials used for soundproofing walls and ceilings	• Resilient channel • Gypsum wallboard • Ceiling tiles • Acoustical wall assemblies • Panels • Baffles • Acoustical sealant/caulking • Suspension isolators • Sound deadening board • Sound insulation blankets • Double leaf wall • Lead sheathing
7. Describe the application of fitting and fastening methods	• To manufacturer's instructions • Resilient channel • Gypsum wallboard • Ceilings • Walls • Ceiling blanket • Sheet lead • Cutting tools • Drywall knife • Aviation (steel) snips • Carbide tip arborite knife • Taping • Glue • Double-sided/gasket tape • Mechanical fasteners • Tie on methods
8. Describe the use of caulking equipment	• Material selection • Caulking gun • Apply at partition perimeter

LEARNING TASKS	CONTENT
	• Airtight seals

9. Describe the installation of materials for soundproofing assemblies	• As per specifications
	• Resilient channel
	• Gypsum wallboard
	• Ceiling tiles
	• Acoustical wall assemblies
	  ○ Panels
	  ○ Baffles
	• Acoustical sealant/caulking
	• Suspension isolators
	• Sound deadening board
	• Sound insulation blankets
	• Double leaf wall
	• Lead sheathing

Line (GAC): K INSTALL ACOUSTICAL CEILINGS

Competency: K2 Install specialty acoustical ceilings

Objectives

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

- Install specialty acoustical ceilings

LEARNING TASKS	CONTENT
1. Describe advantages and disadvantages of various acoustical products	• Acoustical value • Appearance • Strength • Weight • Fire rating • Accessibility • Repair • Noise reduction coefficient (NRC) • Sound transmission class (STC)
2. Describe the specialty component parts	• Knowledge of types of grid systems • Concealed • Fine grid • Basket weave • Proprietary systems
3. Build specialty acoustical ceilings	• Layout methods • Ability to locate expansion and control joints • Specialty panels • Wood • Metal • Composite/FRP • Fabric

4. Install ceiling panels	• Acoustical ceiling panel products
	  ○ Mineral fibre
	  ○ Fibreglass
	  ○ Membrane
	  ○ Gypsum core
	  ○ Metal faced
	  ○ Vinyl faced
	  ○ Wood fibre
	• Cut and measure

LEARNING TASKS	CONTENT

	• Directional
	• Non-directional
	• Edge designs
	  ○ Tegular
	  ○ Coffered
	• Handling and storage

Achievement Criteria

Performance — The learner will layout and install a T-bar ceiling complete with all components

Conditions — The learner will be given:

- Tools
- Equipment
- Instructions
- Ceiling plan
- Engineered drawings

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- Safety
- Adherence to ceiling plan
- Level and square
- Fit and finish

Line (GAC): L INSTALL SPECIALTY SYSTEMS

Competency: L1 Install traditional lath and trims on walls and ceilings

Objectives

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

- Describe the installation of metal lath on walls and ceilings
- Describe the installation of specialty trims and mouldings
- Describe the installation of plaster beads, stops, and expansion joints to lath and wire systems

LEARNING TASKS	CONTENT
1. Describe types and functions of metal lath	• Galvanized metal lath • Painted metal lath • Stucco wire

2. Describe other materials used with lath and wire systems	• Sheathing paper
	• Reinforced Portland stucco cement
	• Carrying channel (1 1/2 in.)
	• Furring channel (3/4 in.)
	• Expansion/control joints
	• Stucco/plaster stop
	• Perforated stucco/plaster stop
	• Bug screen
	• Flashings
	• Tie wire
	  ○ 18 gauge galvanized wire
	  ○ Pre-cut and packaged
	  ○ 42 in. lengths
	  ○ Terminology: “hanks”

3. Describe the use of cutting and specialty tools	• Aviation snips
	• Metal shears
	• Nippers
	• Channel locks
	• Hack saw
	• Magnetic punch
	• Sheet metal snips
	• Hammer stapler
	• Hanger benders
	  ○ Carrying channel bender
	  ○ Hanger wire

LEARNING TASKS	CONTENT
4. Describe the use of fitting methods of lath and wire	• End lap on supports • End lap between supports • Side lap • Direction of lath • Around openings • On curved surfaces • Measure, cut and shape lath and stops
5. Describe the use of fastening methods	• Ties and anchors • Tie wire • Mechanical fasteners • Pins • Dab of plaster
6. Describe the installation of metal lath	• On walls • On ceilings • Bulkheads • Soffits • Curves/domes
7. Describe the installation of stucco wire and paper backed welded wire lath	• Used on walls only • “Keying” of stucco

8. Describe specialty trims and mouldings	• J-bead, L-trim, F mould
	  ○ Plastic
	  ○ Metal
	  ○ Composite
	  ○ Wire
	• Shadow mould
	• Step mould
	• Bull-nosed
	• Reveal moulds
	• Control/expansion joints

9. Describe the application of fitting and fastening methods for specialty trim and mouldings	• Fasteners
	  ○ Mechanical
	  ○ Pneumatic
	  ○ Adhesives

LEARNING TASKS	CONTENT
10. Describe the installation of specialty trims and mouldings	• On walls • On ceilings • Bulkheads • Soffits • Curves/domes • Doors and windows

11. Describe the requirements for plaster beads, expansion joints, and plaster stops	• Cracks and failures due to:
	  ○ Structural stresses
	  ○ Temperature extremes
	• Types of beads
	• Types of expansion joints
	• AWCC Specifications for interior or exterior

12. Describe the installation of plaster beads, stops, and expansion joints	• Decorative feature • Exterior surfaces • One-piece types • Two-piece types • Cutting of wire at control joints • Spacing of control joints

Line (GAC): L INSTALL SPECIALTY SYSTEMS

Competency: L2 Build access floor systems

Objectives

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

- Build access floors

LEARNING TASKS	CONTENT

1. Describe the types of access floor system applications	• General office
	• Computer rooms
	  ○ Snap lock
	  ○ Rigid grid
	  ○ Free standing
	• Clean room

2. Describe the main components of access floor systems	• Proprietary systems
	  ○ Steel
	  ○ Wood composite
	  ○ Modular floor panels
	• Components
	  ○ Pedestals
	  ○ Grid and gridless
	  ○ Stringers
	  ○ Anchors
	  ○ Supporting hardware
	  ○ Firestop requirements

3. Use specialty layout tools	• Levelling bar • Suction cups

4. Use layout methods	• Grid system layout
	  ○ Squaring
	  ○ Dividing
	• Establish elevations
	  ○ Pedestal shot points
	  ○ Finished floor height
	• Check room dimensions
	  ○ To ensure room is square
	  ○ Use of control lines

5. Use fitting and fastening methods	• Pedestals
	  ○ Adhesives
	  ○ Mechanical fasteners (seismic)

LEARNING TASKS	CONTENT

	• Panels
	  ○ Mechanical fasteners
	  ○ Perimeter cuts
	  ○ Rectangular inside cut-outs
	  ○ Round cuts
	• Stringers
	• Cutting tools
	  ○ Band saw
	  ○ Hole saw
	  ○ Jig saw
	  ○ Reciprocating saw
	  ○ Bi-metal saw blades

6. Build access floors	• To manufacturer's instructions • Coordinate work with related sub- trades • Perform layout • Install pedestals • Bolt stringers • Cut floor panels • Lay floor panels • Secure panels • Install supporting hardware • Install fire stopping (as per specifications)

Achievement Criteria

Performance — The learner will build an access floor (minimum 64 sq. ft.)

Conditions — The learner will be given:

- Tools
- Equipment
- Instructions
- Floor plan

Criteria — The learner will score 70% or better on a rating sheet that reflects the following criteria:

- Safety
- Adherence to floor plan
- Level andsquare

Line (GAC): L INSTALL SPECIALTY SYSTEMS

Competency: L3 Build demountable partitions

Objectives

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

- Build demountable partitions

LEARNING TASKS	CONTENT

1. Describe demountable partition types	• Non-progressive
	  ○ Independent panel sections
	• Progressive
	  ○ Must be installed in sequence
	• Sound ratings
	• Battens
	• Batten-less
	• Gravity lock

2. Describe the main components of demountable partitions	• Framing Components
	  ○ Ceiling runner
	  ○ Base track
	  ○ Tree studs
	  ○ V-locks
	  ○ Brackets
	  ○ Clips
	• Trims
	  ○ Ceiling trim
	  ○ Base
	  ○ End caps
	  ○ Battens and covers
	  ○ Corner pieces
	  ○ J hook, J trim
	• Wall panels
	  ○ Vinyl covered
	  ○ Cloth covered
	  ○ Veneer covered
	• Door and window components

3. Use specialty tools	• Board lifter • Metal file • Rubber mallet • Magnetic clip holder • Suction cups

LEARNING TASKS	CONTENT
	• Crimper • Edge lock block • Mitre saw/carbide tipped

4. Apply layout methods	• Establish elevations
	• Establish openings
	• Partition layout
	  ○ Ceiling grid layout
	  ○ Door and window layout
	  ○ Stud layout
	  ○ Base track
	  ○ Ceiling runner
	  ○ Wall panels

5. Use fastening methods	• Framing screws • Drywall screws • Clips • Velcro hook tape • Double-sided tape • Brackets

6. Build demountable partitions	• To manufacturer's instructions
	• Perform layout
	• Inspect and quantify components
	• Install
	  ○ Ceiling runner
	  ○ Base track
	  ○ Tree studs
	  ▪ V-locks
	  ▪ Tree stud brackets
	  ○ Predecorated panels
	  ▪ Edge lock clips
	  ▪ Gravity lock clips
	  ○ Corner pieces
	  ○ Door and window framing
	  ○ Glazing
	  ○ Battens and covers
	  ○ Ceiling trim
	  ○ Base trim

Line (GAC): L INSTALL SPECIALTY SYSTEMS

Competency: L4 Install specialty ceilings

Objectives

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

- Install specialty systems

LEARNING TASKS	CONTENT
1. Describe types of specialty ceilings	• T-bar • Metal linear ceilings • Wood • Composite • Ornamental plaster • Luminous • Clouds
2. Describe the components of specialty ceilings	• Component materials
3. Install specialty ceiling	• Suspended • Wires and grids • Inserts, clips, and anchors • Specialized layout • Engineered shop drawings ○ Seismic requirements • To manufacturer's instructions • Finished product

Line (GAC): N APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES

Competency: N2 Install exterior finishes

Objectives

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

- Describe the installation of exterior finishes

LEARNING TASKS	CONTENT

1. Describe siding types	• Cementitious
	• Siding
	  ○ Metal
	  ○ Vinyl
	  ○ Composite
	  ○ Wood
	• Exterior insulation finishing system (EIFS)
	• Specialty products
	  ○ Composite material

2. Describe exterior siding/cladding installation practices	• Cutting and fastening • Corner installation • Sealants • Flashing use • Other trim installation
3. Describe the installation of flashing and wall sheathing membrane	• Installation procedures • Flashing types • End dams

4. Describe the installation of exterior siding	• Handling and storage
	• Cutting procedures
	  ○ Exterior
	  ○ Interior
	• Framing requirements
	• Clearance
	  ○ Roof
	  ○ Grade
	• Concrete/concrete block construction
	• Nailing and fasteners
	• Corner posts
	  ○ Inside
	  ○ Outside

LEARNING TASKS	CONTENT

	• Expansion allowance
	• Starter strip
	• Bug screen
	• Soffit vents
	• Window and door trims
	• Gable end trim
	• Cementitious siding installation
	• Vinyl and metal siding installation
	  ○ Nailing flange at top
	  ○ Five installation rules

5. Describe EIFS components and installation procedure	• Review EIFS system components
	• Acrylic finishes
	• Inspect building substrate
	• Attach sheathing
	• Cut expanded polystyrene sheets (EPS) board
	  ○ Rainscreen
	  ○ Ornamental
	• Attach EPS board
	  ○ Adhesive method
	• Proprietary mechanical fastener

Line (GAC): N APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES

Competency: N3 Install rainscreen systems

Objectives

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

- Describe the installation of rainscreen systems

LEARNING TASKS	CONTENT
1. Describe rainwater exposure to walls	• Direct impact • Run-off • Backsplash

2. Describe rainscreen technology	• Four conditions necessary for water to penetrate wall
	  ○ Water on surface
	  ○ Opening/cracks in wall
	  ○ Driving force/pressure
	  ○ Porous materials
	• Difficulties in achieving watertight seal
	  ○ Temperature changes
	  ○ Cladding movement
	  ○ Ultraviolet ray degradation
	  ○ Chemical decomposition
	  ○ Building settling/shifting
	  ○ Pressure differential
	• Effects of high wind driven rain/snow
	• Controlling water penetration
	  ○ Control capillary action
	  ○ Control water momentum
	  ○ Control effects of gravity
	  ○ Control effects of wind
	• Drying
	• Durable materials
	• The four principles of rainscreen walls – the 4 Ds
	  ○ Deflection
	  ○ Drainage
	  ○ Drying
	  ○ Durability

3. Describe components of a rainscreen wall	• Cladding • Clear air space • Sheathing membrane

LEARNING TASKS	CONTENT
	• Flashing • Furring • Membrane material • Rainscreen system installation • Engineered pressure moderated rainscreen walls
4. Describe the interfacing with other materials	• Railings • Brick • Other flashings • Window design, performance, and installation • Other

5. Identify various wood components	• Plywood
	  ○ ACQ – pressure treated
	  ○ OSB – plywood
	  ○ Borate – insecticide treated

6. Describe the installation of rainscreen systems	• Install strapping
	  ○ Wood
	  ○ Metal
	• Install drainage mat
	  ○ Per manufacturer's instructions
	• Install flashings
	  ○ Metal
	  ○ Membrane
	  ○ Plastic
	• Bug screen
	• Finished substrate

Section 4

ASSESSEMENT GUIDELINES

Assessment Guidelines – Level 1

Level 1 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:	LATHER (INTERIOR SYSTEMS MECHANIC) LEVEL 1		
LINE	**SUBJECT COMPETENCIES**	**THEORY WEIGHTING**	**PRACTICAL WEIGHTING**
A	APPLY SAFE WORK PRACTICES	6%	5%
C	USE TRADE RELATED SKILLS	22%	10%
D	USE LADDERS, SCAFFOLDS, AND LIFT EQUIPMENT	5%	5%
E	USE TOOLS AND EQUIPMENT	12%	0%
F	INSTALL INSULATION	7%	0%
G	INSTALL NON-LOAD-BEARING METAL FRAMING	28%	40%
I	INSTALL GYPSUM WALLBOARD PRODUCTS	20%	40%
	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:	LATHER (INTERIOR SYSTEMS MECHANIC) LEVEL 2		
LINE	**SUBJECT COMPETENCIES**	**THEORY WEIGHTING**	**PRACTICAL WEIGHTING**
B	APPLY CODES, STANDARDS, AND DOCUMENTATION	10%	0%
C	USE TRADE RELATED SKILLS	17%	10%
F	INSTALL INSULATION	5%	0%
G	INSTALL NON-LOAD-BEARING METAL FRAMING	25%	35%
H	INSTALL LOAD-BEARING METAL FRAMING	0%	0%
I	INSTALL GYPSUM WALLBOARD PRODUCTS	15%	25%
J	INSTALL FIREPROOFING AND SOUNDPROOFING	5%	10%
K	INSTALL ACOUSTICAL CEILINGS	13%	15%
M	INSTALL DRYWALL TAPING AND FINISHING	5%	5%
N	APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES	5%	0%
	Total	100%	100%
In-school theory / practical subject competency weighting		60%	40%
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 3

Level 3 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:	LATHER (INTERIOR SYSTEMS MECHANIC) LEVEL 3		
LINE	**SUBJECT COMPETENCIES**	**THEORY WEIGHTING**	**PRACTICAL WEIGHTING**
C	USE TRADE RELATED SKILLS	15%	15%
H	INSTALL LOAD-BEARING METAL FRAMING	35%	45%
J	INSTALL FIREPROOFING AND SOUNDPROOFING	5%	0%
K	INSTALL BASIC ACOUSTICAL CEILINGS	7%	15%
L	INSTALL SPECIALTY SYSTEMS	28%	25%
N	APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES	10%	0%
	Total	100%	100%
In-school theory / practical subject competency weighting		60%	40%
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 3 of the Lather (Interior Systems Mechanic) program with a FINAL level percentage score of 70% or greater will write the Interprovincial Red Seal examination as their final assessment.

SkilledTradesBC will enter the apprentices' Lather (Interior Systems Mechanic) Interprovincial Red Seal examination percentage score into 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 safetyrequirements
- 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 reference material for student and instructor use

Shop Area

- Workshop with sufficient square footage to complete projects and with enough ceiling height to allow safe movement of materials
- Tool crib
- Lockers
- Adequate lighting and lighting control
- Ventilation as per WorkSafeBC standards
- Refuse and recycling bins for used shop materials
- First-aid facilities
- Fire alarm
- Fire extinguisher
- Eye wash facilities
- Signage
- Masks (dust or particle)

Lab Requirements

- Not Applicable

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

Tools and Equipment

Shop Equipment

Power Tools

Required

- Abrasive chop saw
- Angle grinder
- Circular saw
- Cordless drill
- Drywall router
- Drywall screw gun
- Electric drill
- Electric shears
- Hammer drill
- Impact drill
- Jig saw
- Powder-actuated tools
- Power shears (snips)
- Reciprocating saw
- Router

Recommended

- Band saw
- Compound mitre saw
- Compressor, c/w hose
- Gas-actuated tools
- Power stapler
- Table saw

Scaffolding and Access Equipment

Required

- Aluminum bench
- Portable scaffolds
- Ladders
- Rolling scaffolds
- Stationary scaffolds
- Stilts

Recommended

- Boom lifts
- Scissor-lift

Material Handling and Site Maintenance Equipment

Required

- Portable fans
- Broom
- Drywall cart
- Extension cord
- Floor scraper
- Lockup box
- Pails
- Portable lights
- Shop vacuum
- Shovel
- Temporary heaters
- Wheeled dolly
- Wheeled garbage box

Recommended

- Squeegee
- Suction cups
- Wheelbarrow

Required Material Handling and Site Maintenance Equipment (supplied by apprentice)

- Architect's scale
- Calculator
- Centre punch
- Chalk line
- Compass
- Dry line
- Framing square
- Laser level
- Magnetic hand level
- Pencils and markers
- Plumb bob
- Spirit Level
- Tape measure (imperial and metric)
- T-bevel

Required Personal Protective Equipment

Supplied by apprentice

- Appropriate clothing
- Gloves
- Goggles/safety glasses
- Hard hat
- Knee pads
- Safety vest
- CSA approved safety boots

Supplied by the training provider

- Ear plugs and muffs
- Evacuation horn
- Face sheilds

Shop (Facility) Tools

Standard Hand Tools

- Adjustable wrenches
- Aviation snips
- Bead clincher
- Bolt cutter
- Burke bar
- Caulking gun
- Channel locks
- Circle cutters
- Cold chisel
- Hammers
- Hand sander
- Hole Whitney punch
- Keyhole saw
- Lather's hatchet
- Locking c-clamp
- Magnetic punch
- Multi-tip screwdriver
- Nail bar

- Crimpers
- Dry line/t-bar clips
- Drywall Board lifter
- Drywall saw
- Eye screw pole
- Files
- Flat bar
- Hack saw
- Nippers
- Pliers
- Pop rivet gun
- Putty knife
- Rasps
- Rubber mallet Square (t, combination,
- tri-speed)
- Wedge lock clamp

Reference Materials

Required Reference Materials

- Association of Wall and Ceiling Contractors (AWCC) of BC specifications/standards manual
- Gypsum Construction Handbook
- Fire and Design manual
- BC Building Code
- Steel Framing guide

Recommended Resources

- Finishing Trades Institute BC (FTIBC)
- BC Wall & Ceiling Association (BCWCA)
- AWCC

Instructor Requirements

Occupation Qualification

The instructor must possess one of the following:

- Lather – Interior Systems Mechanic – BC Certificate of Qualification, preferably with an Interprovincial Red Seal endorsement
- Lather – Interior Systems Mechanic (Wall and Ceiling Installer) – BC Certificate of Qualification, preferably with an Interprovincial Red Seal endorsement
- Lather – Interior Systems Mechanic – Certificate of Qualification from another province in Canada with an Interprovincial Red Seal endorsement

Work Experience

A minimum of 10 years' experience working in the industry as a journeyperson.

Instructional Experience and Education

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

- 5 years experience as a supervisor
- Possess or is working toward an Instructors Diploma or equivalent

Appendices

Appendix A
Acronyms

ACQ	Alkaline Copper Quaternary
ASTM	American Society of Testing and Materials
AWCC	Association of Wall and Ceiling Contractors
BCWCA	BC Wall & Ceiling Association
CSA	Canadian Standards Association
EIFS	Exterior insulation finishing system
EPS	Expanded polystyrene
FRP	Fibreglass-Reinforced Plastic
FTIBC	Finishing Trades Institute of BC
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GWB	Gypsum Wallboard
HVAC	Heating, ventilation, and air conditioning
NRC	Noise reduction coefficient
OHS	Occupational Health and Safety
OSB	Oriented strand board
PPE	Personal protective equipment
PSF	Pressed Steel Frame
SDS	Safety data sheet
STC	Sound Transmission Class
ULC	Underwriters Laboratories Canada
WHMIS	Workplace Hazardous Materials Information System

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.**

LATHER (INTERIOR SYSTEMS MECHANIC) – LEVEL 1 SUMMARY OF ACHIEVEMENT CRITERIA	
SUBJECT COMPETENCY	**ACHIEVEMENT CRITERIA TASK**
A1 Use personal protective equipment (PPE)	The learner will select and fit PPE for a given task
A6 Apply fall arrest procedures	The learner will perform a fit test
C1 Use blueprints and specifications	The learner will interpret a print, and answer questions related to measurement, location, and layout
D1 Use ladders, scaffolds, and aerial lifts	The learner will set up the first lift of a scaffold
G1 Build walls, ceilings, and bulkheads	The learner will frame out an 8 ft. x 10 ft. mock-up of a steel-framed assembly **Note: This may be combined with the I1 Level 1 Achievement Criteria.**
I1 Install gypsum wallboard	The learner will install gypsum wallboard on an 8 ft. x 10 ft. mock-up of a steel-framed assembly **Note: This may be combined with the G1 Level 1 Achievement Criteria.**

LATHER (INTERIOR SYSTEMS MECHANIC) – LEVEL 2 SUMMARY OF ACHIEVEMENT CRITERIA	
SUBJECT COMPETENCY	**ACHIEVEMENT CRITERIA TASK**
C1 Use blueprints and specifications	The learner will interpret a print and answer questions related to measurement, location, and layout
G3 Install pressed steel frames	The learner will install a pressed steel metal frame
I1 Install gypsum wallboard	The learner will install drywall
J3 Install shaft wall assemblies	The learner will install a mock-up of a shaft wall system with all components, to a maximum of 28 sq. ft.
K1 Install basic acoustical ceilings	The learner will build an acoustical ceiling (maximum 100 sq. ft.)
M2 Install drywall compounds, tape, beads, trims, and expansion joints	The learner will install a horizontal bead, a vertical bead, and a 3-way corner and replace/repair damaged drywall and bead

LATHER (INTERIOR SYSTEMS MECHANIC) – LEVEL 3 SUMMARY OF ACHIEVEMENT CRITERIA	
SUBJECT COMPETENCY	**ACHIEVEMENT CRITERIA TASK**
C3 Plan a project	The learner will plan a project
H1 Build wind load and axial load-bearing walls	The learner will build a mock-up including: • Wall section • Window section • Door • Bulkhead **Note: This may be combined with the H3 Level 3 Achievement Criteria.**
H2 Install exterior walls and panelized systems	The learner will build a mock-up of a prefabricated panel (maximum 64 sq. ft.)
H3 Install floor joists	The learner will build a mock-up of a floor section. **Note: This may be combined with the H1 Level 3 Achievement Criteria.**
K2 Install specialty acoustical ceilings	The learner will layout and install a T-bar ceiling complete with all components
L2 Build access floor systems	The learner will build an access floor (minimum 64 sq. ft.)