

PROGRAM OUTLINE

Lather – Interior Systems

Mechanic

(Wall and Ceiling Installer)



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www.itabc.ca

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WALL AND CEILING INSTALLER PROGRAM OUTLINE

**APPROVED BY INDUSTRY
NOVEMBER 2012**

**BASED ON
NOA 2012**

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



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Section 1

INTRODUCTION

Wall and Ceiling Installer



Foreword

This revised 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 new Wall and Ceiling Installer National Occupational Analysis (2012) and British Columbia industry and instructor subject matter experts.

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

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

The Program Outline was prepared with the advice and assistance of the Wall and Ceiling Installer Review Committee, and will form the basis for further updating of the British Columbia Wall and Ceiling Installer Program and the learning resources by the Construction Industry Training Organization (CITO) on behalf of the Industry Training Authority (ITA).

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

Achievement Criteria are included for those competencies that require a practical component. The intent of including Achievement Criteria in the program outline is to ensure consistency in training across the many training institutions in British Columbia. Their purpose is to reinforce the theory and to provide a mechanism for evaluation of the learner's ability to apply the theory to practice. It is important that these performances be observable and measureable and that they reflect the skills spelled out in the competency as those required of a competent 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 level of expectation of success.

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

SAFETY ADVISORY

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



Acknowledgements

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

- Stewart Baird
- Orval Bernardin
- Murray Correy
- Bert Gerwin
- Dino Gusola
- David Holmes
- Steve Moore

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

- Stuart Baird
- Noah Eliassen
- Dino Gusola
- Larry Robinson
- Kevin Weston

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 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
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



Section 2

PROGRAM OVERVIEW

Wall and Ceiling Installer

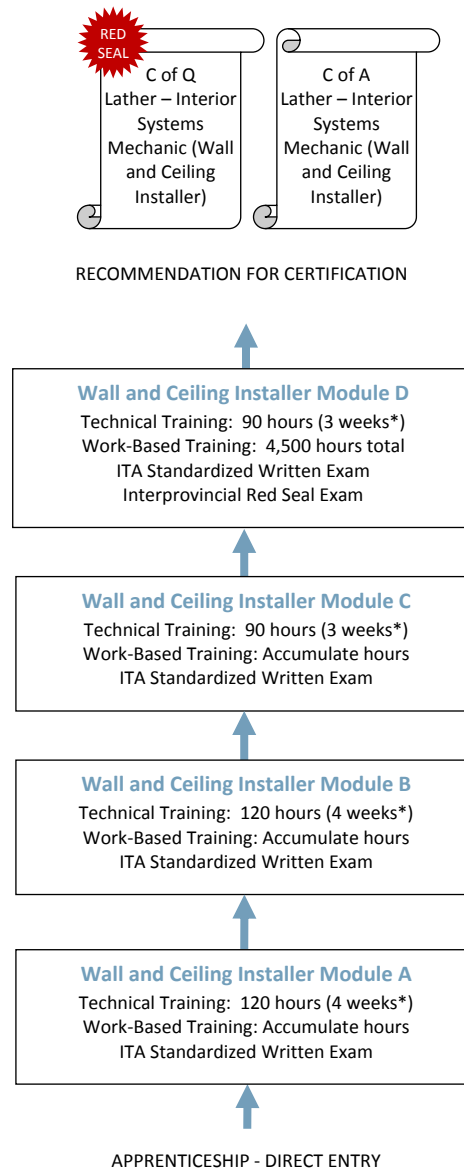


Program Credentialing Model

Apprenticeship Pathway

This graphic provides an overview of the Lather – Interior Systems Mechanic (Wall and Ceiling Installer) apprenticeship pathway.

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



**Suggested duration based on 30-hour week*

CROSS-PROGRAM CREDITS

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

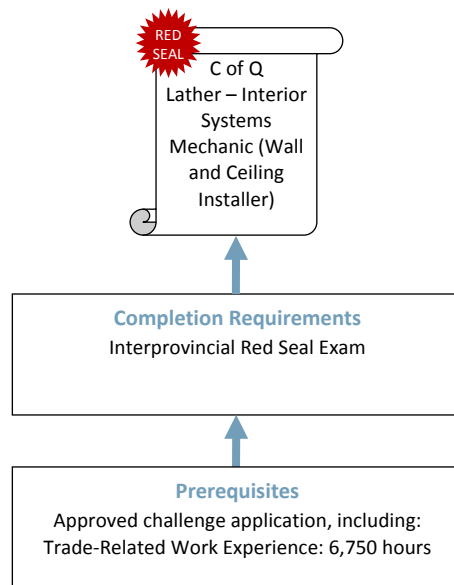
None



Challenge Pathway

This graphic provides an overview of the Lather – Interior Systems Mechanic (Wall and Ceiling Installer) challenge pathway.

C of Q = Certificate of Qualification



CREDIT FOR PRIOR LEARNING

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

None



Occupational Analysis Chart

WALL AND CEILING INSTALLER

Occupation Description: A “Wall and Ceiling Installer” is a person who 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 and building partitions to prepare for the installation of drywall or plaster walls and ceilings. They also install curtain walls, perform acoustical installations and install shielded walls. Wall and Ceiling Installers were previously designated as Lathers in BC.

Apply Trade-Related Communication Skills A	Use Trade-Related Communication Skills A1					
	A					
Apply Safe Work Practices B	Use Personal Protective Equipment B1		Control Workplace Hazards B2		Apply WHMIS B3	
	A		A		A	
					Apply OHS Regulations and WorkSafeBC Standards B4	
					A	
					Attain First Aid Certification B5	
	A					
Apply Codes, Standards and Documentation C	Apply Codes and Regulations C1		Apply Fire Assembly Requirements C2		Apply Structural and Seismic Codes and Regulations C3	
		B				
						C
Prevent and Correct Mould D	Prevent Mould D1		Correct Mould Problems D2			
	A					D
Use Ladders, Scaffolds and Lift Equipment E	Use Ladders, Platforms and Lifts E1		Use Fall Arrest and Fall Restraint Systems E2		Perform Approved WorkSafeBC Rigging and Hand Signals E3	
	A		A		A	



Use Tools and Equipment F	Use Hand Tools F1	Use Power Tools F2	Use Powder-Actuated and Gas-Actuated Tools F3	Use Pneumatic Tools F4
	A	A	A	A
Use Mathematics G	Use Mathematics G1			
	A B C			
Use Blueprints and Specifications H	Use Blueprints and Specifications H1	Draw Floor and Ceiling Plans H2		
	A B C	C		
Install Insulation I	Install Thermal Insulation I1	Install Acoustical Insulation I2	Install Vapour Barriers and Sealants I3	
	A	A	A	
Install Non Load Bearing Metal Framing J	Build Walls, Ceilings and Bulkheads J1	Install Wood and Metal Backing J2	Install Metal Doors and Window Frames J3	Install Access Panels J4
	B	B	B	B
Install Load Bearing Metal Framing K	Build Wind Load and Axial Load Bearing Walls K1	Prefabricate and Install Walls and Panels K2	Install Floor Joists and Roof Rafters K3	
	C	C	C	



Install Gypsum Wallboard, Shaft Walls and Security Mesh L	Install Gypsum Wallboard L1	Install Shaft Wall Assemblies L2	Finish Drywall L3	Install Security Mesh L4																			
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Apply Lath, Wire, and Trims to Walls and Ceilings P	Install Metal Lath on Walls and Ceilings P1	Install Plaster Beads, Expansion Joints and Plaster Stops P2																					
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Use Estimating and Project Planning Skills Q	Use Estimating Methods Q1	Plan a Project Q2																					
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Training Topics and Suggested Time Allocation

Wall and Ceiling Installer – Module A

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line A	Apply Trade-Related Communication Skills	3.5%	100%	0%	100%
A1	Use Trade-Related Communication Skills		✓		
Line B	Apply Safe Work Practices	14.5%	100%	0%	100%
B1	Use Personal Protective Equipment		✓		
B2	Control Workplace Hazards		✓		
B3	Apply WHMIS		✓		
B4	Apply OHS Regulations and WorkSafeBC Standards		✓		
B5	Attain First Aid Certification		✓		
Line D	Prevent and Correct Mould	4%	100%	0%	100%
D1	Prevent Mould		✓		
Line E	Use Ladders, Scaffolds and Lift Equipment	14.5%	75%	25%	100%
E1	Use Ladders, Platforms and Lifts		✓	✓	
E2	Use Fall Arrest and Fall Restraint Systems		✓	✓	
E3	Perform Approved WorkSafeBC Rigging and Hand Signals		✓		
Line F	Use Tools and Equipment	9%	90%	10%	100%
F1	Use Hand Tools		✓		
F2	Use Power Tools		✓		
F3	Use Powder-Actuated Tools and Gas-Actuated Tools		✓	✓	
F4	Use Pneumatic Tools		✓		
Line G	Use Mathematics	14.5%	100%	0%	100%
G1	Use Mathematics		✓		
Line H	Use Blueprints and Specifications	20%	75%	25%	100%
H1	Use Blueprints and Specifications		✓	✓	
Line I	Install Insulation	10%	100%	0%	100%
I1	Install Thermal Insulation		✓		
I2	Install Acoustical Insulation		✓		
I3	Install Vapour Barriers and Sealants		✓		
Line L	Install Gypsum Wallboard, Shaft Walls and Security Mesh	3%	100%	0%	100%
L1	Install Gypsum Wallboard		✓		
Line Q	Use Estimating and Project Planning Skills	7%	100%	0%	100%
Q1	Use Estimating Methods		✓		
Total Percentage for Wall and Ceiling Installer Module A		100%			

The composite level mark is to consist of 80% Theory and 20% Practical.



Training Topics and Suggested Time Allocation

Wall and Ceiling Installer – Module B

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line C	Apply Codes, Standards and Documentation	5%	100%	0%	100%
C1	Apply Codes and Regulations		✓		
C2	Apply Fire Assembly Requirements		✓		
Line G	Use Mathematics	2.5%	100%	0%	100%
G1	Use Mathematics		✓		
Line H	Use Blueprints and Specifications	2.5%	100%	0%	100%
H1	Use Blueprints and Specifications		✓		
Line J	Install Non Load Bearing Metal Framing	47%	25%	75%	100%
J1	Build Walls, Ceilings and Bulkheads		✓	✓	
J2	Install Wood and Metal Backing		✓		
J3	Install Metal Doors and Window Frames		✓	✓	
J4	Install Access Panels		✓		
Line L	Install Gypsum Wallboard, Shaft Walls and Security Mesh	32%	25%	75%	100%
L1	Install Gypsum Wallboard		✓	✓	
L2	Install Shaft Wall Assemblies		✓	✓	
L3	Finish Drywall		✓		
L4	Install Security Mesh		✓		
Line M	Install Drywall Beads and Moulding	6.5%	50%	50%	100%
M1	Install Drywall Beads and Trims		✓	✓	
M2	Install Drywall Reveals and Expansion Joints		✓	✓	
Line N	Install Fireproofing and Soundproofing	4.5%	50%	50%	100%
N2	Install Materials for Fireproofing and Smoke Seals		✓	✓	
N3	Install Materials for Lead Radiation Shielding		✓	✓	
Total Percentage for Wall and Ceiling Installer Module B		100%			

The composite level mark is to consist of 70% Theory and 30% Practical.



Training Topics and Suggested Time Allocation

Wall and Ceiling Installer – Module C

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line C	Apply Codes, Standards and Documentation	2%	100%	0%	100%
C3	Apply Structural and Seismic Codes and Regulations		✓		
Line G	Use Mathematics	4%	100%	0%	100%
G1	Use Mathematics		✓		
Line H	Use Blueprints and Specifications	14%	25%	75%	100%
H1	Use Blueprints and Specifications		✓		
H2	Draw Floor and Ceiling Plans		✓	✓	
Line K	Install Load Bearing Metal Framing	42%	25%	75%	100%
K1	Build Wind Load and Axial Load Bearing Walls		✓	✓	
K2	Prefabricate and Install Walls and Panels		✓	✓	
K3	Install Floor Joists and Roof Rafters		✓		
Line O	Install Acoustical Ceilings	27%	45%	55%	100%
O1	Layout and Install Acoustical Ceilings		✓		
O2	Build Feature Ceilings		✓	✓	
Line Q	Use Estimating and Project Planning Skills	11%	40%	60%	100%
Q1	Use Estimating Methods			✓	
Q2	Plan a Project			✓	
Total Percentage for Wall and Ceiling Installer Module C		100%			

The composite level mark is to consist of 70% Theory and 30% Practical.



Training Topics and Suggested Time Allocation

Wall and Ceiling Installer – Module D

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line D	Prevent and Correct Mould	2%	100%	0%	100%
D2	Correct Mould Problems		✓		
Line N	Install Fireproofing and Soundproofing	6%	100%	0%	100%
N1	Install Materials for Soundproofing Assemblies		✓		
Line P	Apply Lath, Wire, and Trims to Walls and Ceilings	34%	15%	85%	100%
P1	Install Metal Lath on Walls and Ceilings		✓	✓	
P2	Install Plaster Beads, Expansion Joints and Plaster Stops		✓		
Line R	Apply Exterior Building Envelope Technologies	24%	50%	50%	100%
R1	Install Air and Water Barriers		✓		
R2	Install Rainscreen Systems		✓		
R3	Install Exterior Finishes		✓		
R4	Build Exterior Insulated Walls, Rainscreen Walls and Curtain Walls		✓	✓	
Line S	Build Access Floor Systems	10%	40%	60%	100%
S1	Build Access Floors Systems		✓	✓	
Line T	Build Demountable Partitions	24%	40%	60%	100%
T1	Build Demountable Partitions		✓	✓	
Total Percentage for Wall and Ceiling Installer Module D		100%			

The composite level mark is to consist of 70% Theory and 30% Practical.



Section 3

PROGRAM CONTENT

Wall and Ceiling Installer



Module A

Wall and Ceiling Installer



Line (GAC): A APPLY TRADE-RELATED COMMUNICATION SKILLS

Competency: A1 Use Trade-Related Communication Skills

Objectives

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

- Describe work performed by Wall and Ceiling Installers within the context of the construction industry.
- Use trade-related communication skills to coordinate work with other trades.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <p>1. Describe methods of communication</p> | <ul style="list-style-type: none"> • Listening • Verbal • Written • Drawings • Trade terminology • Two-way radios • Fax machines • Computers • Interpersonal skills • Ethics/moral responsibility • Signage • Men working above • Tapes (yellow, red) |
| <p>2. Describe work performed by Wall and Ceiling Installers</p> | <ul style="list-style-type: none"> • Installation tasks • Fire proofing • Sound proofing • Technologies • Systems • Wall and Ceiling trades <ul style="list-style-type: none"> ○ Metal stud framer ○ Gypsum wallboard installer ○ Wire lath installers ○ Ceiling installers • Structural metal framing • Drywall finisher • Plasterer |



LEARNING TASKS

3. Describe the construction industry structure

4. Use standard construction terminology

5. Communicate with others

6. Coordinate work with other trades

CONTENT

- Interest groups
 - Owners
 - Architects
 - Engineers
 - Managers
 - Sub-contractors
 - Labour contractors

- According to glossary of terms and definitions

- 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
 - Charge hand
 - Journeypersons
 - Apprentices
- Sub trade schedules
- Requirements of other trades on site
- Coordinating work through general contractor
- Anticipating and solving problems
- Communication and cooperation with others



Line (GAC): B APPLY SAFE WORK PRACTICES

Competency: B1 Use Personal Protective Equipment

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

<p>1. Describe personal protective work clothes and equipment</p>	<ul style="list-style-type: none"> • Clothing <ul style="list-style-type: none"> ○ Personal apparel ○ Interior/exterior environments ○ Raingear ○ Hazardous waste suits ○ Disposable • Equipment <ul style="list-style-type: none"> ○ Safety hard hat ○ Respiratory protection ○ Eye protection ○ Hearing protection ○ Work gloves ○ Safety footwear ○ Knee pads
<p>2. Select PPE required for a given task</p>	<ul style="list-style-type: none"> • According to job requirements
<p>3. Maintain PPE</p>	<ul style="list-style-type: none"> • Organization • Storage • Maintenance (according to Manufacturer specifications, WorkSafeBC/OH&S)
<p>4. Use Personal Protective Equipment</p>	<ul style="list-style-type: none"> • 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): B APPLY SAFE WORK PRACTICES

Competency: B2 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

2. Describe how to maintain a safe work environment

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
 - Ensure materials and goods are systematically supplied and properly placed
 - Provide safe working equipment as required
 - Ensure sufficient task lighting
 - Provide “Danger” signage and



LEARNING TASKS

3. Control workplace hazards

CONTENT

- barricades where required
- Provide “No Smoking” signage 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
- Adhere to safety regulations



LEARNING TASKS

CONTENT

- As per job requirements
- As per WorkSafeBC
- As per site specifications
- As per employer safety manual



Line (GAC): B APPLY SAFE WORK PRACITCES

Competency: B3 Apply WHMIS

Objectives

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

- Interpret MSDS sheets.
- Apply WHMIS.

LEARNING TASKS

1. Explain the purpose of WHMIS

2. Describe the three elements of the WHMIS system

3. Describe supplier, employer and worker responsibilities regarding WHMIS

CONTENT

- Canada-wide legislated system
- Provides information on workplace hazardous materials
- How to safely use, store and handle hazardous materials
- Although nation-wide, employer WHMIS compliance is regulated and enforced by WorkSafeBC

- WHMIS labels
- Material Safety Data Sheets (MSDS)
- WHMIS education and training programs

- Supplier
 - Classify controlled products
 - Supply proper labels and MSDS
 - Keep information on labels and MSDS current
- Employer
 - Educate and train workers
 - Provide safe work practices
 - Ensure availability of proper and up-to-date labels and MSDS
- Worker
 - Understand content and significance of labels and MSDS
 - Follow safe work procedures
 - Know how to find MSDSs
 - Notify employers about problems with labels and MSDS

**LEARNING TASKS**

4. Identify the warning labels and symbols on the six classes of hazardous materials

5. Describe hazardous materials common to the construction workplace

6. Understand “Routes of Entry” of hazardous materials into the body

7. Use workplace labels

CONTENT

- 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
 - Risk phrases (words that describe the main hazards of the product)
 - Precautionary statements
 - First aid measures
 - Reference to MSDS
 - 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 MSDS



LEARNING TASKS

8. Describe the safety implications of information on Material Safety Data Sheets

CONTENT

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



Line (GAC): B APPLY SAFE WORK PRACTICES
Competency: B4 Apply OHS Regulations and WorkSafeBC Standards

Objectives

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

- Describe the role of WorkSafeBC.
- Describe the rights, roles and responsibilities of employers and employees.
- Apply OH&S and WorkSafeBC regulations.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <p>1. Explain WorkSafeBC functions and procedures</p> | <ul style="list-style-type: none"> • Inspects places of employment • Investigates accidents and causes of industrial disease • Assists in developing health and safety programs • Provides rehabilitation and retraining for injured workers • Assists in creating a safe place to work |
| <p>2. Explain employer roles and responsibilities</p> | <ul style="list-style-type: none"> • 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 |
| <p>3. Explain employee rights and responsibilities</p> | <ul style="list-style-type: none"> • 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 |



LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>4. List and describe the regulations applicable to the Wall and Ceiling Installer trade</p> | <ul style="list-style-type: none"> • 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 |
| <p>5. Adhere to injury-reporting procedures</p> | <ul style="list-style-type: none"> • Identify first aid room • Get first aid • Get medical attention • Notify the supervisor |



Line (GAC): **B APPLY SAFE WORK PRACTICES**

Competency: **B5 Attain First Aid Certification**

Objectives

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

- Attain Level 1 First Aid certification.

LEARNING TASKS

1. Attain Level 1 First Aid Certification

CONTENT

- Arrange with a qualified provider of First Aid Certification



Line (GAC): D PREVENT AND CORRECT MOULD

Competency: D1 Prevent Mould

Objectives

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

- Identify and describe mould and its causes.
- Describe health and safety issues related to mould.

LEARNING TASKS

1. Explain issues related to mould

2. Describe mould

3. Describe the building components that are commonly susceptible to mould growth

CONTENT

- Health of workers and occupants
- Removal of mould in existing buildings
- Construction processes to reduce/prevent mould growth
- Lawsuits

- Form of fungi – many species
- Present indoors and outdoors
- Temperature, moisture and nutrients creates ideal breeding
- Appearance varies
- Recognition through smell or odour
- Colonization on building materials
- Professional mould identification and training for mould removal

- Gypsum board
- Wood products
- Ceiling tiles
- Wallpaper
- Carpets
- Exposed soil in crawl spaces



4. Describe occupational health and safety requirements
 - Identify WorkSafeBC and OH&S regulations and guidelines
 - Training of workers
 - Reference to MSDS for disinfectants and detergents
 - Personal Protective Equipment (PPE)
 - Containment of area
 - Limited access of others to contaminated area
 - Prohibition of smoking, drinking and eating in work area
 - Decontamination rooms



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

Competency: E1 Use Ladders, Platforms and Lifts

Objectives

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

- Use ladders, scaffolds and elevated platforms for a given task.
- Maintain access and hoisting equipment.

LEARNING TASKS

1. Describe scaffolding and elevated platforms

CONTENT

- Types and applications
- Scaffolds
 - Bakers
 - Mechanical
 - Ground-based
 - Rolling
 - Stationary
 - Ladder jack
 - Tubular
 - Hydraulic
 - Jack-up
- Aerial work platforms
- Swing stages
- Step ups
- Saw horses
- 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 levels for inspection and erection



LEARNING TASKS

2. Describe types of ladders
3. Set up, move and level ladders and scaffolding
4. Set up an elevated platform
5. Maintain scaffolding and ladders

CONTENT

- Maintaining three point contact
- Straight and extension
- Step
- Trestle and extension trestle
- Selection
- Site hazards
- Inspect for defects
 - Rusting, split planks, broken rungs
- Set up, layout and levelling
- Restrictions
 - Height, no-step zones, load limitations, no opaque coatings
- 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
- Height, no-step zones, load limitations, no painting of ladders
- Securing
- Maintenance
- As per manufacturer's specifications
- Storage



Achievement Criteria

Performance	The individual will set up the first lift of a scaffold.
Conditions	The individual will be given: <ul style="list-style-type: none">• Scaffold and components• Instructions
Criteria	The individual will score 70% or better on a rating sheet that reflects the following criteria: <ul style="list-style-type: none">• Safety• Level• Braces in proper spot• Proper base support• Proper use of components



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

Competency: E2 Use Fall Arrest and Fall Restraint Systems

Objectives

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

- Select appropriate fall protection equipment for a given task.
- Use fall protection equipment and systems for a given task.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>1. Describe a fall protection plan</p> | <ul style="list-style-type: none"> • Employer responsibility • Where permanent guardrails are not in place • Written plan in place before a risk of falling begins <ul style="list-style-type: none"> ○ Fall hazards ○ Fall protection system ○ Fall rescue plan and instructions ○ Instructions to workers on how to use safety equipment |
| <p>2. Set up a fall restraint system</p> | <ul style="list-style-type: none"> • Fall restraint prevents falls • Used when travel restriction systems of guardrails cannot be utilized <ul style="list-style-type: none"> ○ Safety belts or full body harness ○ Lanyards ○ Lifelines ○ Rope grabs ○ Anchors |
| <p>3. Set up a fall arrest system</p> | <ul style="list-style-type: none"> • Fall protection system that will stop a worker's fall before the worker hits the surface below • Full body harness connected by lanyards to life lines or secure anchors <ul style="list-style-type: none"> ○ Full body harness ○ Lanyards ○ Lifelines ○ Rope grabs ○ Anchors • Use of safety nets |
| <p>4. Use fall arrest and fall restraint systems</p> | <ul style="list-style-type: none"> • According to job requirements and safety regulations |



Achievement Criteria

Performance The individual will perform a fit test.

Conditions The individual will be given:

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

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

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



Line (GAC): E USE LADDERS, SCAFFOLDS AND LIFT EQUIPMENT
Competency: E3 Perform Approved WorkSafeBC Rigging and Hand Signals

Objectives

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

- Use appropriate hand signals.
- Perform rigging and hoisting.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| 1. Describe types of signals | <ul style="list-style-type: none"> • Hand signals • Bell signals • Light signals |
| 2. Demonstrate the use of hand signals to control hoist operations | <ul style="list-style-type: none"> • 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 signals |
| 3. Use bell and/or light signals | <ul style="list-style-type: none"> • Stop • Raised • Lower • All clear |



LEARNING TASKS

4. Describe safe rigging practices

5. Perform safe rigging procedures

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
-
- Rigging structural shapes securely
 - Wrapping and blocking loads
 - Hoist rope and hook
 - Slings
 - Protective padding
 - Choker hitch
 - Shackles
 - Tag lines
 - Landing loads
 - Turning loads
 - Blocking and stacking loads



Line (GAC): F USE TOOLS AND EQUIPMENT

Competency: F1 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

- | | |
|---|--|
| <p>1. Describe types of hand tools used in the Wall and Ceiling Installer trade</p> | <ul style="list-style-type: none"> • Types • Purpose • Application • Parts • See Tools and Equipment for complete list of tools |
| <p>2. Use hand tools</p> | <ul style="list-style-type: none"> • Safety • According to WorkSafeBC regulations • According to job requirements |
| <p>3. Maintain hand tools</p> | <ul style="list-style-type: none"> • Maintenance procedures • Adjustments • According to manufacturer's instructions • Storage |



Line (GAC): F USE TOOLS AND EQUIPMENT

Competency: F2 Use Power Tools

Objectives

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

- Use power tools.
- Maintain power tools.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Describe the types of power tools used in the Wall and Ceiling Installer trade
 2. Use power tools
 3. Maintain power tools | <ul style="list-style-type: none"> • Types • Purpose • Application • See Tools and Equipment for list of power tools
 • Safety • According to WorkSafeBC regulations • According to job requirements
 • Maintenance procedures • Adjustments • According to manufacturer’s instructions • Storage |
|--|--|



Line (GAC): **F USE TOOLS AND EQUIPMENT**
Competency: **F3 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

CONTENT

<p>1. Describe powder-actuated tools used in the Wall and Ceiling Installer trade</p>	<ul style="list-style-type: none"> • Types • Components • Purpose • Application • See Tools and Equipment for list of powder-actuated tools
<p>2. Use powder-actuated tools</p>	<ul style="list-style-type: none"> • Safety • According to WorkSafeBC regulations • According to job requirements • Types of charges <ul style="list-style-type: none"> ○ High velocity ○ Low velocity • Types of fasteners • Methods of propulsion <ul style="list-style-type: none"> ○ Co-acting ○ Impact ○ Contact
<p>3. Maintain powder-actuated tools</p>	<ul style="list-style-type: none"> • Maintenance procedures • Adjustments • According to manufacturer's instructions • Storage
<p>4. Describe gas-actuated tools used in the Wall and Ceiling Installer trade</p>	<ul style="list-style-type: none"> • Types • Components • Purpose • Application • See Tools and Equipment for list of gas-actuated tools



LEARNING TASKS

5. Use gas-actuated tools

6. Maintain gas-actuated tools

7. Describe job restrictions

CONTENT

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

- Maintenance procedures
- Adjustments
- According to manufacturer's instructions
- Storage

- Substrate restrictions
- Correct equipment for the substrate

Achievement Criteria

- Performance** The individual will demonstrate proper set-up, safe use, disassembly and maintenance of powder-actuated tools.
- Conditions** The individual will be given:
- Tools
 - Instructions
- Criteria** The individual 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): F USE TOOLS AND EQUIPMENT

Competency: F4 Use Pneumatic Tools

Objectives

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

- Use pneumatic tools.
- Maintain pneumatic tools.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Describe pneumatic tools used in the Wall and Ceiling trade | <ul style="list-style-type: none"> • Types • Components • Purpose • Application • See Tools and Equipment for list of pneumatic tools |
| <ol style="list-style-type: none"> 2. Use pneumatic tools | <ul style="list-style-type: none"> • Safety • According to WorkSafeBC regulations • According to job requirements |
| <ol style="list-style-type: none"> 3. Maintain pneumatic tools | <ul style="list-style-type: none"> • Maintenance procedures • Adjustments • According to manufacturer's instructions • Storage |



Line (GAC): G USE MATHEMATICS

Competency: G1 Use Mathematics

Objectives

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

- Solve problems containing fractions and decimals.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| 1. Convert between fractions and decimals | <ul style="list-style-type: none"> • Multiplication • Addition • Subtraction • Division |
| 2. Solve problems using fractions and decimals | <ul style="list-style-type: none"> • Multiplication • Addition • Subtraction • Division |
| 3. Convert within the imperial system | <ul style="list-style-type: none"> • Feet to inches • Square inches to square feet |
| 4. Convert within the metric system | <ul style="list-style-type: none"> • Millimetres to centimeters • Centimeters to metres |
| 5. Convert between metric and imperial | <ul style="list-style-type: none"> • Inches to centimetres • Pounds to kilos • Ounces to grams • Feet to metres |



Line (GAC): H USE BLUEPRINTS AND SPECIFICATIONS

Competency: H1 Use Blueprints and Specifications

Objectives

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

- Identify lines, symbols and abbreviations used in the Wall and Ceiling Installer trade.
- Read and interpret blueprints to specifications.
- Interpret schedules related to work in the Wall and Ceiling Installer industry.

LEARNING TASKS

CONTENT

<p>1. Describe how to read an architect's scale</p>	<ul style="list-style-type: none"> • Imperial • Metric • Conversion calculations
<p>2. Describe and locate the types of lines, symbols and abbreviations commonly used in the trade</p>	<ul style="list-style-type: none"> • Lines <ul style="list-style-type: none"> ○ Object line ○ Hidden object lines ○ Symbols and abbreviations ○ Dimensional lines ○ Directional lines • Symbols • Abbreviations
<p>3. Describe how blueprints are used in the Wall and Ceiling Installer trade</p>	<ul style="list-style-type: none"> • Purpose <ul style="list-style-type: none"> ○ Communicate work requirements and coordination with all trades ○ Drawings, specifications, and schedules are complementary ○ Layout of walls and ceilings • Installation techniques and sequences for various wall and ceiling systems • Types of projections • Isometric • Orthographic
<p>4. Identify and describe sections and elements of a set of blueprints</p>	<ul style="list-style-type: none"> • Specifications • Blueprint cover sheet • Working drawings <ul style="list-style-type: none"> ○ Architectural • Plot plan • Floor plan • Elevation drawing



LEARNING TASKS

CONTENT

- Cross sections
- Detail drawings
- Schedules
- Views
- Lines
- Symbols and abbreviations
- Scale
- Title block information

Achievement Criteria

Performance	The individual will interpret a print, and answer questions related to measurement, location and layout.
Conditions	The individual will be given: <ul style="list-style-type: none"> • A print • Instructions • Questions
Criteria	The individual 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): I **INSTALL INSULATION**

Competency: I1 **Install Thermal Insulation**

Objectives

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

- Describe principles of thermal insulation.
- Install thermal insulation.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <p>1. Describe principles of thermal insulation</p> | <ul style="list-style-type: none"> • Preventing heat loss <ul style="list-style-type: none"> ○ Conduction ○ Convection ○ Radiation • Insulating values • Causes of heat loss <ul style="list-style-type: none"> ○ Below grade in foundation walls and slabs ○ Above grade in foundation walls ○ In walls |
| <p>2. Describe types of thermal insulation materials</p> | <ul style="list-style-type: none"> • Flexible fibreglass insulation batts • Blown insulation • Spray insulation • Rigid fibreglass insulation sheathing • Semi-rigid fibreglass wall insulation <ul style="list-style-type: none"> ○ Mineral fibre • Extruded polystyrene • Fibreglass insulation for commercial construction: <ul style="list-style-type: none"> ○ Acoustic/thermal batts ○ Partition batts ○ Thermal Kraft-face batts ○ Reflective thermal foil-faced batts ○ Fire-resistant batts ○ Extended-flange batts ○ Loose-fill fibreglass |



LEARNING TASKS

3. Install flexible insulation

4. Install loose fill insulation

5. Install rigid insulation

6. Install reflective insulation

CONTENT

- Mechanical fasteners and adhesives (Refer to Tools and Equipment)
- Select proper width and thickness
- Install wood supports
- Install to metal supports
- To manufacturer's instructions

- Fill wall and/or ceilings to specified depth for "R" rating
- Select proper thickness
- Applications
 - Into wood and metal studs
- To manufacturer's instructions

- Select proper thickness
- Applications
 - Into wood and metal studs
 - Attachment to various substrates
- To manufacturer's instructions
- Expandable foam

- Applications
 - Into wood and metal studs
 - Attachment to various substrates
- To manufacturer's instructions



Line (GAC): I **INSTALL INSULATION**
Competency: I2 **Install Acoustical Insulation**

Objectives

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

- Install acoustical insulation.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <p>1. Describe the principles of acoustical insulation</p>

<p>2. Describe acoustic wall assemblies</p> | <ul style="list-style-type: none">• 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
<ul style="list-style-type: none">• Gypsum board<ul style="list-style-type: none">○ Types○ Thickness○ Layers• Wall studs<ul style="list-style-type: none">○ Wood○ Steel○ Size• Resilient channels• Insulation materials<ul style="list-style-type: none">○ Mineral fibre○ Fibreglass insulation○ Acoustic batts○ Partition batt• Shaft wall system• High density ceiling tiles and wall panels |
|---|---|



LEARNING TASKS

3. Describe types of acoustical insulation

4. Install acoustical insulation

CONTENT

- 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
- Properties
- Mechanical fasteners and adhesives (Refer to Tools and Equipment)
 - To acoustical ceilings
 - To wood supports
 - To metal supports
 - To manufacturer's instructions
 - Lead sheeting and approved fastening system



Line (GAC): I **INSTALL INSULATION**
Competency: I3 **Install Vapour Barriers and Sealants**

Objectives

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

- Install vapour barriers.
- Install sealants.

LEARNING TASKS

1. Describe the principles of vapour barriers and sealants

CONTENT

- 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 barriers

- Foil back gypsum board
- Two coats of alkyd paint applied to gypsum wallboard
- Metal roof deck
- Polyethylene plastic
- Aluminum foil
- Asphalt laminated paper
- Caulks and sealants



LEARNING TASKS

3. Describe vapour barrier and air barrier systems

4. Describe installation of caulks and sealants

5. Install vapour and air barriers

CONTENT

- Gypsum board
 - Accessible gypsum board approach
 - Non-accessible gypsum board approach
- Metal air barrier systems
- 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 wood supports
- To metal supports
- To building code and local municipal standards
- Mechanical fasteners and adhesives (Refer to Tools and Equipment)



Line (GAC): L INSTALL GYPSUM WALLBOARD, SHAFT WALLS AND SECURITY MESH

Competency: L1 Install Gypsum Wallboard

Objectives

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

- Install gypsum wallboard.

LEARNING TASKS

1. Describe types of gypsum and their uses

2. Demonstrate proper methods of handling gypsum wallboard

CONTENT

- Gyproc core
- Standard gypsum board
- Fire-resistant gypsum board (Type X)
- Moisture-resistant board
- Backing board
- Vinyl gypsum board
- Coreboard
- Exterior sheathing gypsum board
- Veneer gypsum board
- Controlled-density (CD) gypsum board
- Foil-backed gypsum board
- Gypsum lath
- Abuse-resistant board
- Glass mat panels
- Concrete glass fibre-reinforced backer board
- Sound-deadening board (Densshield)
- Quiet rock
- Mould resistant wallboard
- Decorative strips
- Common thicknesses, widths and lengths of drywall
- Butt joints
- Bevel joints
- Proper lifting and carrying techniques
- Ways to avoid damaging gypsum board
- Ways to avoid cracking gypsum board
- Ways to avoid rough edges
- Using drywall roller dollies
- Determining number of people needed to move drywall
- Determining sequence in which materials are to be used



Line (GAC): **Q USE ESTIMATING AND PROJECT PLANNING SKILLS**
Competency: **Q1 Use Estimating Methods**

Objectives

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

- Describe estimating methods.

LEARNING TASKS

1. Describe estimating methods used in the Wall and Ceiling Installer trade

CONTENT

- Purpose
 - Time
 - Materials
- Types
 - Quantities
 - Cost
 - Computer-generated
- Methods



Module B

Wall and Ceiling Installer



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

Competency: C1 Apply Codes and Regulations

Objectives

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

- Apply appropriate codes, standards and regulations as they pertain to the Wall and Ceiling Installer trade.

LEARNING TASKS

CONTENT

<p>1. Describe the basis for building codes</p>	<ul style="list-style-type: none"> • Specifications and standards for construction • Minimum requirements for safe and sound buildings • Protection of owners, workers and contractors
<p>2. Describe applicable building codes</p>	<ul style="list-style-type: none"> • National Building Code • British Columbia Building Code • Municipal Building Codes or Bylaws
<p>3. Describe building codes in relation to the Wall and Ceiling Installer trade</p>	<ul style="list-style-type: none"> • AWCC Wall and Ceiling Specification Standards • Proper installation of boards, systems, fasteners, etc. • Structurally and seismically appropriate installations • Fire ratings • Sound proofing • Durability and aesthetics of substrates
<p>4. Identify building code requirements for Wall and Ceiling installation</p>	<ul style="list-style-type: none"> • Wall framing and stud spacing • Ceilings • Fire separations • Fasteners • Insulation • Vapour barrier • Building envelope • Seismic bracing
<p>5. Find relevant fire ratings</p>	<ul style="list-style-type: none"> • Drawings • Specifications • Building codes • AWCC manual • Other (e.g. manufacturers' information)



LEARNING TASKS

6. Find relevant seismic requirements

CONTENT

- Drawings
- Specifications
- Engineered drawings
- Building codes
- AWCC manual
- ASTM regulations
- Other (e.g. manufacturers' information)

7. Find structural requirements

- Drawings (blueprints)
- Specifications
- Engineered drawings
- Building codes
- AWCC manual
- Other (e.g. manufacturers' information)

8. Describe applicable quality assurance standards

- Building Codes
- Underwriters Laboratories of Canada (ULC)
- Canadian Standard Association (CSA) codes
- AWCC Wall & Ceiling Specifications Standards Manual

9. Apply codes, standards and regulations

- As per job requirement
- Use standards to determine
 - Size of component parts
 - Spans of component parts
 - Installation recommendations



Line (GAC): C APPLY CODES, STANDARDS AND DOCUMENTATION
Competency: C2 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

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Describe fire resistance ratings
 2. Describe fire rated wall assemblies
 3. Describe fire rated ceiling assemblies
 4. Apply fire assemblies | <ul style="list-style-type: none"> • 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
 • Zero rated assemblies • Time rated assemblies
 • Time rated assemblies
 • Types of systems • Relate system to wall type • Reference to a design number • According to the task |
|--|--|



Line (GAC): **G USE MATHEMATICS**

Competency: **G1 Use Mathematics**

Objectives

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

- Solve problems involving area and perimeter.
- Solve problems using geometry.

LEARNING TASKS

1. Calculate area 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
- Protractor
- Carpenter square
- Bisecting angles
- Square off wall – long distance
- Square off wall – short distance
- Establish radius point
- Framing arches
- Establish diameter of circle
- Layout circle around a triangle
- Layout elliptical arch
- Layout curved wall to connect with given points
- Layout segmented arch



Line (GAC): H USE BLUEPRINTS AND SPECIFICATIONS

Competency: H1 Use Blueprints and Specifications

Objectives

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

- Identify lines, symbols and abbreviations used in the Wall and Ceiling Installer trade.
- Read and Interpret blueprints to specifications.
- Interpret schedules related to work in the Wall and Ceiling Installer trade.

LEARNING TASKS

1. Identify and describe sections and elements of a set of blueprints

CONTENT

- Specifications
- Blueprint cover sheet
- Working drawings
 - Architectural
 - Structural
- Plot plan
- Floor plan
- Elevation drawing
- Cross sections
- Detail drawings
- Schedules
- Views
- Lines
- Symbols and abbreviations
- Scale
- Title block information

Achievement Criteria

Performance The individual will interpret a print and answer questions related to measurement, location and layout.

Conditions The individual will be given:

- A print
- Instructions
- Questions

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

- Accuracy of answers



Line (GAC): J INSTALL NON LOAD BEARING METAL FRAMING
Competency: J1 Build Walls, Ceilings and Bulkheads

Objectives

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

- Build walls, ceilings and bulkheads.

LEARNING TASKS

1. Describe substrate types and properties

2. Describe types of wall assemblies

3. Describe types of ceiling assemblies

4. Describe types of bulkheads

CONTENT

- Structural substrates
 - Concrete
 - CMU masonry
 - Brick
 - Steel
 - Wood
- Sheathing type substrates
- Relation to fastening systems
- Direct attachment wall furring
 - Furring channel (hat track)
 - Wood furring strips
 - Z-furring channel
 - Resilient channel
- Free standing wall furring
 - Metal track and studs
- Metal stud walls
 - Floor-to-ceiling – straight
 - Floor-to-ceiling – curved
 - Freestanding
- Shaft walls
- Chase walls
- Fire ratings
- Solid
- Semi-solid
- Suspended (independent)
- Dependent
- Metal stud
- Furred
- Structural (carrying weight)
- Decorative
- Drops



LEARNING TASKS

5. Describe layout tools
6. Demonstrate layout methods for walls, ceilings and bulkheads
7. Describe interior framing systems
8. Install wall and ceiling furring – direct attachment method
9. Use jigs and templates

CONTENT

- See Tools and Equipment for tool list
- Read blueprints/specification
- Establish grid lines
- Layout locations of walls
- Establish elevations
- Establish openings
- Mark location of stud
- Squaring
- Bisecting
- Dividing
- Establish radius points
- Interior partitions
- Ceiling suspensions systems
- Column and beam cladding protection
- Fire and sound resistance rated partitions and ceiling systems
- Interior wall cladding (freestanding or supported)
- Chase walls
- To specifications
- Install furring channel (hat track)
 - Vertical application
 - Horizontal application
- Framing/furring outside corners
- Framing/furring window openings
- Z-furring channel application
- Resilient wall furring channels
- Types of jigs
 - Multi-use
 - Single-use
- Types of templates such as manufactured or job built
- Material used for jigs and templates such as wood and plywood
- Drywall, steel studs and track
- Applications of jigs and templates such as building bulkheads
- Prefabricated wall panels



LEARNING TASKS

10. Frame and build walls

11. Demonstrate cutting, fitting and fastening methods for gypsum wallboard ceilings

12. Frame and build gypsum wallboard ceilings, drops and bulkheads

CONTENT

- Determining when to build and use jigs and templates
- Assemble and square jigs and templates
- Building repetitive internal frame structures using jigs and templates

- To specifications
- Floor-to-ceiling straight walls
- Floor-to-ceiling curved walls
- Freestanding walls
- Shaft walls
- Chase walls

- Wood, concrete and steel substrates
- Inserts
- Hangers
 - Q-Deck punch
 - Step punch
- Carriers
- Tying off

- To specifications
- Suspended ceiling (dependent)
 - Identify and select materials
 - Perform layout
 - Install inserts
 - Cut and install hangers
 - Secure, install and level carriers
 - Secure furring channel to carriers
 - Install gypsum wall board
- Metal-stud ceiling
 - Identify and select materials
 - Perform 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 individual will build a mock-up of a non load bearing wall and ceiling assembly, complete with window and door openings and all fastening methods.

Conditions The individual will be given:

- Materials
- Equipment
- Instructions
- Drawings

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

- Plumb, level, square
- Quality of ties
- Screw and tie patterns
- Appropriate tie
- Compliance with drawing



Line (GAC): J **INSTALL NON LOAD BEARING METAL FRAMING**
Competency: J2 **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 and wide metal strapping
- Wood and metal backing requirements and placement
- Metal strapping thickness
- Determining metal backing location
- Cutting and shaping backing
- Fastening wood and metal backing
- Tools and equipment
- Fasteners



Achievement Criteria

Performance The individual will install a pressed steel metal frame.

Conditions The individual will be given:

- Materials
- Equipment
- Instructions

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

- Plumb
- Level
- Square



Line (GAC): L INSTALL GYPSUM WALLBOARD, SHAFT WALLS AND SECURITY MESH

Competency: L1 Install Gypsum Wallboard

Objectives

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

- Install gypsum wallboard.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <p>1. Describe and demonstrate proper methods of stacking gypsum wallboard</p> | <ul style="list-style-type: none"> • Preparation of storage area • Secure area for delivery and distribution of load • Inspection of drywall upon delivery • Placement procedures • Correct amount of support under stacks • Organization of materials – sequence of use • General safety considerations and WorkSafeBC regulations • Ensure that proper load bearing is maintained • Schedule time to hoist drywall <ul style="list-style-type: none"> ○ Hoist ○ Crane |
| <p>2. Describe and demonstrate fitting methods</p> | <ul style="list-style-type: none"> • Using gyproc knife • Using key hole saw • Using wallboard saw • Using T-square • Using router • Locate and cut access holes • Off-angles • 90° angles (to accept various types of corner beads) |
| <p>3. Describe and identify fasteners used for gypsum board installation</p> | <ul style="list-style-type: none"> • Screws • Nails • Glue • Joint filler |



LEARNING TASKS

4. Demonstrate fastening methods for gypsum board installation

5. Describe different methods of installing gypsum wallboards

6. Select proper board for a given application

CONTENT

- Securing single-layer gypsum board to metal and wood supports
- Perimeter fasteners
 - Screw spacing: non-fire rated GWB
 - Screw spacing: fire-rated GWB
 - Single-nailing method
 - Double-nailing method
 - Screw penetration: metal to wood supports
 - Nail penetration into wood supports
 - Fastener head diameter
 - Fire-rated assemblies
 - Floating gypsum board at interior angles
 - Glue

- Advantages and disadvantages
 - Perpendicular method
 - Parallel method
- Installing gypsum board on ceilings
- Installation sequence
 - Perpendicular installation
 - Parallel installation
 - Textured ceilings
- Installing gypsum board on walls
 - Vertically
 - Horizontally
- Correct methods of installing gypsum board on walls and ceilings
 - Single layer
 - Double layer
 - Laminating (two or more layers)

- Specifications
 - Manufacturers' BC Wall and Ceiling
 - UL



LEARNING TASKS

7. Install gypsum wallboard

CONTENT

- Walls
- Ceilings
- Metal supports
- Wood supports
- Concrete
- To manufacturer's instructions
- Cut
- Bend
- Measure
- Use of hand and power tools
- Ensuring studs, doors and window frames are level and plumb during installation of sheets

Achievement Criteria

Performance The individual will install drywall.

Conditions The individual will be given:

- Materials
- Equipment
- Instructions

Criteria The individual 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



LEARNING TASKS

3. Build shaft wall framing and install shaft wall liner coreboard

4. Install shaft wall liner coreboard

CONTENT

- Layers
- Attachment procedures
- 12.6 mm (1/2-in.) Type “X” Firestop gypsum board
 - CSA standards
 - Fire rating
 - Layers
 - Attachment procedures
- Fire stopping materials

- As per specifications
- Check tolerances that must be adhered to
- Layout as per construction drawings
- Install track
- Install as a progressive system
- Erect, insert, and fasten 19 mm (3/4-in.) and or 25 mm (1-in.) Type “X” shaftliner panel into studs and tracks
- Refer to details regarding installation around door, ducts, other openings
- Maximum horizontal spans
- Firestop caulking/sealant
- Add appropriate layers of board as per requirements

- Types of shaft wall systems
- Installation procedures
- Caulking properties and procedures
- Anchoring and fastening
- Cut, level, and place J-tracks
- Frame shaft wall with studs
- Cut and install core board
- Cut and install finish layers of coreboard
- Select proper anchors and fasteners
- Tolerances
- Stacking
- To manufacturer’s recommended installation instructions



LEARNING TASKS

5. Install shaft wall firestop gypsum board facing

CONTENT

- As per specifications
- STC ratings
- 16 mm (5/8-in.) Type “X” and 12.6 mm (1/2-in.) Type “X” Firestop gypsum board facing layer(s)
- Fire rating examples – facing layer installations
 - 1 hour rating – finished one side
 - 2 hour rating – finished one side
 - 2 hour rating – finished both sides
 - 3 hour rating – finished one side
 - 3 hour rating – finished both sides
 - Accessory details with 2 hour rated assembly
- Recommended procedure for location of gypsum board joints
- Caulking properties and procedures

Achievement Criteria

- | | |
|-------------|---|
| Performance | The individual will install a mock-up of a shaft wall system with all components, to a maximum of 64 sq. ft. |
| Conditions | The individual will be given: <ul style="list-style-type: none"> • Materials • Equipment • Instructions |
| Criteria | The individual will score 70% or better on a rating sheet that reflects the following criteria: <ul style="list-style-type: none"> • As per manufacturer’s specifications • Tightness • Plumb, level, square |



Line (GAC): L INSTALL GYPSUM WALLBOARD, SHAFT WALLS AND SECURITY MESH

Competency: L3 Finish Drywall

Objectives

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

- Finish drywall.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>1. Describe drywall finishing level definitions</p> | <ul style="list-style-type: none"> • Reference AWCC specifications for levels of finish <ul style="list-style-type: none"> ○ Level 0 ○ Level 1 ○ Level 2 ○ Level 3 ○ Level 4 ○ Level 5 |
| <p>2. Use drywall finishing tools</p> | <ul style="list-style-type: none"> • Tin snips • Mixing drill and paddle • Utility knife all-purpose • Putty knife • Hawk and trowel • Mud pan • Flexible taping knives - 152 mm (6-in.) and 254 mm (10-in.) • Sandpaper • Pole sander • Hand sander • Sponge sander • Goggles and disposable mask |
| <p>3. Select drywall finishing materials</p> | <ul style="list-style-type: none"> • Gypsum board joint compound properties <ul style="list-style-type: none"> ○ Taping ○ Topping/finishing ○ All purpose ○ Quick setting materials • Joint tape • Corner beads • Perforated paper • Reinforcing tape |



Line (GAC): L INSTALL GYPSUM WALLBOARD, SHAFT WALLS AND SECURITY MESH

Competency: L4 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, materials and mesh size
- Applications for security mesh such as banks, secure storage rooms and prisons
- Intended use
- Penetration barrier
- High strength alloy steel
- As per specifications
- Cutting mesh
- Staggered joints
- Butting of joints
- Fastening of mesh



Line (GAC): M INSTALL DRYWALL BEADS AND MOULDINGS

Competency: M1 Install Drywall Beads and Trims

Objectives

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

- Install drywall beads and trims.

LEARNING TASKS

1. Describe corner beads

CONTENT

- Function
- Types of corner beads
 - Metal
 - Plastic
 - Paper
 - Aluminum
 - Stainless
 - Small nose
 - No-nose
 - Round nose
 - Radius beads
 - Advantages and disadvantages:
 - Metal beads
 - Paper beads
 - Plastic beads
 - Fastening to wood, metal, metal lath supports
 - High traffic areas
 - High and low moisture areas

2. Describe mouldings

- Function
- Types of moulding
 - J-bead
 - L-trim
 - F mould
 - J-round
 - Plaster
 - Cove
 - Step
 - Ornamental
 - Shadow mould
 - Paper face EPS



LEARNING TASKS

3. Apply fitting and fastening methods

4. Select correct type of drywall bead for intended use

CONTENT

- Tools
 - Aviation snips
 - Hacksaw
 - Mitre saw
 - Bead clincher
 - Mallet
 - Stapler
 - Putty knife
- Fitting methods
 - Curved openings
 - Straight runs
 - 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
- Available lengths
- Adjacent substrate abutment
- Metal corner beads
 - Outside corner bead
 - Veneer (mini) outside corner bead
 - Plastic nose, drywall arch bead
- Paper corner beads
 - Pro-bead tape-on corner bead
 - Offset corner beads – inside and outside corners
 - Roll-on flexible corner beads – inside and outside corners

**LEARNING TASKS****CONTENT**

- Plastic corner bead
 - Outside corner bead
 - Archway drywall corner bead
 - 3/4-in. radius, bull nose, archway corner bead
 - Magic corner
- Metal mouldings
 - Drywall channel trim
 - Drywall angle “L” trim
- Plastic moulding
 - Plastic L-bead
 - Tear-away L-bead
 - Pull-away premised L-bead
 - J-bead
 - Mud-on J-bead
 - Reveal bead
 - Shadow bead
- Paper mouldings
 - B4 tape-on L-trim



LEARNING TASKS

5. Install metal and plastic drywall beads

CONTENT

- Closet openings
- Straight runs
- Curves
- Reveals
- As moisture barrier
- Window openings
- Door openings
- Drywall finish trim
- Abutting brick, tile, or metal
- Metal
- Plastic
- Paper
- Aluminum
- Stainless
- Outside corners
- Inside corners
- Offset corners
- On curved openings
- In high-traffic areas
- In wet areas
- On difficult corners

Achievement Criteria

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



Line (GAC): **M INSTALL DRYWALL BEADS AND MOULDINGS**
Competency: **M2 Install Drywall Reveals and Expansion Joints**

Objectives

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

- Install drywall reveals and expansion joints.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <p>1. Describe types of expansion joints and reveals</p> | <ul style="list-style-type: none"> • Hideaway expansion joint <ul style="list-style-type: none"> ○ One-piece ○ V shaped ○ Vinyl centre • Two-piece expansion joint <ul style="list-style-type: none"> ○ Angle “L” trim ○ Paper, metal or plastic ○ Adjustable dimensions ○ Difficult to install • Shadowline tape-on reveal trim • Reveal abutting ceilings or wood finishes |
| <p>2. Install plastic and metal drywall reveals and expansion joints</p> | <ul style="list-style-type: none"> • One-piece types • Two-piece types • Reveal trim pieces • Refer to AWCC specifications |

Achievement Criteria

- 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



Line (GAC): **N** **INSTALL FIREPROOFING AND SOUNDPROOFING**
Competency: **N2** **Install Materials for Fireproofing and Smoke Seals**

Objectives

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

- Describe types and rating systems for fireproofing.
- Install materials for fireproofing assemblies.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <p>1. Describe terms relating to fireproofing</p> | <ul style="list-style-type: none"> • Fire stopping • Fireproofing • Fire rating • Flame spread rate |
| <p>2. Describe types of materials used for fireproofing</p> | <ul style="list-style-type: none"> • Spray-applied fireproofing <ul style="list-style-type: none"> ○ Cementitious products ○ Intumescent materials ○ Fibrous materials ○ Composites • Other products used for fireproofing <ul style="list-style-type: none"> ○ Gypsum wallboard ○ Plaster ○ Wonder board ○ Metal framing component parts ○ Fire caulking |
| <p>3. Describe fire rated caulking assemblies</p> | <ul style="list-style-type: none"> • Stationary joints • Deflection joints |
| <p>4. Describe fire-resistance and acoustic ratings for cold-formed steel framed floor assemblies</p> | <ul style="list-style-type: none"> • Refer to FIRE PROTECTION, Canadian Steel Construction Council—bulletin No. 27 • When fire and acoustic ratings are required • Fire ratings <ul style="list-style-type: none"> ○ Outline of tests ○ Description of steel joist assemblies ○ Testing procedures ○ Results • Acoustic ratings <ul style="list-style-type: none"> ○ Outline of tests ○ Results • Practical application of results |



LEARNING TASKS

5. Use cutting tools

6. Use fitting methods

7. Use fastening methods

8. Use caulking and sealing equipment

9. Describe types of fire protection

CONTENT

- Drywall knife
- Aviation (steel) snips
- Carbide tip carpet knife

- To manufacturer's instructions
- Resilient channel
- Gypsum wallboard
- Ceilings
- Walls
- Ceiling blanket
- Sheet lead

- Nails
- Screws
- Taping compound
- Mechanical fasteners
- Tie on methods
- To manufacturer's instructions

- Material selection
- Caulking gun
- Apply at partition perimeter and all openings such as pipes, electrical outlets, ductwork etc.
- Airtight seals
- Fire taping
- Adhesive fire tape

- Passive fire protection
- Active fire protection
- Gypsum board fireproofing
- Spray on fireproofing



LEARNING TASKS

10. Install fireproofing materials

CONTENT

- Areas requiring fireproofing
- Codes and standards
- Specifications
- Installation of gypsum board assemblies
 - Fire ratings
- Spray on fireproofing
 - Specifications and details
 - Operator skill and experience
 - Product handling and storage
 - Mesh reinforcement
 - Weather factors
 - Job conditions
 - Preparation
 - Examination prior to application
 - Application
 - Patching
 - Cleaning and protection
 - Quality control
 - Performance
 - Primed/painted substrates

**LEARNING TASKS**

5. Use shielding techniques

6. Install lead radiation shielding

CONTENT

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

- Minimum 20 gauge steel stud framing
- Safety precautions
 - Long sleeves
 - Gloves
 - Disposable suits
 - Breathing apparatus
 - As per job requirements.



Module C

Wall and Ceiling Installer



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

Competency: C3 Apply Structural and Seismic Codes and Regulations

Objectives

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

- Apply appropriate seismic and structural codes, standards and regulations as they pertain to the Wall and Ceiling Installer trade.

LEARNING TASKS

CONTENT

1. Find relevant seismic requirements

- Drawings
- Specifications
- Engineered drawings
- Building codes
- AWCC manual
- ASTM regulations
- Other (e.g. manufacturers' information)

2. Find structural requirements

- Drawings (blueprints)
- Specifications
- Engineered drawings
- Building codes
- AWCC manual
- Other (e.g. manufacturers' information)



Line (GAC): H USE BLUEPRINTS AND SPECIFICATIONS

Competency: H1 Use Blueprints and Specifications

Objectives

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

- Identify lines, symbols and abbreviations used in the Wall and Ceiling Installer trade.
- Read and interpret blueprints to specifications.
- Interpret schedules related to work in the Wall and Ceiling industry.

LEARNING TASKS

CONTENT

<p>1. Identify and describe sections and elements of a set of blueprints</p>	<ul style="list-style-type: none"> • Specifications and contracts • Blueprint cover sheet • Engineered/shop drawings <ul style="list-style-type: none"> ○ Seismic ○ Wind loads ○ Axial loads • Working drawings <ul style="list-style-type: none"> ○ Architectural ○ Structural ○ Mechanical ○ Electrical • Plot plan • Floor plan • Elevation drawing • Cross sections • Detail drawings • Schedules • Views • Lines • Symbols and abbreviations • Scale • Title block information
<p>2. Describe schedules used in the construction industry</p>	<ul style="list-style-type: none"> • Wall • Door/frame • Window • Room finish
<p>3. Interpret schedules related to work in the Wall and Ceiling Installer trade</p>	<ul style="list-style-type: none"> • Wall • Door/frame • Window



Line (GAC): H USE BLUEPRINTS AND SPECIFICATIONS

Competency: H2 Draw Floor and Ceiling Plans

Objectives

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

- Use drafting materials and tools.
- Draw floor and ceiling plans.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>1. Describe and demonstrate the use of drafting tools</p> | <ul style="list-style-type: none"> • Drafting board and table • T-square • Triangles • Scales • Pencils • Erasers • Templates • Compasses |
| <p>2. Describe and demonstrate the use of drafting materials</p> | <ul style="list-style-type: none"> • Dusting cloth or brush • Drawing paper • Tracing paper • Paper rolls • Drafting or masking tape |
| <p>3. Draw simple floor and ceiling plans to scale mockup</p> | <ul style="list-style-type: none"> • Establish and layout gridlines • Select drafting equipment tools and materials • Use imperial measurements • Use metric measurements • Complete drawings to scale <ul style="list-style-type: none"> ○ Plan or floor view ○ Details ○ Sections ○ Elevations |

**Achievement Criteria**

Performance The learner will draw a print complete with details, sections, elevations and reflected ceiling plans.

Conditions The learner will be given:

- Instructions
- Drawing materials

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

- Accuracy
- To scale
- Legibility
- Correct information
- All necessary information as required



Line (GAC): **K INSTALL LOAD BEARING METAL FRAMING**
Competency: **K1 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.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>1. Describe load bearing metal framing construction</p> | <ul style="list-style-type: none"> • Benefits derived from using light-gauge steel framed buildings • Interior/exterior • Prefabricated • Assembled on job site • Key definitions and terms • Common framing members <ul style="list-style-type: none"> ○ “C” shape and track ○ Flat straps ○ Angles • Thickness/strength <ul style="list-style-type: none"> ○ Gauge (mm) and flange size • Deflection material • Connections/fasteners • Bridging and bracing • Parapet walls • Strong ties |
| <p>2. Describe types of load bearing walls</p> | <ul style="list-style-type: none"> • Interior walls • Exterior walls • Curtain walls • Axial load bearing |
| <p>3. Describe steel stud floor, roof and ceiling assemblies</p> | <ul style="list-style-type: none"> • Roof rafter (common, hip, and valley) • Ceiling joists • Floor joists • Manufactured trusses |

**LEARNING TASKS**

4. Use layout tools for load bearing walls

5. Describe layout methods for load bearing metal framing

6. Apply layout procedures for load bearing metal framing

7. Use cutting tools

CONTENT

- Carpenters square
- 25' and 100' tape
- Water level
- Laser beam
- Spirit level
- Chalk line
- Dry line
- Plumb bob

- Squaring and plumbing
- Bisecting
- Dividing
- Establishing elevations
- Establishing grid lines
- Establishing openings
- Establishing radius points

- Floor joists
- Interior walls
- Exterior walls
- Window openings
- Door openings
- Wall partitions
- Ceiling joists
- Rafters
- Trusses

- Aviation snips
- Electric shear
- Chop saw
- Nibblers
- Step drill bit, 25.4 mm (1-in.)
- Hole punch, 32 mm (1 1/4-in.)
- Mini grinder



LEARNING TASKS

- 17. Attach finish materials

- 18. Coordinate installation of utilities

CONTENT

- Temporary bracing
- Attaching load bearing walls to the foundation of a floor deck
- Shear bracing

- Secure interior 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



Line (GAC): **K INSTALL NON LOAD BEARING METAL FRAMING**
Competency: **K2 Prefabricate and Install Walls and Panels**

Objectives

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

- Prefabricate and install walls and panels.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Describe types of prefabricated wall and ceiling systems
 2. Describe methods of prefabricating walls and panels
 3. Prefabricate walls
 4. Prefabricate panels
 5. Install prefabricated walls and panels | <ul style="list-style-type: none"> • Wall assemblies • Roof trusses • Floor assemblies • Pre-cut rafters • Panelized systems
 • Built on the job site or employer shop <ul style="list-style-type: none"> ○ To specifications ○ Built in jigs ○ High production ○ Accurate and cost effective • Factory manufactured sections • Proprietary systems • Transported to site
 • Exterior • Use shop drawings
 • Exterior and in-fill panels • Use shop drawings • Finishes • Building substrate
 • 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



LEARNING TASKS

CONTENT

- Collar beams (ties)
- Calculating, layout, and building ceiling joists
- Installing rafter bridging



Line (GAC): O INSTALL ACOUSTICAL CEILINGS

Competency: O1 Layout and Install Acoustical Ceilings

Objectives

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

- Apply layout methods.
- Build acoustical ceilings.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Define acoustical terminology 2. Describe types of acoustical ceilings 3. Describe the component parts of acoustical ceiling systems and their functions 4. Describe advantages and disadvantages | <ul style="list-style-type: none"> • Glossary of acoustical terms • Direct attachment system (adhesive, stapled) • T-bar systems <ul style="list-style-type: none"> ○ Exposed grid ○ Semi-exposed grid ○ Concealed grid • Knowledge of seismic restraint • Inserts • Hanger wire • Splayed bracing wire • Vertical struts • Lateral support (for partitions) • Perimeter wall moulding • Main tees • Cross tees • Ceiling panels • Adhesive (direct attachment system) <ul style="list-style-type: none"> ○ Pre-preparation of substrate • Knowledge of types of grid systems <ul style="list-style-type: none"> ○ Concealed ○ Fine grid ○ Basket weave • Specialty components • Acoustical value • Appearance • Strength • Weight • Fire rating • Accessibility |
|---|--|



LEARNING TASKS

CONTENT

- | | | |
|----|--|---|
| 5. | Describe and demonstrate cutting tools | <ul style="list-style-type: none"> • Repair • Sound reduction coefficient (NRC) • Sound transmission coefficient (STC) |
| 6. | Describe and demonstrate fitting and fastening tools | <ul style="list-style-type: none"> • Aviation snips • Keyhole saw • Utility knife • Whitney punch • Hacksaw • Grid punch |
| 7. | Use cutting, fitting and fastening methods | <ul style="list-style-type: none"> • Wedge lock clip • Pop riveter • Framing screws • Drywall screws • Staples • Concrete nails • 18-gauge tie wire • 12-gauge wire • Q-Deck punch • Step punch |
| 8. | Use layout tools | <ul style="list-style-type: none"> • T-Bar • Ceiling tile/panels |
| 9. | Apply layout methods | <ul style="list-style-type: none"> • 25' and 100' tape • Carpenter square • Combination square • Water level • Spirit level • Chalk line • Dry line • Laser level • Line clamps • Wedge lock clip (line clip) |
| | | <ul style="list-style-type: none"> • Determine ceiling height • Determine grid layout <ul style="list-style-type: none"> ○ Reflected ceiling plan ○ Location of lights and other openings ○ Positioning of panels |



LEARNING TASKS

10. Build acoustical ceilings

CONTENT

- Perimeter cuts
- Location of movable partition
- Perform grid layout math calculations
 - Inside cuts and outside cuts
- Number of ceiling panels
- Use laser level
- Use dry lines
- Ability to locate expansion and control joints

- To manufacturer's instructions
- T-bar ceiling installation guide:
 - Scaffold setup
 - Determining ceiling height
 - Determining grid layout
 - Installing inserts and hangers
 - Laser beam set up
 - Installing perimeter wall moulding
 - Installing dry lines
 - Installing main tees
 - Installing cross tees
 - Levelling ceiling
 - Installing panels
 - Final inspection

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): **O** **INSTALL ACOUSTICAL CEILINGS**
Competency: **O2** **Build Feature Ceilings**

Objectives

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

- Build specialty ceilings.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>1. Describe types of specialty ceilings</p> | <ul style="list-style-type: none"> • T-bar • Paraline • Metal pan • Luminous • Wood |
| <p>2. Describe the component parts of feature ceilings and their functions</p> | <ul style="list-style-type: none"> • Materials • Finishes • Sizes • Inserts • Hanger wire • Splayed bracing wire • Vertical struts • Lateral support (for partitions) • Perimeter wall moulding • Main tees • Cross tees • Proprietary system specialized components • Proprietary feature ceiling panels • Mounting clips |



Line (GAC): Q USE ESTIMATING AND PROJECT PLANNING SKILLS
Competency: Q1 Use Estimating Methods

Objectives

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

- Estimate material quantities required for various jobs.
- Estimate labour quantities required for various jobs.
- Describe how to estimate time and labour costs from construction information.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <p>1. Perform estimating methods</p> | <ul style="list-style-type: none"> • Use formulas • Use colour coding • Use notes given with drawing • Identify drawing component parts • Use the “piece by piece” estimating method • Organization • Understanding of completed job • Measurement source • From prints • From site |
| <p>2. Estimate material quantities</p> | <ul style="list-style-type: none"> • Using the “piece by piece” method • Using estimating guidelines • Using information taken from blueprints • Information from specifications • Using information taken from job site • Using calculations, formulas and computers • Use material take off sheets |
| <p>3. Estimate labour quantity</p> | <ul style="list-style-type: none"> • Historical production rates • Estimate time to complete specific tasks • Plan timeline • Special conditions |
| <p>4. Describe how to calculate time and labour costs as per industry practices</p> | <ul style="list-style-type: none"> • Blueprints • Industry standards for labour production • Procurement procedures |



Achievement Criteria:

- Performance The individual will perform a take-off from a set of prints.
- Conditions The individual will be given:
- Formula Instruction
 - Prints
 - Calculator
- Criteria The individual will score 70% or better on a rating sheet that reflects the following criteria:
- Accuracy of material quantity estimation within 10 percent
 - Accuracy of labour quantity



Module D

Wall and Ceiling Installer



LEARNING TASKS

3. Apply mould remediation methods
4. Prevent mould

CONTENT

- As per job requirements
- 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



Line (GAC): N INSTALL FIREPROOFING AND SOUNDPROOFING

Competency: N1 Install Materials for Soundproofing Assemblies

Objectives

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

- Describe types and rating systems for soundproofing.
- Install materials for soundproofing assemblies.

LEARNING TASKS

CONTENT

<p>1. Describe sound control factors in the construction of buildings</p>	<ul style="list-style-type: none"> • Mass • Isolation • Damping • Leaks • Flanking paths • STC ratings • Measurement of sound
<p>2. Describe types of materials used for soundproofing</p>	<ul style="list-style-type: none"> • Acoustical tile and panels • Baffles • Gypsum board • Resilient (floating) channel (sound bar) • Sheet lead • Acoustical sealant • Sound attenuation blankets • Sound deadening board
<p>3. Describe soundproofing of walls and partitions</p>	<ul style="list-style-type: none"> • Wall panel mounting methods • Controlling air leakage • Controlling wall vibration • Reducing structure borne sound through wall • Wall assemblies
<p>4. Describe acoustical ceiling products, panels and systems</p>	<ul style="list-style-type: none"> • Acoustical ceiling products • Ceiling suspension systems • Other specialty systems • Standards and approvals • Proprietary ceiling panel systems • Finishes
<p>5. Describe and demonstrate the use of cutting tools</p>	<ul style="list-style-type: none"> • Drywall knife • Aviation (steel) snips



LEARNING TASKS

6. Describe and demonstrate fitting methods

7. Use fastening methods

8. Use caulking equipment

9. Describe sound control theory and applications

10. Select materials used for soundproofing walls and ceilings

CONTENT

- Carbide tip carpet knife

- To manufacturer's instructions
- Resilient channel
- Gypsum wallboard
- Ceilings
- Walls
- Ceiling blanket
- Sheet lead

- Nails
- Screws
- Taping
- Glue
- Double-sided tape
- Mechanical fasteners
- Tie on methods
- To manufacturer's instructions

- Material selection
- Caulking gun
- Apply at partition perimeter and all openings such as pipes, electrical outlets, ductwork, etc.
- Airtight seals

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

- Resilient channel
- Gypsum wallboard
- Acoustical wall and ceiling tiles and panels
- Acoustical baffles
- Wall assemblies
- Acoustical sealant/caulking



LEARNING TASKS

11. Install materials for soundproofing assemblies

CONTENT

- Sound deadening board
- Sound insulation blankets
- Lead sheet

- As per specifications
- Resilient channel
- Gypsum wallboard
- Acoustical wall and ceiling tiles and panels
- Acoustical baffles
- Wall assemblies
- Acoustical sealant/caulking
- Sound deadening board
- Sound insulation blankets
- Double stud wall



Line (GAC): P APPLY LATH, WIRE, AND TRIMS TO WALLS AND CEILINGS

Competency: P1 Install Metal Lath on Walls and Ceilings

Objectives

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

- Install metal lath on walls and ceilings.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>1. Describe types and functions of metal lath</p> | <ul style="list-style-type: none"> • Interior and exterior types <ul style="list-style-type: none"> ○ Painted ○ Galvanized • Diamond mesh <ul style="list-style-type: none"> ○ Flat diamond mesh ○ V-grooved (self-furring) ○ Ribbed ○ Weights and measures • Paper-backed welded-wire lath (K-lath) <ul style="list-style-type: none"> ○ Grade “B” waterproof lamination ○ Grade “D” black “Breather” lamination ○ Gauge stiffener wire addition ○ Fire-rated lamination • Stucco wire |
| <p>2. Describe tie wire</p> | <ul style="list-style-type: none"> • 18 –gauge galvanized wire • Pre-cut and packaged • 42-in. lengths • Terminology: “hanks” |
| <p>3. Describe other materials used with lath and wire systems</p> | <ul style="list-style-type: none"> • Sheathing paper • Reinforced Portland stucco cement • Carrying channel (1 1/2-in.) • Furring channel (3/4-in.) • Expansion joints • Stucco/plaster stop • Perforated stucco/plaster stop • Bug screen • Flashings |
| <p>4. Use cutting and specialty tools</p> | <ul style="list-style-type: none"> • Aviation snips • Metal shears • Nippers |



LEARNING TASKS

5. Use fitting methods of lath and wire

6. Use fastening methods

7. Select metal lath and wire system components

8. Install diamond mesh lath

CONTENT

- Channel locks
- Hack saw
- Magnetic punch
- Sheet metal snips
- Hammer stapler
- Hanger benders
 - Carrying channel bender
 - Hanger 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

- Ties and anchors
- Tie wire
- Screws
- Nails
- Pins
- Staples
- Dab of plaster

- Metal lath types
- Anchors and ties
- Other related materials

- On walls
- On ceilings
- Bulkheads
- Soffits
- Curves/domes
- Furring strips
- Self-furring strips
- Self-furring nails
- Fixing to wood supports
- Fixing to steel channel supports
- Fixing to furring channel supports (hat track)



Line (GAC): R APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES

Competency: R1 Install Air and Water Barriers

Objectives

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

- Describe building envelope technology principles and theory.
- Install air and water barriers.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <p>1. Describe specialty tools for building envelope systems</p> | <ul style="list-style-type: none"> • Types <ul style="list-style-type: none"> ○ Table saw ○ Long tooth nibblers ○ Cement board cutters ○ Nail guns ○ Hot knife ○ Rasp ○ Caulking gun ○ Hammer tacker ○ Stapler ○ Heat gun/tiger torch ○ Paint brush/roller • See safety equipment |
| <p>2. Describe face-sealed cladding systems</p> | <ul style="list-style-type: none"> • Exterior insulation and finish systems (EIFS) • Stucco • Siding/cladding • Stucco failures |
| <p>3. Describe rainscreen cladding systems</p> | <ul style="list-style-type: none"> • Drainage mat • Air cavity (strapped) • Grooved EIFS • Manufacturers' proprietary systems • Cut, shape and install flashings |
| <p>4. Identify building envelope substrates</p> | <ul style="list-style-type: none"> • Gypsum sheathing • Concrete/block • Various types of wood (e.g. pressure treated) • Cement board |
| <p>5. Describe thermal bridging</p> | <ul style="list-style-type: none"> • Steel framing • Heat transfer |



LEARNING TASKS

6. Describe air and vapour barriers used for building envelope

7. Describe other materials used for building envelope

8. Describe materials used for air and vapour barriers

CONTENT

- Foam insulation

- Air barriers
 - Polyethylene
 - Gypsum board
 - Plywood
 - Hardi board
 - Building wrap
 - Rigid insulation
 - Concrete
 - Plywood/OSB
 - Sheet metal
 - Various membranes
 - Foams
- Vapour barriers
- Air/vapour barriers
- Rigid insulation

- Membranes
 - Peel and stick
 - Paint-on
 - Nailed/stapled (building paper, wraps, etc.)
- Sealants
- Flashings
- Furring
- Metal lath

- Location
- Materials
 - MP Flex (trowel-on)
 - Cementitious board
 - Polyethylene
 - Gypsum board
 - Plywood
 - Building wrap
 - Rigid insulation and urethane foam
 - Concrete
 - OSB
 - Sheet metal
 - Peel and stick-on membranes
 - Liquid applied membranes on structural



LEARNING TASKS

9. Describe air barrier systems found in construction
10. Install building papers
11. Install membranes
12. Describe the natural forces acting on buildings

CONTENT

- substrates
 - Aluminum foil
 - Building wrap
 - Polyethylene fills
 - Rubberized non-permeable membrane
- Requirements
- Advantages/disadvantages
 - Polyethylene air/vapour system
 - Airtight Gypsum Board air barrier
 - Building Wrap air barrier
 - Exterior Air Barrier Approach (EABA)
- Building papers and wraps
- Trowel on, paint on, spray on
- Self-adhering
- Layout
- Attaching membranes
- Cutting and measuring
- Attachment methods (as per manufacturer's specifications)
- Moisture
 - Outdoor moisture
 - Construction moisture
 - Occupancy generated moisture
- Wind
 - Pressure differential caused by wind
- Thermal bridging
- Sunlight
- Heat transfer
- Ground water
- Earth's water cycle
- Humidity/condensation
 - Relative humidity
 - Condensation
 - Dew point temperatures
 - Water droplet condensation
- Moisture movement
- Water movement by capillary action
- Water movement by gravity



LEARNING TASKS

13. Describe building envelope problems
14. Describe building envelope technology principles and theory
15. Describe materials used for air and vapour barriers
16. Describe air barrier systems found in construction
17. Install building papers

CONTENT

- Air movement (air infiltration/exfiltration)
- Heat transfer
- Living organisms
- Fluctuating temperatures
- Direct impact and run-off
 - Older buildings 1900-1960
 - Buildings 1960-1990's
- Current building envelope practices
- Heat and sound transfer principles
- Air and moisture movement in a building
 - Positive/negative pressures on and in buildings (wind)
- Methods for controlling the forces acting on a building
- Methods of controlling heat and sound transmission
- Methods of controlling air and moisture flow
- Location
 - Materials
 - Polyethylene
 - Gypsum board
 - Plywood
 - Building wrap
 - Rigid insulation and urethane foam
 - Concrete
 - OSB
 - Sheet metal
 - Peel and stick-on membranes
 - Liquid applied membranes on structural substrates
- Requirements
- Advantages/disadvantages
 - Polyethylene air/vapour system
 - Airtight Gypsum Board air barrier
 - Building Wrap air barrier
 - Exterior Air Barrier Approach (EABA)
- Building papers and wraps



LEARNING TASKS

18. Install membranes

CONTENT

- Trowel on, paint on, spray on
- Self-adhering



Line (GAC): R APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES

Competency: R2 Install Rainscreen Systems

Objectives

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

- Install rainscreen systems.

LEARNING TASKS

1. Describe rainwater exposure to walls

2. Describe rainscreen technology

CONTENT

- Direct impact
- Run-off
- Backsplash

- 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 D's
 - Deflection
 - Drainage
 - Drying
 - Durability



Line (GAC): R **APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES**
Competency: R3 **Install Exterior Finishes**

Objectives

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

- Install exterior finishes.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>1. Describe siding types</p> | <ul style="list-style-type: none"> • Cementitious • Metal siding • Vinyl siding • Hardi board® • Specialty products (e.g. composite material) |
| <p>2. Describe exterior siding/cladding installation practices</p> | <ul style="list-style-type: none"> • Estimating amount of siding and accessories • Cutting and fastening • Corner installation • Sealants • Flashing use • Other trim installation |
| <p>3. Install flashing and wall sheathing membrane</p> | <ul style="list-style-type: none"> • Installation procedures • Flashing types • End dams |
| <p>4. Install cementitious siding</p> | <ul style="list-style-type: none"> • Handling and storage • Health and safety • MSDS • Outdoor cutting procedures • Indoor cutting procedures • Framing requirements • Grade clearance • Roof clearance • Concrete/concrete block construction • Nailing and fasteners |



Line (GAC): **R** **APPLY EXTERIOR BUILDING ENVELOPE TECHNOLOGIES**
Competency: **R4** **Build Exterior Insulated Walls, Rainscreen Walls and Curtain Walls**

Objectives

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

- Build exterior insulated walls.
- Build rainscreen walls.
- Build curtain walls.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <p>1. Describe stud load data</p> | <ul style="list-style-type: none"> • Height • Depth • Spacing • Bending and shear stresses • Deflection • Web crippling |
| <p>2. Describe stud load data bracing</p> | <ul style="list-style-type: none"> • Lateral • Diagonal |
| <p>3. Build walls</p> | <ul style="list-style-type: none"> • Check tolerances that must be adhered to • Exterior walls • Interior walls • Types of membranes <ul style="list-style-type: none"> ○ Polyethylene films ○ Rubberized non-permeable membrane ○ Aluminum foil ○ Building wrap |
| <p>4. Install walls</p> | <ul style="list-style-type: none"> • Check structural framing of building • Check how connections are to be made • Build to manufacturer’s recommendations or approved shop drawings |



Line (GAC): S BUILD ACCESS FLOOR SYSTEMS

Competency: S1 Build Access Floors Systems

Objectives

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

- Build access floors.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <p>1. Describe the types of access floor system applications</p> | <ul style="list-style-type: none"> • General office • Computer rooms • High – technology • Clean room • Snap lock • Rigid grid • Free standing |
| <p>2. Describe the main components of access floor systems</p> | <ul style="list-style-type: none"> • Proprietary systems <ul style="list-style-type: none"> ○ Steel ○ Wood composite • Modular floor panels <ul style="list-style-type: none"> ○ Grid system • Pedestals • Grid and gridless • Stringers • Adhesive • Anchors • Supporting hardware • Firestop requirements |
| <p>3. Use layout tools</p> | <ul style="list-style-type: none"> • Measuring tape • Chalk line • Laser level • Levelling bar • Spirit level • Suction cups |
| <p>4. Use layout methods</p> | <ul style="list-style-type: none"> • Establish elevations • Determine floor height • Check room dimensions • Use laser level to determine variations of level of sub-floor and terminations |



LEARNING TASKS

5. Describe cutting tools
6. Describe fastening methods
7. Use cutting, fitting and fastening methods
8. Build access floors

CONTENT

- Chalk line system
 - To ensure room is square
 - Used as control lines
- Pedestal shot points
- Bisecting
- Dividing
- Band saw – hand held
- Hole saw
- Reciprocating saw
- Bi-metal saw blades
- Adhesives
- Mechanical fasteners
- Pedestals
- Stringers
- Panels
 - Perimeter cuts
 - Rectangular inside cut-outs
- Round cuts
- 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

3. Select specialty tools

4. Apply layout methods

5. Use cutting tools

6. Describe fastening methods

CONTENT

- Rubber gasket
- Plumb bob
- Carpenter square
- Laser
- Spirit level
- Chalk line
- Combination square
- Rasp
- Board lifter
- Metal file
- Plunge router
- Rubber mallet
- Magnetic clip holder
- String line
- Suction cups
- Crimper
- Squaring
- Bisecting
- Dividing
- Establish elevations
- Establish grid lines
- Establish openings
- Establish radius points
- Partition layout
 - Base track
 - Ceiling runner
 - Tree studs
 - Door frames
 - Window frames
 - Wall panels
- Steel snips
- Mitre saw
- Knife
- Keyhole saw
- Framing screws
- Drywall screws
- Clips



LEARNING TASKS

CONTENT

7. Use fastening methods

- Velcro hook tape
- Double-sided tape
- Brackets

8. Build demountable partitions

- Ceiling runner
- Base track
- Tree studs
- Door frames
- Wall panels

- To manufacturer's instructions
- Perform layout
- Inspect components for defects
- Install
 - Ceiling runner
 - Base track
 - Tree studs
 - V-locks where applicable
 - GWB
 - Corner pieces
 - Door and window framing
 - Glazing
 - Battens
 - Trim
 - Base

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



Section 4

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
- Access to computers
- 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

Lab Requirements

- N/A

Student Facilities

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

Instructor's Office Space

- Desk and filing space
- Computer

Other

- N/A



Tools and Equipment

Shop Equipment

Required Power Tools

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

Required Scaffolding and Access Equipment

- Aluminum bench
- Aluminum planks
- Boom lifts
- Extendable boom lift
- Portable scaffolds
- Ladders
- Rolling scaffolds
- Scissor-lift
- Stationary scaffolds
- Stilts
- Swing stage

Required Material Handling and Site Maintenance Equipment

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



Required Layout and Measuring Devices

- Architect scale
- Calculator
- Centre punch
- Chalk line
- Compass
- Dry line
- Framing square
- Laser alignment equipment
- Laser level
- T-bevel
- Laser measure tool
- Magnetic hand level
- Moisture meter
- Pencils and markers
- Plumb bob
- Scratch awl
- Spirit level
- Straight edge
- Tape measure (25 ft. and 100 ft.)
- Water level

Required Personal Protective Equipment

- Coveralls
- Ear plugs and muffs
- Evacuation horn
- Eye wash facilities
- Face shields
- Fall arrest and restraint equipment
- Fire extinguishers
- First aid equipment
- Gloves
- Goggles
- Hard hat
- Knee pads
- Masks (particle, vapour)
- Respirators and cartridges
- Safety glasses
- Safety vest
- Steel toe boots
- Warning signs
- Warning tapes

Shop (Facility) Tools

Standard Tools

- Adjustable wrenches
- Aviation snips
- Bead clincher
- Bolt cutter
- Caulking gun
- Channel cutters
- Circle cutters
- Cold chisel
- Deck punch
- Dry line/t-bar clips
- Drywall lifter
- Drywall saw
- Eye screw pole
- Files
- Hack saw
- Hammers
- Hand sander
- Hole punch
- Keyhole saw
- Lather's hatchet
- Locking c-clamp
- Magnetic punch
- Multi-tip screwdriver
- Nippers
- Pliers
- Pop rivet gun



- Putty knife
- Rasps
- Rubber mallet
- Screw puller
- Sharpening stone
- Square (t, combination, tri (speed square))
- Stapler/hammer tacker
- Stud crimpers
- T-bar grid punch
- Utility knives
- Wrecking bar



Reference Materials

Required Reference Materials

- ITA Wall and Ceiling – Lather Modules A to D

Recommended Resources

N/A

Suggested Texts

N/A

NOTE:

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



Instructor Requirements

Occupation Qualification

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 journey person.

Instructional Experience and Education

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

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



Appendices



Appendix A

Assessment Guidelines



Grading Sheet: Subject Competency and Weightings

PROGRAM:	LATHER (INTERIOR SYSTEMS MECHANIC) (WALL AND CEILING INSTALLER)		
IN-SCHOOL TRAINING:	MODULE A		
ITA DIRECT ACCESS CODE:	0188WCMACE		
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
A	Apply Trade Related Communication Skills	7%	0%
B	Apply Safe Work Practices	17%	0%
C	Apply Codes, Standards and Documentation	12%	0%
D	Prevent and Correct Mould	10%	0%
E	Use Ladders, Scaffolds and Lift Equipment	9%	21%
F	Use Tools and Equipment	14%	5%
G	Use Mathematics	16%	0%
H	Use Blueprints and Specifications	11%	53%
Q	Use Estimating and Project Planning Skills	4%	21%
	Total	100%	100%
In-school theory / practical subject competency weighting		75%	25%
Final in-school percentage score		IN-SCHOOL %	

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



PROGRAM:		LATHER (INTERIOR SYSTEMS MECHANIC) (WALL AND CEILING INSTALLER)	
IN-SCHOOL TRAINING:		MODULE B	
ITA DIRECT ACCESS CODE:		0188WCMBCE	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
I	Install Insulation	10%	0%
J	Install Non Load-Bearing Metal Framing	36%	59%
L	Install Gypsum Wallboard, Shaft Walls and Security Mesh	24%	29%
M	Install Drywall Beads and Moulding	10%	12%
N	Install Fireproofing and Soundproofing	20%	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%
Standard Level Exam Percentage Score The exam score is multiplied by	20%
Final Percentage Score	FINAL%



PROGRAM:		LATHER (INTERIOR SYSTEMS MECHANIC) (WALL AND CEILING INSTALLER)	
IN-SCHOOL TRAINING:		MODULE C	
ITA DIRECT ACCESS CODE:		0188WCMCCE	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
K	Install Load-Bearing and Metal Framing	40%	60%
O	Install Acoustical Ceilings	35%	19%
S	Install Access Floor Systems	10%	4%
T	Install Demountable Partitions	15%	17%
	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%
Standard Level Exam Percentage Score The exam score is multiplied by	20%
Final Percentage Score	FINAL%



PROGRAM:		LATHER (INTERIOR SYSTEMS MECHANIC) (WALL AND CEILING INSTALLER)	
IN-SCHOOL TRAINING:		MODULE D / FINAL LEVEL	
ITA DIRECT ACCESS CODE:		0188WCMDCE	
LINE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
P	Apply Lath, Wire, and Trims to Walls and Ceilings	33%	100%
R	Apply Exterior Building Envelop Technologies	67%	0%
	Total	100%	100%
In-school theory / practical subject competency weighting		50%	50%
Final in-school percentage score		IN-SCHOOL %	

In-school Percentage Score Combined theory and practical subject competency multiplied by	85%
Standard Level Exam Percentage Score The exam score is multiplied by	15%
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 or ITA CofQ exam.	IN-SCHOOL %

In order to receive the Interprovincial Red Seal Endorsement, all apprentices who complete Level 4 of the Lather (Interior Systems Mechanic) (Wall and Ceiling Installer) program with a FINAL level percentage score of 70% or greater will write the Interprovincial Red Seal examination.

ITA will enter the apprentices' Lather (Interior Systems Mechanic) (Wall and Ceiling Installer) Red Seal Interprovincial examination percentage score in ITA Direct Access. A minimum percentage score of 70% on the examination is required for a pass.