

PROGRAM OUTLINE

Lather (Interior Systems
Mechanic) (Wall and Ceiling
Installer)



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WALL AND CEILING INSTALLER PROGRAM OUTLINE

**APPROVED BY INDUSTRY
FEBRUARY 2017**

**BASED ON
NOA 2012**

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



TABLE OF CONTENTS

Section 1 INTRODUCTION.....	3
Foreword	4
Acknowledgements	5
How to Use this Document.....	6
Section 2 PROGRAM OVERVIEW.....	8
Program Credentialing Model	9
Occupational Analysis Chart	10
Training Topics and Suggested Time Allocation.....	13
Training Topics and Suggested Time Allocation.....	14
Training Topics and Suggested Time Allocation.....	15
Section 3 PROGRAM CONTENT	16
Level 1 Wall and Ceiling Installer	17
Level 2 Wall and Ceiling Installer	51
Level 3 Wall and Ceiling Installer	82
Section 4 ASSESSEMENT GUIDELINES.....	114
Assessment Guidelines – Level 1	115
Assessment Guidelines – Level 2	116
Assessment Guidelines – Level 3.....	117
Section 5 TRAINING PROVIDER STANDARDS	118
Facility Requirements.....	119
Tools and Equipment	120
Reference Materials	122
Instructor Requirements.....	123
Appendices	124
Appendix A Acronyms.....	125
Appendix B Previous Contributors	126



Section 1

INTRODUCTION

Wall and Ceiling Installer



Foreword

This Lather (Interior Systems Mechanic) (Wall and Ceiling Installer) 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 2012 National Occupational Analysis (NOA) 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 journey person. The conditions under which these performances will be observed and measured must be clear to the learner as well as the criteria by which the learner will be evaluated. The learner must also be given the evaluation criteria.

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

SAFETY ADVISORY

Be advised that references to the 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.



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The Industry Training Authority 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) (Wall and Ceiling Installer) occupation.



How to Use this Document

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

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



Section	Training Providers	Employers/ Sponsors	Apprentices	Challengers
Achievement Criteria	<p>Defines observable, measureable performance expectations for competencies with a lab component.</p> <p>For this trade, achievement criteria is performed in a lab setting and does not indicate workplace standards</p>	<p>Defines observable, measureable performance expectations for competencies with a lab component.</p> <p>For this trade, achievement criteria is performed in a lab setting and does not indicate workplace standards</p>	<p>Defines observable, measureable performance expectations for competencies with a lab component.</p> <p>For this trade, achievement criteria is performed in a lab setting and does not indicate workplace standards</p>	<p>Defines observable, measureable performance expectations for competencies with a lab component.</p> <p>For this trade, achievement criteria is performed in a lab setting and does not indicate workplace standards</p>
Training Provider Standards	<p>Defines the facility requirements, tools and equipment, reference materials (if any) and instructor requirements for the program</p>	<p>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</p>	<p>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</p>	<p>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</p>
Appendix – Glossary of Acronyms	<p>Defines program specific acronyms</p>	<p>Defines program specific acronyms</p>	<p>Defines program specific acronyms</p>	<p>Defines program specific acronyms</p>
Assessment Guidelines	<p>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.</p> <p>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.</p>	<p>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.</p> <p>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.</p>	<p>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.</p> <p>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.</p>	<p>Understand the relative weightings of various competencies of the occupation on which assessment is based</p>



Section 2

PROGRAM OVERVIEW

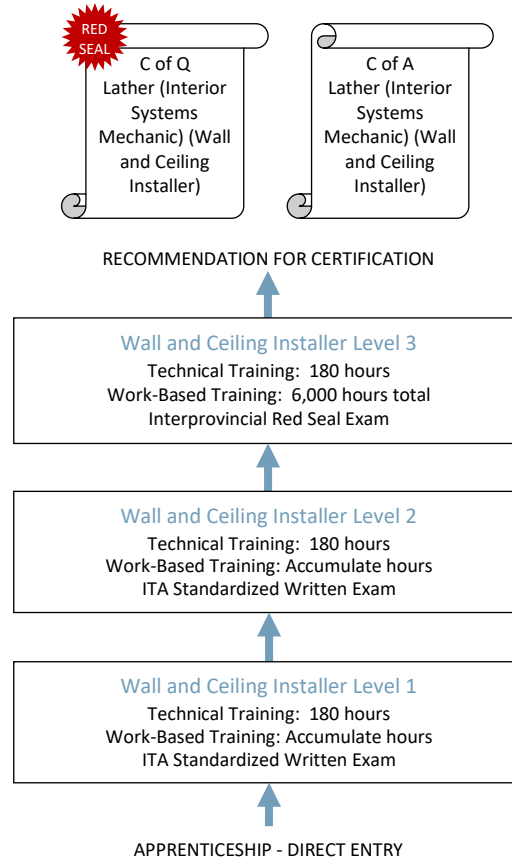
Wall and Ceiling Installer



Program Overview

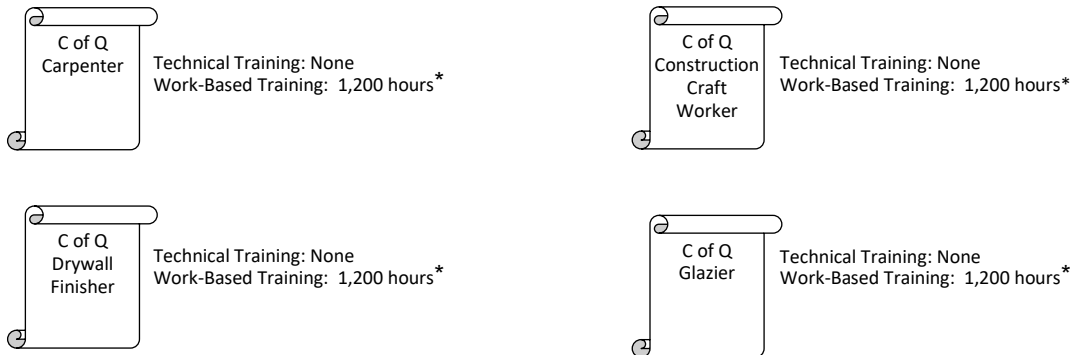
Program Credentialing Model

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



*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

WALL AND CEILING INSTALLER

Occupation Description: A “Wall and Ceiling Installer” performs job layout using blueprints, and installs, handles, erects and applies materials that are component parts in the construction of ceilings and walls. Wall and Ceiling Installers 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. Wall and Ceiling Installers were previously designated as Lathers or Interior Systems Mechanics in BC.

Apply Safe Work Practices A	Use Personal Protective Equipment 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	Use Power Tools E2	Use Powder-Actuated and Gas-Actuated Tools E3	Use Measurement and Layout Tools E4
	1	1	1	1
Install Insulation F	Install Thermal and Acoustic Insulation F1	Install Vapour Barriers and Sealants F2	Control Mold F3	
	1	2	1	
Install Non Load Bearing Metal Framing G	Build Walls, Ceiling 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
	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	
	3	2	2	



Install Acoustical Ceilings K	Build Basic Acoustical Ceilings K1	Build Specialty Acoustical Ceilings K2				
	2	3				
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 & 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			



Training Topics and Suggested Time Allocation

LATHER (INTERIOR SYSTEMS MECHANIC) (WALL AND CEILING INSTALLER) – 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		✓	✓	
A2	Control Workplace Hazards		✓		
A3	Apply GHS 2015 (WHIMIS)		✓		
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 INSULTATION	7%	100%	0%	100%
F1	Install Thermal and Acoustic Insulation		✓		
F3	Control Mold		✓		
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 Wall and Ceiling Installer Level 1		100%			



Training Topics and Suggested Time Allocation

LATHER (INTERIOR SYSTEMS MECHANIC) (WALL AND CEILING INSTALLER) – 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	25%	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 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%
J2	Install Materials for Fireproofing and Smoke Seals		✓		
J3	Install Shaft Wall Assemblies		✓	✓	
Line K	INSTALL ACOUSTICAL CEILLINGS	12%	60%	40%	100%
K1	Build Basic Acoustical Ceilings		✓	✓	
Line M	INSTALL DRYWALL TAPING AND FINISHING	8%	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 Wall and Ceiling Installer Level 2		100%			



Training Topics and Suggested Time Allocation

LATHER (INTERIOR SYSTEMS MECHANIC) (WALL AND CEILING INSTALLER) – 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	Build 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%	95%	5%	100%
N2	Install Exterior Finishes		✓		
N3	Install Rainscreen Systems		✓		
Total Percentage for Wall and Ceiling Installer Level 3		100%			



Section 3

PROGRAM CONTENT

Wall and Ceiling Installer



Level 1

Wall and Ceiling Installer



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

1. Identify workplace hazards

CONTENT

- 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
 - Cementitious products
- Wood preservatives
- Paints, varnishes, solvents and primers
- Dust and particulates
- Fire hazards
- 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

2. Maintain a safe work environment



LEARNING TASKS

CONTENT

3. Control workplace hazards

- where required
- 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
- 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



LEARNING TASKS

CONTENT

- 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) sheets.
- Use GHS 2015 (WHMIS) and related materials.

LEARNING TASKS

1. Explain the purpose of GHS 2015 (WHMIS)

2. Describe the three elements of the GHS 2015 (WHMIS) system

3. Describe supplier, employer and worker responsibilities regarding GHS 2015 (WHMIS)

4. Identify the warning labels and symbols on hazardous materials

CONTENT

- 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
- WHMIS labels
- Safety Data Sheets (SDS)
- WHMIS education and training programs
- 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
- Supplier labels must appear on all controlled products received at workplaces in Canada and contain the following information:
 - Product identifier (name of product)



LEARNING TASKS

5. Describe hazardous materials common to the construction workplace

6. Describe "Routes of Entry" of hazardous materials into the body

7. Use workplace labels

8. Describe the safety implications of information on SDS

CONTENT

- Hazard symbols
- 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

- Dusts and particulates including fiberglass, 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

- Respiratory
- Oral ingestion
- Skin absorption

- Information required on secondary containers:
 - Product name
 - Safe handling procedures
 - Reference to SDS

- Product information
- Hazardous ingredients
- Physical data
- Fire and explosion hazards
- Reactivity data
- Health hazards
- First aid measures
- Preventative measures
- Preparation information



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

1. Read an architect's scale

2. Identify the types of lines, symbols and abbreviations used in blueprints

3. Describe purpose of blueprints

4. Identify sections and elements of a set of blueprints

CONTENT

- Imperial
- Metric
- Conversions
- Lines
 - Grid or bay lines
 - Break lines
 - Object line
 - Hidden object lines
 - Symbols and abbreviations
 - Dimension lines
 - Directional lines
- Symbols
- Abbreviations
- 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
- Specifications
- Blueprint cover sheet
- Working drawings
 - 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: **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

1. Describe methods of communication

2. Communicate with others

3. Coordinate work with other trades

CONTENT

- Listening
- Verbal
- Written
- Drawings
- Trade terminology
- Two-way radios
- Computers
- Interpersonal skills
- Signage
- Overhead hazards
- Control zone - tapes (yellow, red, etc)
- Other trades
- Industry people
- Apprentices (mentoring)
- Completion of work-related documents such as records, time sheets and deficiency lists
- 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
- Coordinating work through general contractor
- Anticipating and solving problems



LEARNING TASKS

4. Describe types of signals

5. Recognize hand signals used to control hoist operations

CONTENT

- Communication and cooperation with others
- Hand signals
- Bell/horn signals
- Light signals
- Radio signals
- 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): 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

1. Describe scaffolding and elevated platforms

CONTENT

- Types and applications
- Scaffolds
 - Utility
 - Mechanical
 - Ground-based
 - Rolling
 - Stationary
 - Ladder jack
 - Tubular
 - Hydraulic
 - Jack-up
- Aerial work platforms
- Swing stages
- Step ups
- Boatswain's chair
- 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



LEARNING TASKS

2. Describe types of ladders

3. Use ladders and scaffolding

4. Use an elevated platform

5. Maintain scaffolding and ladders

CONTENT

- Maintaining three point contact
 - Single free standing and extension
 - Step
 - Trestle and extension trestle
 - Job built ladders

- Selection
- Site hazards
- Inspections
- Set up, layout and levelling
- Restrictions
- Securing
- Moving ladders
- Competency levels for inspection and erection
- Adherence to manufacturer specifications and WorkSafeBC regulations and/or engineered drawings

- Selection
- Site hazards
- Set up, layout and levelling
- Tie-in to existing wall
- Install mud sills
- Restrictions

- 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 & Hoisting Practices

Objectives

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

- Describe rigging and hoisting.

LEARNING TASKS

1. Describe safe rigging and hoisting practices

CONTENT

- 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

1. Describe hand tools

2. Use hand tools

3. Maintain hand tools

CONTENT

- Types
- Purpose
- Application
- Parts
- See Tools and Equipment for complete list of tools
- Safety
- According to WorkSafeBC regulations
- According to job requirements
- 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

1. Describe power and pneumatic tools

2. Use power and pneumatic tools

3. Maintain power and pneumatic tools

CONTENT

- Types
- Components
- Purpose
- Application
- See Tools and Equipment for list

- Safety
- According to WorkSafeBC regulations
- According to job requirements

- 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:

- Use gas and powder-actuated tools.
- Maintain gas and powder-actuated tools.

LEARNING TASKS

1. Describe powder-actuated tools

2. Use powder-actuated tools

3. Maintain powder-actuated tools

4. Describe gas-actuated tools

5. Use gas-actuated tools

CONTENT

- Types
- Components
- Purpose
- Application
- See Tools and Equipment for list 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
- Maintenance procedures
- Adjustments
- According to manufacturer’s instructions
- Storage
- Types
- Components
- Purpose
- Application
- See Tools and Equipment for list of gas- actuated tools
- Safety
- According to WorkSafeBC regulations
- According to job requirements



LEARNING TASKS

- 6. Maintain gas-actuated tools

- 7. Describe job restrictions

CONTENT

- Maintenance procedures
- Adjustments
- According to manufacturer's instructions
- Storage
- Substrate restrictions
- Correct equipment for the substrate
- Ticketing

Achievement Criteria

Performance The learner will demonstrate proper set-up, safe use, disassembly and maintenance of powder-actuated tools

Conditions The learner will be given:

- Tools.
- Instructions.

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

- Safety.
- Adherence to procedures.
- Proper maintenance and cleaning.
- Inspection for defects.



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

1. Describe types of measurement and layout tools

2. Use measurement and layout tools

3. Maintain measurement and layout tools

CONTENT

- Types
- Purpose
- Application
- Parts
- See Tools and Equipment for complete list of tools
- Safety
- According to WorkSafeBC regulations
- According to job requirements
- Maintenance procedures
- Adjustments
- According to manufacturer’s instructions
- Storage



LEARNING TASKS

7. Install acoustical insulation

CONTENT

- 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
- Mechanical fasteners and adhesives (Refer to Tools and Equipment)
- Framing assemblies
- To manufacturer's instructions
- Lead sheeting and approved fastening system



Line (GAC): F INSTALL INSULATION

Competency: F3 Control Mold

Objectives

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

- Describe mold, its causes and related issues.
- Describe susceptibility to mold.
- Describe occupational health and safety requirements.
- Prevent mold.
- Apply mold remediation and mitigation methods.

LEARNING TASKS

1. Describe mold
2. Explain issues related to mold
3. Describe the building components that are commonly susceptible to mold growth
4. Describe occupational health and safety requirements

CONTENT

- Form of fungi – many species
- Remediation levels (1, 2, 3)
- Present indoors and outdoors
- Temperature, moisture and nutrients creates ideal breeding
- Recognition through smell or odour
- Colonization on building materials
- Professional mold identification and training for mold removal
- Health of workers and occupants
- Removal of mold in existing buildings
- Construction processes to reduce/prevent mold growth
- Lawsuits
- Gypsum board
- Wood products
- Ceiling tiles
- Wallpaper
- Carpets
- Exposed soil in crawl spaces
- Identify WorkSafeBC and OHS Regulations and guidelines
- Training of workers
- Reference to SDS for disinfectants and detergents
- Personal Protective Equipment (PPE)
- Containment of area
 - Level 1, 2, 3 remediation
- Limited access of others to contaminated area



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 gypsuum wallboard.

LEARNING TASKS

1. Describe types of gypsum and their uses

2. Install gypsum wallboard

CONTENT

- **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
 - Mold resistant
 - Decorative strips
- Square edge
- Tapered edge
- Lifting and carrying requirements
- Fastening requirements
 - Specified fastener types
 - Spacing
- Staggering joints
- Horizontal application
- Vertical application



LEARNING TASKS

3. Store gypsum materials

CONTENT

- Proper storage of material
 - Preparation of storage area
 - General safety considerations and WorkSafeBC regulations
 - 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



Level 2

Wall and Ceiling Installer



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

1. Interpret blueprint elevations, floor plans, cross sections and details

CONTENT

- 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: <ul style="list-style-type: none"> • A print. • Instructions. • Questions.
Criteria	The learner will score 70% or better on a rating sheet that reflects the following criteria: <ul style="list-style-type: none"> • 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

1. Calculate area and perimeter for various shapes and combinations of shapes

2. Calculate dimensions of various shapes

3. Perform calculations on geometric shapes

CONTENT

- Shapes
 - Squares
 - Triangles
 - Circles
 - Parallelogram
 - Trapezoid
 - Multi-step problems involving complex shapes

- Hypotenuse of a right triangle
- Altitude of a right triangle
- Base of a right triangle
- Radius of a circle

- 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): **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

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Describe type of wall assemblies
 2. Describe types of ceiling assemblies
 3. Describe types of bulkheads assemblies
 4. Describe interior framing systems
 5. Install wall and ceiling furring – direct attachment method
 6. Use jigs and templates | <ul style="list-style-type: none"> • Shaft walls • Chase walls • Fire ratings • Sound walls
 • Suspended (independent) • Dependent
 • Structural (carrying weight) • Decorative
 • Interior partitions • Ceiling suspensions systems • Column and beam • Fire and sound resistance rated partitions and ceiling systems • Deflection considerations • Bracing
 • To specifications • Install furring channel (hat track) <ul style="list-style-type: none"> ○ Vertical application ○ Horizontal application • Framing/furring outside/inside corners • Framing/furring window openings • Z-furring channel application • Resilient bar furring channels
 • Types of jigs <ul style="list-style-type: none"> ○ Multi-use ○ Single-use • Types of templates such as manufactured or job built • Material used for jigs and templates <ul style="list-style-type: none"> ○ Wood and plywood ○ Drywall, steel studs and track • Applications of jigs and templates such as building bulkheads |
|--|---|



LEARNING TASKS

7. Frame walls

8. Perform cutting, fitting and fastening methods for gypsum wallboard ceilings

9. Frame ceilings, drops and bulkheads

CONTENT

- Determining when to build and use jigs and templates
- Assemble and square jigs and templates
- Shaft walls
 - To specifications
 - Inspections
- Chase walls
- Wood, concrete and steel substrates
- Inserts
- Hangers
 - Q-Deck punch
 - Step punch
 - Pole applications
- Carriers
 - Proprietary systems
- Tying off
- 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

1. Describe types of wood and metal backing

2. Install wood and metal backing

CONTENT

- Plywood/wood and wide metal strapping
 - Proprietary systems
 - Shop drawings
- 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



LEARNING TASKS

CONTENT

- 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
- Determining 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.



LEARNING TASKS

4. Install gypsum wallboard

CONTENT

- Vertically
- Horizontally
- Correct methods of installing gypsum board on walls and ceilings
 - Single layer
 - Double layer
 - Laminating (two or more layers)
- 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:

- Install materials for lead assemblies.

LEARNING TASKS

1. Describe lead shielding
2. Use shielding techniques
3. Install lead radiation shielding

CONTENT

- 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
- Material selection
- Apply at partition perimeter and all openings such as pipes, electrical outlets, ductwork etc.
- 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
 - Screws



LEARNING TASKS

CONTENT

- 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:

- Install security mesh.

LEARNING TASKS

1. Describe security mesh

2. Install security mesh

CONTENT

- Mesh properties such as gauge, weights, material, composition and mesh size
- Application/intended uses
- Penetration barrier
- As per specifications
- Cutting mesh
- Staggered joints
- Butting of joints
- Fastening of mesh



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:

- Install materials for fireproofing assemblies.

LEARNING TASKS

1. Describe terms relating to fireproofing

2. Describe types of materials used for fireproofing

3. Describe types of fire protection

4. Describe fire rated caulking assemblies

5. Describe fire-resistance and acoustic ratings for cold-formed steel framed floor assemblies

CONTENT

- Fire stopping
- Fireproofing
- Fire rating
- Flame spread rate
- Spray-applied fireproofing
 - Cementitious products
 - Intumescent materials
 - Fibrous materials
 - Composites
- Other products used for fireproofing
 - Gypsum wallboard
 - Plaster
 - Cement board
 - Metal framing component parts
 - Fire caulking/spray
- Passive fire protection
- Active fire protection
- GWB fireproofing
- Spray on fireproofing
- Stationary joints
- Deflection joints
- 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
 - Outline of tests
 - Results
- Practical application of results



LEARNING TASKS

6. Apply fitting and fastening methods

7. Use caulking and sealing equipment

8. Install fireproofing materials

CONTENT

- 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
- Areas requiring fireproofing
- Codes and standards
- Specifications
- Installation of GWB assemblies
 - Fire ratings
- Spray on fireproofing
- Areas requiring fireproofing
- Codes and standards
- Specifications
- Installation of GWB assemblies
 - Fire ratings
- Spray on fireproofing



LEARNING TASKS

3. Build shaft wall assemblies

4. Install shaft wall firestop gypsum board facing

CONTENT

- 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 door, ducts, other openings
- Maximum horizontal spans
- Firestop caulking/sealant
- Add appropriate layers of GWB (gypsum wallboard) as per requirements
- 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 64 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, square.



LEARNING TASKS

5. Identify problems and corrective measures related to GWB installation and finishing

CONTENT

- 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
- 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
- Mold/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



LEARNING TASKS

6. Install plastic and metal drywall reveals and expansion joints

CONTENT

- One-piece types
- Two-piece types
- Reveal trim pieces
- Refer to AWCC specifications

Achievement Criteria 1

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

Achievement Criteria 2

- Performance** The individual will install, fit and finish reveals and/or expansion joints.
- Conditions** The individual will be given:
- Tools.
 - Equipment.
 - Instructions.
- Criteria** The individual will score 70% or better on a rating sheet that reflects the following criteria:
- Accuracy.
 - Proper mud distribution.
 - Straight, square, level, plumb.



LEARNING TASKS

3. Apply caulking and sealants

4. Install vapour and air barriers

CONTENT

- approach
- Metal air barrier systems
 - Exterior cladding
- Curtain wall systems
- Sheet metal wall systems
- Masonry wall systems
 - Thermo fusible membranes
 - Peel and stick membranes
- Added protection against air infiltration
- Importance of surface preparation
- Proper selection of appropriate compound
- Sealant type
 - Interior
 - Exterior
 - Typical use
 - Joint application
 - Advantages/disadvantages
- 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

Wall and Ceiling Installer



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

1. Interpret engineered shop drawings

CONTENT

- 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

1. Perform geometric line construction

2. Use trigonometry

CONTENT

- Bisecting
- Calculating radius point
- Cords and segments
- Obtuse and acute line
- Compass trammel points
- Pythagorean theory (3-4-5)
- Formulas
- Applications
 - Roof pitches
 - Floors
 - Soffit overhangs

**Achievement Criteria**

Performance The individual will plan a project.

Conditions The individual will be given:

- Material take-off (Based on information from H2 practical exercise).

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

- Accuracy of estimates within 10 percent.
- 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

1. Describe load bearing metal framing construction

2. Describe types of load bearing walls

3. Describe steel stud floor, roof and ceiling assemblies

4. Apply layout procedures for load bearing metal framing

5. Apply fitting and fastening methods

CONTENT

- 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
- Interior walls
- Exterior walls
- Curtain walls
- Axial load bearing
- Roof framing
- Ceiling joists
- Floor joists
- Manufactured trusses
- Floor joists
- Interior walls
- Exterior walls
- Window openings
- Door openings
- Wall partitions
- Ceiling joists
- Roof framing
- Axial and lateral load
 - Deflection principles
- Fasteners
 - Size
 - Length



LEARNING TASKS

- 9. Attach cladding and sheathing

- 10. Coordinate installation of utilities

CONTENT

- Shear bracing
- Anchorage
- Secure exterior trim
 - Adhesive
 - Self-drilling screws
 - Wood nailer/blocks
- 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, square.



LEARNING TASKS

4. Install exterior walls and panels

CONTENT

- To specifications
- Installation procedures
- Modify panels as per site conditions
- Plan sequence and placement of panels
- Install temporary braces
- Using man power
- Using material hoist machines
- Bolting
- Welding
- Using screws
- Hoisting and rigging regulations

Achievement Criteria

Performance The learner will build a mockup 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, square.

**Achievement Criteria**

- Performance** The learner will build a mockup of a floor section. This may be combined with H1 achievement criteria.
- 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, square.



LEARNING TASKS

3. Describe installation of roof rafters/truss and ceiling joists

CONTENT

- Rafter and ceiling joist installation
 - Layout of roof framing
 - 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:

- Install materials for soundproofing assemblies.

LEARNING TASKS

1. Describe sound control principals

2. Describe sound control factors in the construction of buildings

3. Describe types of materials used for soundproofing

4. Describe processes for soundproofing walls and partitions

5. Describe acoustical ceiling products, panels and systems

CONTENT

- Measurement of sound
- Terminology for sound control
- Typical sound control problems
- Sound control systems
- Building considerations
- Sound absorption
- Sound isolation
- Acoustical material

- Mass
- Isolation
- Damping
- Leaks
- Flanking paths
- STC ratings
- Measurement of sound
- Acoustical tile and panels
- Baffles
- Gypsum board
- Resilient (floating) channel (sound bar)
- Sheet lead
- Acoustical sealant
- Sound attenuation blankets
- Sound deadening board

- Wall panel mounting methods
- Controlling air leakage
- Controlling wall vibration
- Reducing structure borne sound through wall
- Wall assemblies

- Acoustical ceiling products
- Ceiling suspension systems
- Other specialty systems
- Standards and approvals



LEARNING TASKS

9. Install materials for soundproofing assemblies

CONTENT

- 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 Build Specialty Acoustical Ceilings

Objectives

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

- Build specialty acoustical ceilings.

LEARNING TASKS

1. Describe advantages and disadvantages of various acoustical products

2. Describe the specialty component parts

3. Build specialty acoustical ceilings

4. Install ceiling panels

CONTENT

- Acoustical value
- Appearance
- Strength
- Weight
- Fire rating
- Accessibility
- Repair
- Sound reduction coefficient (NRC)
- Sound transmission coefficient (STC)
- Knowledge of types of grid systems
- Concealed
- Fine grid
- Basket weave
- Proprietary systems
- Layout methods
- Ability to locate expansion and control joints
- Specialty panels
- Wood
- Metal
- Composite/FRP
- Fabric
- Acoustical ceiling panel products
 - Mineral fibre
 - Fibreglass
 - Membrane
 - Gypsum core
 - Metal faced
 - Vinyl faced
 - Wood fibre
- Cut and measure
- Directional
- Non-directional



LEARNING TASKS

CONTENT

- 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, 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:

- Install metal lath on walls and ceilings.
- Install specialty trims and mouldings
- Install plaster beads, stops and expansion joints to lath and wire systems.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Describe types and functions of metal lath
 2. Describe other materials used with lath and wire systems
 3. Use cutting and specialty tools
 4. Use fitting methods of lath and wire | <ul style="list-style-type: none"> • Galvanized metal lath • Painted metal lath • Stucco wire
 • 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 <ul style="list-style-type: none"> ○ 18 –gauge galvanized wire ○ Pre-cut and packaged ○ 42-in. lengths ○ Terminology: “hanks”
 • Aviation snips • Metal shears • Nippers • Channel locks • Hack saw • Magnetic punch • Sheet metal snips • Hammer stapler • Hanger benders <ul style="list-style-type: none"> ○ Carrying channel bender ○ Hanger wire
 • End lap on supports • End lap between supports • Side lap |
|---|--|



LEARNING TASKS

12. Install plaster beads, stops and expansion joints

CONTENT

- Types of beads
- Types of expansion joints
- AWCC Specifications for interior or exterior
- Decorative feature
- Exterior surfaces
- One-piece types
- Two-piece types
- Cutting of wire at control joints
- Spacing of control joints



Line (GAC): L INSTLAL 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

1. Describe the types of access floor system applications

2. Describe the main components of access floor systems

3. Use specialty layout tools

4. Use layout methods

5. Use fitting and fastening methods

CONTENT

- General office
- Computer rooms
 - Snap lock
 - Rigid grid
 - Free standing
- Clean room
- Proprietary systems
 - Steel
 - Wood composite
 - Modular floor panels
- Components
 - Pedestals
 - Grid and gridless
 - Stringers
 - Anchors
 - Supporting hardware
 - Firestop requirements
- Levelling bar
- Suction cups
- 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
- Pedestals
 - Adhesives
 - Mechanical fasteners (seismic)
- Panels
 - Mechanical fasteners



LEARNING TASKS

6. Build access floors

CONTENT

- Perimeter cuts
- Rectangular inside cut-outs
- Round cuts
- Stringers
- Cutting tools
 - Band saw
 - Hole saw
 - Jig saw
 - Reciprocating saw
 - Bi-metal saw blades
- 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 (maximum 100 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, square.



LEARNING TASKS

4. Apply layout methods

5. Use fastening methods

6. Build demountable partitions

CONTENT

- Mitre saw/carbide tipped
- Establish elevations
- Establish openings
- Partition layout
 - Ceiling grid layout
 - Door and window layout
 - Stud layout
 - Base track
 - Ceiling runner
 - Wall panels
- Framing screws
- Drywall screws
- Clips
- Velcro hook tape
- Double-sided tape
- Brackets
- 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

**Achievement Criteria**

- Performance** The learner will build a wall, door and window assembly complete with all accessories and components.
- Conditions** The learner will be given:
- Tools and materials.
 - Instructions/plan/drawing.
- Criteria** The learner will score 70% or better on a rating sheet that reflects the following criteria:
- Safety.
 - Accuracy of finished product.
 - Plumb, level, square.
 - Fit and finish.



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

1. Describe types of specialty ceilings

2. Describe the components of specialty ceilings
3. Install specialty ceiling

CONTENT

- T-bar
- Metal linear ceilings
- Wood
- Composite
- Ornamental plaster
- Luminous
- Clouds

- Component materials
- Suspended
- Wires and grids
- Inserts, clips, 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:

- Install exterior finishes.

LEARNING TASKS

1. Describe siding types

2. Describe exterior siding/cladding installation practices

3. Install flashing and wall sheathing membrane

4. Install exterior siding

CONTENT

- Cementitious
- Siding
 - Metal
 - Vinyl
 - Composite
 - Wood
- Exterior insulation finishing system (EIFS)
- Specialty products (e.g. composite material)

- Cutting and fastening
- Corner installation
- Sealants
- Flashing use
- Other trim installation

- Installation procedures
- Flashing types
- End dams

- Handling and storage
- Cutting procedures
 - Exterior
 - Interior
- Framing requirements
- Clearance
 - Roof
 - Grade
- Concrete/concrete block construction
- Nailing and fasteners
- Corner posts
 - Inside
 - Outside
- Expansion allowance
- Starter strip
- Bug screen



LEARNING TASKS

5. Describe EIFS components and installation procedure

CONTENT

- Soffit vents
- Window and door trims
- Gable end trim
- Cementitious siding installation
- Vinyl and metal siding installation
 - Nailing flange at top
 - Five installation rules
- 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



LEARNING TASKS

4. Describe the interfacing with other materials
5. Identify various wood components
6. Install rainscreen systems

CONTENT

- Furring
- Membrane material
- Rainscreen system installation
- Engineered pressure moderated rainscreen walls
- Railings
- Brick
- Other flashings
- Window design, performance and installation
- Other
- Plywood
 - ACQ – pressure treated
 - OSB – plywood
 - Borate – insecticide treated
- Install strapping
 - Wood
 - Metal
- Install drainage mat
 - Per manufacturer's instructions
- Install flashings
 - Metal
 - Membrane
 - Plastic
- Bug screen
- Finished substrate



Section 4

ASSESSMENT GUIDELINES



Assessment Guidelines – Level 1

Level 1 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:		WALL AND CEILING INSTALLER LEVEL 1	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
A	Apply Safe Work Practices	6%	5%
C	Use Trade Related Skills	22%	15%
D	Use Ladders, Scaffolds and Lift Equipment	5%	5%
E	Use Tools and Equipment	12%	10%
F	Install Insulation	7%	5%
G	Install Non Load Bearing Metal Framing	28%	35%
I	Install Gypsum Wallboard Products	20%	25%
	Total	100%	100%
In-school theory / practical subject competency weighting		70%	30%
Final in-school mark Apprentices must achieve a minimum 70% for the final in-school mark to be eligible to write the Lather (Interior Systems Mechanic) (Wall and Ceiling Installer) Standardized Level exam.		IN-SCHOOL %	

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



Assessment Guidelines – Level 2

Level 2 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:		WALL AND CEILING INSTALLER LEVEL 2	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
B	Apply Codes, Standards and Documentation	10%	4%
C	Use Trade Related Skills	17%	10%
F	Install Insulation	5%	2%
G	Install Non Load Bearing Metal Framing	25%	32%
I	Install Gypsum Wallboard Products	15%	25%
J	Install Fireproofing and Soundproofing	5%	5%
K	Install Basic Acoustical Ceilings	13%	12%
M	Install Drywall Taping and Finishing	5%	5%
N	Apply Exterior Building Envelope Technologies	5%	5%
	Total	100%	100%
In-school theory / practical subject competency weighting		60%	40%
Final in-school percentage score Apprentices must achieve a minimum 70% for the final in-school mark to be eligible to write the Lather (Interior Systems Mechanic) (Wall and Ceiling Installer) Standardized Level exam.		IN-SCHOOL %	

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



Assessment Guidelines – Level 3

Level 3 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:		WALL AND CEILING INSTALLER LEVEL 3	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
C	Use Trade Related Skills	15%	15%
H	Install Load Bearing Metal Framing	35%	35%
J	Install Fireproofing and Soundproofing	5%	10%
K	Install Basic Acoustical Ceilings	7%	5%
L	Install Specialty	28%	25%
N	Apply Exterior Building Envelope Technologies	10%	10%
	Total	100%	100%
In-school theory / practical subject competency weighting		60%	40%
Final in-school percentage score		IN-SCHOOL %	

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

All apprentices who complete Level 3 of the Wall and Ceiling Installer program with a FINAL level percentage score of 70% or greater will write the Interprovincial Red Seal examination as their final assessment.

ITA will enter the apprentices' Lather (Interior Systems Mechanic) (Wall and Ceiling Installer) Interprovincial Red Seal examination percentage score into ITA Direct Access.

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



Section 5

TRAINING PROVIDER STANDARDS



Facility Requirements

Classroom Area

- Comfortable seating and tables suitable for learning
- Compliance with the local and national fire code and occupational safety requirements
- Overhead and multimedia projectors with a projection screen
- 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

Required Power Tools

- Abrasive chop saw
- Angle grinder
- Band saw
- Circular saw
- Compound mitre saw
- Compressor, c/w hose
- Cordless drill
- Drywall router
- Drywall screw gun
- Electric drill
- Electric shears
- Gas-actuated tools
- Hammer drill
- Impact drill
- Jig saw
- Powder-actuated tools
- Power shears (snips)
- Power stapler
- Reciprocating saw
- Router
- Table saw

Required Scaffolding and Access Equipment

- Aluminum bench
- Boom lifts
- Portable scaffolds
- Ladders
- Rolling scaffolds
- Scissor-lift
- Stationary scaffolds
- Stilts

Required Material Handling and Site Maintenance Equipment

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

Required Material Handling and Site Maintenance Equipment

- 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



- Water level

Required Personal Protective Equipment

- | | |
|--|---|
| <ul style="list-style-type: none"> • Appropriate clothing • Ear plugs and muffs • Evacuation horn • Face shields • Gloves • Goggles/safety glasses | <ul style="list-style-type: none"> • Hard hat • Knee pads • Safety vest • CSA approved safety boots |
|--|---|

Shop (Facility) Tools

Standard Hand Tools

- | | |
|--|---|
| <ul style="list-style-type: none"> • Adjustable wrenches • Aviation snips • Bead clincher • Bolt cutter • Burke bar • Caulking gun • Channel locks • Circle cutters • Cold chisel • Crimpers • Dry line/t-bar clips • Drywall Board lifter • Drywall saw • Eye screw pole • Files • Flat bar • Hack saw | <ul style="list-style-type: none"> • Hammers • Hand sander • Hole Whitney punch • Keyhole saw • Lather's hatchet • Locking c-clamp • Magnetic punch • Multi-tip screwdriver • Nail bar • 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

- FTIBC
- BCWCA
- AWCC



Instructor Requirements

Occupation Qualification

The instructor must possess:

- Lather – Interior Systems Mechanic (Wall and Ceiling Installer) – BC Certificate of Qualification, preferably with an Interprovincial Red Seal endorsement, or
- 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 and Ceiling Association
CSA	Canadian Standards Association
EIFS	Exterior insulation finishing system
EPS	Expanded polystyrene
FRP	Fiberglass-Reinforced Plastic
FTIBC	Finishing Trades Institute of BC
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
SDS	Safety data sheet
STC	Sound Transmission Class
ULC	Underwriters Laboratories Canada
WHMIS	Workplace Hazardous Materials Information System



Appendix B Previous Contributors

The Program Outline was prepared with the advice and direction of an industry steering committee convened initially by the Industry Training Organization (ITO). Members included:

- Stewart Baird
- Orval Bernardin
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- Dino Gusola
- David Holmes
- Steve Moore

Industry Subject Matter Experts retained to assist in the development of the Program Outline (2012):

- Stewart Baird
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