

# RED SEAL OCCUPATIONAL STANDARD

## Lather

### (Interior Systems Mechanic)



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**RED SEAL**  
**OCCUPATIONAL**  
**STANDARD**  
**LATHER**  
**(INTERIOR SYSTEMS MECHANIC)**



Title: Lather (Interior Systems Mechanic)

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# FOREWORD

***The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this Red Seal Occupational Standard (RSOS) as the Red Seal standard for the Lather (Interior Systems Mechanic) trade.***

## **Background**

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. Employment and Social Development Canada (ESDC) sponsors the Red Seal Program, which, under the guidance of the CCDA, develops a national occupational standard for each of the Red Seal trades.

Standards have the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed in every province and territory;
- to develop instruments for use in the preparation of Interprovincial Red Seal Examinations and assessment tools for apprenticeship and certification authorities;
- to develop common tools for apprenticeship on-the-job and technical training in Canada;
- to facilitate the mobility of apprentices and skilled workers in Canada;
- to supply employers, employees, associations, industries, training institutions and governments with occupational standards.

Any questions, comments, or suggestions for changes, corrections, or revisions to this standard or any of its related products may be forwarded to:

Trades and Apprenticeship Division  
Apprenticeship and Sectoral Initiatives Directorate  
Employment and Social Development Canada  
140 Promenade du Portage, Phase IV, 6th Floor  
Gatineau, Quebec K1A 0J9

# ACKNOWLEDGEMENTS

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Thanks are offered to the many trade representatives who greatly contributed to the review and revision of this standard across Canada.

This standard was prepared by the Apprenticeship and Sectoral Initiatives Directorate of ESDC. The coordinating, facilitating and processing of this standard were undertaken by employees of the standards development team of the Trades and Apprenticeship Division and of Manitoba, the host jurisdiction for this trade.

# STRUCTURE OF THE OCCUPATIONAL STANDARD

This standard contains the following sections:

**Methodology:** an overview of the process for development, review, validation and weighting of the standard

**Description of the Lather (Interior Systems Mechanic) trade:** an overview of the trade's duties, work environment, job requirements, similar occupations and career progression

**Trends in the Lather (Interior Systems Mechanic) trade:** some of the trends identified by industry as being the most important for workers in this trade

**Essential Skills Summary:** an overview of how each of the nine essential skills is applied in this trade

**Industry Expected Performance:** description of the expectations regarding the level of performance of the tasks, including information related to specific codes, regulations and standards that must be observed

**Language Requirements:** description of the language requirements for working and studying in this trade in Canada

**Pie Chart of Red Seal Examination Weightings:** a graph which depicts the national percentages of exam questions assigned to the major work activities

**Task Matrix:** a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard

**Major Work Activity (MWA):** the largest division within the standard that is comprised of a distinct set of trade activities

**Task:** distinct actions that describe the activities within a major work activity

**Task Descriptor:** a general description of the task

**Sub-task:** distinct actions that describe the activities within a task

**Skills:**

**Performance Criteria:** description of the activities that are done as the sub-task is performed

**Evidence of Attainment:** proof that the activities of the sub-task meet the expected performance of a tradesperson who has reached journeyman level

**Knowledge:**

**Learning Outcomes:** describes what should be learned relating to a sub-task while participating in technical or in-school training

**Learning Objectives:** topics to be covered during technical or in-school training in order to meet the learning outcomes for the sub-task

**Range of Variables:** elements that provide a more in-depth description of a term used in the performance criteria, evidence of attainment, learning outcomes, or learning objectives

**Appendix A – Acronyms:** a list of acronyms used in the standard with their full name

**Appendix B – Tools and Equipment / Outils et équipement:** a non-exhaustive list of tools and equipment used in this trade

**Appendix C – Glossary / Glossaire:** definitions or explanations of selected technical terms used in the standard

# METHODOLOGY

## Development of the Standard

A draft standard is developed by analyzing existing industry-developed standards, including the National Occupational Analysis and provincial/territorial apprenticeship curricula. This draft standard breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade.

## Online Survey

Stakeholders are given the opportunity to review and validate the activities outlined in the standard through an online survey. These stakeholders are invited to participate in this consultation through apprenticeship authorities, as well as national stakeholder groups.

## Draft Review

The RSOS development team forwards a copy of the standard to provincial and territorial authorities who consult with industry representatives to review it. Their recommendations are assessed and incorporated into the standard.

## Validation and Weighting

Participating provinces and territories also consult with industry to validate and weight the document for the purpose of planning the makeup of the Red Seal Interprovincial Examination for the trade. They validate and weight the major work activities (MWA), tasks and sub-tasks, of the standard as follows:

<b>MWA</b>	Each jurisdiction assigns a percentage of questions to each MWA for an examination that would cover the entire trade.
<b>TASKS</b>	Each jurisdiction assigns a percentage of exam questions to each task within a MWA.
<b>SUB-TASKS</b>	Each jurisdiction indicates, with a YES or NO, whether or not each sub-task is performed by skilled workers within the occupation in its jurisdiction.

The results of this exercise are submitted to the RSOS development team who then analyzes the data and incorporates it into the document. The RSOS provides the individual jurisdictional validation results as well as the national averages of all responses. The national averages for MWA and task weighting guide the Interprovincial Red Seal Examination plan for the trade.

The validation of the RSOS is used to identify common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions' industry performs a sub-task, it shall be considered common core. Interprovincial Red Seal Examination questions are limited to the common core sub-tasks identified through this validation process.

## Definitions for Validation and Weighting

<b>YES</b>	sub-task performed by qualified workers in the occupation in that province or territory
<b>NO</b>	sub-task not performed by qualified workers in the occupation in that province or territory
<b>NV</b>	standard <u>N</u> ot <u>V</u> alidated by that province or territory
<b>ND</b>	trade <u>N</u> ot <u>D</u> esignated in a province or territory
<b>NOT COMMON CORE (NCC)</b>	sub-task, task or MWA performed less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
<b>NATIONAL AVERAGE %</b>	average percentage of questions assigned to each MWA and task in Interprovincial Red Seal Examination for the trade

## Provincial/Territorial Abbreviations

<b>NL</b>	Newfoundland and Labrador
<b>NS</b>	Nova Scotia
<b>PE</b>	Prince Edward Island
<b>NB</b>	New Brunswick
<b>QC</b>	Quebec
<b>ON</b>	Ontario
<b>MB</b>	Manitoba
<b>SK</b>	Saskatchewan
<b>AB</b>	Alberta
<b>BC</b>	British Columbia
<b>NT</b>	Northwest Territories
<b>YT</b>	Yukon Territory
<b>NU</b>	Nunavut

# DESCRIPTION OF THE LATHER (INTERIOR SYSTEMS MECHANIC) TRADE

“Lather (Interior Systems Mechanic)” is this trade’s official Red Seal occupational title approved by the CCDA. This standard covers tasks performed by lathers (interior systems mechanics).

Lathers (Interior Systems Mechanics) handle, erect and install materials that are components in the construction of all or part of a structure. They lay out and install framework for ceiling systems, interior and exterior walls, floors and roofs. They install various types of ceilings (e.g., suspended, spanned, direct contact), shielded walls (e.g., fire, sound, thermal separation) and various sheathing products. They also perform acoustical installations.

Materials that lathers (interior systems mechanics) install include: cold rolled steel components (e.g., steel studs, tracks, channels), metal door and window frames, stucco wire, vapour barriers and insulation, sheathing products (e.g., gypsum and cement products), specialty architectural products and metal lath.

Lathers (Interior Systems Mechanics) are employed by construction companies and drywall contractors. They may also be self-employed. In the residential construction industry, they construct, maintain and renovate structures from single-family homes to multi-story apartments. In the commercial, institutional and industrial construction sectors, they build, maintain and renovate structures such as commercial buildings, schools, hospitals and manufacturing complexes.

Lathers (Interior Systems Mechanics) work both indoors and outdoors year-round. They may specialize in individual aspects of the trade such as layout, wall framing and drywall installation. They use a variety of hand and power tools. They also use layout tools such as surveyor’s levels and laser levels. They may use machinery such as boom lifts and scissor lifts to access their work. The installation of metal stud framing and suspended ceilings often requires the use of lasers and powder-actuated tools.

Key attributes for people in this trade are good hand-eye coordination, the ability to work at heights and the ability to pay attention to detail. Lathers (Interior Systems Mechanics) must be able to read and interpret information from drawings, blueprints and specifications. The work may require lifting and positioning heavy building materials in a fast-paced environment. The work is physically demanding and requires the use of personal protective equipment. Workers in this trade work in teams and independently.

There are similarities and overlaps with the work of carpenters, insulators, and drywall finishers and plasterers.

Experienced lathers (interior systems mechanics) may act as mentors and trainers to apprentices in the trade. They may also advance to positions such as estimators, supervisors, training coordinators and project managers.

# TRENDS IN THE LATHER (INTERIOR SYSTEMS MECHANIC) TRADE

## Tools and Equipment

Laser levelling and layout tools and technology are becoming more accurate, less expensive and more user-friendly, as are other electronic and digital devices and software.

Battery fastening tools and systems are also becoming more commonly used and user-friendly.

## Materials and Building Technology

There is an increased use of steel floor decking systems. More efficient building technologies are being developed for the steel framing industry. Seismic restraints are becoming more common in the construction industry.

There is a wider variety of wall and ceiling component systems such as drywall grid systems and premade wood backing, resulting in faster installation. There is an increased emphasis on smoke and fire stopping, resulting in some lathers (interior systems mechanics) specializing in the installation of smoke and fire barriers. Lathers (interior systems mechanics) have more choice in the types of clips such as glue-on and friction fit clips.

There is an increase in the use of rainscreen systems for moisture drainage. New products are being introduced in the market to create the rainscreen (e.g., plastic stucco wire with built-in rainscreen). Pre-manufactured panels are used more frequently. The use of cementitious panels and planks for exterior finish is increasing.

# ESSENTIAL SKILLS SUMMARY

Essential skills are needed for work, learning and life. They provide the foundation for learning all other skills and enable people to evolve with their projects and adapt to workplace change.

Through extensive research, the Government of Canada and other national and international agencies have identified and validated nine essential skills. These skills are used in nearly every occupation and throughout daily life in different ways.

The application of these skills may be described throughout this document within the skills and knowledge which support each sub-task of the trade. The following are summaries of the requirements in each of the essential skills, taken from the essential skills profile.

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## READING

Lathers (Interior Systems Mechanics) require reading skills to gather information from forms and labels. They also need to read to understand more complex texts such as equipment and policy and procedure manuals, specifications, codes, standards and safety regulations. They read bulletins and brochures from suppliers describing new products and technologies. They also refer to engineering reports, site orientation guidelines, project specifications, work orders and change notices when planning a job.

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## DOCUMENT USE

Lathers (Interior Systems Mechanics) need to be able to locate and interpret information in several types of documents such as labels/stickers, posted signs, forms, lists, tables, and installation and delivery schedules. They also refer to and interpret complex blueprints, drawings and sketches integrating text, drawings and actual components. They may prepare estimates, invoices and incident reports.

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## WRITING

Writing skills are used by lathers (interior systems mechanics) to write notes to themselves to record information, such as a personal log of what work was completed on a given day. They may also write notes to supervisors requesting more information or materials or write notes summarizing discussions and decisions at a weekly toolbox or safety meeting. They may also write a quote or estimate that includes costs of labour to remove existing materials and install the new product, as well as costs of all materials. They may also need to complete documents such as incident reports describing an event they witnessed.

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## ORAL COMMUNICATION

Some tasks performed by lathers (interior systems mechanics) require oral communication skills, including discussing safety issues, work schedules, modifications, materials and equipment with supervisors, contractors, inspectors, building managers, clients, suppliers and other tradespeople. Lathers (Interior Systems Mechanics) may explain the fabrication, construction, installation and repair procedures to clients as well. They may also instruct others, such as an apprentice or a work crew, explaining and demonstrating procedures.

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## **NUMERACY**

Numeracy skills are extremely important in the everyday work of lathers (interior systems mechanics). Substantial mathematical skills are used in taking measurements, doing material layout, using formulas and performing trade calculations such as geometry and trigonometry to calculate distances and angles. Lathers (Interior Systems Mechanics) may create project timelines, calculating time requirements for tasks in the project. They may also calculate amounts for supplies, estimates and overall costs.

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## **THINKING**

Lathers (Interior Systems Mechanics) solve problems in situations where work may require modifications due to work of other trades or shortages of materials. They may perform modifications to project designs to correct flaws. They need the ability to think spatially and visualize in three dimensions. Problem solving and thinking sequentially are important skills in fabrication and installation activities. Lathers (Interior Systems Mechanics) need to be able to plan their work and organize tasks and materials.

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## **WORKING WITH OTHERS**

Lathers (Interior Systems Mechanics) may work independently or with partners or apprentices depending on the type of work they are performing. They must coordinate their work with many other co-workers, trades and suppliers. They see themselves as members of a team who work together to provide a quality service and product. Some lathers (interior systems mechanics) supervise the work of apprentices and other journeypersons on larger jobs.

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## **DIGITAL TECHNOLOGY**

Lathers (Interior Systems Mechanics) use digital devices such as laptops, tablets, smartphones and two-way radios to communicate with others, record job changes and daily activities, track job progress, order materials, perform Internet research and perform word processing. Highly technical layout devices such as laser 3D scanners and total stations require advanced digital skills.

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## **CONTINUOUS LEARNING**

Lathers (Interior Systems Mechanics) are required to stay current with new products and materials. They refer to brochures or manuals from suppliers and by using them on the job. They also attend courses and orientations on safety procedures and the operation of equipment. They must also attend upgrading on topics such as layout, safety and rigging. On-the-job learning takes place continuously using methods such as safety meetings, toolbox talks and mentoring.

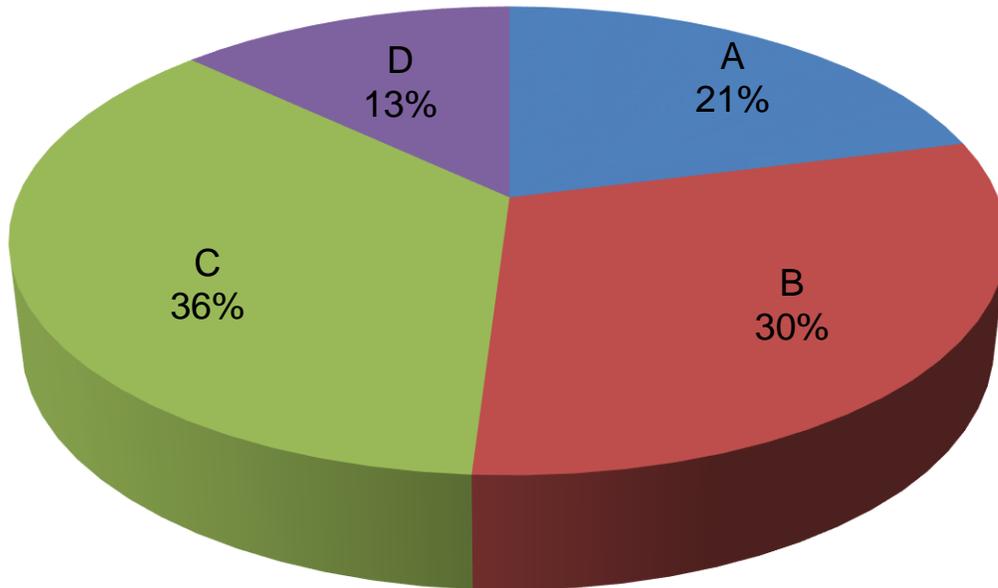
# INDUSTRY EXPECTED PERFORMANCE

All tasks must be performed according to the applicable jurisdictional codes and standards, including regional-specific requirements such as those for seismic reinforcement. All health and safety standards must be respected and observed. Work should be done efficiently and to a high quality without material waste or environmental damage. All requirements of employers, engineers, designers, manufacturers, clients and quality control policies must be met. At a journeyperson level of performance, all tasks must be done with minimal direction and supervision. As a journeyperson progresses in their career, there is an expectation they continue to upgrade their skills and knowledge to maintain pace with industry and promote continuous learning in their trade through mentoring of apprentices.

# LANGUAGE REQUIREMENTS

It is expected that journeypersons are able to understand and communicate in either English or French, which are Canada's official languages. English or French are the common languages of business as well as languages of instruction in apprenticeship programs.

# PIE CHART OF RED SEAL EXAMINATION WEIGHTINGS



MWA A	Performs common occupational skills	21%
MWA B	Performs framing activities	30%
MWA C	Installs interior systems	36%
MWA D	Installs exterior systems	13%

This pie chart represents a breakdown of the interprovincial Red Seal examination. Percentages are based on the collective input from workers from the trade from across Canada. The Task Matrix on the next pages indicates the breakdown of tasks and sub-tasks within each Major Work Activity and the breakdown of questions assigned to the Tasks. The Interprovincial examination for this trade has 125 questions.

# LATHER (INTERIOR SYSTEMS MECHANIC)

## TASK MATRIX

### A – Performs common occupational skills

**21%**

<b>Task A-1</b> <b>Performs safety-related functions</b> <b>11%</b>	<b>A-1.01 Maintains safe work environment</b>	<b>A-1.02 Uses personal protective equipment (PPE) and safety equipment</b>	
<b>Task A-2</b> <b>Uses tools and equipment</b> <b>23%</b>	<b>A-2.01 Uses hand tools</b>	<b>A-2.02 Uses power tools and equipment</b>	<b>A-2.03 Uses powder-actuated tools</b>
	<b>A-2.04 Uses gas-actuated tools</b>	<b>A-2.05 Uses pneumatic tools (NOT COMMON CORE)</b>	<b>A-2.06 Uses layout and measuring devices</b>
	<b>A-2.07 Uses scaffolding and access equipment</b>		
<b>Task A-3</b> <b>Organizes work</b> <b>26%</b>	<b>A-3.01 Uses documentation and reference materials</b>	<b>A-3.02 Uses blueprints and drawings</b>	<b>A-3.03 Plans project tasks</b>
	<b>A-3.04 Estimates materials and supplies</b>		
<b>Task A-4</b> <b>Performs routine trade activities</b> <b>29%</b>	<b>A-4.01 Performs measurements</b>	<b>A-4.02 Uses jigs and templates</b>	<b>A-4.03 Handles materials, supplies and products</b>
	<b>A-4.04 Lays out work</b>	<b>A-4.05 Applies sealants and gaskets</b>	
<b>Task A-5</b> <b>Uses communication and mentoring techniques</b> <b>11%</b>	<b>A-5.01 Uses communication techniques</b>	<b>A-5.02 Uses mentoring techniques</b>	

## B – Performs framing activities

30%

<b>Task B-6</b> Erects non-loadbearing steel assemblies <b>60%</b>	B-6.01 Frames non-loadbearing walls	B-6.02 Frames spanned ceilings	B-6.03 Frames suspended drywall ceilings
	B-6.04 Frames non-loadbearing bulkheads	B-6.05 Installs metal door and window frames	B-6.06 Installs backing
<b>Task B-7</b> Erects loadbearing steel assemblies <b>40%</b>	B-7.01 Frames loadbearing walls	B-7.02 Frames exterior ceilings and soffits	B-7.03 Frames loadbearing bulkheads
	B-7.04 Frames loadbearing floors	B-7.05 Frames loadbearing roofs	

## C – Installs interior systems

36%

<b>Task C-8</b> Installs wall systems and components <b>32%</b>	C-8.01 Installs demountable walls	C-8.02 Installs drywall	C-8.03 Finishes drywall
	C-8.04 Installs drywall trims and mouldings	C-8.05 Installs security mesh	C-8.06 Installs access panels
<b>Task C-9</b> Installs ceiling systems <b>31%</b>	C-9.01 Installs suspended ceilings	C-9.02 Installs non-suspended ceilings	
	C-10.01 Installs pedestals and supporting hardware	C-10.02 Installs flooring panels	
<b>Task C-10</b> Installs access flooring systems <b>6%</b>			
<b>Task C-11</b> Installs sound barriers and lead radiation shielding <b>11%</b>	C-11.01 Installs sound barriers	C-11.02 Installs lead radiation shielding	
	C-12.01 Installs shaft wall systems	C-12.02 Seals penetrations	C-12.03 Encloses beams, columns and staircases to achieve desired fire rating
<b>Task C-12</b> Installs smoke and fire barriers <b>20%</b>			

## D – Installs exterior systems

13%

<b>Task D-13</b> Installs insulation and membranes <b>48%</b>	<b>D-13.01</b> Installs thermal insulation	<b>D-13.02</b> Installs interior/exterior membranes	
<b>Task D-14</b> Prepares surface for exterior finishes <b>36%</b>	<b>D-14.01</b> Installs exterior sheathing	<b>D-14.02</b> Installs lath	<b>D-14.03</b> Installs Exterior Insulation Finish System (EIFS) (NOT COMMON CORE)
<b>Task D-15</b> Installs exterior finishes <b>16%</b>	<b>D-15.01</b> Fabricates panels	<b>D-15.02</b> Installs pre-manufactured panels	

# Harmonization of Apprenticeship Training

Provincial and territorial apprenticeship authorities are each responsible for their respective apprenticeship programs. In the spirit of continual improvement, and to facilitate mobility among apprentices in Canada, participating authorities have agreed to work towards harmonizing certain aspects of their programs where possible. After consulting with their stakeholders in the trade, they have reached consensus on the following elements. Note that implementation of these elements may vary from jurisdiction to jurisdiction, depending on their own circumstances. For more information on the implementation in any province and territory, please contact that jurisdiction’s apprenticeship authority.

## 1. Trade name

The official Red Seal name for this trade is Lather (Interior Systems Mechanic).

## 2. Number of Levels of Apprenticeship

The number of levels of technical training recommended for this trade is 3 (three).

## 3. Total Training Hours During Apprenticeship Training

The total hours of training, including both on-the-job and in-school training for this trade is 5400.

## 4. Sequencing Topics and Related Sub-tasks

The topic titles in the table below are placed in a column for each apprenticeship level for technical training. Each topic is accompanied by the sub-tasks and their reference number. The topics in the grey shaded cells represent those that are covered “in context” with other training in the subsequent years.

Level 1	Level 2	Level 3
	<b>Safety-Related Functions</b>	<b>Safety-Related Functions</b>
	<b>Organizes Work</b>	<b>Organizes Work</b>
<b>Safety-Related Functions</b> 1.01 Maintains a safe work environment 1.02 Uses personal protective equipment (PPE) and safety equipment		
<b>Tools and Equipment</b> 2.01 Uses hand tools 2.02 Uses power tools and equipment 2.03 Uses powder-actuated tools 2.04 Uses gas-actuated tools 2.05 Uses pneumatic tools (NCC) 2.06 Uses layout and measuring devices 2.07 Uses scaffolding and access equipment		

Level 1	Level 2	Level 3
<p><b>Organizes Work</b>  3.01 Uses documentation and reference materials  3.02 Uses blueprints and drawings  3.03 Plans project tasks  3.04 Estimates materials and supplies (introduction)</p>		
<p><b>Routine Trade Activities</b>  4.01 Performs measurements  4.02 Uses jigs and templates  4.03 Handles materials, supplies and products  4.04 Lays out work  4.05 Applies sealants and gaskets</p>	<p><b>Routine Trade Activities</b>  4.01 Performs measurements  4.02 Uses jigs and templates  4.03 Handles materials, supplies and products  4.04 Lays out work  4.05 Applies sealants and gaskets</p>	<p><b>Routine Trade Activities</b>  4.01 Performs measurements  4.02 Uses jigs and templates  4.03 Handles materials, supplies and products  4.04 Lays out work</p>
<p><b>Communication Techniques</b>  5.01 Uses communication techniques</p>		<p><b>Mentoring Techniques</b>  5.02 Uses mentoring techniques</p>
<p><b>Non Load-Bearing Steel Assemblies</b>  6.01 Frames non load-bearing walls  6.02 Frames spanned ceilings  6.03 Frames suspended drywall ceilings  6.04 Frames non load-bearing bulkheads  6.05 Installs metal door and window frames</p>	<p><b>Non Load-Bearing Steel Assemblies</b>  6.01 Frames non load-bearing walls  6.02 Frames spanned ceilings  6.03 Frames suspended drywall ceilings  6.04 Frames non load-bearing bulkheads  6.05 Installs metal door and window frames  6.06 Installs backing</p>	
	<p><b>Load-Bearing Steel Assemblies</b>  7.01 Frames load-bearing walls  7.02 Frames exterior ceilings and soffits  7.03 Frames load-bearing bulkheads  7.04 Frames load-bearing floors  7.05 Frames load-bearing roofs</p>	<p><b>Load-Bearing Steel Assemblies</b>  7.01 Frames load-bearing walls  7.02 Frames exterior ceilings and soffits  7.03 Frames load-bearing bulkheads  7.04 Frames load-bearing floors  7.05 Frames load-bearing roofs</p>
<p><b>Wall Systems and Components</b>  8.02 Installs drywall  8.06 Installs access panels</p>	<p><b>Wall Systems and Components</b>  8.02 Installs drywall  8.03 Finishes drywall  8.04 Installs drywall trims and mouldings  8.05 Installs security mesh  8.06 Installs access panels</p>	<p><b>Wall Systems and Components</b>  8.01 Installs demountable walls</p>
	<p><b>Ceiling Systems</b>  9.01 Installs suspended ceilings  9.02 Installs non-suspended ceilings</p>	<p><b>Ceiling Systems</b>  9.01 Installs suspended ceilings  9.02 Installs non-suspended ceilings</p>

Level 1	Level 2	Level 3
		<b>Access Flooring Systems</b> 10.01 Installs pedestals and supporting hardware 10.02 Installs floor panels
	<b>Sound Barriers</b> 11.01 Installs sound barriers	<b>Sound Barriers and Lead Radiation Shielding</b> 11.01 Installs sound barriers 11.02 Installs lead radiation shielding
	<b>Smoke and Fire Barriers</b> 12.01 Installs shaft wall systems 12.02 Seals penetrations 12.03 Encloses beams, columns and staircases to achieve desired fire rating	<b>Smoke and Fire Barriers</b> 12.01 Installs shaft wall systems 12.02 Seals penetrations 12.03 Encloses beams, columns and staircases to achieve desired fire rating
<b>Insulation</b> 13.01 Installs thermal insulation		<b>Membranes</b> 13.02 Installs interior/ exterior membranes
		<b>Surface Preparation for Exterior Finishes</b> 14.01 Installs exterior sheathing 14.02 Installs lath 14.03 Installs Exterior Insulation Finish System (EIFS) (NCC)
		<b>Exterior Finishes</b> 15.01 Fabricates panels 15.02 Installs pre-manufactured panels

# MAJOR WORK ACTIVITY A

## Performs common occupational skills

### TASK A-1 Performs safety-related functions

#### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) need to recognize and follow regulations and requirements such as jurisdictional safety regulations, Canadian Standards Association (CSA), jurisdictional building codes and company policies to ensure workplace, public and individual safety.

#### **A-1.01** Maintains safe work environment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

#### SKILLS

	Performance Criteria	Evidence of Attainment
A-1.01.01P	locate and recognize <b>safety documentation</b>	<b>safety documentation</b> is located and recognized
A-1.01.02P	perform precautionary inspections	precautionary inspections are performed to reduce <b>on-site hazards</b>
A-1.01.03P	identify <b>on-site hazards</b> and report to appropriate personnel	<b>on-site hazards</b> are identified and reported to appropriate personnel
A-1.01.04P	set up signage, guardrails and <b>barricades</b>	signage, guardrails and <b>barricades</b> are set up to protect personnel, public and work areas
A-1.01.05P	locate first aid kits and muster points	first aid kits and muster points are located
A-1.01.06P	use proper lifting techniques to unload equipment and materials	proper lifting techniques are used to unload equipment and materials
A-1.01.07P	perform <b>housekeeping</b> tasks	<b>housekeeping</b> tasks are performed according to company policies and procedures
A-1.01.08P	use adequate lighting	adequate lighting is used
A-1.01.09P	install hoarding	hoarding is installed according to task
A-1.01.10P	protect surrounding environment	surrounding environment is protected using <b>materials</b>

## RANGE OF VARIABLES

**safety documentation** includes: Safety Data Sheets (SDS), Workplace Hazardous Materials Information System (WHMIS) labels

**hazards (on-site)** include: electrical, working at heights, overhead dangers, heavy material, sharp protrusions, slipping and tripping hazards

**barricades** include: warning tape, plywood

**housekeeping** includes: cleaning up, removing tripping hazards

**materials** include: dust barriers, drop cloths

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
A-1.01.01L	demonstrate knowledge of safe work practices and procedures	identify potential <b>on-site and health hazards</b> and ways to control them
		describe company safety policies, procedures and requirements
		describe safe work practices, procedures and equipment
		describe <b>unsafe work practices</b> and risks associated with them
		identify regulations and company policies related to <b>substance</b> abuse
		describe first aid practices
		describe workers' rights and responsibilities
		identify <b>training requirements</b>
		describe good <b>housekeeping</b> practices
		describe proper lifting techniques when unloading equipment and materials
A-1.01.02L	demonstrate knowledge of regulatory requirements pertaining to safety	describe <b>site requirements for tasks</b>
		identify and interpret workplace safety and health <b>regulations</b>
		identify and interpret fire safety

## RANGE OF VARIABLES

**hazards (on-site)** include: electrical, working at heights, overhead dangers, heavy material, sharp protrusions, slipping and tripping hazards

**hazards (health)** include: excessive noise, fumes, dust, mould, asbestos, improper ventilation

**unsafe work practices** include: working under the influence of drugs or alcohol, lack of sleep

**substances** include: alcohol, legal drugs, prescription drugs (e.g. opioids), illegal drugs

**training requirements** include: fall protection, confined space entry, material handling, use of power tools

**housekeeping** includes: cleaning up, removing tripping hazards

**site requirements for tasks** include: cleanliness, lighting, power, heating, ventilation

**regulations** include: WHMIS, Occupational Health and Safety (OH&S)

**A-1.02****Uses personal protective equipment (PPE) and safety equipment**

<b>NL</b>	<b>NS</b>	<b>PE</b>	<b>NB</b>	<b>QC</b>	<b>ON</b>	<b>MB</b>	<b>SK</b>	<b>AB</b>	<b>BC</b>	<b>NT</b>	<b>YT</b>	<b>NU</b>
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

**SKILLS**

<b>Performance Criteria</b>		<b>Evidence of Attainment</b>
A-1.02.01P	select and use PPE and safety equipment	PPE and safety equipment are selected and used according to jurisdictional regulations, task and manufacturers' specifications
A-1.02.02P	inspect PPE and safety equipment	PPE and safety equipment are inspected before each use to verify operating condition and that they are free from damage
A-1.02.03P	verify that PPE fits properly	PPE is verified to ensure a proper fit according to CSA and manufacturers' specifications
A-1.02.04P	identify and remove from service worn, damaged and defective PPE and safety equipment	worn, damaged and defective PPE and safety equipment are identified and removed from service according to CSA and manufacturers' specifications
A-1.02.05P	store PPE and safety equipment in designated area	PPE and safety equipment are stored in designated area according to manufacturers' specifications and company policies and procedures
A-1.02.06P	install and operate safety equipment	safety equipment is installed and operated according to CSA and manufacturers' specifications
A-1.02.07P	identify limitations of use of PPE and safety equipment	limitations of use of PPE and safety equipment are identified

**KNOWLEDGE**

<b>Learning Outcomes</b>	<b>Learning Objectives</b>
A-1.02.01L	demonstrate knowledge of PPE and safety equipment, their applications, limitations, maintenance, storage and procedures for use
	identify types of PPE and safety equipment and describe their applications, limitations, maintenance, storage and procedures for use
	describe the importance of expiry dates on PPE and safety equipment
	describe the importance of locating PPE and safety equipment

A-1.02.02L	demonstrate knowledge of regulatory requirements pertaining to PPE and safety equipment	describe <b>workplace safety and health regulations</b> pertaining to the use of PPE and safety equipment
		describe the certification and training requirements for PPE and safety equipment

## RANGE OF VARIABLES

**workplace safety and health regulations** include: WHMIS, OH&S

## TASK A-2 Uses tools and equipment

### TASK DESCRIPTOR

This task describes the use and maintenance of tools and equipment that lathers (interior systems mechanics) use to perform tasks in their trade. It also describes the use of scaffolding and access equipment.

#### A-2.01 Uses hand tools

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
A-2.01.01P	select and use hand tools	hand tools are selected and used according to task and manufacturers' specifications
A-2.01.02P	inspect and identify worn, damaged and defective hand tools, and remove from service	worn, damaged and defective hand tools are identified and removed from service according to company policies
A-2.01.03P	clean and maintain hand tools	hand tools are cleaned and maintained according to manufacturers' specifications and company policies and procedures
A-2.01.04P	organize and store hand tools	hand tools are organized and stored according to manufacturers' specifications and company policies and procedures

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-2.01.01L	demonstrate knowledge of hand tools, their applications, limitations and maintenance	describe terminology associated with hand tools
		identify types of hand tools and describe their applications, limitations and maintenance
A-2.01.02L	demonstrate knowledge of procedures for use of hand tools	describe procedures for use of hand tools
		describe procedures used to maintain hand tools
		identify hazards and describe safe work practices and procedures pertaining to the use of hand tools

### A-2.02 Uses power tools and equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
A-2.02.01P	select and use power tools and equipment	power tools and equipment are selected and used according to task and manufacturers' specifications
A-2.02.02P	inspect and identify worn, damaged and defective power tools and equipment, and remove from service	worn, damaged and defective power tools and equipment are identified and removed from service according to company policies
A-2.02.03P	clean and maintain power tools and equipment	power tools and equipment are cleaned and maintained according to manufacturers' specifications and company policies and procedures
A-2.02.04P	organize and store power tools and equipment	power tools and equipment are organized and stored according to manufacturers' specifications and company policies and procedures

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-2.02.01L	demonstrate knowledge of power tools and equipment, their applications, limitations and maintenance	describe terminology associated with power tools and equipment
		identify types of power tools and equipment, and describe their applications, limitations and maintenance
		describe procedures used to maintain power tools and equipment
A-2.02.02L	demonstrate knowledge of procedures for use of power tools and equipment	describe procedures for use of power tools and equipment
		identify hazards and describe safe work practices and procedures pertaining to use of power tools and equipment

### A-2.03 Uses powder-actuated tools

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
A-2.03.01P	select and use powder-actuated tools	powder-actuated tools are selected and used according to task and manufacturers' specifications
A-2.03.02P	inspect and identify worn, damaged and defective powder-actuated tools, and remove from service	worn, damaged and defective powder-actuated tools are identified and removed from service according to manufacturers' specifications, and company policies and procedures
A-2.03.03P	disassemble, clean and lubricate powder-actuated tools	powder-actuated tools are disassembled, cleaned and lubricated according to manufacturers' specifications
A-2.03.04P	organize and store powder-actuated tools	powder-actuated tools are organized and stored according to manufacturers' specifications, and company policies and procedures
A-2.03.05P	store and dispose of shots	shots are stored and disposed of according to manufacturers' specifications, and company policies and procedures

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-2.03.01L	demonstrate knowledge of powder-actuated tools, their applications, limitations and maintenance	describe terminology associated with powder-actuated tools
		identify types of powder-actuated tools, and describe their applications, limitations and maintenance
A-2.03.02L	demonstrate knowledge of procedures for use of powder-actuated tools	describe procedures for use of powder-actuated tools
		identify hazards and describe safe work practices and procedures pertaining to the use of powder-actuated tools
		identify types of pins and shots
		describe procedure for disposal of shots
A-2.03.03L	demonstrate knowledge of certification requirements pertaining to the use of powder-actuated tools	identify certification requirements for powder-actuated tools

### A-2.04 Uses gas-actuated tools

<b>NL</b>	<b>NS</b>	<b>PE</b>	<b>NB</b>	<b>QC</b>	<b>ON</b>	<b>MB</b>	<b>SK</b>	<b>AB</b>	<b>BC</b>	<b>NT</b>	<b>YT</b>	<b>NU</b>
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
A-2.04.01P	select and use gas-actuated tools	gas-actuated tools are selected and used according to task and manufacturers' specifications
A-2.04.02P	inspect and identify worn, damaged and defective gas-actuated tools, and remove from service	worn, damaged and defective gas-actuated tools are identified and removed from service according to manufacturers' specifications, and company policies and procedures
A-2.04.03P	disassemble, clean and lubricate gas-actuated tools	gas-actuated tools are disassembled, cleaned and lubricated according to manufacturers' specifications, and company policies and procedures

A-2.04.04P	organize and store gas-actuated tools	gas-actuated tools are organized and stored according to manufacturers' specifications, and company policies and procedures
A-2.04.05P	handle and dispose of gas cylinders and batteries	gas cylinders and batteries are handled and disposed of according to jurisdictional regulations

## KNOWLEDGE

Learning Outcomes		Learning Objectives
A-2.04.01L	demonstrate knowledge of gas-actuated tools, their applications, limitations and maintenance	describe terminology associated with gas-actuated tools
		identify types of gas-actuated tools, and describe their applications, limitations and maintenance
		describe procedures used to clean, lubricate and maintain gas-actuated tools
A-2.04.02L	demonstrate knowledge of procedures for use of gas-actuated tools	describe procedures for use of gas-actuated tools
		identify hazards and describe safe work practices and procedures pertaining to the use of gas-actuated tools
A-2.04.03L	demonstrate knowledge of regulatory requirements pertaining to use and disposal of gas cylinders	identify regulatory requirements for use and disposal of gas cylinders

## A-2.05 Uses pneumatic tools (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	no	NV	no	yes	ND	NV	ND

## SKILLS

Performance Criteria		Evidence of Attainment
A-2.05.01P	select and use pneumatic tools	pneumatic tools are selected and used according to task and manufacturers' specifications
A-2.05.02P	inspect and identify worn, damaged and defective pneumatic tools, and remove from service	worn, damaged and defective pneumatic tools are identified and removed from service according to company policies
A-2.05.03P	disassemble, clean and lubricate pneumatic tools	pneumatic tools are disassembled, cleaned and lubricated according to manufacturers' specifications

A-2.05.04P	organize and store pneumatic tools	pneumatic tools are organized and stored according to manufacturers' specifications, and company policies and procedures
A-2.05.05P	drain air hoses and tanks	air hoses and tanks are drained according to manufacturers' specifications

## KNOWLEDGE

Learning Outcomes		Learning Objectives
A-2.05.01L	demonstrate knowledge of pneumatic tools, their applications, limitations and maintenance	describe terminology associated with pneumatic tools
		identify types of pneumatic tools, and describe their applications, limitations and maintenance
		describe procedures used to clean, lubricate and maintain pneumatic tools
A-2.05.02L	demonstrate knowledge of procedures for use of pneumatic tools	describe procedures for use of pneumatic tools
		identify hazards and describe safe work practices and procedures pertaining to the use of pneumatic tools
		describe handling procedures for air compressors

## A-2.06

**Uses layout and measuring devices**

<b>NL</b>	<b>NS</b>	<b>PE</b>	<b>NB</b>	<b>QC</b>	<b>ON</b>	<b>MB</b>	<b>SK</b>	<b>AB</b>	<b>BC</b>	<b>NT</b>	<b>YT</b>	<b>NU</b>
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

Performance Criteria		Evidence of Attainment
A-2.06.01P	check accuracy of layout and measuring devices	accuracy of layout and measuring devices are checked
A-2.06.02P	select and use layout and measuring devices	layout and measuring devices are selected and used according to task and manufacturers' specifications
A-2.06.03P	inspect and identify worn, damaged and defective layout and measuring devices, and remove from service	worn, damaged and defective layout and measuring devices are identified and removed from service according to manufacturers' specifications, and company policies and procedures

A-2.06.04P	clean and lubricate layout and measuring devices	layout and measuring devices are cleaned and lubricated according to manufacturers' specifications
A-2.06.05P	organize and store layout and measuring devices	layout and measuring devices are organized and stored according to manufacturers' specifications, and company policies and procedures

## KNOWLEDGE

Learning Outcomes		Learning Objectives
A-2.06.01L	demonstrate knowledge of layout and measuring devices, their applications, limitations and maintenance	describe terminology associated with layout and measuring devices
		identify types of layout and measuring devices, and describe their applications, limitations and maintenance
A-2.06.02L	demonstrate knowledge of procedures for use of layout and measuring devices	describe procedures used to maintain layout and measuring devices
		describe procedures for use of layout and measuring devices
		identify hazards and describe safe work practices and procedures pertaining to use of layout and measuring devices

## A-2.07 Uses scaffolding and access equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

Performance Criteria		Evidence of Attainment
A-2.07.01P	select and use scaffolding and access equipment	scaffolding and access equipment is selected and used according to site conditions, job requirements, manufacturers' specifications and jurisdictional safety regulations
A-2.07.02P	inspect and identify worn, damaged and defective scaffolding and access equipment, and remove from service	worn, damaged and defective scaffolding and access equipment are identified and removed from service according to company policies and jurisdictional regulations
A-2.07.03P	establish solid and level footing for scaffolding and access equipment	solid and level footing for scaffolding and access equipment is established
A-2.07.04P	identify <b>hazards</b> when erecting scaffolding and access equipment	<b>hazards</b> are identified according to site conditions

A-2.07.05P	set up and erect scaffolding and access equipment	scaffolding and access equipment are erected according to jurisdictional safety regulations
A-2.07.06P	clean and maintain scaffolding and access equipment	scaffolding and access equipment are maintained and kept clean

## RANGE OF VARIABLES

**hazards** include: power lines, uneven surfaces, pinch points, soft ground

<b>KNOWLEDGE</b>		
	<b>Learning Outcomes</b>	<b>Learning Objectives</b>
A-2.07.01L	demonstrate knowledge of scaffolding and access equipment, its applications, limitations and maintenance	describe terminology associated with scaffolding and access equipment
		identify types of scaffolding and access equipment, and describe their applications, limitations and maintenance
A-2.07.02L	demonstrate knowledge of procedures for use of scaffolding and access equipment	identify <b>hazards</b> and describe safe work practices and procedures pertaining to use of scaffolding and access equipment
		identify fall protection requirements
		describe safe angles of ladders
		describe the three-point contact rule
		describe the importance of being aware of <b>worksite surroundings</b>
A-2.07.03L	demonstrate knowledge of regulatory requirements pertaining to the use of scaffolding and access equipment	identify and interpret regulations and certification requirements pertaining to the use of scaffolding and access equipment

## RANGE OF VARIABLES

**hazards** include: power lines, uneven surfaces, pinch points, soft ground

**worksite surroundings** include: trenching, pits, overhead hazards, drop-offs

## TASK A-3 Organizes work

### TASK DESCRIPTOR

In order to organize their work, lathers (interior systems mechanics) must be able to use documentation, use blueprints and drawings, plan daily tasks, and estimate materials and supplies. A well-organized job reduces costs, minimizes mistakes and ensures a productive and safe workplace.

#### A-3.01 Uses documentation and reference materials

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

#### SKILLS

	Performance Criteria	Evidence of Attainment
A-3.01.01P	complete <b>work-related documentation</b>	<b>work-related documentation</b> is completed according to company policies and procedures
A-3.01.02P	fill out <b>safety-related documentation</b>	<b>safety-related documentation</b> is filled out according to jurisdictional regulations
A-3.01.03P	identify and label hazardous materials	hazardous materials are identified and labelled according to WHMIS
A-3.01.04P	interpret <b>reference materials</b>	<b>reference materials</b> are interpreted
A-3.01.05P	track and complete change orders	change orders are tracked and completed
A-3.01.06P	prepare maintenance logs of tools and equipment	maintenance logs of tools and equipment are prepared according to company policies and procedures

#### RANGE OF VARIABLES

**work-related documentation** include: records, time sheets, deficiency lists, schedules

**safety-related documentation** includes: accident reports, hazard assessments, stop work orders, warning signs

**reference materials** include: change orders, manuals, manufacturers' specifications, meeting minutes, National Building Code

#### KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-3.01.01L	demonstrate knowledge of <b>work-related</b> and <b>safety-related documentation</b> , and <b>reference materials</b> , and their applications	define terminology associated with <b>work-related</b> and <b>safety-related documentation</b> , and <b>reference materials</b>
		identify types of <b>work-related</b> and <b>safety-related documentation</b> , and <b>reference materials</b> and describe their applications

A-3.01.02L	demonstrate knowledge of procedures used to prepare <b>work-related</b> and <b>safety-related documentation</b>	describe procedures used to complete <b>work-related</b> and <b>safety-related documentation</b>
		explain responsibilities associated with completing and signing <b>work-related</b> and <b>safety-related documentation</b>
A-3.01.03L	demonstrate knowledge of regulatory requirements pertaining to <b>safety-related documentation</b>	identify codes, standards, <b>rules and regulations</b> pertaining to <b>safety-related documentation</b>

## RANGE OF VARIABLES

**work-related documentation** include: records, time sheets, deficiency lists, schedules

**safety-related documentation** includes: accident reports, hazard assessments, stop work orders, warning signs

**reference materials** include: change orders, manuals, manufacturers' specifications, meeting minutes, National Building Code

**rules and regulations** include: site-specific requirements, OH&S

## A-3.02 Uses blueprints and drawings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
A-3.02.01P	locate and interpret <b>information</b> on <b>blueprints and drawings</b>	<b>information</b> on <b>blueprints and drawings</b> is located and interpreted
A-3.02.02P	interpret lines and symbols on <b>blueprints and drawings</b>	lines and symbols are interpreted on <b>blueprints and drawings</b>
A-3.02.03P	scale <b>blueprints and drawings</b>	<b>blueprints and drawings</b> are scaled using <b>tools</b>
A-3.02.04P	visualize finished product	finished product is visualized

## RANGE OF VARIABLES

**information** includes: section and detail views, elevations

**blueprints and drawings** include: digital, paper, as-built drawings, engineered shop drawings, architectural drawings, structural drawings

**tools** include: calculators, scale ruler, computer software, apps

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-3.02.01L	demonstrate knowledge of <b>blueprints and drawings</b> , their <b>components</b> , purposes and applications	define terminology associated with <b>blueprints and drawings</b> , and their <b>components</b>
		identify types of <b>blueprints and drawings</b> , and describe their purposes and applications
		describe metric and imperial systems of measurement
A-3.02.02L	demonstrate knowledge of procedures used to interpret and extract <b>information</b> from <b>blueprints and drawings</b> and their <b>components</b>	interpret and extract <b>information</b> from <b>blueprints and drawings</b> and their <b>components</b>
		describe types of <b>tools</b> used to scale <b>blueprints and drawings</b>
		identify types of <b>projections</b>
		estimate materials required for projects using scale ruler

### RANGE OF VARIABLES

**blueprints and drawings** include: digital, paper, as-built drawings, engineered shop drawings, architectural drawings, structural drawings

**components** include: symbols, scales, schedules

**information** includes: section and detail views, elevations

**tools** include: calculators, scale ruler, computer software, apps

**projections** include: isometric, orthographic

### A-3.03 Plans project tasks

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
A-3.03.01P	determine sequence of operations	sequence of operations is determined
A-3.03.02P	establish and maintain schedules	schedules are established and maintained according to contractual obligations
A-3.03.03P	determine <b>labour</b> and equipment requirements	<b>labour</b> and equipment requirements are determined by schedule, site conditions, supplies and materials
A-3.03.04P	identify <b>regionally-specific building requirements</b>	<b>regionally-specific building requirements</b> are identified

A-3.03.05P	coordinate <b>tasks</b>	<b>tasks</b> are coordinated according to work plan and worksite conditions
A-3.03.06P	estimate time required to accomplish <b>tasks</b>	time required to accomplish <b>tasks</b> is estimated according to industry standard and site conditions
A-3.03.07P	coordinate delivery dates and availability of materials	delivery dates and availability of materials are coordinated according to work plan and site conditions

## RANGE OF VARIABLES

**labour** includes: other trades' work requirements, workers

**regionally-specific building requirements** include: seismic restraints, exterior wind-load, jurisdictional fire codes, acoustic codes

**tasks** include: utility requirements, safety requirements, preparation, installation, completion, work sequence

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-3.03.01L	demonstrate knowledge of procedures used to plan project <b>tasks</b>	define terminology associated with project planning
		identify the <b>factors</b> that affect scheduling of work
		identify impact of <b>factors</b> on timing and work sequence
		identify <b>regionally-specific building requirements</b>
		describe sequence of operations and timing of procedures

## RANGE OF VARIABLES

**tasks** include: utility requirements, safety requirements, preparation, installation, completion, work sequence

**factors** include: site, weather and environmental conditions, work of other trades, material properties, public safety, accessibility to work area for conveyance of materials and equipment, pre-construction meetings

**regionally-specific building requirements** include: seismic restraints, exterior wind-load, jurisdictional fire codes, acoustic codes

## A-3.04 Estimates materials and supplies

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
A-3.04.01P	interpret plans and specifications	plans and specifications are interpreted
A-3.04.02P	perform <b>mathematical calculations</b>	<b>mathematical calculations</b> are performed in both metric and imperial measurements
A-3.04.03P	calculate <b>material</b> coverage	<b>material</b> coverage is calculated to manufacturers' specifications
A-3.04.04P	interpret site measurements	site measurements are interpreted

### RANGE OF VARIABLES

**mathematical calculations** include: surface area, linear measurement, quantity requirements

**materials** include: walls (interior and exterior), ceilings, roofs, floors, columns, beams

### KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-3.04.01L	demonstrate knowledge of procedures used to estimate <b>materials</b> and supplies	define terminology associated with the estimation of <b>materials</b> and supplies
		describe procedures used to interpret plans and specifications
A-3.04.02L	demonstrate knowledge of <b>mathematical calculations</b> required to estimate <b>materials</b> and supplies	calculate area and linear measurements
		calculate <b>material</b> coverage
		convert between metric and imperial measurements

### RANGE OF VARIABLES

**materials** include: walls (interior and exterior), ceilings, roofs, floors, columns, beams

**mathematical calculations** include: surface area, linear measurement, quantity requirements

## TASK A-4 Performs routine trade activities

### TASK DESCRIPTOR

This task is made up of repetitive activities that lathers (interior systems mechanics) perform on a daily basis that apply to most aspects of the trade.

#### A-4.01 Performs measurements

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

#### SKILLS

	Performance Criteria	Evidence of Attainment
A-4.01.01P	select and use measuring devices	measuring devices are selected and used according to task and manufacturers' specifications
A-4.01.02P	interpret scale from blueprints	scale from blueprints is interpreted
A-4.01.03P	transfer information from blueprints to job site	information from blueprints is transferred to job site
A-4.01.04P	perform mathematical calculations	mathematical calculations are performed to verify measurements and dimensions
A-4.01.05P	convert between metric and imperial measurements	metric and imperial measurements are converted

#### KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.01.01L	demonstrate knowledge of mathematical principles used to verify measurements and dimensions	define terminology associated with mathematical principles
		identify mathematical principles used to verify measurements and dimensions
		describe metric and imperial systems of measurement
		identify formulas to calculate area, radii and surface area
		describe roof calculations

## A-4.02 Uses jigs and templates

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
A-4.02.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
A-4.02.02P	determine when to build and use <b>jigs</b> and <b>templates</b>	when to use <b>jigs</b> and <b>templates</b> is determined according to task requirements
A-4.02.03P	assemble and square <b>jigs</b> and <b>templates</b>	<b>jigs</b> and <b>templates</b> are assembled and squared
A-4.02.04P	use <b>jigs</b> and <b>templates</b> to build repetitive internal frame structures	<b>jigs</b> and <b>templates</b> are used to build repetitive internal frame structures

### RANGE OF VARIABLES

**jigs** include: multi-use, single-use

**templates** include: manufactured, job-built

### KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.02.01L	demonstrate knowledge of <b>jigs</b> and <b>templates</b> , their characteristics and <b>applications</b>	define terminology used with <b>jigs</b> and <b>templates</b>
		identify types of <b>jigs</b> and <b>templates</b> , and describe their characteristics and <b>applications</b>
A-4.02.02L	demonstrate knowledge of procedures used to build <b>jigs</b> and <b>templates</b>	identify types of tools and equipment used to build <b>jigs</b> and <b>templates</b> , and describe their applications and procedures for use
		describe procedures used to build <b>jigs</b> and <b>templates</b>
		identify <b>materials</b> used to build <b>jigs</b> and <b>templates</b>

### RANGE OF VARIABLES

**jigs** include: multi-use, single-use

**templates** include: manufactured, job-built

**applications** include: building bulkheads, building prefabricated wall panels

**materials** include: wood, plywood, drywall, steel studs, track

## A-4.03 Handles materials, supplies and products

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
A-4.03.01P	select and use material handling equipment	material handling equipment is selected and used according to task and manufacturers' specifications
A-4.03.02P	locate and identify <b>materials, supplies and products</b>	<b>materials, supplies and products</b> are located and identified to accommodate construction, future partitions and weight distribution
A-4.03.03P	handle <b>materials, supplies and products</b> manually	<b>materials, supplies and products</b> are handled manually
A-4.03.04P	select storage location	storage location is selected according to site conditions
A-4.03.05P	organize <b>materials, supplies and products</b>	<b>materials, supplies and products</b> are organized according to when they will be used
A-4.03.06P	dispose of surplus and waste <b>materials, supplies and products</b>	surplus and waste <b>materials, supplies and products</b> are disposed of according to waste reduction efforts, company policies and procedures, and jurisdictional regulations

### RANGE OF VARIABLES

**materials, supplies and products** include: drywall, ceiling tiles, adhesives

### KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.03.01L	demonstrate knowledge of procedures used to handle <b>materials, supplies and products</b>	describe loading and unloading procedures
		identify types of material handling equipment used to handle <b>materials, supplies and products</b> , and describe their applications and procedures for use
		describe storage procedures for <b>materials, supplies and products</b>
		describe importance of placing <b>materials, supplies and products</b> in sequence in which they are to be used

## RANGE OF VARIABLES

**materials, supplies and products** include: drywall, ceiling tiles, adhesives

### A-4.04 Lays out work

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
A-4.04.01P	select and use layout devices	layout devices are selected and used according to task and manufacturers' specifications, and site conditions
A-4.04.02P	transfer information from blueprint to job site	information from blueprint is transferred to job site
A-4.04.03P	transfer layout from floor to ceiling for suspended ceilings and bulkheads	layout from floor to ceiling is transferred for suspended ceilings and bulkheads
A-4.04.04P	determine and mark gridlines	gridlines are determined and marked according to blueprints and <b>drawings</b>
A-4.04.05P	transfer elevations to elements	elevations are transferred to elements using <b>benchmarks</b>
A-4.04.06P	transfer <b>benchmarks</b> from one area to another	<b>benchmarks</b> are transferred from one area to another
A-4.04.07P	check gridlines for square	gridlines are checked for square
A-4.04.08P	identify <b>irregularities on floors, walls and ceilings</b>	<b>irregularities on floors, walls and ceilings</b> are identified
A-4.04.09P	calculate elevation of finished floors and ceilings	elevation of finished floors and ceilings is calculated
A-4.04.10P	offset lines to re-establish gridlines	lines are offset to re-establish gridlines
A-4.04.11P	lay out corners, angles and radii	corners, angles and radii are laid out according to blueprints and <b>drawings</b>
A-4.04.12P	make allowances to achieve finish dimension on walls, ceilings and floors	allowances are made to achieve finish dimension on walls, ceilings and floors

## RANGE OF VARIABLES

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**benchmarks** include: door and window openings, bulkheads, ceilings

**irregularities on floors, walls and ceilings** include: high spots on floor, lowest obstacle for ceiling layout

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.04.01L	demonstrate knowledge of procedures used to lay out work	identify types of layout devices used to lay out work, and describe their applications and procedures for use
		describe procedures used to lay out work
		determine installation sequence
		determine work requirements of other trades
A-4.04.02L	demonstrate knowledge of mathematical calculations required to lay out work	identify <b>mathematical principles</b> used to lay out work

### RANGE OF VARIABLES

**mathematical principles** include: 3-4-5 triangle (Pythagorean theorem), radii, angles

### A-4.05 Applies sealants and gaskets

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
A-4.05.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
A-4.05.02P	determine type and amount of <b>sealants</b> and <b>gaskets</b>	type and amount of <b>sealants</b> and <b>gaskets</b> are determined according to task
A-4.05.03P	tool <b>sealants</b>	<b>sealants</b> are tooled according to manufacturers' specifications
A-4.05.04P	clean up <b>sealants</b> , and remove and dispose of excess <b>sealants</b>	<b>sealants</b> are cleaned up, and excess <b>sealants</b> are removed and disposed of according to manufacturers' specifications and jurisdictional regulations

### RANGE OF VARIABLES

**tools and equipment** include: caulking guns, knives

**sealants** include: acoustical, fireproof, thermal, silicone, latex caulking

**gaskets** include: neoprene, foam

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.05.01L	demonstrate knowledge of <b>sealants</b> and <b>gaskets</b> , their characteristics and <b>applications</b>	define terminology associated with <b>sealants</b> and <b>gaskets</b>
		identify types of <b>sealants</b> and <b>gaskets</b> , and describe their characteristics and <b>applications</b>
A-4.05.02L	demonstrate knowledge of procedures used to apply <b>sealants</b> and <b>gaskets</b>	identify <b>tools and equipment</b> used to apply <b>sealants</b> and <b>gaskets</b> , and describe their characteristics and procedures for use
		describe procedures used to apply <b>sealants</b> and <b>gaskets</b>

### RANGE OF VARIABLES

**sealants** include: acoustical, fireproof, thermal, silicone, latex caulking

**gaskets** include: neoprene, foam

**applications** include: prevention of reaction of dissimilar metals, reduction of sound transmission, prevention of drafts, fire rating

**tools and equipment** include: caulking guns, knives

## TASK A-5 Uses communication and mentoring techniques

### TASK DESCRIPTOR

Learning in the trades is done primarily in the workplace with tradespeople passing on their skills and knowledge to apprentices, as well as sharing knowledge among themselves. Apprenticeship is, and always has been about mentoring – learning workplace skills and passing them on. Because of the importance of this to the trade, this task covers the activities related to communication in the workplace and mentoring skills.

#### A-5.01 Uses communication techniques

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
A-5.01.01P	demonstrate communication practices with individuals or in a group	instructions and messages are interpreted by all parties involved in communication
A-5.01.02P	listen using <b>active listening</b> practices	<b>active listening</b> practices are utilized

A-5.01.03P	receive and respond to feedback on work	response to feedback indicates understanding and corrective measures are taken
A-5.01.04P	explain and provide feedback	explanation and feedback is provided and task is carried out as directed
A-5.01.05P	use questioning to improve communication	questions enhance understanding, on-the-job training and goal setting
A-5.01.06P	participate in safety and information meetings	meetings are attended, information is relayed to the workforce, and is applied

## RANGE OF VARIABLES

**active listening** includes: hearing, interpreting, reflecting, responding, paraphrasing, comprehending

<b>KNOWLEDGE</b>		
	<b>Learning Outcomes</b>	<b>Learning Objectives</b>
A-5.01.01L	demonstrate knowledge of trade terminology	define terminology used in trade
A-5.01.02L	demonstrate knowledge of effective communication practices	describe importance of using effective verbal and non-verbal communication with <b>people in the workplace</b>
		identify <b>sources of information</b> to effectively communicate
		identify communication and <b>learning styles</b>
		describe effective listening and speaking skills
		describe effective conflict resolution skills
		identify <b>personal responsibilities and attitudes</b> that contribute to on-the-job success
		identify value of diversity in workplace
		identify communication that constitutes <b>harassment</b> and <b>discrimination</b>

## RANGE OF VARIABLES

**people in the workplace** include: other tradespeople, colleagues, apprentices, supervisors, clients, authorities having jurisdiction (AHJ), manufacturers, general public

**sources of information** include: regulations, codes, occupational health and safety requirements, AHJ requirements, prints, drawings, specifications, company and client documentation, roofing associations

**learning styles** include: seeing it, hearing it, trying it

**personal responsibilities and attitudes** include: asking questions, working safely, accepting constructive feedback, time management and punctuality, respect for authority, good stewardship of materials, tools and property, efficient work practice

**harassment:** as defined by the Canadian and jurisdictional Human Rights Commissions

**discrimination:** as defined by the Canadian Human Rights Act and jurisdictional human rights laws

## A-5.02 Uses mentoring techniques

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
A-5.02.01P	identify and communicate learning objective and point of lesson	apprentice or learner can explain objective and point of lesson
A-5.02.02P	link lesson to other lessons and job	lesson order and unplanned learning opportunities are defined
A-5.02.03P	demonstrate performance of a skill to an apprentice or learner	<b>steps required to demonstrate a skill</b> are performed
A-5.02.04P	set up conditions required for an apprentice or learner to practice a skill	<b>practice conditions</b> are set up so that skill can be practiced safely by apprentice or learner
A-5.02.05P	assess apprentice or learner's ability to perform tasks with increasing independence	performance of apprentice or learner improves with practice to a point where skill can be done with little supervision
A-5.02.06P	give supportive and corrective feedback	apprentice or learner adopts best practice after having been given supportive or corrective feedback
A-5.02.07P	support apprentices or learners in pursuing technical training opportunities	technical training is completed within timeframe prescribed by apprenticeship authority
A-5.02.08P	support anti- <b>harassment</b> in the workplace	workplace is <b>harassment-</b> and <b>discrimination-free</b>
A-5.02.09P	assess apprentice or learner suitability for trade during probationary period	apprentice or learner is given feedback that helps them identify their own strengths and weaknesses and suitability for trade

### RANGE OF VARIABLES

**steps required to demonstrate a skill** include: understanding the who, what, where, when, why, and how, explaining, showing, giving encouragement, following up to ensure skill is performed correctly

**practice conditions** mean: guided, limited independence, full independence

**harassment:** as defined by the Canadian and jurisdictional Human Rights Commissions

**discrimination:** as defined by the Canadian Human Rights Act and jurisdictional human rights laws

### KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-5.02.01L	demonstrate knowledge of strategies for learning skills in the workplace	describe importance of individual experience describe shared responsibilities for workplace learning

		determine one's own learning preferences and explain how these relate to learning new skills
		describe importance of different types of skills in the workplace
		describe importance of <b>essential skills</b> in workplace
		identify different <b>learning styles</b>
		identify different <b>learning needs</b> and strategies to meet them
		identify <b>strategies to assist in learning a skill</b>
A-5.02.02L	demonstrate knowledge of strategies for <b>teaching</b> workplace <b>skills</b>	identify different roles played by a workplace mentor
		describe <b>teaching skills</b>
		explain the importance of identifying point of a lesson
		identify how to choose a good time to present a lesson
		explain importance of linking lessons
		identify components of skill (the context)
		describe considerations in setting up opportunities for skill practice
		explain the importance of providing feedback
		identify techniques for giving effective feedback
		describe a skills assessment
		identify methods of assessing progress
		explain how to adjust a lesson to different situations

## RANGE OF VARIABLES

**essential skills** are: reading, document use, writing, oral communication, numeracy, thinking, working with others, digital technology, continuous learning

**learning styles** include: seeing it, hearing it, trying it

**learning needs** include: learning disabilities, learning preferences, language proficiency

**strategies to assist in learning a skill** include: understanding the basic principles of instruction, developing coaching skills, being mature and patient, providing feedback

**teaching skills** include: identifying point of lesson, linking lesson, demonstrating skill, providing practice, giving feedback, assessing skills and progress

# MAJOR WORK ACTIVITY B

## Performs framing activities

### TASK B-6 Erects non-loadbearing steel assemblies

#### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) erect non-loadbearing steel assemblies. Non-loadbearing steel assemblies are used to create walls, ceilings and bulkheads. Their erection should conform to manufacturers' specifications and applicable codes.

#### **B-6.01** Frames non-loadbearing walls

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

#### SKILLS

	Performance Criteria	Evidence of Attainment
B-6.01.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-6.01.02P	identify <b>material thicknesses</b>	<b>material thicknesses</b> are identified
B-6.01.03P	verify component requirements	component requirements are verified
B-6.01.04P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes
B-6.01.05P	measure and cut <b>non-loadbearing wall components</b>	<b>non-loadbearing wall components</b> are measured and cut according to blueprints and <b>drawings</b>
B-6.01.06P	determine stud spacing	stud spacing is determined according to blueprints and <b>drawings</b> , building codes and industry standards
B-6.01.07P	place and attach <b>non-loadbearing wall components</b>	<b>non-loadbearing wall components</b> are placed and attached according to blueprints and <b>drawings</b> , building codes and industry standards

## RANGE OF VARIABLES

**tools and equipment** include: hammer drills, screw guns, plumb bobs, powder-actuated tools, laser levels, levels

**material thicknesses** include: gauge, mils

**fasteners** include: various self-tapping screws, pin bolts, adhesives, anchors

**non-loadbearing wall components** include: studs, tracks, channels

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
B-6.01.01L	demonstrate knowledge of non-loadbearing walls, their characteristics and applications	define terminology associated with non-loadbearing walls
		identify types of <b>non-loadbearing wall components</b> and describe their characteristics and applications
B-6.01.02L	demonstrate knowledge of procedures used to frame non-loadbearing walls	identify <b>tools and equipment</b> used to frame non-loadbearing walls, and describe their characteristics and procedures for use
		describe procedures used to frame non-loadbearing walls
		identify types of <b>fasteners</b> used to frame non-loadbearing walls
		describe clearances required for deflection and expansion
		identify <b>types of substrates</b> and describe their properties

## RANGE OF VARIABLES

**non-loadbearing wall components** include: studs, tracks, channels

**tools and equipment** include: hammer drills, screw guns, plumb bobs, powder-actuated tools, laser levels, levels

**fasteners** include: various self-tapping screws, pin bolts, adhesives, anchors

**types of substrates** include: concrete, concrete masonry unit (CMU) masonry, brick, steel, wood

## B-6.02 Frames spanned ceilings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
B-6.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-6.02.02P	identify <b>component</b> thicknesses	<b>component</b> thicknesses are identified
B-6.02.03P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications and building codes
B-6.02.04P	measure and cut <b>ceiling components</b>	<b>ceiling components</b> are measured and cut
B-6.02.05P	determine ceiling framing member spacing	ceiling framing member spacing is determined according to blueprints and <b>drawings</b> , building codes and industry standards
B-6.02.06P	place and attach <b>ceiling components</b>	<b>ceiling components</b> are placed and attached according to blueprints and <b>drawings</b> , building codes and industry standards

### RANGE OF VARIABLES

**tools and equipment** include: laser levels, screw guns

**components** include: gauges, mils

**fasteners** include: framing screws, concrete pins, pin bolts

**ceiling components** include: studs, tracks

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

### KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-6.02.01L	demonstrate knowledge of spanned ceilings, their <b>components</b> , characteristics and applications	define terminology associated with spanned ceilings and their <b>components</b>
		identify types of spanned ceilings and their <b>components</b> , and describe their characteristics and applications
B-6.02.02L	demonstrate knowledge of determining elevation heights	describe procedures used to determine elevation heights

B-6.02.03L	demonstrate knowledge of procedures used to frame spanned ceilings	identify <b>tools and equipment</b> used to frame spanned ceilings, and describe their characteristics and procedures for use
		describe procedures used to frame spanned ceilings
		identify types of <b>fasteners</b> used to frame spanned ceilings
		identify span tables

## RANGE OF VARIABLES

**components** include: gauges, mils

**tools and equipment** include: laser levels, screw guns

**fasteners** include: framing screws, concrete pins, pin bolts

## B-6.03 Frames suspended drywall ceilings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
B-6.03.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-6.03.02P	check requirements for <b>access panels</b>	requirements for <b>access panels</b> are checked
B-6.03.03P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes
B-6.03.04P	identify <b>material thicknesses</b>	<b>material thicknesses</b> are identified
B-6.03.05P	measure and cut <b>components</b>	<b>components</b> are measured and cut according to manufacturers' specifications
B-6.03.06P	determine <b>component</b> spacing	<b>component</b> spacing is determined according to blueprints and <b>drawings</b> , manufacturers' specifications, building codes and industry standards
B-6.03.07P	attach <b>components</b>	<b>components</b> are attached according to manufacturers' specifications, project specifications and building codes

## RANGE OF VARIABLES

**tools and equipment** include: laser levels, screw guns, nippers

**access panels** include: electrical fixtures, ducts, plumbing

**fasteners** include: tie wire, hanger wire, eyelets

**material thicknesses** include: gauge and mils of framing members, thickness of drywall

**components** include: tracks, angles, carrying channels, furring channels

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
B-6.03.01L	demonstrate knowledge of suspended drywall ceilings, their <b>components</b> , characteristics and applications	define terminology associated with suspended drywall ceilings and their <b>components</b>
		identify types of suspended drywall ceilings, and describe their characteristics and applications
		identify types of suspended drywall ceiling <b>components</b> , and describe their characteristics and applications
B-6.03.02L	demonstrate knowledge of determining elevation heights	describe procedures used to determine elevation heights
B-6.03.03L	demonstrate knowledge of procedures used to frame suspended drywall ceilings	identify <b>tools and equipment</b> used to frame suspended drywall ceilings, and describe their characteristics and procedures for use
		describe procedures used to frame suspended drywall ceilings
		identify types of <b>fasteners</b> used to frame suspended drywall ceilings
		describe structural requirements for suspended drywall ceilings

## RANGE OF VARIABLES

**components** include: tracks, angles, carrying channels, furring channels

**tools and equipment** include: laser levels, screw guns, nippers

**fasteners** include: tie wire, hanger wire, eyelets

## B-6.04 Frames non-loadbearing bulkheads

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
B-6.04.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-6.04.02P	identify <b>material thicknesses</b>	<b>material thicknesses</b> are identified
B-6.04.03P	measure and cut <b>components</b>	<b>components</b> are measured and cut according to manufacturers' specifications
B-6.04.04P	determine <b>component</b> spacing	<b>component</b> spacing is determined according to blueprints and <b>drawings</b> and manufacturers' specifications
B-6.04.05P	brace bulkhead	bulkhead is braced according to project documents and engineered drawings
B-6.04.06P	place and attach <b>components</b>	<b>components</b> are placed and attached according to blueprints and <b>drawings</b> , and manufacturers' specifications
B-6.04.07P	maximize use of materials	use of materials is maximized
B-6.04.08P	form curves for bulkheads	curves for bulkheads are formed according to blueprints and <b>drawings</b>
B-6.04.09P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes

### RANGE OF VARIABLES

**tools and equipment** include: laser levels, screw guns

**material thicknesses** include: gauge and mils of framing members, thickness of drywall

**components** include: studs, tracks

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**fasteners** include: pin bolts, framing screws, drywall screws

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-6.04.01L	demonstrate knowledge of non-loadbearing bulkheads, their <b>components</b> , characteristics, <b>applications</b> and <b>architectural features</b>	define terminology associated with non-loadbearing bulkheads and their <b>components</b>
		identify types of non-loadbearing bulkheads and describe their characteristics, <b>applications</b> and <b>architectural features</b>
		identify types of non-loadbearing bulkhead <b>components</b> , and describe their characteristics, <b>applications</b> and <b>architectural features</b>
B-6.04.02L	demonstrate knowledge of determining elevation heights	describe procedures used to determine elevation heights
B-6.04.03L	demonstrate knowledge of procedures used to frame non-loadbearing bulkheads	identify <b>tools and equipment</b> used to frame non-loadbearing bulkheads, and describe their characteristics and procedures for use
		describe procedures used to frame non-loadbearing bulkheads
		identify types of <b>fasteners</b> used to frame non-loadbearing bulkheads

### RANGE OF VARIABLES

**components** include: studs, tracks

**applications** include: cosmetic, concealing electrical and mechanical devices, smoke barrier, defining room transitions

**architectural features** include: light coves, valences, curves

**tools and equipment** include: laser levels, screw guns

**fasteners** include: pin bolts, framing screws, drywall screws

### B-6.05

### Installs metal door and window frames

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
B-6.05.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-6.05.02P	level, plumb and square frame	frame is levelled, plumbed and squared

B-6.05.03P	attach frame to studs and floor	frame is attached to studs and floor according to industry standards and building codes
B-6.05.04P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes
B-6.05.05P	determine throat size of windows and doors	throat size of windows and doors is determined according to blueprints and <b>drawings</b>
B-6.05.06P	assemble knock-down frames	knock-down frames are assembled according to manufacturers' specifications
B-6.05.07P	install shims	shims are installed
B-6.05.08P	determine secure side of window	secure side of window is determined
B-6.05.09P	detect and correct <b>defects</b>	<b>defects</b> are detected and corrected
B-6.05.10P	place frame in correct position	frame is placed in correct position

## RANGE OF VARIABLES

**tools and equipment** include: laser and spirit levels, plumb bobs, squares, screw guns, hammer drills

**fasteners** include: screws, anchors

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**defects** include: deformed frames, inconsistent spreaders

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-6.05.01L	demonstrate knowledge of metal door and window frames, their characteristics and applications	define terminology associated with metal door and window frames
		identify <b>types of metal door frames</b> , and describe their characteristics and applications
		identify types of metal window frames, and describe their characteristics and applications
B-6.05.02L	demonstrate knowledge of procedures used to install metal door and window frames	identify <b>tools and equipment</b> used to install metal door and window frames, and describe their characteristics and procedures for use
		describe procedures used to install metal door and window frames
		identify types of <b>fasteners</b> used to install metal door and window frames
		identify types of possible <b>defects</b> when installing metal door and window frames
		describe metal door frame swing

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describe metal window and door frame throat sizes

---

identify types of wall finishes

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## RANGE OF VARIABLES

**types of metal door frames** include: welded, knock-down, 3-piece knock-down

**tools and equipment** include: laser and spirit levels, plumb bobs, squares, screw guns, hammer drills

**fasteners** include: screws, anchors

**defects** include: deformed frames, inconsistent spreaders

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### **B-6.06** Installs backing

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
B-6.06.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-6.06.02P	determine <b>backing</b> location	<b>backing</b> location is determined according to blueprints and <b>drawings</b> , and manufacturers' specifications
B-6.06.03P	cut and shape <b>backing</b>	<b>backing</b> is cut and shaped
B-6.06.04P	fasten <b>backing</b>	<b>backing</b> is fastened
B-6.06.05P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes

## RANGE OF VARIABLES

**tools and equipment** include: saws (table, circular, chop), screw guns, pop riveter, drill

**backing** includes: plywood, wide metal strapping

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**fasteners** include: framing screws, drywall screws

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-6.06.01L	demonstrate knowledge of <b>backing</b> , their characteristics and applications	define terminology associated with <b>backing</b>
		identify types of <b>backing</b> , and describe their characteristics and applications
B-6.06.02L	demonstrate knowledge of procedures used to install <b>backing</b>	identify <b>tools and equipment</b> used to install <b>backing</b> , and describe their characteristics and procedures for use
		describe procedures used to install <b>backing</b>
		identify types of <b>fasteners</b> used to install <b>backing</b>
		describe <b>backing</b> requirements and placement
		identify metal strapping thickness

### RANGE OF VARIABLES

**backing** includes: plywood, wide metal strapping

**tools and equipment** include: saws (table, circular, chop), screw guns, pop riveter, drill

**fasteners** include: framing screws, drywall screws

## TASK B-7 Erects loadbearing steel assemblies

### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) erect loadbearing steel assemblies. All load (wind and weight) bearing assemblies need to be designed and approved by engineers before lathers (interior systems mechanics) can begin their work. The engineers' specifications must be strictly followed.

#### B-7.01

**Frames loadbearing walls**

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
B-7.01.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-7.01.02P	identify <b>material thicknesses</b>	<b>material thicknesses</b> are identified

B-7.01.03P	verify component requirements	component requirements are verified
B-7.01.04P	measure and cut <b>components</b>	<b>components</b> are measured and cut according to blueprints and <b>drawings</b>
B-7.01.05P	determine stud spacing	stud spacing is determined according to blueprints and <b>drawings</b>
B-7.01.06P	place and attach <b>loadbearing wall components</b>	<b>loadbearing wall components</b> are placed and attached according to blueprints and <b>drawings</b>
B-7.01.07P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes

## RANGE OF VARIABLES

**tools and equipment** include: hammer drills, impact drivers, chop saws, plumb bobs, shears, nibblers, laser levels, spirit levels, welding equipment

**material thicknesses** include: gauge and mils of framing members, thickness of drywall

**loadbearing wall components** include: cross bracing, strapping, bridging, studs, tracks, channels, clips

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**fasteners** include: self-drilling screws, pin bolts, powder-actuated fasteners, anchors

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
B-7.01.01L	demonstrate knowledge of <b>loadbearing walls</b> , their <b>components</b> , characteristics and applications	define terminology associated with <b>loadbearing walls</b>
		identify types of <b>loadbearing walls</b> and describe their characteristics and applications
		identify types of <b>loadbearing wall components</b> and describe their characteristics and applications
B-7.01.02L	demonstrate knowledge of <b>drawings</b> and specifications	interpret information from <b>drawings</b> and specifications
B-7.01.03L	demonstrate knowledge of procedures used to frame <b>loadbearing walls</b>	identify <b>tools and equipment</b> used to frame <b>loadbearing walls</b> , and describe their characteristics and procedures for use
		describe procedures used to frame <b>loadbearing walls</b>
		identify types of <b>fasteners</b> used to frame <b>loadbearing walls</b>

identify **types of substrates** and describe their properties

identify basic welding and plasma cutting procedures and required to frame **loadbearing walls**

## RANGE OF VARIABLES

**loadbearing walls** include: parapet walls, exterior walls, interior walls

**loadbearing wall components** include: cross bracing, strapping, bridging, studs, tracks, channels, clips

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**tools and equipment** include: hammer drills, impact drivers, chop saws, plumb bobs, shears, nibblers, laser levels, spirit levels, welding equipment

**fasteners** include: self-drilling screws, pin bolts, powder-actuated fasteners, anchors

**types of substrates** include: concrete, CMU masonry, brick, steel, wood

## B-7.02 Frames exterior ceilings and soffits

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
B-7.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-7.02.02P	identify <b>material thicknesses</b>	<b>material thicknesses</b> are identified
B-7.02.03P	measure and cut <b>exterior ceiling and soffit components</b>	<b>exterior ceiling and soffit components</b> are measured and cut according to blueprints and <b>drawings</b>
B-7.02.04P	determine component spacing	component spacing is determined according to blueprints and <b>drawings</b>
B-7.02.05P	place and attach <b>exterior ceiling and soffit components</b>	<b>exterior ceiling and soffit components</b> are placed and attached according to blueprints and <b>drawings</b>
B-7.02.06P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes
B-7.02.07P	install vertical bracing for wind load	vertical bracing for wind load is installed according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: hammer drills, impact drivers, chop saws, plumb bobs, laser levels, spirit levels

**material thicknesses** include: gauge and mills of framing members, thickness of drywall

**exterior ceiling and soffit components** include: furring channel, studs, flat metal, angles, tracks

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**fasteners** include: self-drilling screws, pin bolts, powder-actuated fasteners, anchors

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
B-7.02.01L	demonstrate knowledge of exterior ceilings and soffits, their <b>components</b> , characteristics and applications	define terminology associated with exterior ceilings and soffits and their <b>components</b>
		identify types of exterior ceilings and soffits, and describe their characteristics and applications
		identify types of exterior ceiling and soffit <b>components</b> , and describe their characteristics and applications
B-7.02.02L	demonstrate knowledge of <b>drawings</b> and specifications	interpret information from <b>drawings</b> and specifications
B-7.02.03L	demonstrate knowledge of procedures used to frame exterior ceilings and soffits	identify <b>tools and equipment</b> used to frame exterior ceilings and soffits, and describe their characteristics and procedures for use
		describe procedures used to frame exterior ceilings and soffits
		identify types of <b>fasteners</b> used to frame exterior ceilings and soffits
		identify <b>types of substrates</b> and describe their properties

## RANGE OF VARIABLES

**exterior ceiling and soffit components** include: furring channel, studs, flat metal, angles, tracks

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**tools and equipment** include: hammer drills, impact drivers, chop saws, plumb bobs, laser levels, spirit levels

**fasteners** include: self-drilling screws, pin bolts, powder-actuated fasteners, anchors

**types of substrates** include: concrete, CMU masonry, brick, steel, wood

**B-7.03****Frames loadbearing bulkheads**

<b>NL</b>	<b>NS</b>	<b>PE</b>	<b>NB</b>	<b>QC</b>	<b>ON</b>	<b>MB</b>	<b>SK</b>	<b>AB</b>	<b>BC</b>	<b>NT</b>	<b>YT</b>	<b>NU</b>
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

**SKILLS**

	<b>Performance Criteria</b>	<b>Evidence of Attainment</b>
B-7.03.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-7.03.02P	identify <b>material thicknesses</b>	<b>material thicknesses</b> are identified
B-7.03.03P	measure and cut <b>bulkhead components</b>	<b>bulkhead components</b> are measured and cut according to blueprints and <b>drawings</b>
B-7.03.04P	determine <b>bulkhead component</b> spacing	<b>bulkhead component</b> spacing is determined according to blueprints and <b>drawings</b>
B-7.03.05P	place and attach <b>bulkhead components</b>	<b>bulkhead components</b> are placed and attached according to blueprints and <b>drawings</b>
B-7.03.06P	form curves for bulkheads	curves for bulkheads are formed according to blueprints and <b>drawings</b>
B-7.03.07P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes
B-7.03.08P	install bracing and backing	bracing and backing are installed

**RANGE OF VARIABLES**

**tools and equipment** include: laser levels, spirit levels, screw guns, impact drills

**material thicknesses** include: gauge and mils of framing members, thickness of drywall

**bulkhead components** include: studs, backing, hangers, tracks

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**fasteners** include: pin bolts, framing screws, drywall screws, anchors

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-7.03.01L	demonstrate knowledge of <b>loadbearing bulkheads</b> , their <b>components</b> , characteristics, applications and <b>functions</b>	define terminology associated with <b>loadbearing bulkheads</b> and their <b>components</b>
		identify types of <b>loadbearing bulkheads</b> and their <b>components</b> , and describe their characteristics, applications and <b>functions</b>
B-7.03.02L	demonstrate knowledge of <b>drawings</b> and specifications	interpret information from <b>drawings</b> and specifications
B-7.03.03L	demonstrate knowledge of procedures used to frame <b>loadbearing bulkheads</b>	identify <b>tools and equipment</b> used to frame <b>loadbearing bulkheads</b> , and describe their characteristics and procedures for use
		describe procedures used to frame <b>loadbearing bulkheads</b>
		identify types of <b>fasteners</b> used to frame <b>loadbearing bulkheads</b>
		identify <b>types of substrates</b> and describe their properties
		identify structural requirements
		identify <b>bulkhead component</b> spacing requirements
		identify basic welding and plasma cutting procedures required to frame <b>loadbearing bulkheads</b>

### RANGE OF VARIABLES

**loadbearing bulkheads** include: store fronts, light covers, canopies

**bulkhead components** include: studs, backing, hangers, tracks

**functions** include: cosmetic, concealing electrical and mechanical devices, protection from weather, defining room transitions

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**tools and equipment** include: laser levels, spirit levels, screw guns, impact drills

**fasteners** include: pin bolts, framing screws, drywall screws, anchors

**types of substrates** include: concrete, CMU masonry, brick, steel, wood

**B-7.04****Frames loadbearing floors**

<b>NL</b>	<b>NS</b>	<b>PE</b>	<b>NB</b>	<b>QC</b>	<b>ON</b>	<b>MB</b>	<b>SK</b>	<b>AB</b>	<b>BC</b>	<b>NT</b>	<b>YT</b>	<b>NU</b>
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

**SKILLS**

	<b>Performance Criteria</b>	<b>Evidence of Attainment</b>
B-7.04.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-7.04.02P	identify <b>material thicknesses</b>	<b>material thicknesses</b> are identified
B-7.04.03P	measure and cut <b>loadbearing floor components</b>	<b>loadbearing floor components</b> are measured and cut
B-7.04.04P	determine <b>loadbearing floor component</b> spacing	<b>loadbearing floor component</b> spacing is determined according to blueprints and <b>drawings</b>
B-7.04.05P	place and attach <b>loadbearing floor components</b>	<b>loadbearing floor components</b> are placed and attached according to blueprints and <b>drawings</b>
B-7.04.06P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes

**RANGE OF VARIABLES**

**tools and equipment** include: hammer drills, impact drivers, chop saws, laser levels, spirit levels, shears

**material thicknesses** include: gauge and mils of framing members, thickness of drywall

**loadbearing floor components** include: steel joists, channels, flat metal, bridging, bracing, stiffeners, decking

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**fasteners** include: self-drilling screws, anchors

**KNOWLEDGE**

	<b>Learning Outcomes</b>	<b>Learning Objectives</b>
B-7.04.01L	demonstrate knowledge of <b>loadbearing floors</b> , their <b>components</b> , characteristics, applications and <b>functions</b>	define terminology associated with <b>loadbearing floors</b> and their <b>components</b>  identify types of <b>loadbearing floors</b> and their <b>components</b> , and describe their characteristics, applications and <b>functions</b>
B-7.04.02L	demonstrate knowledge of <b>drawings</b> and specifications	interpret information from <b>drawings</b> and specifications

B-7.04.03L	demonstrate knowledge of procedures used to frame <b>loadbearing floors</b>	identify <b>tools and equipment</b> used to frame <b>loadbearing floors</b> , and describe their characteristics and procedures for use
		describe procedures used to frame <b>loadbearing floors</b>
		identify types of <b>fasteners</b> used to frame <b>loadbearing floors</b>
		identify <b>types of substrates</b> and describe their properties
		identify basic welding and plasma cutting procedures required to frame <b>loadbearing floors</b>

## RANGE OF VARIABLES

**loadbearing floor components** include: steel joists, channels, flat metal, bridging, bracing, stiffeners, decking

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**tools and equipment** include: hammer drills, impact drivers, chop saws, laser levels, spirit levels, shears

**fasteners** include: self-drilling screws, anchors

**types of substrates** include: concrete, CMU masonry, brick, steel, wood

## B-7.05 Frames loadbearing roofs

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
B-7.05.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
B-7.05.02P	identify <b>material thicknesses</b>	<b>material thicknesses</b> are identified
B-7.05.03P	measure and cut <b>loadbearing roof components</b>	<b>loadbearing roof components</b> are measured and cut according to blueprints and <b>drawings</b>
B-7.05.04P	determine <b>loadbearing roof components</b> spacing	<b>loadbearing roof components</b> spacing is determined according to blueprints and <b>drawings</b>
B-7.05.05P	place and attach <b>loadbearing roof components</b>	<b>loadbearing roof components</b> are placed and attached according to blueprints and <b>drawings</b>

B-7.05.06P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes
B-7.05.07P	install manufactured trusses	manufactured trusses are installed according to manufacturers' specifications
B-7.05.08P	install bridging and bracing	bridging and bracing are installed according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: hammer drills, impact drivers, chop saws, levels, framing squares

**material thicknesses** include: gauge and mils of framing members, thickness of drywall

**loadbearing roof components** include: studs, flat metal for cross bracing, tracks, bridging, pre-manufactured trusses

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**fasteners** include: self-drilling screws, nuts, bolts

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-7.05.01L	demonstrate knowledge of loadbearing roofs, their <b>components</b> , characteristics, applications and functions	define terminology associated with loadbearing roofs and their <b>components</b>
		identify <b>types of loadbearing roofs</b> and their <b>components</b> , and describe their characteristics, applications and functions
B-7.05.02L	demonstrate knowledge of <b>drawings</b> and specifications	interpret information from <b>drawings</b> and specifications
B-7.05.03L	demonstrate knowledge of procedures used to frame loadbearing roofs	identify <b>tools and equipment</b> used to frame loadbearing roofs, and describe their characteristics and procedures for use
		describe procedures used to frame loadbearing roofs
		identify types of <b>fasteners</b> used to frame loadbearing roofs
		identify <b>types of substrates</b> and describe their properties
		identify basic welding and plasma cutting procedures required to frame loadbearing roofs

## **RANGE OF VARIABLES**

***loadbearing roof components*** include: studs, flat metal for cross bracing, tracks, bridging, pre-manufactured trusses

***types of loadbearing roofs*** include: gable, hip, sloping, flat, mansard

***drawings*** include: engineered shop drawings, architectural drawings, structural drawings

***tools and equipment*** include: hammer drills, impact drivers, chop saws, levels, framing squares

***fasteners*** include: self-drilling screws, nuts, bolts

***types of substrates*** include: concrete, CMU masonry, brick, steel, wood

# MAJOR WORK ACTIVITY C

## Installs interior systems

### TASK C-8 Installs wall systems and components

#### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) install wall systems and components to match project requirements such as security, reusable partitions and accessibility of covered devices. Components are installed to provide desired appearance and protect against sound and fire.

#### C-8.01 Installs demountable walls

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

#### SKILLS

Performance Criteria		Evidence of Attainment
C-8.01.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-8.01.02P	place studs for windows, doors and corners	studs for windows, doors and corners are placed when framing according to industry practices and standards, codes and regulations
C-8.01.03P	cut panel and trim	panel and trim are cut to minimize waste
C-8.01.04P	cut back of sheets for outside angles and off angles	back of sheets are cut for outside angles and off angles
C-8.01.05P	install and fasten sheets	sheets are installed and fastened using <b>fasteners</b> according to manufacturers' specifications
C-8.01.06P	cut out openings for windows, doors and other penetrations	openings for windows, doors and other penetrations are cut according to blueprints and <b>drawings</b>
C-8.01.07P	mitre and install plastic trims and aluminum frames	plastic trims and aluminum frames are mitred and installed
C-8.01.08P	fabricate finished edge on vinyl-covered drywall	finished edge is fabricated on vinyl-covered drywall
C-8.01.09P	install aluminum window and door frames	aluminum window and door frames are installed according to manufacturers' specifications

C-8.01.10P	handle pre-finished products with care	pre-finished products are handled with care to avoid damage
C-8.01.11P	install channels on steel studs for hanging gravity system	channels on steel studs are installed for hanging gravity system according to manufacturers' specifications
C-8.01.12P	install gravity clips on back of drywall	gravity clips are installed on back of drywall according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: routers, keyhole saws, knives, rasps, pencil, tape measure, drywall lifter

**fasteners** include: screws (framing, drywall), clips, tape (hook and loop, double-sided), brackets

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
C-8.01.01L	demonstrate knowledge of demountable walls, their <b>components</b> , characteristics and applications	define terminology associated with demountable walls and their <b>components</b>
		identify <b>types of demountable walls</b> and their <b>components</b> , and describe their characteristics and applications
		identify types of <b>drywall used in demountable wall systems</b>
		describe framing systems used with demountable walls
C-8.01.02L	demonstrate knowledge of procedures used to install demountable walls and their <b>components</b>	identify sizes of prefinished drywall
		identify <b>tools and equipment</b> used to install demountable walls and their <b>components</b> , and describe their characteristics and procedures for use
		describe procedures used to install demountable walls and their <b>components</b>
		identify <b>types of fastening systems</b> used with demountable walls
		describe <b>fasteners</b> used to install demountable walls

## RANGE OF VARIABLES

**components** include: baseboards, J trims, corner pieces, top tracks, battens

**types of demountable walls** include: gravity lock, side clip, batten systems

**drywall used in demountable wall systems** include: vinyl-covered, cloth-covered, veneer-covered

**tools and equipment** include: routers, keyhole saws, knives, rasps, pencil, tape measure, drywall lifter

**types of fastening systems** include: progressive, non-progressive

**fasteners** include: screws (framing, drywall), clips, tape (hook and loop, double-sided), brackets

## C-8.02 Installs drywall

<b>NL</b>	<b>NS</b>	<b>PE</b>	<b>NB</b>	<b>QC</b>	<b>ON</b>	<b>MB</b>	<b>SK</b>	<b>AB</b>	<b>BC</b>	<b>NT</b>	<b>YT</b>	<b>NU</b>
NV	yes	NV	yes	NV	yes	yes	NV	no	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
C-8.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-8.02.02P	place drywall sheets	drywall sheets are placed according to standards, codes and regulations, and with minimal waste
C-8.02.03P	check that studs, and door and window frames are level and plumb during installation of sheets	studs, and door and window frames are checked to be level and plumb during installation of sheets
C-8.02.04P	measure and cut drywall	drywall is measured and cut according to industry practices and with minimal waste
C-8.02.05P	select and use <b>fasteners</b>	<b>fasteners</b> are selected and used according to manufacturers' specifications, project specifications and building codes
C-8.02.06P	install drywall on concrete and block walls	drywall is installed on concrete and block walls according to standards, codes and regulations
C-8.02.07P	curve drywall	drywall is curved according to industry practices and manufacturers' specifications
C-8.02.08P	measure and cut openings for windows, doors and penetrations	openings for windows, doors and penetrations are measured and cut

### RANGE OF VARIABLES

**tools and equipment** include: screw guns, routers, drywall lifters, saws (key hole, wallboard), T-squares, knives, tape measures, pencils

**fasteners** include: screws, nails, concrete nails, adhesives

### KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-8.02.01L	demonstrate knowledge of drywall, its characteristics and applications	define terminology associated with drywall
		identify <b>types of drywall</b> , and describe their characteristics and applications
		identify common thicknesses, widths and lengths of drywall

C-8.02.02L	demonstrate knowledge of procedures used to install drywall	identify <b>tools and equipment</b> used to install drywall, and describe their characteristics and procedures for use
		describe procedures used to install drywall
		describe <b>fasteners</b> used to install drywall
		identify finished ceiling heights
		identify multi-layer requirements
		identify sequence of installation of drywall sheets
		identify problems and corrective measures related to installing drywall

## RANGE OF VARIABLES

**types of drywall** include: fire-rated, regular, moisture-resistant

**tools and equipment** include: screw guns, routers, drywall lifters, saws (key hole, wallboard), T-squares, knives, tape measures, pencils

**fasteners** include: screws, nails, concrete nails, adhesives

## C-8.03 Finishes drywall

<b>NL</b>	<b>NS</b>	<b>PE</b>	<b>NB</b>	<b>QC</b>	<b>ON</b>	<b>MB</b>	<b>SK</b>	<b>AB</b>	<b>BC</b>	<b>NT</b>	<b>YT</b>	<b>NU</b>
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
C-8.03.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-8.03.02P	mix compound	compound is mixed according to site conditions and manufacturers' specifications
C-8.03.03P	embed tape	tape is embedded according to industry practices
C-8.03.04P	apply compounds for rough coats	compounds are applied for rough coats according to industry practices and manufacturers' specifications
C-8.03.05P	apply compounds for finish coats	compounds are applied for finish coats according to industry practices and manufacturers' specifications
C-8.03.06P	sand joints	joints are sanded according to industry practices

## RANGE OF VARIABLES

**tools and equipment** include: tin snips, mixing drill and paddle, utility knives, hawks and trowels, mud pans, taping knives, sandpaper, sanding tools

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
C-8.03.01L	demonstrate knowledge of drywall, its characteristics and applications	define terminology associated with drywall
		identify <b>types of drywall</b> , and describe their characteristics and applications
C-8.03.02L	demonstrate knowledge of procedures used to finish drywall	identify common thicknesses, widths and lengths of drywall
		identify <b>tools and equipment</b> used to finish drywall, and describe their characteristics and procedures for use
		describe procedures used to finish drywall
		describe drywall finishing level definitions
		identify <b>drywall finishing materials</b>
		describe drywall sanding techniques
		identify problems and corrective measures related to finishing of drywall

## RANGE OF VARIABLES

**types of drywall** include: fire-rated, regular, moisture-resistant, cement board

**tools and equipment** include: tin snips, mixing drill and paddle, utility knives, hawks and trowels, mud pans, taping knives, sandpaper, sanding tools

**drywall finishing materials** include: joint compound, joint tape, corner beads and trims, perforated paper, reinforcing tape, mesh tape, compounds (quick setting, all purpose, finish)

### C-8.04 Installs drywall trims and mouldings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

SKILLS		
	Performance Criteria	Evidence of Attainment
C-8.04.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-8.04.02P	select <b>trims</b> and <b>mouldings</b>	<b>trims</b> and <b>mouldings</b> are selected according to task

C-8.04.03P	measure and cut <b>trims</b> and <b>mouldings</b>	<b>trims</b> and <b>mouldings</b> are measured and cut according to industry practices
C-8.04.04P	fasten <b>trims</b> and <b>mouldings</b>	<b>trims</b> and <b>mouldings</b> are fastened using <b>methods</b>
C-8.04.05P	install <b>trims</b> to provide best look at reveal	<b>trims</b> are installed to provide best look at reveal

## RANGE OF VARIABLES

**tools and equipment** include: aviation snips, hacksaws, mitre saws, bead clinchers, mallets, staplers, putty knives, tape measures, pencils

**trims** include: corner beads (plastic, metal, bullnose), L-beads, J-beads, expansion and control joints

**mouldings** include: plaster, cove, step, ornamental

**methods** include: nailing, screwing, clinching, gluing, stapling

<b>KNOWLEDGE</b>		
	<b>Learning Outcomes</b>	<b>Learning Objectives</b>
C-8.04.01L	demonstrate knowledge of drywall <b>trims</b> and <b>mouldings</b> , their characteristics, applications and functions	define terminology associated with drywall <b>trims</b> and <b>mouldings</b>
		identify types of drywall <b>trims</b> and <b>mouldings</b> , and describe their characteristics, applications and functions
		identify <b>trim and moulding locations</b>
C-8.04.02L	demonstrate knowledge of procedures used to install drywall <b>trims</b> and <b>mouldings</b>	identify <b>tools and equipment</b> used to install drywall <b>trims</b> and <b>mouldings</b> , and describe their characteristics and procedures for use
		describe procedures used to install drywall <b>trims</b> and <b>mouldings</b>
		describe <b>methods</b> used to fasten drywall <b>trims</b> and <b>mouldings</b>

## RANGE OF VARIABLES

**trims** include: corner beads (plastic, metal, bullnose), L-beads, J-beads, expansion and control joints

**mouldings** include: plaster, cove, step, ornamental

**trim and moulding locations** include: corners, closet edges, transitions, door frames

**tools and equipment** include: aviation snips, hacksaws, mitre saws, bead clinchers, mallets, staplers, putty knives, tape measures, pencils

**methods** include: nailing, screwing, clinching, gluing, stapling

## C-8.05 Installs security mesh

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
C-8.05.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-8.05.02P	cut mesh	mesh is cut according to manufacturers' specifications
C-8.05.03P	attach mesh to framing with <b>fasteners</b>	mesh is attached to framing with <b>fasteners</b> according to manufacturers' specifications

### RANGE OF VARIABLES

**tools and equipment** include: bolt cutters, nibblers, electric shears, rotary cut-off tools

**fasteners** include: security screws, regular screws, washers

### KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-8.05.01L	demonstrate knowledge of security mesh, its <b>properties</b> , characteristics and <b>applications</b>	define terminology associated with security mesh
		identify types of security mesh, and describe their <b>properties</b> , characteristics and <b>applications</b>
C-8.05.02L	demonstrate knowledge of procedures used to install security mesh	identify <b>tools and equipment</b> used to install security mesh, and describe their characteristics and procedures for use
		describe procedures used to install security mesh
		describe procedures used to butt and stagger joints of security mesh
		describe methods used to fasten security mesh with <b>fasteners</b>

### RANGE OF VARIABLES

**properties** include: gauge, weights, material, composition, mesh size

**applications** include: banks, secure storage rooms, prisons

**tools and equipment** include: bolt cutters, nibblers, electric shears, rotary cut-off tools

**fasteners** include: security screws, regular screws, washers

## C-8.06 Installs access panels

<b>NL</b>	<b>NS</b>	<b>PE</b>	<b>NB</b>	<b>QC</b>	<b>ON</b>	<b>MB</b>	<b>SK</b>	<b>AB</b>	<b>BC</b>	<b>NT</b>	<b>YT</b>	<b>NU</b>
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
C-8.06.01P	select and use <i>tools and equipment</i>	<i>tools and equipment</i> are selected and used according to task and manufacturers' specifications
C-8.06.02P	select panels	panels are selected according to application
C-8.06.03P	identify panel location	panel location is identified according to discussions with other tradespersons, and blueprints and <i>drawings</i>
C-8.06.04P	modify wall and ceiling openings for panels	wall and ceiling openings for panels are modified according to manufacturers' specifications
C-8.06.05P	install framing for opening	framing for opening is installed according to manufacturers' specifications
C-8.06.06P	ensure panels are plumb, aligned and squared	panels are plumb, aligned and squared
C-8.06.07P	fasten panels and <i>components</i>	panels and <i>components</i> are fastened according to manufacturers' specifications

### RANGE OF VARIABLES

*tools and equipment* include: tape measures, pencils, aviation snips, impact drills, mixing drills, tape, putty knives, mixing paddles, sanding tools

*drawings* include: engineered shop drawings, architectural drawings, structural drawings

*components* include: hinges, springs, latches

### KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-8.06.01L	demonstrate knowledge of access panels, their <i>components</i> , characteristics and applications	define terminology associated with access panels and their <i>components</i>
		identify <i>types of access panels</i> and describe their characteristics and applications
		identify types of access panel <i>components</i> , and describe their characteristics and applications
		identify <i>types of panel materials</i>

		describe requirements for fire-rated access panels
C-8.06.02L	demonstrate knowledge of procedures used to install access panels	identify tools and equipment used to install access panels, and describe their characteristics and procedures for use
		describe procedures used to install access panels

## RANGE OF VARIABLES

**components** include: hinges, springs, latches

**types of access panels** include: fire rated, non-fire rated

**types of panel materials** include: plastic, drywall, metal, glass-reinforced gypsum (GRG)

## TASK C-9 Installs ceiling systems

### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) install various ceiling systems for purposes such as aesthetic, acoustic, and concealment of electrical and mechanical devices.

Suspended ceilings are supported by vertical supports and bulkheads or walls. Bulkheads are supported by walls and/or higher substrates such as higher ceilings, slabs and other bulkheads. Non-suspended ceilings are made up of various types of materials such as glued-on tiles, stapled tiles and panels.

### C-9.01 Installs suspended ceilings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
C-9.01.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-9.01.02P	cut, place and secure hardware and panels	hardware and panels are cut, placed and secured according to manufacturers' specifications
C-9.01.03P	cut out holes for electrical and mechanical devices	holes for electrical and mechanical devices are cut out according to blueprints and <b>drawings</b>
C-9.01.04P	handle pre-finished products with care	pre-finished products are handled with care to avoid damage

C-9.01.05P	adapt installation procedures to new systems	installation procedures are adapted to new systems
C-9.01.06P	locate expansion and control joints	expansion and control joints are located
C-9.01.07P	level, square and align ceiling grid	ceiling grid is levelled, squared and aligned according to manufacturers' specifications
C-9.01.08P	calculate size of border panels	size of border panels is calculated to achieve desired ceiling layout
C-9.01.09P	install bridging	bridging is installed according to manufacturers' specifications

## RANGE OF VARIABLES

*drawings* include: engineered shop drawings, architectural drawings, structural drawings

<b>KNOWLEDGE</b>		
	<b>Learning Outcomes</b>	<b>Learning Objectives</b>
C-9.01.01L	demonstrate knowledge of suspended ceilings, their <b>components</b> , characteristics and applications	define terminology associated with suspended ceilings and their <b>components</b>
		identify <b>types of suspended ceilings</b> and describe their characteristics and applications
		identify types of suspended ceiling <b>components</b> and describe their characteristics and applications
		identify <b>types of grid systems</b> and describe their characteristics and applications
C-9.01.02L	demonstrate knowledge of procedures used to install suspended ceilings and their <b>components</b>	identify <b>types of T-bar systems</b> and describe their characteristics and applications
		identify tools and equipment used to install suspended ceilings and their <b>components</b> , and describe their characteristics and procedures for use
		describe procedures used to install suspended ceilings and their <b>components</b>
		describe <b>methods of installing hangers</b>
C-9.01.03L	demonstrate knowledge of regulatory requirements pertaining to the installation of suspended ceilings	identify requirements for utility fixtures
		identify codes, standards, and regulations pertaining to the installation of suspended ceilings

## RANGE OF VARIABLES

**components** include: inserts, hanger wire, main and cross T's, perimeter mouldings, panels

**types of suspended ceilings** include: acoustical, metal, wood

**types of grid systems** include: concealed, fine grid, standard grid, specialty ceilings

**types of T-bar systems** include: fire rated, non-fire rated

**methods of installing hangers** include: tying wires to structure, using various anchors

### C-9.02 Installs non-suspended ceilings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
C-9.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-9.02.02P	prepare substrate	substrate is prepared to eliminate irregularities and ensure bonding
C-9.02.03P	lay out, cut, shim, level and install strapping/furring	strapping/furring is laid out, cut, shimmed, levelled and installed according to manufacturers' specifications
C-9.02.04P	lay out ceiling pattern	ceiling pattern is laid out according to manufacturers' specifications and blueprints and <b>drawings</b>
C-9.02.05P	level, square and align ceiling	ceiling is levelled, squared and aligned
C-9.02.06P	cut out holes for electrical and mechanical devices	holes for electrical and mechanical devices are cut out according to blueprints and <b>drawings</b>
C-9.02.07P	install tiles	tiles are installed using adhesives and <b>fasteners</b> according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: tape measures, utility knives, keyhole saws, hammers, levels, laser levels, staple guns

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

**fasteners** include: metal spline, staples, screws, nails

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-9.02.01L	demonstrate knowledge of non-suspended ceilings, their characteristics and applications	define terminology associated with non-suspended ceilings
		identify <b>types of non-suspended ceilings</b> , and describe their characteristics and applications
C-9.02.02L	demonstrate knowledge of procedures used to install non-suspended ceilings	identify tools and equipment used to install non-suspended ceilings, and describe their characteristics and procedures for use
		describe procedures used to install non-suspended ceilings
		identify types of adhesives and <b>fasteners</b> used to install non-suspended ceilings

### RANGE OF VARIABLES

**types of non-suspended ceilings** include: glue-on, stapled tiles

**fasteners** include: metal spline, staples, screws, nails

## TASK C-10 Installs access flooring systems

### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) install access flooring systems. Access flooring systems allow for airflow, electrical grounding, flexibility in room usage and easy access to wiring. Lathers (Interior Systems Mechanics) must ensure that access flooring systems are level and stable.

### C-10.01 Installs pedestals and supporting hardware

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	no	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
C-10.01.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-10.01.02P	determine starting point	starting point is determined

C-10.01.03P	establish layout pattern for pedestal location	layout pattern for pedestal location is established using measuring tape and chalk lines
C-10.01.04P	assemble pedestals	pedestals are assembled according to manufacturers' specifications
C-10.01.05P	place and fasten pedestals	pedestals are placed and fastened with adhesives and mechanical fasteners according to manufacturers' specifications
C-10.01.06P	level pedestals	pedestals are levelled
C-10.01.07P	install grids on pedestals	grids are installed on pedestals according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: measuring tapes, chalk lines, laser levelling equipment, spirit levels, hammer drills, caulking guns

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
C-10.01.01L	demonstrate knowledge of access flooring systems, their characteristics and applications	define terminology associated with access flooring systems
		identify <b>types of access flooring systems</b> , and describe their characteristics and applications
C-10.01.02L	demonstrate knowledge of pedestals, their <b>supporting hardware</b> , characteristics and applications	define terminology associated with pedestals and their <b>supporting hardware</b>
		identify <b>types of pedestals</b> and describe their characteristics and applications
		identify <b>types of supporting hardware</b> , and describe their characteristics and applications
C-10.01.03L	demonstrate knowledge of procedures used to install pedestals and their <b>supporting hardware</b>	identify <b>tools and equipment</b> used to install pedestals and their <b>supporting hardware</b> , and describe their characteristics and procedures for use
		describe procedures used to install pedestals and their <b>supporting hardware</b>
		describe layout methods

## RANGE OF VARIABLES

**types of access flooring systems** include: rigid grid, free-standing, snap lock

**supporting hardware** includes: stringers, screws, wall moulding

**types of pedestals** include: grid, gridless

**tools and equipment** include: measuring tapes, chalk lines, laser levelling equipment, spirit levels, hammer drills, caulking guns

### C-10.02 Installs floor panels

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	no	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
C-10.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-10.02.02P	cut and trim panels to fit	panels are cut and trimmed to fit
C-10.02.03P	cut holes in panels for penetrations	holes in panels are cut for penetrations according to blueprints and <b>drawings</b>
C-10.02.04P	place and secure panels	panels are placed and secured according to manufacturers' specifications
C-10.02.05P	select and install ramps and railings for computer access flooring	ramps and railings for computer access flooring are selected and installed according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: screw guns, suction cup panel lifters, band saws, tape measures, pry bars, laser levels

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

### KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-10.02.01L	demonstrate knowledge of floor panels, their characteristics and applications	define terminology associated with floor panels
		identify types of floor panels and describe their characteristics and applications
C-10.02.02L	demonstrate knowledge of procedures used to install floor panels	identify <b>tools and equipment</b> used to install floor panels, and describe their characteristics and procedures for use
		describe procedures used to install floor panels

## RANGE OF VARIABLES

**tools and equipment** include: screw guns, suction cup panel lifters, band saws, tape measures, pry bars, laser levels

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

## TASK C-11 Installs sound barriers and lead radiation shielding

### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) install sound barriers to reduce sound transmission between areas to provide occupant privacy and comfort. Lead radiation shielding is installed to prevent radiation exposure in medical facilities and labs.

### C-11.01 Installs sound barriers

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
C-11.01.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-11.01.02P	cut and fit insulation	insulation is cut and fitted
C-11.01.03P	install foil-backed insulation with foil tape and tracks	foil-backed insulation is installed with foil tape and tracks and seams are covered according to manufacturers' specifications
C-11.01.04P	install pre-finished sound panels	pre-finished sound panels are installed according to manufacturers' specifications
C-11.01.05P	install lead sheeting	lead sheeting is installed with <b>fasteners</b> according to manufacturers' specifications
C-11.01.06P	install resilient channel	resilient channel is installed according to manufacturers' specifications, project specifications and building codes
C-11.01.07P	caulk and seal penetrations and perimeter	penetrations and perimeter are caulked and sealed with acoustical caulking and fire-rated caulking according to manufacturers' specifications, project specifications and building codes

## RANGE OF VARIABLES

**fasteners** include: drywall screws, wafer screws, washers, clips, contact cement

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
C-11.01.01L	demonstrate knowledge of sound barriers, their characteristics, properties and applications	define terminology associated with sound barriers
		identify <b>types of sound barriers</b> and describe their characteristics, properties and applications
C-11.01.02L	demonstrate knowledge of procedures used to install sound barriers	identify tools and equipment used to install sound barriers, and describe their characteristics and procedures for use
		describe procedures used to install sound barriers
		identify types of caulking and describe their applications

## RANGE OF VARIABLES

**types of sound barriers** include: acoustical batt insulation, plenum baffles, lead sheeting, steel stud and drywall, resilient channels, pre-finished sound panels

### C-11.02 Installs lead radiation shielding

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

SKILLS		
	Performance Criteria	Evidence of Attainment
C-11.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-11.02.02P	cut shielding	shielding is cut using <b>tools and equipment</b>
C-11.02.03P	fasten shielding	shielding is fastened using <b>fasteners</b> according to manufacturers' specifications
C-11.02.04P	install lead-lined drywall on walls and ceilings	lead-lined drywall is installed on walls and ceilings according to manufacturers' specifications
C-11.02.05P	cover screws with lead tabs	screws are covered with lead tabs

C-11.02.06P	encase electrical boxes with lead shielding	electrical boxes are encased with lead shielding
C-11.02.07P	treat inside and outside corners, and door and window frames with shielding	inside and outside corners, and door and window frames are treated with shielding according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: knives, shears, aviation snips, screw guns, impact guns

**fasteners** include: wafers, drywall screws, nails, mechanical fasteners, washers, screws, adhesive

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-11.02.01L	demonstrate knowledge of lead radiation shielding, their <b>characteristics, purpose</b> and applications	define terminology associated with lead radiation shielding
		identify types of lead radiation shielding and describe their <b>characteristics, purpose</b> and applications
		describe lead handling precautions
		identify <b>locations</b> where lead radiation shielding might be installed
C-11.02.02L	demonstrate knowledge of lead inspection process for radiation	describe the procedures used to inspect lead radiation shielding
C-11.02.03L	demonstrate knowledge of procedures used to install lead radiation shielding	identify <b>tools and equipment</b> used to install lead radiation shielding, and describe their characteristics and procedures for use
		describe procedures used to install lead radiation shielding

## RANGE OF VARIABLES

**characteristics** include: weight, thicknesses

**purpose** includes: sound proofing, radiation protection

**locations** include: hospitals, dental offices, laboratories

**tools and equipment** include: knives, shears, aviation snips, screw guns, impact guns

## TASK C-12 Installs smoke and fire barriers

### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) install smoke and fire barriers to control the spread of fire and smoke, and delay the collapse of buildings to allow occupants to escape a building fire.

#### C-12.01 Installs shaft wall systems

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

	Performance Criteria	Evidence of Attainment
C-12.01.01P	select and use <i>tools and equipment</i>	<i>tools and equipment</i> are selected and used according to task and manufacturers' specifications
C-12.01.02P	determine layout pattern	layout pattern is determined according to blueprints and <i>drawings</i> , building codes, regulations, and manufacturers' specifications
C-12.01.03P	cut, install and plumb studs and tracks	studs and tracks are cut, installed and plumbed
C-12.01.04P	seal joints and cracks	joints and cracks are sealed according to manufacturers' specifications and building codes
C-12.01.05P	install core board	core board is installed using friction fit method according to building codes, regulations, and manufacturers' specifications

### RANGE OF VARIABLES

*tools and equipment* include: powder-actuated tools, hammer drills, screw guns, impact drills, caulking guns

*drawings* include: engineered shop drawings, architectural drawings, structural drawings

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-12.01.01L	demonstrate knowledge of shaft wall systems, their <b>components</b> , characteristics and applications	define terminology associated with shaft wall systems and their <b>components</b>
		identify types of shaft wall systems and their <b>components</b> , and describe their characteristics and applications
C-12.01.02L	demonstrate knowledge of procedures used to install shaft wall systems and their <b>components</b>	identify tools and equipment used to install shaft wall systems and their <b>components</b> , and describe their characteristics and procedures for use
		describe procedures used to install shaft wall systems
		describe sequence of construction of shaft walls
C-12.01.03L	demonstrate knowledge of regulatory requirements pertaining to the installation of shaft wall systems	identify types of <b>fasteners</b> used in the installation of shaft wall systems
		identify codes, standards and regulations pertaining to the installation of shaft wall systems

### RANGE OF VARIABLES

**components** include: J-track, I-studs, CH studs, core board, fire caulking

**fasteners** include: screws, pins, anchors, powder-actuated pins

## C-12.02 Seals penetrations

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
C-12.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-12.02.02P	locate and seal metal sleeves	metal sleeves are located and sealed by caulking inside and outside
C-12.02.03P	line openings with fire-rated drywall	openings are lined with fire-rated drywall

### RANGE OF VARIABLES

**tools and equipment** include: caulking guns, spray guns

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-12.02.01L	demonstrate knowledge of penetrations, their characteristics and applications	define terminology associated with penetrations  identify <b>types of penetrations</b> , and describe their characteristics and applications
C-12.02.02L	demonstrate knowledge of procedures used to seal penetrations	identify <b>tools and equipment</b> used to seal penetrations, and describe their characteristics and procedures for use  describe procedures used to seal penetrations  identify <b>materials</b> used to seal penetrations  identify clearances required for expansion
C-12.02.03L	demonstrate knowledge of regulatory requirements pertaining to sealing of penetrations	identify codes, standards and regulations pertaining to sealing of penetrations

### RANGE OF VARIABLES

**types of penetrations** include: pipes, ducts, electrical wiring

**tools and equipment** include: caulking guns, spray guns

**materials** include: fire stop caulking/sealant (liquid, workable), mineral wool

### C-12.03 Encloses beams, columns and staircases to achieve desired fire rating

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
C-12.03.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
C-12.03.02P	cut framing and drywall	framing and drywall are cut according to manufacturers' specifications
C-12.03.03P	fit framing and drywall	framing and drywall are fitted using <b>fasteners</b> according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: tape measures, powder-actuated tools, lasers, hammer drills, saws, knives, putty knives

**fasteners** include: screws, tie wire, pins

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
C-12.03.01L	demonstrate knowledge of procedures used to enclose beams, columns and staircases to achieve desired fire rating	identify <b>tools and equipment</b> used to enclose beams, columns and staircases, and describe their characteristics and procedures for use
		describe procedures used to enclose beams, columns and staircases
		identify <b>materials</b> and <b>components</b> used to enclose beams, columns and staircases to achieve desired fire rating
		identify types of <b>fasteners</b> used to install framing and drywall
		identify sequence of assembly of enclosure
C-12.03.02L	demonstrate knowledge of regulatory requirements pertaining to fire ratings	identify codes, standards and regulations pertaining to fire ratings

## RANGE OF VARIABLES

**tools and equipment** include: tape measures, powder-actuated tools, lasers, hammer drills, saws, knives, putty knives

**materials** include: fire-rated drywall, framing

**components** include: tracks, studs, caulking, furring channels

**fasteners** include: screws, tie wire, pins

# MAJOR WORK ACTIVITY D

## Installs exterior systems

### TASK D-13 Installs insulation and membranes

#### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) install insulation and membranes. In an exterior system, insulation is primarily used to stop thermal transfer. Membranes are installed to create a barrier against vapour, air and water. Together, they create a continuous and uniform building envelope.

#### D-13.01 Installs thermal insulation

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

#### SKILLS

	Performance Criteria	Evidence of Attainment
D-13.01.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
D-13.01.02P	measure and cut insulation	insulation is measured and cut
D-13.01.03P	lay out insulation panels	insulation panels are laid out according to manufacturers' specifications
D-13.01.04P	place and attach insulation	insulation is placed and attached using <b>methods</b> according to manufacturers' specifications

#### RANGE OF VARIABLES

**tools and equipment** include: saws, knives

**methods** include: using adhesives, using friction fit, using mechanical fasteners

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-13.01.01L	demonstrate knowledge of thermal insulation, its characteristics, <b>principles</b> and applications	define terminology associated with thermal insulation
		identify <b>types of thermal insulation</b> , and describe their characteristics, <b>principles</b> and applications
		identify <b>insulating values</b>
D-13.01.02L	demonstrate knowledge of procedures used to install thermal insulation	identify <b>tools and equipment</b> used to install thermal insulation, and describe their characteristics and procedures for use
		describe procedures used to install thermal insulation
		describe <b>methods</b> used to place and attach insulation
		identify <b>types of sealants</b> used to install thermal insulation

### RANGE OF VARIABLES

**principles** include: preventing heat loss, conduction, convection, radiation, insulating values

**types of thermal insulation** include: fibreglass, mineral fibre, rigid, semi-rigid, batts, spray, blown

**insulating values** include: R-20, R-12

**tools and equipment** include: saws, knives

**methods** include: using adhesives, using friction fit, using mechanical fasteners

**types of sealants** include: thermal sealant, expandable foam, sheeting tape, foil tape

### D-13.02 Installs interior/exterior membranes

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
D-13.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
D-13.02.02P	measure and cut membranes	membranes are measured and cut

D-13.02.03P	lay out membranes	membranes are laid out according to manufacturers' specifications
D-13.02.04P	place and attach membranes	membranes are placed and attached using <b>methods</b> according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: knives, hammers, tackers, staplers

**methods** include: using adhesives, using mechanical fasteners

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
D-13.02.01L	demonstrate knowledge of interior/exterior membranes, their characteristics and applications	define terminology associated with interior/exterior membranes
		identify <b>types of interior/exterior membranes</b> , and describe their characteristics and applications
D-13.02.02L	demonstrate knowledge of procedures used to install interior/exterior membranes	identify <b>tools and equipment</b> used to install interior/exterior membranes, and describe their characteristics and procedures for use
		describe procedures used to install interior/exterior membranes
		describe <b>methods</b> used to place and attach interior/exterior membranes
		identify <b>types of sealants</b> used to install interior/exterior membranes

## RANGE OF VARIABLES

**types of interior/exterior membranes** include: polyethylene film vapour barrier, rubberized non-permeable membrane, aluminum foil, building wrap

**tools and equipment** include: knives, hammers, tackers, staplers

**methods** include: using adhesives, using mechanical fasteners

**types of sealants** include: caulking, tape, expandable foam

## TASK D-14 Prepares surface for exterior finishes

### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) create an appropriate substrate for the attachment of various finishes.

#### D-14.01 Installs exterior sheathing

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	yes	yes	ND	NV	ND

### SKILLS

Performance Criteria		Evidence of Attainment
D-14.01.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
D-14.01.02P	measure, cut and shape exterior sheathing	exterior sheathing is measured, cut and shaped according to manufacturers' specifications
D-14.01.03P	lay out, place and fasten exterior sheathing	exterior sheathing is laid out, placed and fastened using <b>fasteners</b> according to manufacturers' specifications

### RANGE OF VARIABLES

**tools and equipment** include: screw guns, nail guns, cement board cutters

**fasteners** include: screws, nails, pins

### KNOWLEDGE

Learning Outcomes		Learning Objectives
D-14.01.01L	demonstrate knowledge of exterior sheathing, its characteristics and applications	define terminology associated with exterior sheathing
		identify <b>types of exterior sheathing</b> , and describe their characteristics and applications
D-14.01.02L	demonstrate knowledge of procedures used to install exterior sheathing	identify <b>tools and equipment</b> used to install exterior sheathing, and describe their characteristics and procedures for use
		describe procedures used to install exterior sheathing

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identify types of **fasteners** used to install exterior sheathing

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identify **types of sealants** used to install exterior sheathing

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## RANGE OF VARIABLES

**types of exterior sheathing** include: glass mat covered gypsum panels, exterior gypsum panels, cement board panels, plywood

**tools and equipment** include: screw guns, nail guns, cement board cutters

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### D-14.02 Installs lath

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	no	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
D-14.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
D-14.02.02P	measure, cut and shape lath and stops	lath and stops are measured, cut and shaped according to manufacturers' specifications
D-14.02.03P	lay out, place and fasten lath	lath is laid out, placed and fastened using <b>fasteners</b> according to manufacturers' specifications
D-14.02.04P	install plaster stops, beads and expansion joints	plaster stops, beads and expansion joints are installed according to manufacturers' specifications, and blueprints and <b>drawings</b>
D-14.02.05P	cut, shape and install flashings	flashings are cut, shaped and installed according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: screw guns, hammers, nippers

**fasteners** include: screws, nails, pins, tie wire

**drawings** include: engineered shop drawings, architectural drawings, structural drawings

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-14.02.01L	demonstrate knowledge of lath, its characteristics and applications	define terminology associated with lath
		identify <b>types of lath</b> , and describe their characteristics and applications
		describe expansion joints, plaster stops and flashings, and describe their characteristics and applications
D-14.02.02L	demonstrate knowledge of procedures used to install lath	identify <b>tools and equipment</b> used to install lath, and describe their characteristics and procedures for use
		describe procedures used to install lath
		describe fastener spacing required for installation of lath
		identify types of <b>fasteners</b> used to install lath

### RANGE OF VARIABLES

**types of lath** include: expanded metal, rib and welded stucco wire

**tools and equipment** include: screw guns, hammers, nippers

**fasteners** include: screws, nails, pins, tie wire

### D-14.03 Installs Exterior Insulation Finish System (EIFS) (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	no	no	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
D-14.03.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
D-14.03.02P	measure, cut and shape insulation	insulation is measured, cut and shaped according to manufacturers' specifications
D-14.03.03P	lay out, place and fasten insulation	insulation is laid out, placed and fastened using <b>fasteners</b> according to manufacturers' specifications
D-14.03.04P	cut, shape and install flashings	flashings are cut, shaped and installed according to manufacturers' specifications

D-14.03.05P	create and install expansion joints and edge details	expansion joints and edge details are created and installed
D-14.03.06P	create and install rainscreen system	rainscreen system is created and installed according to manufacturers' specifications

## RANGE OF VARIABLES

**tools and equipment** include: screw guns, trowels, spirit levels, saws, knives, hotwire table, hot knives

**fasteners** include: washers, screws, pins, nails, glue

KNOWLEDGE		
	Learning Outcomes	Learning Objectives
D-14.03.01L	demonstrate knowledge of EIFS, its characteristics and applications	define terminology associated with EIFS
		identify <b>types of EIFS</b> , and describe their characteristics and applications
		describe expansion joints and flashings, and describe their characteristics and applications
D-14.03.02L	demonstrate knowledge of procedures used to install EIFS	identify <b>tools and equipment</b> used to install EIFS, and describe their characteristics and procedures for use
		describe procedures used to install EIFS
		describe fastener spacing required for installation of EIFS
		identify types of <b>fasteners</b> used to install EIFS

## RANGE OF VARIABLES

**types of EIFS** include: rainscreen, pressure equalization systems

**tools and equipment** include: screw guns, trowels, spirit levels, saws, knives, hotwire table, hot knives

**fasteners** include: washers, screws, pins, nails, glue

## TASK D-15 Installs exterior finishes

### TASK DESCRIPTOR

Lathers (Interior Systems Mechanics) install exterior finishes to protect the building from environmental conditions while adhering to the architects' and engineers' designs.

#### D-15.01 Fabricates panels

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	no	yes	ND	NV	ND

### SKILLS

Performance Criteria		Evidence of Attainment
D-15.01.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
D-15.01.02P	rig and hoist panels up to worksite	panels are rigged and hoisted up to worksite according to jurisdictional limitations
D-15.01.03P	measure, cut, square and shape <b>materials</b>	<b>materials</b> are measured, cut, squared and shaped according to manufacturers' specifications and architects' and engineers' designs
D-15.01.04P	assemble panels	panels are assembled according to manufacturers' specifications
D-15.01.05P	identify building substrate	building substrate is identified
D-15.01.06P	apply sheathing	sheathing is applied using <b>fasteners</b> according to manufacturers' specifications

### RANGE OF VARIABLES

**tools and equipment** include: chop saws, impact drills, plasma cutters, welding machine

**materials** include: steel studs, tracks, sheathing, bridging clips, channels

**fasteners** include: screws, nails, pins, clips, anchors

## KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-15.01.01L	demonstrate knowledge of panels and their characteristics and applications	define terminology associated with panels
		identify <b>types of panels</b> and describe their characteristics and applications
D-15.01.02L	demonstrate knowledge of procedures used to fabricate panels	identify <b>tools and equipment</b> used to fabricate panels, and describe their characteristics and procedures for use
		describe procedures used to fabricate panels
		describe <b>materials</b> used to fabricate panels
		identify types of <b>fasteners</b> used to apply sheathing
		identify <b>types of substrates</b> and describe their properties

### RANGE OF VARIABLES

**types of panels** include: curtain wall, rainscreen, general cosmetic

**tools and equipment** include: chop saws, impact drills, plasma cutters, welding machine

**materials** include: steel studs, tracks, sheathing, bridging clips, channels

**fasteners** include: screws, nails, pins, clips, anchors

**types of substrates** include: concrete, CMU masonry, brick, steel

### D-15.02 Installs pre-manufactured panels

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	NV	yes	NV	yes	yes	NV	no	yes	ND	NV	ND

## SKILLS

	Performance Criteria	Evidence of Attainment
D-15.02.01P	select and use <b>tools and equipment</b>	<b>tools and equipment</b> are selected and used according to task and manufacturers' specifications
D-15.02.02P	modify panels	panels are modified according to site conditions
D-15.02.03P	plan sequence and placement of panels	sequence and placement of panels are planned according to manufacturers' specifications
D-15.02.04P	identify building substrate	building substrate is identified

D-15.02.05P	place panels	panels are placed using <b>fasteners</b> according to manufacturers' specifications
D-15.02.06P	install and remove temporary braces	temporary braces are installed and removed

## RANGE OF VARIABLES

**tools and equipment** include: impact drills, hammer drills, pry bars, crow bars

**fasteners** include: screws, nails, pins, clips, anchors

<b>KNOWLEDGE</b>		
	<b>Learning Outcomes</b>	<b>Learning Objectives</b>
D-15.02.01L	demonstrate knowledge of pre-manufactured panels, their characteristics and applications	define terminology associated with pre-manufactured panels
		identify <b>types of pre-manufactured panels</b> and describe their characteristics and applications
D-15.02.02L	demonstrate knowledge of procedures used to install pre-manufactured panels	identify <b>tools and equipment</b> used to install pre-manufactured panels, and describe their characteristics and procedures for use
		describe procedures used to install pre-manufactured panels
		identify types of <b>fasteners</b> used to install pre-manufactured panels
		identify <b>types of substrates</b> and describe their properties
		describe joint tolerances
		explain the importance of installing temporary braces after installation of pre-manufactured panels

## RANGE OF VARIABLES

**types of pre-manufactured panels** include: wind-load, axial load

**tools and equipment** include: impact drills, hammer drills, pry bars, crow bars

**fasteners** include: screws, nails, pins, clips, anchors

**types of substrates** include: concrete, CMU masonry, brick, steel

# APPENDIX A

## ACRONYMS

AHJ	authorities having jurisdiction
CMU	concrete masonry unit
CSA	Canadian Standards Association
EIFS	Exterior Insulation Finish System
GRG	glass-reinforced gypsum
OH&S	Occupational Health and Safety
PPE	personal protective equipment
SDS	Safety Data Sheets
WHMIS	Workplace Hazardous Materials Information System

# APPENDIX B

## TOOLS AND EQUIPMENT / OUTILS ET ÉQUIPEMENT

### Personal Protective Equipment and Safety Equipment / Équipement de protection individuelle (EPI) et équipement de sécurité

coveralls	combinaisons
ear plugs and muffs	bouchons d'oreilles et casques antibruit
evacuation horns	avertisseurs d'évacuation
eye wash facilities	douches oculaires
face shields	écrans faciaux
fall arrest and restraint equipment	dispositifs antichute
fire extinguishers	extincteurs
first aid equipment	trousses de premiers soins
gloves	gants
goggles	lunettes à coques
hard hats	casques de sécurité
knee pads	genouillères
masks (particle, vapour)	masques (antipoussière, antigaz)
respirators and cartridges	respirateurs et cartouches
safety glasses	lunettes de sécurité
safety vests	gilets de sécurité
steel toe boots	bottes à embout d'acier
warning signs	panneaux d'avertissement
warning tapes	rubans de signalisation

### Hand Tools / Outils à main

adjustable wrenches	clés réglables
aviation snips	cisailles aviation
bead clinchers	attache-ficelles
bolt cutters	coupe-boulons
broad knives	couteaux à grosse lame
caulking guns	pistolets à calfeutrer
channel cutters	cisailles
circle cutters	emporte-pièces circulaires
cold chisels	ciseaux à froid
countersink bit	fraise angulaire
deck punches	poinçons à platelage
dry line/T-bar clips	pincettes à sertir
drywall lifters	dispositifs de levage pour panneaux de cloison sèche
drywall saws	scies pour cloison sèche
eye screw poles	tiges pour vis à œillet
files	limes
hack saws	scies à métaux
hammers	marteaux
hand sanders	ponceuses à main
hawk and trowels	taloches et truelles

hole punches  
keyhole saws  
lather's hatchets  
locking C-clamps  
machine taping tools  
magnetic punches  
mixing paddles  
mud pans  
multi-tip screwdrivers  
nippers  
pliers  
pole sanders  
pop rivet guns  
pry bar/crow bar  
putty knives  
rasps  
rubber mallets  
sandpapers  
screw pullers  
squares (T, combination, tri-speed square, framing)  
staplers/hammer tackers  
stud crimpers  
tape and mud holders  
T-bar grid punches  
trowels  
utility knives  
wrecking bars

emporte-pièces  
scies à guichet  
hachettes de latteur/latteuse  
serre-joints en C blocable  
applicateurs automatiques de ruban à joint  
poinçons magnétiques  
mélangeurs pour composé  
bacs à composé  
tournevis à pointes multiples  
pinces coupantes  
pinces  
ponceuses à perche  
pistolets à rivet pop  
levier/pied-de-biche  
couteaux à mastic  
râpes  
maillets en caoutchouc  
papiers sablés  
extracteurs de vis  
équerres (tés, équerres combinées, équerres de menuisier, équerres de charpentier)  
agrafeuses/marteaux-cloueur  
plieuses à baguettes  
porte-rubans à joints et planches à mortiers  
poinçons pour grille  
truelles  
couteaux universels  
leviers de démolition

## **Power Tools and Equipment / Outils et équipement mécaniques**

abrasive chop saws	scies tronçonneuses
angle grinders	meuleuses d'angles
band saws	scies à ruban
battery-powered fastening tools	outils de fixation à batterie
circular saws	scies circulaires
compound mitre saws	scies à onglets mixtes
compressors	compresseurs
compressor hoses	tuyaux de compresseur
cordless drills	perceuses sans fil
drywall routers	toupies pour cloisons sèches
drywall screw guns	pistolets pour cloisons sèches
electric drills	perceuses électriques
electric shears (nibblers)	cisailles électriques
gas-actuated tools	outils de fixation à gaz
gas powered cut-off saws	scies à tronçonner à essence
hammer drills	marteaux perforateurs
heat guns	pistolets à air chaud
hot knives	lames chauffantes
hot wire tables	tables chauffantes
impact drills	perceuses à percussion
jig saws	scies à découper
powder-actuated tools	outils à charge explosive
power nailers/fasteners	pistolets cloueurs/agrafeurs
power staplers	agrafeuses électriques
reciprocating saws	scies alternatives
routers	toupies
table saws	scies d'établis

## **Layout and Measuring Devices / Outils de traçage et de mesure**

architect scales	règle-échelles
calculators	calculatrices
centre punches	pointeaux
chalk lines	cordeaux à craie
compasses	compas
dry lines	ficelles sèches
drywall fabricating machine	machine de fabrication de cloison sèche
framing squares	équerres de menuisier
laser alignment equipment	matériel d'alignement à laser
laser levels	niveaux à laser
laser measuring tools	outils de mesure à laser
magnetic hand levels	niveaux de bâtisseur
moisture meters	humidimètres
pencils and markers	crayons et marqueurs
plumb bobs	fils à plomb
scratch awls	pointes à tracer
spirit levels	niveaux à bulle
straight edges	règles droites
tape measures (16 ft./4.87 m., 25 ft./7.62 m., 100 ft./30.48 m.)	rubans à mesurer (de 16 pi / 4,87 m., de 25 pi / 7,62 m. et de 100 pi / 30,48 m.)
T-bevels	fausse équerre
water levels	niveaux à eau

## **Material Handling and Site Maintenance Equipment / Équipement de manutention et d'entretien des chantiers**

brooms	balais
drywall carts	chariots pour panneaux de cloison sèche
drywall lift	élévateur pour cloison sèche
extension cords	rallonges électriques
floor scrapers	grattoirs de plancher
garbage bags	sacs à déchets
generators	génératrices
lockup boxes	coffres verrouillables
pails	seaux
pallet jacks	transpalette à main
portable fans	ventilateurs portatifs
portable lights	lampes portatives
sawhorses	chevalets de sciage
shop vacuums	aspirateurs d'atelier
shovels	pelles
squeegees	raclours en caoutchouc
suction cups	ventouses
temporary heaters	appareils de chauffage temporaire
wheel barrels	brouettes
wheeled dollies	diabes
wheeled garbage boxes	boîtes à ordures sur roues

## **Scaffolding and Access Equipment / Échafaudages et équipement d'accès**

aluminum benches	plans de travail en aluminium
aluminum planks	planches en aluminium
boom lifts	nacelles élévatrices
extendable boom lift	nacelles élévatrices télescopiques
ladder jacks	échafaudages sur échelles
ladders	échelles
portable scaffolds	échafaudages portatifs
rolling scaffolds	échafaudages roulants
scissor-lifts	tables élévatrices à ciseaux
stationary scaffolds	échafaudages fixes
stilts	échasses
swing stages	échafaudages volants

# APPENDIX C

## GLOSSARY / GLOSSAIRE

<b>adhesives (glue)</b>	substance applied to one or both surfaces of two separate items that binds them together and resists their separation	<b>adhésifs (colles)</b>	substance appliqué sur une ou les deux pièces séparées pour les lier, et qui les empêche de se séparer
<b>barrier</b>	a component that prevents movement or access of fire, smoke, heat/cold, moisture, sound, radiation, dust, light, people and animals	<b>barrière</b>	composant qui empêche la propagation ou l'entrée du feu, de la fumée, de la chaleur ou du froid, de l'humidité, du son, des radiations, de la poussière, de la lumière, des personnes et des animaux
<b>bulkhead</b>	an assembly that forms a change in the ceiling elevation; can be decorative or functional	<b>retombée de plafond</b>	assemblage qui apporte un changement de l'élévation d'un plafond; peut être décorative ou fonctionnelle
<b>carrying channel</b>	a main support member for other components	<b>profilé porteur</b>	pièce d'ossature principale soutenant d'autres composants
<b>caulking</b>	filler and sealant used in building work and repairs for the purpose of blocking sound, smoke, fire and water transmission	<b>produit de calfeutrage</b>	produit de remplissage et de scellement utilisé dans l'industrie de la construction et de la réparation pour former une barrière contre le bruit, la fumée, le feu et l'eau
<b>core board</b>	fire-rated board used in shaft wall assemblies	<b>panneau d'âme</b>	panneau résistant au feu utilisé dans les murs creux
<b>corner bead</b>	a trim to guide a trowel to form a uniform corner; it can be made from metal, vinyl or paper	<b>baguette d'angle</b>	bordure conçue pour guider la truelle pour former un angle uniforme; peut être en métal, en vinyle ou en papier
<b>fireproofing</b>	application of a fire-resistant material directly or indirectly to protect structural members from fire damage	<b>ignifugation</b>	application d'un matériau résistant au feu, directement ou indirectement, pour protéger les éléments de charpente contre les dommages causés par le feu

<b>furring channel (hat track, strapping)</b>	framing member used to space lath or gypsum board from any surface member over which it is applied	<b>profilé de fourrure (fond de clouage)</b>	élément d'ossature utilisé pour espacer les lattes ou les plaques de plâtre des pièces de surface sur lesquelles il est appliqué
<b>gas-actuated tools</b>	tools that are powered by gas and ignited by electrical charge	<b>outils de fixation à gaz</b>	outils fonctionnant au gaz et dont le mélange est allumé par une décharge électrique
<b>hanger</b>	vertical tensile member that carries the steel framework of a suspended ceiling	<b>fil de suspension</b>	pièce verticale travaillant en traction pour soutenir l'ossature en acier d'un plafond suspendu
<b>jig</b>	manufactured or job-built assembly used to guide tools or hold materials for repetitive operations	<b>montage</b>	assemblage préfabriqué ou créé pour la tâche à accomplir, servant à guider les outils ou à tenir les matériaux dans le cadre d'activités répétitives
<b>lath</b>	wood, gypsum or metal backing for plaster	<b>latte</b>	matériau de fond en bois, en gypse ou en métal utilisé pour soutenir le plâtre
<b>lead radiation shielding</b>	material used to stop radiation and reduce sound exposure	<b>blindage antiradiation en plomb</b>	matériau utilisé pour éliminer l'exposition aux radiations et pour réduire celle aux bruits
<b>loadbearing members</b>	building components that support both live and dead loads	<b>pièces d'ossature porteuses</b>	composants d'un bâtiment soutenant à la fois les surcharges et les charges permanentes
<b>membrane</b>	continuous barrier used to resist the flow of vapour, air and water	<b>membrane</b>	barrière continue utilisée pour entraver la circulation de la vapeur, de l'air et de l'eau
<b>non-suspended ceiling</b>	a ceiling finish applied directly to a solid unsuspended substrate	<b>plafond non suspendu</b>	finition de plafond appliquée directement sur un support plein non suspendu
<b>pedestal</b>	main support component of an access flooring system	<b>ped</b>	principal élément de soutien d'un faux plancher
<b>rainscreen</b>	cavity between substrate and cladding to allow water and moisture to escape	<b>écran pare-pluie</b>	cavité située entre le support et le revêtement mural extérieur permettant à l'eau et à l'humidité de s'échapper

<b>security mesh</b>	steel mesh used to prevent unauthorized access	<b>treillis de sécurité</b>	treillis en acier utilisé pour éviter les accès non autorisés
<b>shaft wall</b>	assembly used to protect stairwells, ducts and elevator shafts from fire	<b>revêtements de puits</b>	assemblage servant à protéger les cages d'escalier ou d'ascenseur et les conduits contre le feu
<b>sheathing</b>	sheet material that covers the exterior of a building's frame	<b>revêtement</b>	matériau en feuille qui recouvre l'extérieur de l'ossature d'un bâtiment
<b>soffit</b>	exterior horizontal ceiling	<b>soffite</b>	plafond extérieur horizontal
<b>substrate</b>	underlying surface	<b>support</b>	surface sous-jacente
<b>suspended ceiling</b>	a ceiling that is supported intermediately from building structure such as concrete slab and steel decking	<b>plafond suspendu</b>	plafond accroché à distance à l'ossature d'un bâtiment comme à une dalle de béton ou à un platelage en acier
<b>template</b>	temporary pattern created to assist in fabrication	<b>gabarit</b>	guide temporaire créé pour faciliter la fabrication
<b>track (plate or runners)</b>	material used at the top and bottom of walls and perimeter of ceilings to fasten supports	<b>rail (plaque ou profilé)</b>	matériau utilisé au sommet et à la base des murs et sur le périmètre des plafonds pour attacher les supports