

# VOCATIONAL TRAINING PROGRAM ELEVATOR MECHANICS (DVS 5837)

Training Sector: Maintenance Mechanics



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Services langagiers  
Ministère de l'Éducation, du Loisir et du Sport

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Ministère de l'Éducation, du Loisir et du Sport, 2014

ISBN 978-2-550-71079-0 (Print version)  
ISBN 978-2-550-709-04-6 (PDF)

Legal Deposit – Bibliothèque et Archives nationales du Québec, 2014

# Acknowledgments

The Ministère de l'Éducation, du Loisir et du Sport would like to thank the many people working in the field and in the education community who participated in the development of this vocational training program, in particular the following individuals.

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# Introduction to the Program

In vocational training, a program of study presents the competencies required to practise a given trade or occupation at entry level on the job market. The training provided allows students to acquire a degree of versatility that will be useful in their career and personal development.

A program is a coherent set of competencies to be developed. It outlines the knowledge and broad orientations to be favoured during training. The competencies correspond to the tasks of the trade or occupation or to activities related to work, vocational or personal life, depending on the case. Learning is acquired in a specific achievement context and targets the ability to act, succeed and evolve.

According to the Education Act<sup>1</sup>, “every program shall include compulsory objectives and contents and may include optional objectives and contents that shall be enriched or adapted according to the needs of students who receive the services.” For behavioural competencies, the compulsory components include the statement of the competency, the elements of the competency, the achievement context and the performance criteria; for situational competencies, they include the corresponding components.

For information purposes, programs also provide a grid of competencies, educational aims, a summary of competency-related knowledge and know-how, and guidelines. They also specify the suggested duration of each competency. All optional components of a program may be enriched or adapted according to the needs of the students, the environment and the workplace.

## Program Components

### Program Goals

Program goals consist of the expected outcome at the end of training as well as a general description of a given trade or occupation. They also include the four general goals of vocational training.

### Educational Aims

Educational aims are broad orientations to be favoured during training in order to help students acquire intellectual or motor skills, work habits or attitudes. Educational aims usually address important aspects of career and personal development that have not been explicitly included in the program goals or competencies. They serve to orient appropriate teaching strategies to contextualize students' learning, in keeping with the dimensions underlying the practice of a trade or occupation. They help guide educational institutions in implementing the program.

### Competency

A competency is the ability to act, succeed and evolve in order to adequately perform tasks or activities related to one's working or personal life, based on an organized body of knowledge and skills from a variety of fields, perceptions, attitudes, etc.

A competency in vocational training can be defined in terms of a behaviour or a situation, and includes specific practical guidelines and requirements for learning.

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<sup>1</sup> Education Act, R.S.Q., c. I-13.3, ss 461

## 1. Behavioural Competency

A behavioural competency describes the actions and the results expected of the student. It consists of the following features:

- The *statement of the competency* is the result of the job analysis, the orientations and general goals of vocational training and other *determinants*.
- The *elements of the competency* correspond to essential details that are necessary in order to understand the competency *and* are expressed in terms of specific behaviours. They refer to the major steps involved in performing a task or to the main components of the competency.
- The *achievement context* corresponds to the situation in which the competency is exercised at entry-level on the job market. The achievement context attempts to recreate an actual work situation but does not describe a learning or evaluation situation.
- The *performance criteria* define the requirements to be respected. They may refer to elements of the competency or to the competency as a whole. When associated with a specific element, performance criteria are *used* to judge whether a competency has been acquired. When associated with the competency as a whole, the criteria describe the requirements for performing a task or activity and provide information on the expected level of performance or the overall quality of a product or service.

## 2. Situational Competency

A situational competency describes the situation in which students are placed to acquire learning, and allows for actions and results to vary from one student to another. It consists of the following features:

- The *statement of the competency* is the result of the job analysis, the orientations and general goals of vocational training and other determinants.
- The *elements of the competency* outline the essential aspects of the competency and ensure a better understanding of the competency with respect to the expected outcome. The elements of the competency are fundamental to the implementation of the learning situation.
- The *learning context* provides a broad outline of the learning situation designed to help the students develop the *required* competency. It is normally divided into three key phases of learning: information, participation and synthesis.
- The *instructional guidelines* provide reference points and means for teachers to ensure that learning takes place and that the context in which it occurs is always the same. These guidelines may include general principles or specific procedures.
- The *participation criteria* describe requirements that the students must meet when participating in learning activities. They focus on how the students take part in the activities rather than on the results obtained. Participation criteria *are* normally provided for each phase of the learning situation.

### Competency-Related Knowledge and Know-How

Competency-related knowledge and know-how together with related guidelines, are provided for information purposes. Competency-related knowledge and know-how define the essential and meaningful learning that students must acquire in order to apply and continue to develop the competency. They are in keeping with the job market and are accompanied by guidelines that provide information about the field of application, level of complexity and learning content. They generally encompass learning associated with knowledge, skills, strategies, attitudes, perceptions, etc.



## **Duration**

The total duration of the program is compulsory and must be observed. It consists of teaching time, which includes time for the evaluation of learning and for enrichment or remedial activities, depending on the students' needs. The duration indicated for a given competency refers to the amount of time needed to develop the competency.

The amount of teaching time corresponds to the amount of time allotted to training, which is established during program development as the average amount of time needed to acquire a competency and evaluate learning. This duration is helpful in organizing training.

## **Credit**

A credit is a unit used for expressing the quantitative value of each competency. One credit corresponds to 15 hours of training.

# **Aspects of Program Implementation**

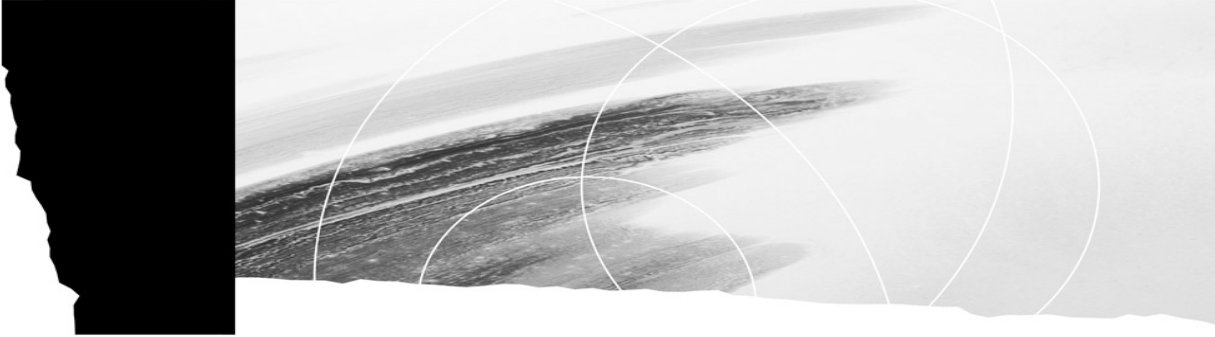
## **Program-Based Approach**

The program-based approach is founded on a comprehensive view of a program of study and its components (e.g. goals, educational aims, competencies). It requires concerted action among all players involved, from the initial stages of program design and development, to program implementation and evaluation. It consists in ensuring that all of the actions and activities proposed are based on the same aims and take into account the same orientations. For students, the program-based approach makes training more meaningful as it presents learning as a coherent whole.

## **Competency-Based Approach**

In vocational training, the competency-based approach is based on a teaching philosophy that is designed to help students mobilize their own individual sets of resources in order to act, succeed and evolve in different contexts, according to established performance levels with all the required knowledge and know-how (e.g. skills, strategies, attitudes, perceptions). The competency-based approach is carried out in situations that are relevant to the students' working life and personal life.





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5837

**Elevator Mechanics**

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Year of approval: 2011

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<b>Certification:</b>	Diploma of Vocational Studies
<b>Number of credits:</b>	120
<b>Number of competencies:</b>	24
<b>Total duration:</b>	1 800 hours

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To be eligible for admission to the *Elevator Mechanics* program, candidates must meet one of the following requirements:

- Persons holding a Secondary School Diploma or a recognized equivalent are not subject to any additional requirements.

OR

- Persons who are at least 16 years of age on September 30 of the school year in which they begin their training must meet the following condition: they must have obtained Secondary IV credits in language of instruction, second language and mathematics in programs established by the Minister, or have been granted recognition of equivalent learning.

OR

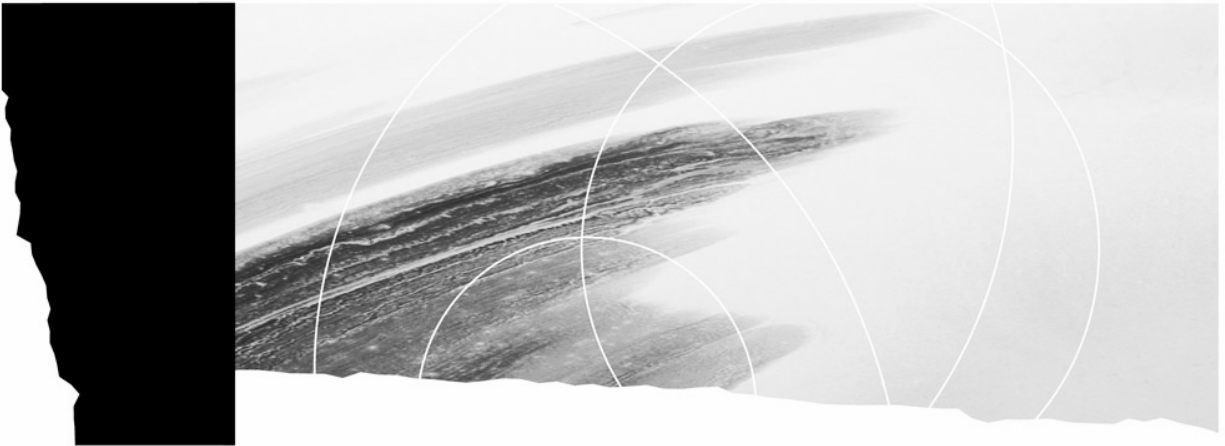
- Persons who are at least 18 years of age upon entry into the program must have the following functional prerequisites: the successful completion of the General Development Test, as well as credits in language of instruction ENG 3101-1 and ENG 3102-2, or recognition of equivalent learning.

OR

- Persons who have obtained Secondary III credits in language of instruction, second language and mathematics in programs established by the Minister are required to pursue general education courses, concurrently with their vocational training, in order to obtain the Secondary IV credits they lack in language of instruction, second language and mathematics in programs established by the Minister.

The duration of the program is 1 800 hours, which includes 900 hours spent on the specific competencies required to practise the trade or occupation and 900 hours on general, work-related competencies. The program of study is divided into 24 competencies, which vary in length from 15 to 120 hours. The total hours allocated to the program include time devoted to teaching, evaluation of learning and enrichment or remedial activities.

<b>Competency</b>	<b>Code</b>	<b>Number</b>	<b>Hours</b>	<b>Credits</b>
The Trade and the Training Process	867101	1	15	1
Health and Safety on Construction Sites	754992	2	30	2
Interpreting Diagrams, Drawings and Specifications	867115	3	75	5
Shop Work	867127	4	105	7
Handling, Rigging and Anchoring Mechanized Conveyor Systems	867133	5	45	3
Aligning Mechanized Conveyor System Components	867144	6	60	4
Installing Electrical Cables and Conduits	867153	7	45	3
Electrical Circuits	867268	8	120	8
Logic Circuits	867276	9	90	6
Connecting Motors and Control Devices	867285	10	75	5
Electronic Circuits in Mechanized Conveyor Systems	867297	11	105	7
Installing Control Units	867302	12	30	2
Hydraulic Components in Mechanized Conveyor Systems	867315	13	75	5
Elevator Infrastructures and Equipment	867328	14	120	8
Installing and Starting Up Elevator Platforms	867336	15	90	6
Installing Hoistway Doors and Shaft Accessories	867346	16	90	6
Assembling Elevator Cabs	867357	17	105	7
Final Connections and Testing	867366	18	90	6
Maintaining and Repairing Mechanized Conveyor Systems	867378	19	120	8
Installing Escalators	867386	20	90	6
Installing Different Types of Mechanized Conveyor Systems	867397	21	105	7
Disassembling Mechanized Conveyor Systems	867406	22	90	6
Organizations Involved in the Construction Industry	754991	23	15	1
Preparing to Enter the Work Force	867411	24	15	1



## **Part I**

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**Program Goals**

**Educational Aims**

**Statements of the Competencies**

**Grid of Competencies**

**Harmonization**



# Program Goals

The *Elevator Mechanics* program prepares students to practise the trade of elevator mechanic.

## Description of the trade

Elevator mechanics install, rebuild, modify, repair and maintain mechanized conveyor systems. These systems are made up of devices and accessories such as passenger and freight elevators, escalators, moving sidewalks, suspended scaffolding, dumbwaiters, moving stage sets, ski lifts and other similar devices generally used to transport people, objects or equipment.<sup>2</sup> Installing a mechanized conveyor system involves connecting the electrical wiring.

Elevator mechanics work in the four sectors of the construction industry (residential, institutional, commercial and industrial), as well as in civil engineering and roadworks. They also work outside the construction sector. For example, elevator mechanics work on mechanized conveyor systems in factories, office buildings, hospitals, seniors' residences, private residences, boats, airplanes, dams, tunnels, bridges, etc.

The program goals of the *Elevator Mechanics* program are based on the general goals of vocational training. These goals are as follows:

- To help students develop effectiveness in the practice of a trade or occupation, that is:
  - to teach students to perform roles, functions, tasks and activities associated with the trade or occupation upon entry into the job market
  - to prepare students to progress satisfactorily on the job (which implies having the technical and technological knowledge and skills in such areas as communication, problem solving, decision making, ethics, health and safety)
- To help students integrate into the work force, that is:
  - to familiarize students with the job market in general, and with the specific context of their chosen trade or occupation
  - to familiarize students with their rights and responsibilities as workers
- To foster students' personal development and acquisition of occupational knowledge, skills, perceptions and attitudes, that is:
  - to help students develop their autonomy and ability to learn, and acquire effective work methods
  - to help students understand the principles underlying the techniques and the technology used in the trade or occupation
  - to help students develop self-expression, creativity, initiative and entrepreneurial spirit
  - to help students adopt the attitudes required to successfully practise the trade or occupation, and instill in them a sense of responsibility and a concern for excellence
- To promote job mobility, that is:
  - to help students develop positive attitudes toward change
  - to help students develop the means to manage their careers by familiarizing them with entrepreneurship

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<sup>2</sup> Adapted from the Regulation respecting the vocational training of workforce in the construction industry, Schedule A, Group X, section 23.

## Educational Aims

The aim of the *Elevator Mechanics* program is to help students develop attitudes and behaviours that representatives from education and the field deem essential to the practice of the trade:

- Become aware of their responsibility toward users of mechanized conveyor systems.
- Develop manual dexterity and acquire effective work methods.
- Develop autonomy and the desire to improve their skills.



# Statements of the Competencies

## List of Competencies

Determine their suitability for the trade and the training process.  
Ensure health, safety and physical well-being on construction sites.  
Interpret diagrams, drawings and specifications.  
Do shop work.  
Handle, rig and anchor mechanized conveyor systems.  
Align mechanized conveyor system components.  
Install electrical cables and conduits.  
Ensure proper operation of electrical circuits.  
Ensure proper operation of logic circuits.  
Connect motors and control devices.  
Ensure proper operation of electronic circuits in mechanized conveyor systems.  
Install a control unit.  
Ensure proper operation of hydraulic components in mechanized conveyor systems.  
Install elevator infrastructures and equipment.  
Install and start up an elevator platform.  
Install hoistway doors and shaft accessories.  
Assemble an elevator cab.  
Make the final connections and test the elevator.  
Maintain and repair mechanized conveyor systems.  
Install an escalator.  
Install different types of mechanized conveyor systems.  
Disassemble mechanized conveyor systems.  
Become familiar with the organizations involved in the construction industry.  
Prepare to enter the work force.

## Grid of Competencies

The grid of competencies shows the relationship between general competencies, which correspond to work-related activities, and specific competencies, which are required to practise the particular trade or occupation, as well as the major steps in the work process.

The general competencies appear on the horizontal axis and the specific competencies, on the vertical axis. The symbol (○) indicates a correlation between a general and a specific competency. The symbol (△) indicates a correlation between a specific competency and a step in the work process. Shaded symbols indicate that these relationships have been taken into account in the acquisition of specific competencies. The logic used in constructing the grid influences the course sequence. Generally speaking, this sequence follows a logical progression in terms of the complexity of the learning involved and the development of the students' autonomy. The vertical axis presents the specific competencies in the order in which they should be acquired and serves as a point of departure for determining how all of the competencies will be taught.

**GRID OF COMPETENCIES**

<b>ELEVATOR MECHANICS</b>	<b>Competency number</b>	<b>Type of competency</b>	<b>Duration (in hours)</b>	<b>SPECIFIC COMPETENCIES</b>														<b>WORK PROCESS</b>						
				Determine their suitability for the trade and the training process	Ensure health, safety and physical well-being on construction sites	Interpret diagrams, drawings and specifications	Do shop work	Handle, rig and anchor mechanized conveyor systems	Align mechanized conveyor system components	Install electrical cables and conduits	Ensure proper operation of electrical circuits	Ensure proper operation of logic circuits	Connect motors and control devices	Ensure proper operation of electronic circuits in mechanized conveyor systems	Install a control unit	Ensure proper operation of hydraulic components in mechanized conveyor systems	Become familiar with the organizations involved in the construction industry	Prepare to enter the work force	Plan the work	Take personal and collective safety measures	Work on mechanized conveyor systems	Do the appropriate inspections and tests	Record and transmit the necessary information	
				1	2	3	4	5	6	7	8	9	10	11	12	13	23	24						
				S	S	B	B	B	B	B	B	B	B	B	B	B	S	S						
15	30	75	105	45	60	45	120	90	75	105	30	75	15	15										
Install elevator infrastructures and equipment	14	B	120	○	●	●	●	●	●	○					○	○	●	○	○	△	△	△		
Install and start up an elevator platform	15	B	90	○	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	△	△	△	△	
Install hoistway doors and shaft accessories	16	B	90	○	●	●	●	●	●	●	●	○	●	○			○	○	○	△	△	△	△	
Assemble an elevator cab	17	B	105	○	●	●	●	●	●	●	●	○	●	○			○	○	○	△	△	△	△	
Make the final connections and test the elevator	18	B	90	○	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	△	△	△	△	△
Maintain and repair mechanized conveyor systems	19	B	120	○	●	●	●	●	●	○	●	●	●	●	●	●	○	○	○	△	△	△	△	△
Install an escalator	20	B	90	○	●	●	●	●	●	●	●	●	●	○			○	○	○	△	△	△	△	△
Install different types of mechanized conveyor systems	21	B	105	○	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	△	△	△	△	△
Disassemble mechanized conveyor systems	22	B	90	○	●	●	●	●		○	●	●	●	●	●	●	○	○	○	△	△	△		△

## Harmonization

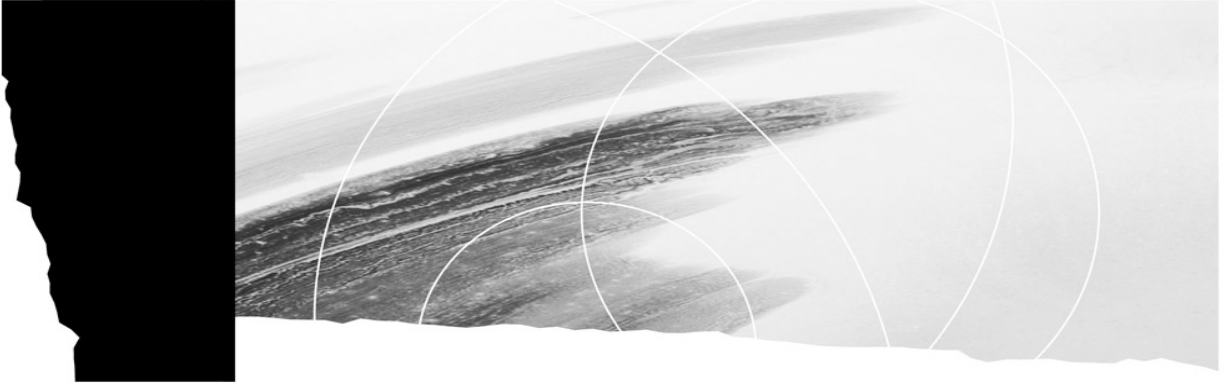
The Ministère de l'Éducation, du Loisir et du Sport harmonizes its vocational and technical programs by establishing similarities and continuity between secondary- and college-level programs within a particular sector or between sectors in order to avoid overlap in program offerings, to recognize prior learning and to optimize the students' progress.

Harmonization establishes consistency between training programs and is especially important in ensuring that the tasks of a trade or occupation are clearly identified and described. Harmonization makes it possible to identify tasks requiring competencies that are common to more than one program. Even if there are no common competencies, training programs are still harmonized.

Harmonization is said to be "inter-level" when it focuses on training programs at different levels, "intra-level" when it focuses on programs within the same educational level, and "inter-sector" when carried out between programs in various sectors.

An important aspect of harmonization is that it allows the common features of competencies to be identified and updated as needed. Common competencies are those that are shared by more than one program; once acquired in one program, they can be recognized as having been acquired in another. Competencies with exactly the same statement and elements are said to be identical. Common competencies that are not identical but have enough similarities to be of equal value are said to be equivalent.





## **Part II**

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### **Program Competencies**



Competency 1      Duration 15 hours      Credit 1

## ***Situational Competency***

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### **Statement of the Competency**

Determine their suitability for the trade and the training process.

### **Competency**

- Be familiar with the nature of the trade.
- Recognize the behaviours and attitudes conducive to providing quality customer service.
- Understand the training process.
- Confirm their career choice.

### **Learning Context**

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#### **Information Phase**

- Learning about the job market in elevator mechanics.
- Learning about the different sectors of activity within and outside the construction industry in which elevator mechanics work: residential, commercial, institutional, industrial, civil engineering and roadworks.
- Learning about the nature and requirements of the job, as well as its advantages and disadvantages.
- Learning about the regulatory framework for the trade.
- Learning about the main trends in the sector of activity.
- Learning about the attitudes and behaviours associated with teamwork, employer satisfaction, competitiveness and working with tradespeople in other specialties.
- Learning about the attitudes, skills and behaviours associated with quality customer service.
- Recognizing the principles underlying time and stress management.
- Learning about the program of study and the training process.

#### **Participation Phase**

- Discussing their perception of the trade: advantages and disadvantages, employers' requirements and customer service.
- Discussing ways of keeping their knowledge and skills up to date.
- Discussing the information obtained during a visit to a company or from talking to trade specialists.
- Sharing their initial reactions to the program of study and the training process.

#### **Synthesis Phase**

- Assessing their career choice by comparing the requirements of the trade with their own aptitudes, interests, strengths and limitations.
- Presenting the results of their assessment.

**Instructional Guidelines**

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- Create a climate that fosters mutual respect.
- Show appreciation for the contribution of each student during group discussions.
- Encourage students to take part in the suggested activities.
- Provide students with the means to assess their career choice honestly and objectively.
- Organize activities representative of the workplace: invite speakers, visit worksites and factories, etc.
- Make available all pertinent sources of information.

**Participation Criteria**

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**Information Phase**

- Gather information on the topics to be covered.

**Participation Phase**

- Express their views on the trade and the training program during a group meeting.
- Participate in the suggested activities.

**Synthesis Phase**

- Write a report that sums up their preferences, interests, strengths and limitations with respect to the trade.



Competency 2      Duration 30 hours      Credits 2

## ***Situational Competency***

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### **Statement of the Competency**

Ensure health, safety and physical well-being on construction sites.

### **Elements of the Competency**

- Adopt a responsible attitude regarding dangers to personal health and safety.
- Be aware of the importance of complying with occupational health and safety standards and regulations.
- Recognize dangerous situations or unsafe behaviour and the applicable preventive measures.

### **Learning Context**

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#### **Information Phase**

- Learning about the risks inherent in construction sites.
- Learning about the health and safety standards and regulations on construction sites.
- Learning about emergency measures.
- Reflecting on the importance of developing occupational health and safety skills.

#### **Participation Phase**

- Experiencing situations in which they must prevent risks and eliminate hazards related to the environment, facilities, equipment, machinery, tools, materials, energy sources, etc.
- Participating in activities in which they can learn to recognize risks associated with transporting loads and working in constricted postures.
- Participating in activities in which they can learn to recognize safety signs and symbols (e.g. hazardous products, roadwork, transportation of hazardous materials).
- Comparing different high-risk behaviours observed on construction sites and identifying the basic principles underlying safe behaviour.

#### **Synthesis Phase**

- Producing a report containing:
  - a summary of their newly acquired knowledge and skills
  - an assessment of their attitude toward occupational health and safety
  - their goals and means of improving their behaviour



Competency 3      Duration 75 hours   Credits 5

***Behavioural Competency***

---

**Statement of the Competency**

Interpret diagrams, drawings and specifications.

**Achievement Context**

- In the residential, institutional, commercial, industrial sectors, civil engineering and roadworks sectors
- Associated with the installation, maintenance, troubleshooting, repair, modification or disassembly of different types of mechanized conveyor systems
- Given work orders; architectural, electrical, mechanical and building mechanics plans; specifications and diagrams
- Using measuring instruments, a calculator, drafting instruments and manufacturers' manuals

**Elements of the Competency**

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**Performance Criteria**

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1. Interpret the general information in a drawing.

- Ability to distinguish among the different types of drawings
- Identification of the different sections of a drawing
- Accurate interpretation of the information in a drawing, title block, notes and symbols
- Careful handling of drawings
- Ability to distinguish among the different views, projections, enlargements and levels
- Accurate location of a mechanized conveyor system and its components in a drawing

2. Identify information concerning mechanized conveyor systems in drawings or diagrams.

- Identification of symbols representing machinery and its components
- Identification of electrical, electronic, mechanical and hydraulic components
- Identification of information concerning assembly and disassembly sequences, etc.

3. Interpret specifications.

- Identification of all specifications concerning mechanized conveyor systems
- Accurate conversion of measurements from the metric to the imperial systems and vice versa
- Validation of information contained in the drawings against the specifications

## 4. Draw sketches and diagrams.

- Freehand schematic representation of part of a general or detail drawing in accordance with drafting standards and conventions respecting projections, lines, hatching lines and sections
- Observance of proportions and dimensions
- Precise sketches

## 5. Dimension sketches.

- Observance of standards, conventions and abbreviations
- Accurate dimensions
- Good penmanship

*For the competency as a whole:*

- Careful handling and storage of documents
- Ability to visualize shapes and objects in space
- Correct use of English and French terminology associated with elevator mechanics
- Location of relevant information in manufacturers' manuals
- Proper maintenance and storage of drafting instruments

Competency 4      Duration 105 hours   Credits 7

### ***Behavioural Competency***

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#### **Statement of the Competency**

Do shop work.

#### **Achievement Context**

- Associated with the installation, maintenance, troubleshooting, repair, modification or disassembly of different types of mechanized conveyor systems
- Working in a team
- Given plans, sketches, technical drawings, instructions, different-shaped parts, equipment and materials
- Using personal and collective safety gear, hand and power tools, the necessary equipment, an arc welding machine and oxygen cutting equipment, measuring instruments, a calculator, conversion tables and technical documentation

#### **Elements of the Competency**

#### **Performance Criteria**

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Identify the dimensions and shape of a part on a piece of equipment or a mechanized conveyor system.</li> <br/> <li>2. Do calculations associated with the geometric and dimensional characteristics of machinery components.</li> <br/> <li>3. Take measurements and readings on mechanized conveyor systems and their components.</li> </ol> | <ul style="list-style-type: none"> <li>• Appropriate choice of measuring instruments</li> <li>• Precise adjustment and calibration of measuring instruments</li> <li>• Correct use of measuring instruments</li> <li>• Accurate readings and measurements</li> <li>• Accurate reading of dimensions</li> <li>• Appropriate maintenance and storage of measuring instruments</li> <br/> <li>• Appropriate use of calculator functions</li> <li>• Proper application of mathematical formulas for calculating dimensions, surface areas and volumes</li> <li>• Accurate measurement and calculation of angles</li> <li>• Accurate results recorded as whole numbers, fractions or percentages</li> <br/> <li>• Correct use of measuring and direct-reading instruments</li> <li>• Accurate identification of measurements and readings</li> </ul> |
|--|---|

- |  |  |
|--|--|
| 4. Associate various metals, materials and products with elevator mechanics tasks.   | <ul style="list-style-type: none"> <li>• Correct identification of the properties of the different metals, materials and products used in elevator mechanics</li> <li>• Correct identification of the characteristics of the solvents and lubricants used in elevator mechanics</li> <li>• Establishment of relevant connections between the metals, materials and products, and their applications in elevator mechanics</li> </ul> |
| 5. Associate various mechanical and structural components with elevator mechanics tasks.   | <ul style="list-style-type: none"> <li>• Correct identification of the properties of the different components used in elevator mechanics</li> <li>• Correct association of components with their use in mechanized conveyor systems</li> </ul>   |
| 6. Perform manual tasks such as laying out, sawing, filing, sharpening, drilling, grinding, sanding, tapping, threading and extracting bolts and screws. | <ul style="list-style-type: none"> <li>• Accurate interpretation of instructions and information in the plans, diagrams or technical drawings</li> <li>• Correct determination of the tool or equipment needed to do the job</li> <li>• Appropriate techniques and work methods</li> <li>• Observance of required measurements or tolerances</li> <li>• Careful, precise work</li> </ul>   |
| 7. Perform basic welding and oxygen cutting operations.  | <ul style="list-style-type: none"> <li>• Accurate interpretation of instructions and information in the plans, diagrams or technical drawings</li> <li>• Preparation and adjustment of welding machinery in accordance with requirements</li> <li>• Appropriate preparation of oxygen cutting equipment</li> <li>• Appropriate techniques and work methods</li> <li>• Proper cleaning of welds</li> <li>• Quality welds</li> </ul>   |

*For the competency as a whole:*

- Consistent observance of occupational health and safety rules
- Consistent observance of environmental protection measures
- Accurate interpretation of technical information in English and French
- Precision
- Economical use of materials and products
- Proper management of recyclables and waste
- Appropriate maintenance and storage of tools and equipment

Competency 5      Duration 45 hours      Credits 3

***Behavioural Competency***

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**Statement of the Competency**

Handle, rig and anchor mechanized conveyor systems.

**Achievement Context**

- When installing, maintaining, troubleshooting, repairing, modifying or disassembling different types of mechanized conveyor systems
- Given drawings, sketches, diagrams and instructions
- Using personal and collective safety gear, and hoisting, rigging and anchoring tools and equipment, as well as means of access such as ladders and stepladders
- Given current regulations concerning the use of tools and equipment, lifting signals, manufacturers' manuals and technical documentation

**Elements of the Competency**

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1. Interpret the drawings, sketches, diagrams and instructions.
2. Plan the work.
3. Check the rigging, lifting and anchoring equipment before use.

**Performance Criteria**

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- Accurate interpretation of information
- Accurate determination of safety measures
- Accurate determination of centre of gravity
- Realistic estimate of loads
- Correct choice of lifting elements and accessories based on their lifting capacity and resistance to friction
- Correct choice of lifting devices based on their lifting capacity
- Correct choice of ladder or stepladder for the job
- Thorough lifting motion planning based on the minimum number of horizontal and vertical movements
- Observance of manufacturers' recommendations and regulatory requirements
- Thorough inspection of the tools, accessories and equipment
- Detection of defects

4. Set up scaffolding.
  - Handling in conformity with the rules of transportation and handling
  - Assembly in accordance with manufacturers' manuals and drawings
  - Solid assembly, anchor points and fastening systems, if applicable
  - Correct installation of accessories for protection against falling (e.g. toeboards, guard rails)
  - Installation of the appropriate signs and markers, if applicable
  - Safe transportation of scaffolding, taking into account techniques and restrictions such as clearance, traffic, load limits and the proximity of electrical sources
  
5. Perform lifting and handling operations such as:
  - preparing steel slings
  - slinging and rigging loads
  - moving loads vertically and horizontally
  - laying down loads
  - Observance of signals
  - Observance of load capacity
  - Appropriate use of fastening techniques
  - Observance of established motion plan
  - Positioning of loads as prescribed
  
6. Fasten and anchor materials and machines on concrete walls, solid or hollow concrete blocks, metal, wood, gypsum, etc.
  - Proper association of tools with the type of anchors
  - Correct choice of anchors based on the materials and loads
  - Solid anchors and fasteners
  
7. Maintain and store the tools, equipment and materials.
  - Appropriate protection and cleaning of equipment and machinery
  - Basic maintenance of equipment and machinery in accordance with manufacturers' instructions
  - Safe storage in accordance with manufacturers' recommendations

*For the competency as a whole:*

- Consistent observance of occupational health and safety rules
- Accurate interpretation of technical information in English and French
- Application of standards associated with the equipment needed for the job
- Adoption of ergonomic postures
- Safe and effective teamwork
- Proper use of the necessary tools and equipment
- Detection of defects
- Appropriate use of trade-related terminology in English and in French



Competency 6      Duration 60 hours   Credits 4

***Behavioural Competency***

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**Statement of the Competency**

Align mechanized conveyor system components.

**Achievement Context**

- Working on different mechanized conveyor system components
- When installing, maintaining, repairing or modifying mechanized conveyor systems
- Given work orders, instructions, drawings, specifications and diagrams
- Using personal and collective safety gear, hand and power tools, lifting equipment and accessories if applicable, and measuring instruments such as dial gauges, alignment gauges, plumb lines and measure tapes
- Given reference tables, mathematical formulas, manufacturers' manuals and data sheets, and technical documentation

**Elements of the Competency**

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1. Plan the work.

- Accurate interpretation of work order
- Accurate authentication of the drawings and diagrams available
- Determination of the appropriate personal and collective safety measures
- Correct selection of the necessary tools, instruments, equipment and materials
- Accurate interpretation of alignment method
- Accurate interpretation of manufacturers' recommendations

2. Check the components or machines to be aligned.

- Proper securement of work area
- Thorough verification of alignment defects
- Accurate determination of manufacturers' specifications

3. Use different alignment methods.

- Proper positioning of instruments and devices
- Precise adjustment and calibration of instruments and devices
- Use of instruments and devices in accordance with the appropriate techniques
- Accurate calculations using mathematical formulas
- Proper positioning of shims under support points

4. Check the alignment.
  - Validation of alignment in accordance with manufacturers' specifications, including tolerances
  - Appropriate changes made, if necessary
  
5. Maintain and put away the instruments and devices.
  - Appropriate cleaning of instruments and devices
  - Detection of a defective instrument or device
  - Safe storage in accordance with manufacturers' recommendations

*For the competency as a whole:*

- Consistent observance of occupational health and safety rules
- Application of standards associated with the equipment needed for the job
- Adoption of ergonomic postures
- Proper application of manufacturers' instructions
- Appropriate use of trade-related terminology in English and French

Competency 7      Duration 45 hours      Credits 3

***Behavioural Competency***

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**Statement of the Competency**

Install electrical cables and conduits.

**Achievement Context**

- When installing, repairing and modifying different types of mechanized conveyor systems
- Working in a team
- Given a work order, instructions, drawings and circuit diagrams
- Using personal and collective safety gear, reference tables, hand and power tools, and mechanical and electrical devices and accessories
- Given current regulations such as the Canadian Electrical Code, and technical documentation

**Elements of the Competency****Performance Criteria**

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1. Plan the work.

- Accurate interpretation of work order and instructions
- Correct selection of the necessary tools and equipment
- Determination of the appropriate personal and collective safety measures
- Determination of the wire gauge and the size of the conduits needed
- Accurate interpretation of installation method
- Accurate interpretation of current regulations

2. Prepare the electrical conduits.

- Precise measurement of lengths
- Appropriate use of cutting, drilling and bending techniques
- Proper assembly of conduits

3. Fasten the electrical conduits.

- Accurate positioning of the necessary fasteners
- Proper application of techniques based on the types of electrical conduits used
- Solid attachment
- Level conduits

4. Pull the wires in the conduits.

- Proper identification of wires
- Observance of technique for pulling wires

5. Strip and connect wires in the terminal boxes.

- Proper application of techniques based on the types of cables used
- Solid connections

6. Tidy up the work area and clean and put away the tools and equipment.

- Recovery of all reusable materials
- Proper management of recyclables and waste
- Cleanliness of work area

*For the competency as a whole:*

- Consistent observance of occupational health and safety rules and environmental protection measures
- Observance of the Canadian Electrical Code
- Systematic observance of drawings and diagrams
- Proper application of manufacturers' specifications
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Proper use of the necessary tools, accessories, devices, equipment and materials
- Proper application of hand-machining techniques
- Detection of defects
- Appropriate use of trade-related terminology in English and French

Competency 8      Duration 120 hours   Credits 8

### ***Behavioural Competency***

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#### **Statement of the Competency**

Ensure proper operation of electrical circuits.

#### **Achievement Context**

- Working on direct current (DC) and alternating current (AC) circuits
- Working on mechanized conveyor system and machinery components
- Given instructions and a circuit diagram, as well as current regulations respecting electrical connections
- Using personal and group safety gear and measuring tools and instruments such as a voltmeter, a clamp-on ammeter and an oscilloscope

#### **Elements of the Competency**

1. Interpret the circuit diagram.
2. Calculate the value of the parameters at the different points in the circuit.
3. Measure the value of the parameters at the different points in the circuit.
4. Inspect electrical circuits in mechanized conveyor system components.
5. Interpret the results.

#### **Performance Criteria**

- Accurate interpretation of terminology
- Accurate interpretation of symbols and conventions
- Accurate interpretation of vector diagrams
- Proper application of the laws of electricity
- Correct use of the appropriate formulas
- Accurate calculations
- Systematic observance of safety measures
- Correct choice of measuring instruments
- Precise connections
- Appropriate use of measuring instruments
- Precise measurements
- Methodical approach
- Inspection of connections
- Detection of defects and appropriate corrections, if necessary
- Accurate calculation of differences
- Accurate determination of causes of differences

*For the competency as a whole:*

- Observance of occupational health and safety rules
- Appropriate use of instruments
- Organized approach
- Precise measurements and accurate calculations
- Careful work
- Appropriate use of trade-related terminology in English and French

Competency 9      Duration 90 hours      Credits 6

***Behavioural Competency***

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**Statement of the Competency**

Ensure proper operation of logic circuits.

**Achievement Context**

- Working on mechanized conveyor system control devices
- Working on an assembly of components and combinational, wired or sequential logic circuits
- Given instructions and a graphic representation of the sequence of operations for a piece of equipment
- Using personal safety gear, tools, measuring instruments, a simulator with inputs and outputs, control software, cables and industrial wires

**Elements of the Competency**

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**Performance Criteria**

- |   |   |
|---|---|
| 1. Interpret a combinational logic circuit diagram. | <ul style="list-style-type: none"> <li>• Accurate interpretation of data sheets</li> <li>• Accurate identification of number systems</li> <li>• Accurate identification of logic gates</li> </ul>   |
| 2. Simplify the combinational logic equation.       | <ul style="list-style-type: none"> <li>• Accurate identification of input and output variables</li> <li>• Proper organization of truth table</li> <li>• Optimal grouping of variables (Karnaugh diagram)</li> <li>• Diagram consistent with the combinational logic equation</li> </ul>   |
| 3. Interpret a sequential logic circuit diagram.    | <ul style="list-style-type: none"> <li>• Accurate interpretation of data sheets</li> <li>• Accurate identification of sequential functions</li> </ul>   |
| 4. Develop sequential logic circuit equations.      | <ul style="list-style-type: none"> <li>• Accurate identification of input and output variables</li> <li>• Accurate interpretation of timing diagrams</li> <li>• Graphic representation of operation, control and transition (Grafcet) in accordance with specifications</li> <li>• Logic equation consistent with the graphic representation of operation, control and transition (Grafcet)</li> <li>• Scale of diagram consistent with sequential logic equations</li> </ul> |

5. Connect circuits.
- Conformity with diagrams and instructions
  - Observance of the components' characteristics
  - Normal functioning of circuits
  - Solid connections
6. Compare the practical and theoretical results.
- Accurate interpretation of visual information
  - Proper validation of functioning of combinational logic circuits
  - Proper validation of sequence of operations
  - Accurate determination of causes of malfunctions
7. Make corrections.
- Accurate identification of defective components
  - Correct choice of replacement components
  - Precise inspection of circuits

*For the competency as a whole:*

- Consistent observance of occupational health and safety rules
- Appropriate use of instruments
- Organized approach
- Precise measurements and accurate calculations
- Careful work
- Appropriate use of trade-related terminology in English and French



Competency 10      Duration 75 hours      Credits 5

***Behavioural Competency***

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**Statement of the Competency**

Connect motors and control devices.

**Achievement Context**

- Working on different mechanized conveyor systems
- Using direct and alternating current motors connected to control devices equipped with relays or a variable speed gear
- Working in a team
- Given a work order, instructions, drawings and diagrams
- Using personal and group safety gear; hand and power tools; measuring instruments; lifting, handling, rigging and anchoring equipment and accessories; anchoring guides and supports, machine room equipment, cleaners and lubricants
- Given the Canadian Electrical Code, manufacturers' manuals and data sheets, and technical documentation

**Elements of the Competency**

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1. Plan the work.

- Accurate interpretation of work order, instructions, drawings and diagrams
- Accurate interpretation of the motors' technical specifications
- Recognition of the operating principles of different types of motors

2. Connect motors.

- Appropriate choice of connecting tools and accessories
- Observance of work methods
- Systematic observance of the standards for electrical connections

3. Attach and connect control devices to the motors.

- Observance of work methods
- Systematic observance of the standards for electrical connections
- Solid attachment

## 4. Inspect control devices and motors.

- Observance of procedure for inspecting devices and verifying the rotation of the motor
- Appropriate use of measuring instruments
- Operation in conformity with parameters
- Appropriate connections, if applicable

*For the competency as a whole:*

- Observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of drawings and diagrams
- Proper application of manufacturers' specifications
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of the required tools, equipment and materials
- Appropriate use of trade-related terminology in English and French

Competency 11 Duration 105 hours Credits 7

***Behavioural Competency***

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**Statement of the Competency**

Ensure proper operation of electronic circuits in mechanized conveyor systems.

**Achievement Context**

- Working on different electronic circuits in mechanized conveyor systems
- Given simulated malfunctions, instructions and circuit diagrams
- Using personal safety gear, tools, replacement components and measuring instruments such as a multimeter and an oscilloscope

**Elements of the Competency**

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**Performance Criteria**

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- |  |  |
|--|--|
| 1. Interpret the instructions and the circuit diagram.                         | <ul style="list-style-type: none"> <li>• Accurate location of components</li> <li>• Accurate explanation of how the circuits work</li> <li>• Correct identification of integrated analog circuits</li> <li>• Accurate explanation of the role of integrated analog circuits</li> <li>• Accurate identification of signals</li> </ul> |
| 2. Measure the value of the parameters at the different points of the circuit. | <ul style="list-style-type: none"> <li>• Systematic observance of safety measures</li> <li>• Correct choice of measuring instruments</li> <li>• Precise connections</li> <li>• Appropriate use of measuring instruments</li> <li>• Precise measurements</li> </ul>   |
| 3. Interpret the results.  | <ul style="list-style-type: none"> <li>• Accurate interpretation of waveforms</li> <li>• Accurate interpretation of measurements</li> <li>• Accurate identification of differences</li> <li>• Accurate determination of causes of differences</li> </ul>   |
| 4. Make corrections.   | <ul style="list-style-type: none"> <li>• Recognition of defective components</li> <li>• Correct choice of replacement components</li> <li>• Appropriate soldering of circuits</li> <li>• Precise verification of proper operation of circuits</li> </ul>   |

*For the competency as a whole:*

- Observance of occupational health and safety rules
- Appropriate use of instruments
- Organized approach
- Precise measurements and accurate calculations
- Careful work
- Appropriate use of trade-related terminology in English and French

Competency 12 Duration 30 hours Credits 2

***Behavioural Competency***

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**Statement of the Competency**

Install a control unit.

**Achievement Context**

- When installing, connecting and activating controls for different types of mechanized conveyor systems
- Given a work order, instructions, an installation drawing and circuit diagrams
- Using personal safety gear, a computer, programming software, tools and measuring instruments such as a voltmeter, a clamp-on ammeter and an oscilloscope
- Given current regulations respecting electrical connections

**Elements of the Competency**

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**Performance Criteria**

- |  |   |
|--|---|
| 1. Plan the installation.                          | <ul style="list-style-type: none"> <li>• Accurate interpretation of instructions and installation drawing</li> <li>• Logical work plan</li> <li>• Correct selection of the necessary tools, equipment and materials</li> </ul>  |
| 2. Locate and fasten the control unit and devices. | <ul style="list-style-type: none"> <li>• Location in accordance with installation drawing</li> <li>• Solid attachment</li> </ul>  |
| 3. Do the wiring and electrical connections.       | <ul style="list-style-type: none"> <li>• Accurate interpretation of circuit diagram</li> <li>• Wiring in accordance with installation drawing</li> <li>• Appropriate connections</li> <li>• Solid connections</li> <li>• Consistency of input and output voltage of control unit and devices</li> </ul>   |
| 4. Activate the control unit.                      | <ul style="list-style-type: none"> <li>• Inspection of inputs and outputs</li> <li>• Functioning in accordance with established parameters</li> <li>• Appropriate connections, if necessary</li> </ul>  |
| 5. Use programming software.                       | <ul style="list-style-type: none"> <li>• Accurate location of application parameters</li> <li>• Modification of parameters in accordance with manufacturers' specifications and the company's installation standards</li> <li>• Functioning in accordance with established parameters</li> <li>• Appropriate connections, if necessary</li> </ul> |

6. Tidy up the work area and put away the tools and equipment.
- Observance of sequence for the appropriate disassembly and storage of the control unit and devices
  - Recovery of all reusable tools, instruments, equipment and materials
  - Appropriate use of solvents
  - Proper management of recyclables and waste
  - Cleanliness of work area

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules
- Systematic observance of the standards for electrical connections
- Appropriate maintenance and storage of tools and equipment
- Organized approach
- Careful work

Competency 13 Duration 75 hours Credits 5

***Behavioural Competency***

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**Statement of the Competency**

Ensure proper operation of hydraulic components in mechanized conveyor systems.

**Achievement Context**

- Working on hydraulic circuits in machinery or other components of mechanized conveyor systems
- Working in a team
- Given instructions and hydraulic circuit diagrams
- Using personal safety gear, tools, equipment, measuring instruments, software, hydraulic components, a hydraulic unit with a minimum pressure of 70 bars (1000 lb/psi.) and a hydraulic simulator
- Given current regulations and manufacturers' technical documentation

**Elements of the Competency****Performance Criteria**

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- |  |  |
|--|--|
| 1. Interpret the instructions and the hydraulic circuit diagram. | <ul style="list-style-type: none"> <li>• Accurate interpretation of instructions</li> <li>• Accurate interpretation of terminology</li> <li>• Accurate interpretation of symbols and conventions</li> <li>• Accurate interpretation of the sequence of circuit operations</li> </ul> |
| 2. Draw hydraulic circuit diagrams.                              | <ul style="list-style-type: none"> <li>• Accurate, precise terminology</li> <li>• Appropriate use of symbols and conventions</li> </ul>  |
| 3. Calculate the parameters of hydraulic circuits.               | <ul style="list-style-type: none"> <li>• Correct application of laws</li> <li>• Correct use of the appropriate formulas</li> <li>• Accurate calculations</li> </ul>  |
| 4. Simulate the operation of hydraulic circuits using software.  | <ul style="list-style-type: none"> <li>• Correct use of software</li> <li>• Appropriate use of symbols and conventions</li> <li>• Accurate adjustment of the characteristics of the circuit</li> <li>• Correct simulation of sequence of operations</li> </ul>                       |
| 5. Position the jack and assemble the hydraulic components.      | <ul style="list-style-type: none"> <li>• Safe handling of parts to be installed</li> <li>• Appropriate assembly and mounting of hydraulic components</li> <li>• Precise positioning and alignment of casing and piston</li> <li>• Appropriate organization of components</li> </ul>  |

6. Inspect and adjust the hydraulic control unit.
  - Thorough verification of seals
  - Precise adjustment of circuit parameters
  - Observance of adjustment procedure
  - Proper validation of sequence of operations
7. Disassemble the hydraulic components.
  - Careful draining of unit
  - Appropriate disassembly of components
  - Proper recovery of oils
8. Tidy up the work area and put away the tools and equipment.
  - Appropriate cleaning and storage of tools and equipment
  - Recovery of all reusable materials
  - Appropriate use of solvents
  - Proper management of recyclables and waste
  - Cleanliness of work area

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of diagrams
- Proper application of manufacturers' specifications
- Safe and appropriate functioning of simulated conveyor system
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of the necessary tools, equipment and materials
- Appropriate use of trade-related terminology in English and French



Competency 14      Duration 120 hours      Credits 8

## ***Behavioural Competency***

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### **Statement of the Competency**

Install elevator infrastructures and equipment.

### **Achievement Context**

- Working on mechanized conveyor systems such as passenger and freight elevators and dumbwaiters
- Working on mechanized conveyor systems with or without a machine room
- In new or existing buildings in the residential, institutional, commercial or industrial sectors, or in civil engineering or roadwork constructions
- Working in a team
- Given a work order, instructions, drawings, specifications and diagrams
- Using personal and collective safety gear; hand and power tools; measuring and laying out instruments; lifting, handling, rigging and anchoring equipment and accessories; guide rollers and rails; machine room equipment; cleaners and lubricants
- Given current standards, municipal bylaws if applicable, manufacturers' manuals and data sheets, technical documentation and regulations concerning different mechanized conveyor systems, including the Québec Construction Code, the Safety Code for Elevators and Escalators, and the Canadian Electrical Code

### **Elements of the Competency**

1. Plan the work.

### **Performance Criteria**

- Accurate interpretation of work order and instructions
- Accurate authentication of the drawings and diagrams available
- Determination of the appropriate personal and collective safety measures
- Verification of the availability of the necessary equipment and materials
- Accurate interpretation of component assembly methods
- Accurate interpretation of installation method
- Accurate interpretation of current regulations

2. Set up scaffolding and other temporary installations, if applicable.
  - Proper securement of work area
  - Observance of handling, rigging and lifting techniques
  - Observance of sequence of operations
  - Solid assembly and anchoring of scaffolding, if applicable
  - Solid, safe assembly of temporary elevator platform, if applicable
  - Solid, safe installation of hoist
  
3. Determine where to position the guide rails in the shaft.
  - Accurate interpretation of installation drawings and diagrams
  - Production and installation of a template and positioning of reference lines
  - Accurate interpretation of results of measurements in the shaft
  - Relevant evaluation of consistency between the dimensions of the shaft and the parameters of the conveyor system to be installed
  - Correct identification of any necessary corrective measures
  - Observance of drawings and diagrams
  
4. Install the guide rollers and rails in the shaft.
  - Safe handling of guide rails
  - Observance of methods for assembling, fastening and aligning guide rollers and rails
  - Solid installation
  - Systematic observation of tightening standards
  - Observance of tolerances
  
5. Handle, position and fasten the machine room components and equipment.
  - Safe handling of components and equipment
  - Observance of sequences for using and assembling the equipment
  - Accurate measurements and solid attachment
  - Thorough lubrication and cleaning of installed components
  - Precise levelling and alignment of components and equipment
  
6. Install the buffers in the pit.
  - Accurate measurements and solid attachment
  - Proper positioning and solid fastening of buffers
  - Alignment in accordance with specifications
  
7. Tidy up the work area and put away the tools and equipment.
  - Appropriate cleaning and storage of tools and equipment
  - Recovery of all reusable materials
  - Appropriate use of solvents
  - Proper management of recyclables and waste
  - Cleanliness of work area

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of drawings and specifications
- Observance of established deadlines
- Proper application of manufacturers' specifications
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of workers lifting devices
- Correct use of the necessary tools, equipment and materials
- Proper application of hand-machining techniques
- Appropriate use of trade-related terminology in English and French



Competency 15      Duration 90 hours      Credits 6

## ***Behavioural Competency***

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### **Statement of the Competency**

Install and start up an elevator platform.

### **Achievement Context**

- Working on mechanized conveyor systems such as traction, hydraulic and freight elevators
- Working on mechanized conveyor systems with or without a machine room
- In new or existing buildings in the residential, institutional, commercial or industrial sectors, or in civil engineering or roadwork constructions
- Working in a team
- Given work orders, instructions, drawings, specifications and sketches
- Using personal and collective safety gear; hand and power tools; measuring instruments; and lifting, handling, rigging and anchoring equipment and accessories
- Using an elevator platform, an assembled counterweight, machine room equipment, cleaners and lubricants
- Given current standards, municipal bylaws if applicable, manufacturers' manuals and data sheets, technical documentation, and regulations concerning different mechanized conveyor systems, including the Québec Construction Code, the Safety Code for Elevators and Escalators, and the Canadian Electrical Code

### **Elements of the Competency**

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1. Plan the work.

### **Performance Criteria**

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- Accurate interpretation of work order
- Accurate authentication of the drawings and diagrams available
- Determination of the appropriate personal and collective safety measures
- Verification of the availability of the necessary equipment and materials
- Accurate interpretation of component assembly methods
- Accurate interpretation of installation method
- Accurate interpretation of current regulations

2. Assemble and install the guide rollers, the platform, the counterweight, the accessories and the suspension cables.
  - Safe handling of equipment and components
  - Observance of sequences for the use and assembly of components
  - Solid installation of guide rollers, platform, counterweight and accessories
  - Correct installation of speed control cable and take-up pulley
  - Installation of guard rails and safe handling of platform at the top of the shaft
  - Installation of suspension cables with no defects
  - Observance of standards and tolerances
  
3. Connect the equipment and control devices in the machine room.
  - Methodical inspection of installation
  - Appropriate connection of electrical wires and conduits
  - Systematic observance of standards respecting electrical connections
  - Connection of a temporary control device
  - Systematic observance of work method
  
4. Inspect and start up the platform temporarily.
  - Methodical inspection of the installation
  - Systematic observance of start-up method
  - Constant adjustment of counterweight to maintain a balanced load
  - Observance of procedure for verifying the rotation of the motor
  - Thorough inspection of installation
  - Precise adjustments in accordance with manufacturers' standards

5. Tidy up the work area and put away the tools and equipment.

- Appropriate cleaning and storage of tools and equipment
- Recovery of all reusable materials
- Appropriate use of solvents
- Proper management of recyclables and waste
- Cleanliness of work area

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of drawings and specifications
- Observance of established deadlines
- Proper application of manufacturers' specifications
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of the necessary tools, instruments, equipment and materials
- Proper application of hand-machining techniques
- Appropriate protection of components throughout the process
- Safe and appropriate functioning of platform
- Accurate recording of work done
- Appropriate use of trade-related terminology in English and French





Competency 16      Duration 90 hours      Credits 6

***Behavioural Competency***

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**Statement of the Competency**

Install hoistway doors and shaft accessories.

**Achievement Context**

- Working on mechanized conveyor systems such as traction, hydraulic and freight elevators
- In new or existing buildings in the residential, institutional, commercial or industrial sectors, or in civil engineering or roadwork constructions
- Working in a team
- Given work orders, instructions, drawings, specifications, diagrams and a functioning platform
- Using personal and collective safety gear; hand and power tools; measuring instruments; and lifting, handling, rigging and anchoring equipment and accessories
- Using hoistway doors and door frames, machine guards, accessories, cleaning products and lubricants
- Given current standards, municipal bylaws if applicable, manufacturers' manuals and data sheets, technical documentation, and regulations concerning different mechanized conveyor systems, including the Québec Construction Code, the Safety Code for Elevators and Escalators, and the Canadian Electrical Code

**Elements of the Competency**

---

1. Plan the work.

**Performance Criteria**

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- Accurate interpretation of work order and instructions
- Accurate authentication of the drawings and diagrams available
- Determination of the appropriate personal and collective safety measures
- Determination of the necessary tools, accessories, equipment and materials
- Accurate interpretation of assembly method
- Accurate interpretation of installation method
- Determination of logical sequence of operations
- Accurate interpretation of current regulations

2. Handle and install hoistway doors and door frames, devices and accessories
  - Correct assembly of components
  - Safe handling of components
  - Positioning, alignment and fastening of components in accordance with techniques
  - Precise levelling of components
  - Appropriate installation of devices and accessories
  
3. Install mechanical components and connect the control devices and electrical accessories.
  - Installation of mechanical components in accordance with proper fastening techniques
  - Positioning and installation of control devices in accordance with techniques
  - Safe electrical connection of controls and accessories
  
4. Install the machine guards.
  - Accurate determination of positioning of machine guards
  - Correct drilling and fastening
  - Precise adjustments
  
5. Clean and lubricate the components and equipment in the shaft.
  - Correct cleaning with the appropriate products
  - Lubrication in accordance with data sheets

6. Tidy up the work area and put away the tools and equipment.

- Appropriate cleaning and storage of tools and equipment
- Recovery of all reusable tools, instruments, equipment and materials
- Appropriate use of solvents
- Proper management of recyclables and waste
- Cleanliness of work area

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of drawings and specifications
- Observance of established deadlines
- Proper application of manufacturers' specifications
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of the necessary tools, instruments, equipment and materials
- Proper application of hand-machining techniques
- Appropriate protection of components throughout the process
- Accurate recording of work done
- Appropriate use of trade-related terminology in English and French



Competency 17      Duration 105 hours      Credits 7

## ***Behavioural Competency***

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### **Statement of the Competency**

Assemble an elevator cab.

### **Achievement Context**

- Working on mechanized conveyor systems such as traction, hydraulic and freight elevators
- In new or existing buildings in the residential, institutional, commercial or industrial sectors, or in civil engineering or roadwork constructions
- Working in a team
- Given work orders, instructions, drawings, specifications, diagrams and a functioning platform
- Using personal and collective safety gear; hand and power tools; measuring instruments; and lifting, handling, rigging and anchoring equipment and accessories
- Using a disassembled elevator cab, cab accessories, paint and cleaning products
- Given current standards, municipal bylaws if applicable, manufacturers' manuals and data sheets, technical documentation, and regulations concerning different mechanized conveyor systems, including the Québec Construction Code, the Safety Code for Elevators and Escalators, and the Canadian Electrical Code

### **Elements of the Competency**

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1. Plan the work.

### **Performance Criteria**

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- Accurate interpretation of work order and instructions
- Accurate authentication of the drawings and diagrams available
- Determination of the appropriate personal and collective safety measures
- Determination of the necessary tools, accessories, equipment and materials
- Accurate interpretation of assembly and finishing methods
- Determination of logical sequence of operations
- Physical organization of components in accordance with the installation sequence
- Accurate interpretation of current regulations

2. Assemble the cab and install the components, control devices and accessories.
  - Safe, careful handling of equipment and materials
  - Observance of assembly sequence
  - Cab components level and square
  - Appropriate choice and positioning of conduits on the roof of the cab
  - Installation of components, devices and accessories in accordance with the appropriate techniques
  
3. Connect the control devices and accessories.
  - Appropriate coding of wires
  - Electrical connection of devices and accessories in accordance with the appropriate technique
  
4. Finish the inside of the cab.
  - Finishing elements level and square
  - Solid fastening of elements
  - Installation of elements without sharp edges and surfaces
  - Appropriate retouching of paint if necessary
  - Careful interior finishing
  
5. Tidy up the work area and put away the tools and equipment.
  - Appropriate cleaning and storage of tools and equipment
  - Recovery of all reusable materials
  - Appropriate use of solvents
  - Proper management of recyclables and waste
  - Cleanliness of work area

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of drawings and specifications
- Observance of established deadlines
- Proper application of manufacturers' specifications
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of the necessary tools, instruments, equipment and materials
- Proper application of hand-machining techniques
- Appropriate protection of components throughout the process
- Accurate recording of work done
- Appropriate use of trade-related terminology in English and French





Competency 18      Duration 90 hours      Credits 6

***Behavioural Competency***

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**Statement of the Competency**

Make the final connections and test the elevator.

**Achievement Context**

- Working on mechanized conveyor systems such as traction, hydraulic and freight elevators
- Working in new or existing buildings in the residential, institutional, commercial and industrial sectors, and in civil engineering and roadwork constructions
- Working in a team
- Given a work order, instructions, drawings, specifications, circuit diagrams, and call system and warning system diagrams
- Using personal and collective safety gear, hand and power tools, measuring instruments, an accelerometer and a controller
- Given current standards, municipal bylaws, if applicable, manufacturers' manuals and data sheets, technical documentation, and regulations concerning different mechanized conveyor systems, including the Québec Construction Code, the Safety Code for Elevators and Escalators, and the Canadian Electrical Code

**Elements of the Competency**

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1. Plan the work.

**Performance Criteria**

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- Accurate interpretation of work order and instructions
- Accurate authentication of the drawings and diagrams available
- Determination of the appropriate personal and collective safety measures
- Determination of the necessary tools, accessories, equipment and materials
- Accurate interpretation of methods for making the electrical connections
- Determination of sequence of operations for connecting and testing the elevator
- Accurate interpretation of current regulations

2. Make the final electrical connections.

- Disconnection of temporary control device
- Connection of cable and wires to the controller
- Proper wire combing and connection
- Systematic observance of coding

3. Inspect and test the mechanized conveyor system.
  - Systematic observance of inspection procedure
  - Inspection of live and dead circuits
  - Thorough inspection of all accessories and devices installed
  - Start-up of system at nominal conveyor speed
  - Systematic observance of adjustment methods
  - Precise and thorough performance of all required tests
  - Proper choice of any necessary corrective measures
  - Systematic observance of technical specifications
  
4. Tidy up the work area and put away the tools and equipment.
  - Appropriate cleaning and storage of tools and equipment
  - Recovery of all reusable materials
  - Appropriate use of solvents
  - Proper management of recyclables and waste
  - Cleanliness of work area
  
5. Do various types of follow-up.
  - Consideration of the different sources of information
  - Accurate recording of all information, for example, in the declaration of work done
  - Logical order of information
  - Use of the appropriate technical terms
  - Incorporation into the drawings and diagrams of all changes made to the system and its immediate environment during installation
  - Communication of relevant information about the system to the appropriate person

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of drawings and specifications
- Observance of established deadlines
- Proper application of manufacturers' specifications
- Safe and appropriate functioning of elevator
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of the necessary tools, instruments, equipment and materials
- Appropriate protection of components throughout the process
- Accurate record of work done
- Appropriate use of trade-related terminology in English and French



Competency 19      Duration 120 hours      Credits 8

## ***Behavioural Competency***

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### **Statement of the Competency**

Maintain and repair mechanized conveyor systems.

### **Achievement Context**

- Working with traction and hydraulic temporary or permanent passenger and freight elevators, escalators, moving sidewalks, platform lifts, ski lifts, etc.
- In response to service calls and in emergencies
- Working alone or in a team
- Given a work order, instructions, drawings, specifications and diagrams including recent modifications and repairs, and maintenance logs
- Using personal and collective safety gear; hand and power tools; lifting, handling, rigging and anchoring equipment and accessories; and measuring instruments
- Using mechanical and electrical replacement parts, cleaning products, lubricants and hydraulic and transmission fluids
- Given current standards, municipal bylaws if applicable, manufacturers' manuals and data sheets, technical and follow-up documentation, and current regulations concerning different mechanized conveyor systems, in particular the Quebec Construction Code, the Safety Code for Elevators and Escalators and the Canadian Electrical Code

### **Elements of the Competency**

1. Plan the work.

### **Performance Criteria**

- Accurate interpretation of work order and instructions
- Appropriate communication with the customer's representative
- Formal consultation of the available sources of information
- Accurate interpretation of information
- Determination of the appropriate personal and collective safety measures
- Establishment of a logical sequence of verifications
- Verification of the availability of the materials needed to do the work
- Accurate interpretation of current regulations

2. Maintain mechanical and electrical components and devices.
  - Consultation of maintenance logs
  - Observance of procedure for verifying the general operation of the system and its components
  - Accurate measurement of values and parameters
  - Visual inspection of installations
  - Accurate interpretation of noises, vibrations, odours, wear, etc.
  - Inspection of components and devices
  - Appropriate interventions on components and devices, such as cleaning, lubricating, adjusting and replacing as necessary
  
3. Take action in an emergency.
  - Correct assessment of the situation
  - Correct application of protocol
  - Appropriate communication with people stuck in the elevator
  - Application of rescue procedure associated with mechanized conveyor systems
  - Accurate recording and transmission of all information on the incident or accident
  
4. Diagnose malfunctions.
  - Systematic observance of inspection procedure
  - Correct action taken to identify the malfunction: accurate interpretation of controller error codes, thorough verification of voltage, etc.
  - Formulation of an accurate diagnosis
  - Appropriate determination of corrective measure
  
5. Disassemble components.
  - Safe handling and rigging of parts removed and replacement parts, if applicable
  - Observance of logical disassembly sequence
  - Systematic observance of disconnection and disassembly techniques
  - Cleaning of parts and appropriate management of oils and contaminated materials, if applicable
  
6. Hand-machine simple parts.
  - Observance of procedure for each operation
  - Precise measuring and hand-machining of simple parts in accordance with tolerances
  - Consideration of expected quality
  - Thorough verification of conformity of machined part with the original part

7. Replace or reinstall components.
  - Correct choice of part or component
  - Safe handling of part or component
  - Precise calibration and adjustments
  - Systematic observance of methods for making electrical, mechanical and hydraulic connections
  - Topping off of lubricants
  - Appropriate cleaning and lubrication of components if necessary
  - Thorough inspection of replaced or reinstalled component
  
8. Apply safe temporary corrective measures to mechanized conveyor systems.
  - Conscientious analysis of planned troubleshooting method
  - Ingenious application of a tested work method
  - Use of safe troubleshooting method
  - Systematic performance of tests
  
9. Do a final check and test the mechanized conveyor system.
  - Systematic observance of inspection procedure
  - Thorough inspection of components, devices and accessories, if applicable
  - Conclusive test results in accordance with manufacturers' specifications
  
10. Tidy up the work area and put away the tools and equipment.
  - Appropriate cleaning and storage of tools and equipment
  - Recovery of all reusable materials
  - Appropriate use of solvents
  - Proper management of recyclables and waste
  - Cleanliness of work area
  
11. Do various types of follow-up.
  - Consultation of different sources of information
  - Accurate recording of all information, for example, in the declaration of work done
  - Logical order of information
  - Use of the appropriate technical terms
  - Incorporation into the drawings and diagrams of all changes made to the system and its immediate environment during installation
  - Communication of relevant information about the system to the appropriate person
  - Establishment of an appropriate follow-up and adjustment schedule

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of drawings and specifications
- Observance of established deadlines
- Proper application of manufacturers' specifications
- Safe and appropriate functioning of mechanized conveyor system
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of the necessary tools, instruments, equipment and materials
- Appropriate protection of components throughout the process
- Accurate recording of work done
- Appropriate use of trade-related terminology in English and French



Competency 20      Duration 90 hours      Credits 6

## ***Behavioural Competency***

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### **Statement of the Competency**

Install an escalator.

### **Achievement Context**

- Working on escalators or moving sidewalks
- Working in new or existing buildings in the residential, institutional, commercial and industrial sectors, and in civil engineering and roadwork constructions
- Working in a team
- Given a work order, instructions, drawings, specifications and diagrams
- Using personal and collective safety gear, hand and power tools, a plumb line, an optical alignment device and other precision instruments, an aerial platform, and lifting, handling, rigging and anchoring equipment
- Using an escalator; components; mechanical, electrical or electronic accessories and devices; cleaning products; lubricants; and finishing paint
- Given current standards, municipal bylaws, if applicable, manufacturers' manuals and data sheets, technical and follow-up documentation, and current regulations concerning different mechanized conveyor systems, in particular the Quebec Construction Code, the Safety Code for Elevators and Escalators and the Canadian Electrical Code

### **Elements of the Competency**

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1. Plan the work.

### **Performance Criteria**

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- Accurate interpretation of work order and instructions
- Accurate authentication of the drawings and diagrams available
- Determination of the appropriate personal and collective safety measures
- Verification of the availability of the necessary equipment and materials
- Accurate interpretation of component assembly methods
- Accurate interpretation of installation method
- Accurate interpretation of current regulations

2. Assemble different components of the mechanized conveyor system.
  - Proper securement of work area
  - Observance of handling, rigging and lifting techniques
  - Observance of assembly sequence
3. Position and anchor the equipment.
  - Proper securement of work area
  - Observance of handling, rigging and lifting techniques
  - Observance of sequence of operations
  - Accurate determination of placement of the conveyor system
  - Systematic observance of installation standards
  - Proper verification of landing levels
  - Proper alignment and leveling of floors
4. Make the electrical connections.
  - Systematic observance of connection standards
  - Systematic observance of work method
  - Appropriate coding of wires
5. Make various adjustments.
  - Systematic observance of system start-up procedure
  - Detection of unusual noises
  - Proper alignment of steps
  - Correct application of adjustment methods
  - Systematic observance of tolerances
  - Correct adjustment of tension of chains, safety devices and brakes
6. Inspect and test the mechanized conveyor system.
  - Systematic observance of inspection procedure
  - Visual inspection of components and accessories
  - Mechanized conveyor system tested in accordance with the Safety Code for Elevators and Escalators
  - Results obtained in accordance with manufacturers' specifications
  - Application of any necessary corrective measures
7. Tidy up the work area and put away the tools and equipment.
  - Appropriate cleaning and storage of tools and equipment
  - Recovery of all reusable materials
  - Appropriate use of solvents
  - Proper management of recyclables and waste
  - Cleanliness of work area

## 8. Do various types of follow-up.

- Consultation of different sources of information
- Complete and accurate recording of all information, for example in the *Déclaration de travaux – Escaliers mécaniques et trottoirs roulants*
- Logical order of information
- Use of the appropriate technical terms
- Incorporation into the drawings and diagrams of all modifications made to the conveyor system and its immediate environment during the installation
- Communication of relevant information about the conveyor system to the appropriate person

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of drawings and specifications
- Observance of established deadlines
- Proper application of manufacturers' specifications
- Safe and appropriate functioning of mechanized conveyor system
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of the necessary tools, instruments, equipment and materials
- Appropriate protection of components throughout the process
- Accurate recording of work done
- Appropriate use of trade-related terminology in English and French



Competency 21      Duration 105 hours      Credits 7

## ***Behavioural Competency***

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### **Statement of the Competency**

Install different types of mechanized conveyor systems.

### **Achievement Context**

- Working with different mechanized conveyor systems such as platform lifts for people with reduced mobility, dumbwaiters, inclined plane passenger and freight elevators, ski lifts and funiculars
- Outside or in new or existing buildings in the residential, institutional, commercial or industrial sectors, or civil engineering or roadwork constructions
- Working in a team
- Given a work order, instructions, drawings, specifications and diagrams
- Using personal and collective safety gear, hand and power tools, measuring instruments, and lifting, handling, rigging and anchoring equipment and accessories
- Using mechanized conveyor systems; components; mechanical, electrical or electronic accessories and devices; cleaning products; lubricants; and finishing paint
- Given current standards, municipal bylaws, if applicable, manufacturers' manuals and data sheets, technical and follow-up documentation, and current regulations concerning different mechanized conveyor systems, in particular the Quebec Construction Code, standards respecting platform lifts and home elevators for people with disabilities, the Safety Code for Elevators and Escalators and the Canadian Electrical Code

Elements of the Competency	Performance Criteria
1. Plan the work.	<ul style="list-style-type: none"> <li>• Accurate interpretation of work order and instructions</li> <li>• Accurate authentication of the drawings and diagrams available</li> <li>• Determination of personal and collective safety measures</li> <li>• Verification of the availability of the necessary equipment and materials</li> <li>• Accurate interpretation of methods of assembling components and installing the system</li> <li>• Determination of logical sequence of operations</li> <li>• Accurate interpretation of current regulations</li> </ul>
2. Assemble different components of the mechanized conveyor system.	<ul style="list-style-type: none"> <li>• Proper securement of work area</li> <li>• Observance of handling, rigging and lifting techniques</li> <li>• Observance of assembly sequence</li> <li>• Observance of tolerances</li> </ul>
3. Position and anchor the equipment.	<ul style="list-style-type: none"> <li>• Proper securement of work area</li> <li>• Observance of handling, rigging and lifting techniques</li> <li>• Observance of sequence of operations</li> <li>• Correct installation of scaffolding and ladders, if applicable</li> <li>• Accurate positioning of conveyor system</li> <li>• Proper verification of dimensions of the shaft, if necessary</li> <li>• Appropriate installation, alignment and adjustment of the system and its components</li> <li>• Systematic observance of tightening standards and tolerances</li> <li>• Solid, safe anchoring of the driving machine</li> </ul>
4. Make the electrical connections.	<ul style="list-style-type: none"> <li>• Systematic observance of connection standards</li> <li>• Systematic observance of work method</li> <li>• Correct installation of electrical conduits</li> <li>• Appropriate coding of wires</li> </ul>

5. Start up the system and make various adjustments.
  - Systematic observance of system start-up procedure
  - Observance of entire procedure for verifying the rotation of the motor, if applicable
  - Systematic observance of adjustment methods depending on the devices, components and systems installed
  - Observance of tolerances
  - Results obtained in accordance with standards
  
6. Inspect and test the mechanized conveyor system.
  - Systematic observance of inspection procedure
  - Thorough inspection of components, devices and accessories, if applicable
  - Test results in accordance with manufacturers' standards and specifications
  - Appropriate choice of corrective measures, if necessary
  - Thorough lubrication and cleaning of components
  
7. Tidy up the work area and put away the tools and equipment.
  - Appropriate cleaning and storage of tools and equipment
  - Recovery of all reusable materials
  - Appropriate use of solvents
  - Proper management of recyclables and waste
  - Cleanliness of work area
  
8. Do various types of follow-up.
  - Consultation of different sources of information
  - Complete and accurate recording of all information, for example, in the declaration of work done
  - Logical order of information
  - Use of the appropriate technical terms
  - Incorporation into the drawings and diagrams of all changes made to the system and its immediate environment during installation
  - Communication of relevant information concerning the functioning of the system to the appropriate person

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current standards and regulations
- Systematic observance of drawings and specifications
- Observance of established deadlines
- Proper application of manufacturers' specifications
- Safe and appropriate functioning of mechanized conveyor system
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the situation
- Correct use of the necessary tools, instruments, equipment and materials
- Proper application of hand-machining techniques
- Appropriate protection of components throughout the process
- Accurate recording of work done
- Appropriate use of trade-related terminology in English and French



Competency 22      Duration 90 hours      Credits 6

***Behavioural Competency***

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**Statement of the Competency**

Disassemble mechanized conveyor systems.

**Achievement Context**

- Working on traction or hydraulic mechanized conveyor systems: passenger and freight elevators, escalators, platform lifts, etc.
- Working in a team
- Given a work order, instructions, a circuit diagram and an elevator installed in a shaft
- Using personal and collective safety gear; hand and power tools; lifting, handling and rigging equipment and accessories; manufacturers' manuals; and technical and follow-up documentation

**Elements of the Competency****Performance Criteria**

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1. Plan the work.

- Accurate interpretation of work order and instructions
- Formal consultation of the available sources of information
- Accurate interpretation of information
- Determination of the appropriate personal and collective safety measures
- Logical sequence of disassembly operations
- Accurate interpretation of current regulations

2. Do a temporary start-up of the mechanized conveyor system.

- Disconnection of non-essential wires in the controller
- Correct connection of temporary control device
- Verification of safe operation of the system

3. Disassemble the elevator cab and its components.

- Correct disassembly of mechanical and electrical components
- Observance of cab disassembly sequence
- Systematic observance of methods of disconnecting components
- Constant adjustment of counterweight to maintain the balance of the loads
- Correct storage of cable

4. Disassemble the devices in the shaft and the hoistway doors.
  - Appropriate disassembly of accessories and devices
  - Temporarily assembly of parts likely to be lost during handling
  - Systematic observance of methods of disconnecting components
  - Appropriate recovery and disassembly of equipment
  
5. Disassemble the platform, components and accessories.
  - Correct application of technique for locking the mechanized conveyor system
  - Solid positioning of platform at the top of the shaft using slings
  - Correct removal of suspension and speed control cables
  - Observance of sequence for disassembling the platform, guide roller and counterweight
  
6. Disassemble the elevator's infrastructure and equipment.
  - Observance of sequence for disassembling a traction elevator's infrastructure and equipment
  - Safe unbolting and transportation of drive machines, pulleys and seats
  - Observance of sequence for disassembling a hydraulic elevator's infrastructure and equipment
  - Safe unbolting and transportation of hydraulic jacks, pulleys and seats
  - Appropriate draining and recovery of hydraulic oil
  
7. Tidy up the work area and put away the tools and equipment.
  - Appropriate cleaning and storage of tools and equipment
  - Recovery of all reusable materials
  - Appropriate use of solvents
  - Proper management of recyclables and waste
  - Cleanliness of work area
  
8. Put away the materials and update the inventory.
  - Accurate recording of information concerning materials recovered
  - Detection of defective materials
  - Appropriate and safe storage

*For the competency as a whole:*

- Systematic observance of occupational health and safety rules and environmental protection measures
- Systematic observance of current regulations
- Proper application of manufacturers' specifications
- Appropriate recovery and storage of materials
- Concern for economy
- Harmonious, safe and effective teamwork
- Adoption of ergonomic postures
- Logical and effective work methods adapted to the operations under way
- Correct and safe use of lifting, rigging and handling equipment
- Correct use of the necessary tools, equipment and materials
- Proper application of hand-machining techniques
- Appropriate protection of components throughout the process
- Accurate updating of inventory
- Appropriate use of trade-related terminology in English and French
- Clean, careful work



Competency 23    Duration 15 hours    Credit 1

## ***Situational Competency***

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### **Statement of the Competency**

Become familiar with the organizations involved in the construction industry.

### **Elements of the Competency**

- Learn about the construction industry.
- Learn about the role and importance of the organizations involved in the industry.
- Form a realistic impression of labour relations in the industry.

### **Learning Context**

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#### **Information Phase**

- Learning about the construction industry.
- Learning about the roles and responsibilities of the organizations involved in the construction industry (e.g. management and union associations, CCQ, CSST).
- Learning about labour relations in the construction industry.

#### **Participation Phase**

- Participating in activities aimed at understanding:
  - the development and future of the construction industry
  - the interdependence of different trades and occupations
  - the effects of regulation on the labour system in the industry
- Exploring the possibility of continuing training for workers in the industry.

#### **Synthesis Phase**

- Presenting a report that contains a summary of the learning they acquired, as well as an assessment of its impact on their career path.

### **Instructional Guideline**

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- Make available the necessary sources of information.
- Use learning situations representative of the situation in the construction industry.
- Encourage students to share their opinions and express themselves.
- Guide students by providing the necessary tools (e.g. a questionnaire).

### **Participation Criteria**

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#### **Information Phase**

- Consult the sources of information made available to them.

#### **Participation Phase**

- Participate seriously and consistently in the suggested activities.

#### **Synthesis Phase**

- Present a report containing a summary of the learning they have acquired, as well as an assessment of its impact on their career path.

Competency 24      Duration 15 hours      Credits 1

## ***Situational Competency***

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### **Statement of the Competency**

Prepare to enter the work force.

### **Elements of the Competency**

- Consult sources of information.
- Plan a job search.
- Prepare for a job search.

### **Learning Context**

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#### **Information Phase**

- Learning about the legal requirements for practising the trade.
- Learning about available sources of information for the job search.
- Learning about the different parts of a résumé.
- Learning about strengths to emphasize and pitfalls to avoid in a selection interview.
- Learning about the job market from potential employers and unions in the construction industry.
- Exploring the potential entrepreneurial in the field of elevator mechanics.

#### **Participation Phase**

- Studying different types of résumés and cover letters.
- Determining which workplaces correspond to their areas of interest in the field of elevator mechanics.
- Identifying the steps in the job search process.
- Participating in simulated interviews in person and over the phone.

#### **Synthesis Phase**

- Analyzing their strengths and limitations with respect to their job search.
- Listing ways of overcoming their limitations.
- Presenting a summary of their thought process.

**Instructional Guidelines**

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- Make available all pertinent sources of information.
- Moderate group discussions.
- Organize meetings with representatives of the work force within and outside the construction industry.
- Encourage students to participate and express themselves.
- Encourage students to take the exercises seriously and to respect others.
- Encourage self-criticism.

**Participation Criteria**

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**Information Phase**

- Consult the available sources of information.
- Participate in discussions with the group and representatives of the work force.

**Participation Phase**

- Participate in activities.
- Draft a job search plan based on their preferences and interests.

**Synthesis Phase**

- Prepare a summary of their thought process.





Achieve Succeed Exercise Share Learn Read Persevere