



**NOVA SCOTIA**  
**OCCUPATIONAL STANDARD**  
**ELEVATING DEVICE MECHANIC**  
**CLASS B**

# FORWARD

This occupational standard was developed by a committee of industry experts in the field led by a facilitator from the Nova Scotia Apprenticeship Agency. It has the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed by skilled workers
- to develop instruments for use in the preparation of examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility of apprentices and skilled workers in Canada; and,
- to supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.

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

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# TABLE OF CONTENTS

|  |    |
|--|----|
| Structure of the Occupational Standard             | 5  |
| Description of the Elevating Device Mechanic Trade | 6  |
| Essential Skills Summary                           | 7  |
| Industry Expected Performance                      | 8  |
| Pie Chart of Certification Examination Weightings  | 9  |
| Task Matrix  | 10 |

# STRUCTURE OF THE OCCUPATIONAL STANDARD

To facilitate the understanding of the occupation, the work performed is divided into the following categories:

**Description of the trade:** an overview of the trade's duties

**Essential Skills Summary:** An overview of how each of the 9 essential skills is applied in this trade

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

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

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

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

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

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

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

**APPENDIX A: TOOLS AND EQUIPMENT** **36**

**APPENDIX B: GLOSSARY** **37**

# DESCRIPTION OF THE ELEVATING DEVICE MECHANIC TRADE

“Elevating Device Mechanic” is this trade’s official occupational title in Nova Scotia. This standard covers tasks performed by a Class A Elevating Device Mechanic whose occupational title has been identified by some provinces and territories of Canada under the following names:

|                                   | NL | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YT | NU |
|-----------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Elevating Device Mechanic         |    | ✓  |    |    |    |    |    |    |    |    |    |    |    |
| Elevator Constructor and Mechanic |    |    |    |    |    |    |    |    | ✓  |    |    |    |    |
| Elevator Devices Mechanic         |    |    |    |    |    | ✓  |    |    |    | ✓  |    |    |    |

The following class A and B elevating device mechanic descriptions have been taken from the Nova Scotia Elevators and Lifts General Regulations:

<https://www.novascotia.ca/just/regulations/regs/ealgen.htm>

## Class A Certificate of Competency:

- i. designates a mechanic working for or as a registered contractor in constructing, installing, altering, repairing, maintaining, servicing, inspecting, examining and testing elevating devices, and
- ii. covers all classes of elevating devices with the exception of passenger ropeways

## Class B Certificate of Competency:

- i. designates a mechanic working for or as a registered contractor solely in constructing, installing, altering, repairing, maintaining, servicing, inspecting, examining and testing barrier-free lifts, and
- ii. is restricted to stair chair lifts, stair platform lifts and vertical platform lifts

# ESSENTIAL SKILLS SUMMARY

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

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

- Reading
- Document Use
- Writing
- Oral Communication
- Numeracy
- Thinking
- Digital Technology
- Working with Others
- Continuous Learning

A series of CCDA-endorsed tools have been developed to support apprentices in their training and to be better prepared for a career in the trades. The tools can be used independently or with the assistance of a tradesperson, trainer, employer, teacher or mentor to:

- understand how essential skills are used in the trades;
- learn about individual essential skills strengths and areas for improvement; and
- improve essential skills and increase success in an apprenticeship program.

Tools are available online or for order at: <http://www.esdc.gc.ca/eng/jobs/les/tools/index.shtml>.

The application of these skills may be described throughout this document within the competency statements which support each subtask of the trade. For a complete description of the nine essential skills for the elevating device mechanic trade, please visit:

<https://www.jobbank.gc.ca/essentialskillsresults/297>

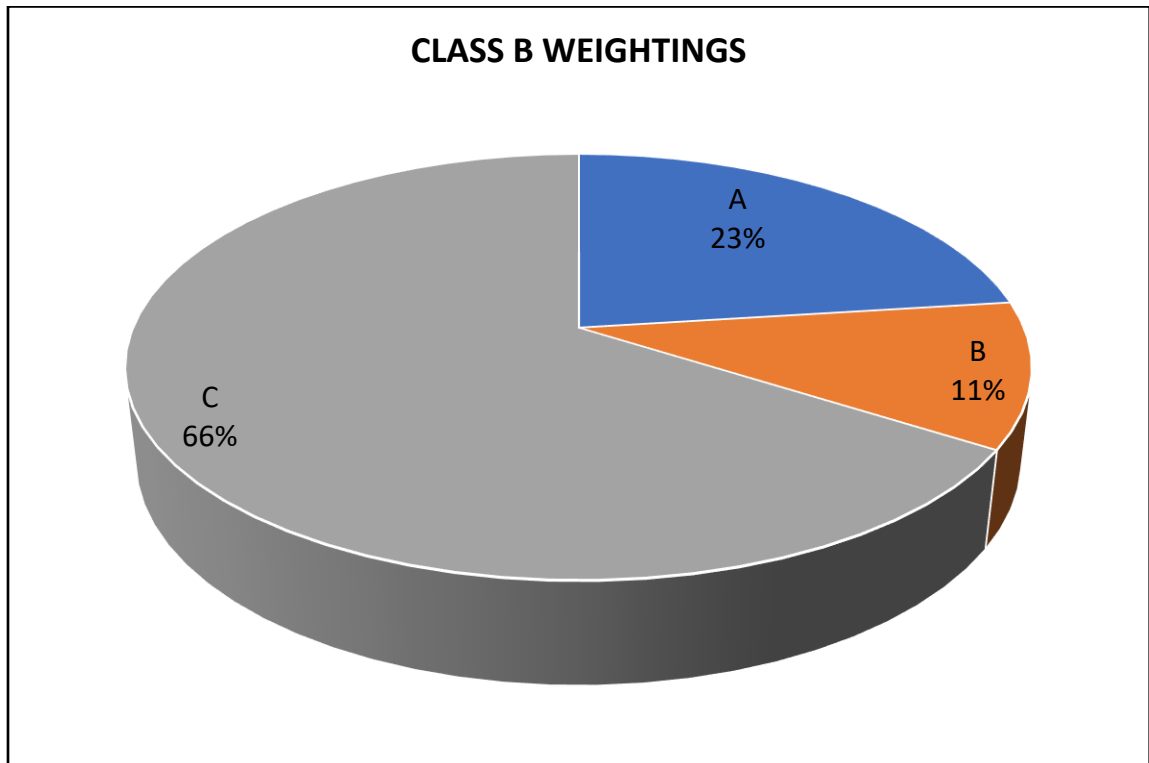
# INDUSTRY EXPECTED PERFORMANCE

All tasks must be performed according to Nova Scotia regulations and standards. All health and safety standards must be respected and observed. Work should be performed efficiently and at a high quality without material waste or environmental damage. All requirements of the manufacturer specifications, employers and client expectations must be met. At a journey person level of performance, all tasks must be completed with minimal direction and supervision. As a journey person progresses in their career there is an expectation they continue to upgrade their skills and knowledge to keep pace with industry and promote continuous learning in their trade through mentoring of apprentices.



# PIE CHART

## OF CERTIFICATION EXAMINATION WEIGHTINGS



|       |   |     |
|-------|---|-----|
| MWA A | Performs Common Occupational Skills     | 23% |
| MWA B | Performs Routine Trade Tasks            | 11% |
| MWA C | Installs and Maintains Elevator Systems | 66% |

This pie chart represents a breakdown of the Nova Scotia provincial certification examination. The task matrix on the following pages indicate the breakdown of tasks and sub-tasks within each major work activity. Provincial certification examinations typically have between 100 and 150 questions. The Class B Elevating Device Mechanic Provincial certification exam has 100 questions.

# ELEVATING DEVICE MECHANIC

## TASK MATRIX

### A – PERFORMS COMMON OCCUPATIONAL SKILLS

**23%**

|  |  |   |  |
|--|--|---|--|
| <b>Task A-1</b><br><b>Performs safety related functions</b><br><b>6%</b>           | <b>A-1.01</b> Uses personal protective equipment (PPE) and safety equipment    | <b>A-1.02</b> Maintains a safe worksite                     | <b>A-1.03</b> Performs lock-out/tag-out and zero-energy state procedures |
|  | <b>A-1.04</b> Performs access and egress procedures                            | <b>A-1.05</b> Protects the environment                      |  |
| <b>Task A-2</b><br><b>Uses tools and equipment</b><br><b>8%</b>                    | <b>A-2.01</b> Uses hand and portable power tools                               | <b>A-2.02</b> Uses mechanical measuring and testing devices | <b>A-2.03</b> Uses electrical measuring and testing devices              |
|  | <b>A-2.04</b> Uses ladders   | <b>A-2.05</b> Uses scaffolding                              | <b>A-2.06</b> Uses work platforms  |
|  | <b>A-2.07</b> Performs rigging, hoisting/lifting and moving equipment          |   |  |
| <b>Task A-3</b><br><b>Organizes work and documentation</b><br><b>7%</b>            | <b>A-3.01</b> Plans project tasks and procedures                               | <b>A-3.02</b> Uses mechanical drawings                      | <b>A-3.03</b> Interprets electrical schematics                           |
|  | <b>A-3.04</b> Applies acts, regulations, codes and manufactures specifications |   |  |
| <b>Task A-4</b><br><b>Uses communication and mentoring techniques</b><br><b>2%</b> | <b>A-4.01</b> Uses communication techniques                                    | <b>A-4.02</b> Uses mentoring techniques                     |  |

## B – PERFORMS ROUTINE TRADE TASKS

**11%**

|  |   |   |   |
|--|---|---|---|
| <b>Task B-5</b><br><b>Performs trade activities</b><br><b>7%</b>     | <b>B-5.01</b> Assembles work pieces                   | <b>B-5.02</b> Performs leveling and alignment of components and systems | <b>B-5.03</b> Uses mechanical fastening and retaining devices |
| <b>Task B-6</b><br><b>Performs measuring and layout</b><br><b>4%</b> | <b>B-6.01</b> Prepares work area, tools and materials | <b>B-6.02</b> Measures material and components                          | <b>B-6.03</b> Lays out components                             |

**Please note: Task B-7, Performs rigging and hoisting/lifting and moving, is not a part of the Class B Occupational Standard. Instead, please refer to Sub-task 2.07, Performs rigging, hoisting/lifting and moving equipment, which is in Task A-2, Uses tools and equipment, under MWA A, Performs Common Occupational Skills.**

## C – INSTALLS AND MAINTAINS ELEVATOR SYSTEMS

**66%**

|   |  |   |   |
|---|--|---|---|
| <b>Task C-8</b><br><b>Installs and maintains runway equipment</b><br><b>20%</b> | <b>C-8.01</b> Installs counterweight and carriage guide systems    | <b>C-8.02</b> Installs carriage and counterweight assemblies        | <b>C-8.03</b> Maintains counterweight and carriage guide systems and assemblies |
|   | <b>C-8.04</b> Installs carriage and counterweight suspension means | <b>C-8.05</b> Maintains carriage and counterweight suspension means | <b>C-8.06</b> Installs runway door entrance assemblies                          |
|   | <b>C-8.07</b> Maintains runway door entrance assemblies            | <b>C-8.08</b> Installs travelling cables                            | <b>C-8.09</b> Maintains travelling cables                                       |
|   | <b>C-8.10</b> Installs runway wiring                               | <b>C-8.11</b> Maintains runway wiring                               | <b>C-8.12</b> Installs runway electrical components                             |
|   | <b>C-8.13</b> Maintains runway electrical components               |   |   |

|  |   |  |  |
|--|---|--|--|
| <b>Task C-9</b><br><b>Installs and maintains pit equipment</b><br><b>7%</b>                          | <b>C-9.01</b> Installs pit hydraulic components                                     | <b>C-9.02</b> Maintains pit hydraulic components                                     | <b>C-9.03</b> Installs pit equipment               |
|  | <b>C-9.04</b> Maintains pit equipment   |  |  |
| <b>Task C-10</b><br><b>Installs and maintains machine/control room/space equipment</b><br><b>18%</b> | <b>C-10.01</b> Installs hydraulic control equipment                                 | <b>C-10.02</b> Maintains hydraulic control equipment                                 | <b>C-10.03</b> Installs traction control equipment |
|  | <b>C-10.04</b> Maintains traction control equipment                                 | <b>C-10.05</b> Installs governors  | <b>C-10.06</b> Maintains governors                 |
|  | <b>C-10.07</b> Installs machine/control room/space wiring and electrical components | <b>C-10.08</b> Maintains machine/control room/space wiring and electrical components |  |
|  |   |  |  |
|  |   |  |  |
| <b>Task C-11</b><br><b>Installs and maintains carriage equipment</b><br><b>11%</b>                   | <b>C-11.01</b> Installs work platform   | <b>C-11.02</b> Installs carriage enclosure   | <b>C-11.03</b> Maintains carriage enclosure        |
|  | <b>C-11.04</b> Installs barrier-free lift door operators                            | <b>C-11.05</b> Maintains barrier-free lift door operators                            |  |

**Task C-12**  
**Performs testing and inspection of barrier-free lifts**  
**10%**

**C-12.01** Performs pre-inspection procedures on barrier-free lifts

**C-12.02** Performs initial inspection on barrier-free lifts

**C-12.03** Performs mandated maintenance tests on barrier-free lifts

**C-12.04** Performs return to service procedures on barrier-free lifts

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## MAJOR WORK ACTIVITY A

### MWA A Performs common occupational skills

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

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##### Task Descriptor

Elevating device mechanics use PPE and safety equipment, maintain a safe work environment and perform other procedures for the purpose of preventing personal injury, equipment damage, environmental impact.

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#### A-1.01 Uses personal protective equipment (PPE) and safety equipment

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Essential Skills      Reading, Thinking, Oral Communication

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##### Performance Criteria

- 1.01.01 Organize **PPE** and **safety equipment**
- 1.01.02 Select **PPE** and **safety equipment** specific to job task
- 1.01.03 Recognize worn, damaged or defective **PPE** and safety equipment
- 1.01.04 Ensure fit of **PPE** and **safety equipment**
- 1.01.05 Ensure cables and straps for **PPE** are secured
- 1.01.06 Clean and store **PPE** and **safety equipment**

##### Range of Variables

**PPE:** safety glasses (face shield), respirators, hardhats, footwear, gloves, coveralls, personal monitors, fall protection, hearing protection, high-visibility and arc-flash clothing  
**safety equipment:** lockout devices, fire extinguishers, gas detectors, fall protection equipment and devices

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**A-1.02****Maintains a safe worksite**

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Essential Skills

Document Use, Oral Communication, Working with Others

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**Performance Criteria**

- 1.02.01 Recognize and address **hazards**
- 1.02.02 Report unsafe working conditions and near misses
- 1.02.03 Handle and store hazardous materials according to WHMIS
- 1.02.04 Install **safety protection**
- 1.02.05 Identify and implement ventilation in workspace
- 1.02.06 Ensure clear path of access and egress
- 1.02.07 Test air quality of confined spaces
- 1.02.08 Follow confined space procedures and **jurisdictional regulations**
- 1.02.09 Follow safe work practices working around mobile and overhead cranes
- 1.02.10 Ensure cables and straps for monitoring equipment are secured

**Range of Variables**

**hazards:** poor housekeeping, improper use of **PPE**, lack of monitoring devices, improper rigging of material, improper hardware selection, poor air quality, poor ventilation, improper pre-use inspection, improper preparation for hot work

**jurisdictional regulations:** (OHS) Occupational Health and Safety Regulations, Workplace Hazardous Materials Information System (WHMIS)

**safety protection:** signage, barrier tape and barricades, **PPE**, monitors, proper training, designated spotter, guarding, warning devices (e.g. horns), rescue plan

**PPE:** safety glasses (face shield), respirators, hardhats, footwear, gloves, coveralls, personal monitors, fall protection, hearing protection, high-visibility and arc-flash clothing

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**A-1.03****Performs lock-out/tag-out and zero energy state procedures**

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Essential Skills

Reading, Document Use, Thinking

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**Performance Criteria**

- 1.03.01 Recognize and de-energize **energy potential** and confirm zero-energy state
- 1.03.02 Follow recognized standard operating procedure (SOP) for shutdown, lock-out and tag-out

**Range of Variables**

**energy potential:** machines, accumulators, suspended loads, pneumatic and hydraulic equipment, gravity, piping, pipe blockages, rotating equipment, stress, strain and/or tension, material memory (e.g. coiled cable, springs), electrical, thermal

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**A-1.04****Performs access and egress procedures**

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|                  |                                       |
|------------------|---------------------------------------|
| Essential Skills | Thinking, Oral Communication, Reading |
|------------------|---------------------------------------|

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### **Performance Criteria**

- 1.04.01 Select **tools and equipment** for task
- 1.04.02 Perform mount/ascend and descend/dismount procedures in **work area**
- 1.04.03 Use required fall protection means
- 1.04.04 Verify appropriate **safety requirements**

### **Range of Variables**

**tools and equipment:** barricades, unlocking devices, door wedge tools and access keys, PPE

**work area:** pit, runway, machine/control room/space, carriage top, working platform

**safety requirements:** government safety regulations, manufactures recommendations, approved industry standards

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## **A-1.05 Protects the environment**

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|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Reading, Thinking, Document Use |
|------------------|---------------------------------|

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### **Performance Criteria**

- 1.05.01 Recognize **environmental hazards**
- 1.05.02 Report potential **environmental hazards**
- 1.05.03 Follow due diligence procedures to avoid contamination
- 1.05.04 Follow disposal procedures of hazardous material

### **Range of Variables**

**environmental hazards:** contamination (water, air, soil), hazardous materials

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## **TASK A-2 Uses tools and equipment**

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### **Task Descriptor**

Elevating device mechanics use various tools and equipment to perform their work. This includes maintenance to ensure optimal efficiency and safe operation.

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## **A-2.01 Uses hand and portable power tools**

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|                  |   |
|------------------|---|
| Essential Skills | Thinking, Numeracy, Continuous Learning |
|------------------|---|

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### **Performance Criteria**

- 2.01.01 Select required **hand and power tools**
- 2.01.02 Recognize worn, damaged or defective **hand and portable power tools**
- 2.01.03 Operate **hand and portable power tools**
- 2.01.04 Maintain **hand and portable power tools**

2.01.05 Store *hand* and *portable power tools*

**Range of Variables**

***hand tools***: wrenches, screwdrivers, measuring tools, hammers, pry bars, hand saws, pneumatic tools

***portable power tools***: grinders, power metal saws, drilling machines, wrenches (hydraulic, impact), portable hydraulic unit

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**A-2.02 Uses mechanical measuring and testing devices**

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Essential Skills      Thinking, Numeracy, Continuous Learning

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**Performance Criteria**

- 2.02.01 Select the required device or equipment
- 2.02.02 Use and maintain ***mechanical measuring and testing devices***
- 2.02.03 Set up the device
- 2.02.04 Test the device
- 2.02.05 Adjust device operation as necessary
- 2.02.06 Identify device deficiencies

**Range of Variables**

***mechanical measuring and testing devices***: measuring tapes, scales, dividers, callipers, dial indicators, tachometers, gauges, micrometers

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**A-2.03 Uses electrical measuring and testing devices**

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Essential Skills      Thinking, Numeracy, Continuous Learning

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**Performance Criteria**

- 2.03.01 Select the required device or equipment
- 2.03.02 Use and maintain ***electrical measuring and testing devices***
- 2.03.03 Set up the device
- 2.03.04 Test the device
- 2.03.05 Adjust device operation as necessary
- 2.03.06 Identify device deficiencies

**Range of Variables**

***electrical measuring and testing devices***: voltmeter, ammeter, megohmmeter, scales, callipers, multimeters, tachometers, oscilloscope

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**A-2.04 Uses ladders**



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|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Reading, Document Use, Thinking |
|------------------|---------------------------------|

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### **Performance Criteria**

- 2.04.01 Perform pre-use inspection on ladders
- 2.04.02 **Set up and use** ladders
- 2.04.03 Identify and remove from service unsafe, worn, damaged or defective ladders
- 2.04.04 Store ladders

### **Range of Variables**

**set up and use:** securing footing, using tie-offs, ensuring height and positioning, observing load limits, guarding area, following government safety regulations, manufacturer's recommendations, approved industry standards

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## **A-2.05 Uses scaffolding**

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|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Reading, Document Use, Thinking |
|------------------|---------------------------------|

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### **Performance Criteria**

- 2.05.01 Select scaffolding for the specific job
- 2.05.02 Perform pre-use inspection on scaffolding
- 2.05.03 **Set up and use** scaffolding
- 2.05.04 Identify and remove from service unsafe, worn, damaged or defective scaffolding
- 2.05.05 Disassemble and store scaffolding

### **Range of Variables**

**set up and use:** observing load limits, erecting scaffolding, guarding area, following government safety regulations, manufacturer's recommendations, approved industry standards

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## **A-2.06 Uses work platforms**

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|                  |  |
|------------------|--|
| Essential Skills | Oral Communication, Document Use, Thinking |
|------------------|--|

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### **Performance Criteria**

- 2.06.01 Select the work platform for the specific job
- 2.06.02 Install work platform
- 2.06.03 Perform pre-use inspection and safety testing
- 2.06.04 **Operate the work platform**

### **Range of Variables**

**operate the work platform:** following employer's procedures, manufacturer's specifications, CSA safety standards, Nova Scotia's regulation requirements

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**A-2.07****Performs rigging, hoisting/lifting and moving**

---

## Essential Skills

Oral Communication, Working with Others, Thinking

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**Performance Criteria**

- 2.07.01 Determines load
- 2.07.02 Selects rigging hoisting/lifting and moving equipment
- 2.07.03 Secures area
- 2.07.04 Sets up rigging, hoisting/lifting and moving equipment
- 2.07.05 Performs hoist/lift and move
- 2.07.06 Maintains rigging, hoisting/lifting and moving equipment

---

**TASK A-3 Organizes work and documentation**

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**Task Descriptor**

Elevating device mechanics organize projects in order to safely and efficiently use materials, labour, tools and equipment. They interpret drawings, plans and specifications to identify required resources. Prior to starting they must plan their tasks, identify environmental conditions, identify workplace hazards, prepare the worksite and organize the materials and supplies needed.

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**A-3.01****Plans project tasks and procedures**

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## Essential Skills

Thinking, Document Use, Working with Others

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**Performance Criteria**

- 3.01.01 Determine **scope of job**
- 3.01.02 Develop a safety plan
- 3.01.03 Gather **documents**
- 3.01.04 Determine tools and equipment
- 3.01.05 Identify required **materials**
- 3.01.06 Produce field drawings and sketches
- 3.01.07 Coordinate work with other trades
- 3.01.08 Estimate time to complete job
- 3.01.09 Complete required **documentation**

**Range of Variables**

**scope of job:** labour and equipment requirements

**documents:** work orders, Safety Data Sheets (SDS), safety documents, manuals, standard operating procedure (SOP), drawings

**materials:** consumables, parts, rigging, hoisting/lifting equipment

**documentation:** Maintenance Control Program (MCP) logbook, timesheets

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### **A-3.02** Uses mechanical drawings

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Essential Skills      Document Use, Numeracy, Thinking

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#### **Performance Criteria**

- 3.02.01 Determine and recognize locations of equipment, components and parts
- 3.02.02 Identify clearances
- 3.02.03 Interpret and cross-reference specifications, technical manuals and **drawings**
- 3.02.04 Perform trade-related calculations
- 3.02.05 Identify **symbols** found on drawings
- 3.02.06 Request revisions to **drawings**

#### **Range of Variables**

**drawings:** civil/site, engineered, architectural, mechanical (elevating device layout), structural, electrical, shop, field, sketches, as-builts, working, installation  
**symbols:** hydraulic, welding, pneumatic, electrical, piping

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### **A-3.03** Interprets electrical schematics

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Essential Skills      Document Use, Thinking, Numeracy

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#### **Performance Criteria**

- 3.03.01 Determine location and layout of equipment and devices
- 3.03.02 Identify symbols found on electrical schematics
- 3.03.03 Identify power requirements
- 3.03.04 Interpret and cross-reference information on plans and contract specifications
- 3.03.05 Determine if schematics and specifications are current
- 3.03.06 Request revisions to schematics

---

### **A-3.04** Applies Acts, regulations, codes and manufactures specifications

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Essential Skills      Document Use, Reading, Thinking

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#### **Performance Criteria**

- 3.04.01 Apply **acts, regulations, and jurisdictional orders**
- 3.04.02 Apply **prescribed codes**
- 3.04.03 Apply manufactures specifications

#### **Range of Variables**

**acts, regulations, and jurisdictional orders:** Nova Scotia Apprenticeship Act, Elevators and Lifts Act, Elevators and Lifts General Regulations, Occupational Health and Safety Act, NSAA EDM Trade Regulation, Active jurisdictional Orders and Bulletins

**prescribed codes:** Canadian Electrical Code S38, ASME A17, CSA B355 – Code for Persons with Physical Disabilities, CSA

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## **TASK A-4 Uses communication and mentoring techniques**

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### **Task Descriptor**

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

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### **A-4.01 Uses communication techniques**

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|                  |                                      |
|------------------|--------------------------------------|
| Essential Skills | Reading, Writing, Oral Communication |
|------------------|--------------------------------------|

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#### **Performance Criteria**

- 4.01.01 Demonstrate **communication practices** individually or in a group
- 4.01.02 Listen using **active listening** practices
- 4.01.03 Receive and respond to feedback on work
- 4.01.04 Explain and provide feedback
- 4.01.05 Use questioning to improve communication
- 4.01.06 Participate in safety and information meetings
- 4.01.07 Confirm understanding of information

#### **Range of Variables**

**communication practices:** verbal communication techniques, written communication techniques, electronic communication techniques, hand signal techniques

**active listening:** hearing, interpreting, reflecting, responding, paraphrasing, questioning

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### **A-4.02 Uses mentoring techniques**

---

|                  |  |
|------------------|--|
| Essential Skills | Oral Communication, Working with Others, Continuous Learning |
|------------------|--|

---

#### **Performance Criteria**

- 4.02.01 Demonstrate performance of a skill to a learner
- 4.02.02 Set up conditions required for a learner to develop proficiency in a skill
- 4.02.03 Assess and give feedback
- 4.02.04 Support apprentices in pursuing technical training opportunities

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# MAJOR WORK ACTIVITY B

## MWA B Performs routine trade tasks

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### TASK B-5 Performs trade activities

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#### Task Descriptor

Elevating device mechanics perform routine trade tasks to optimize the efficiency and life expectancy of equipment.

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#### B-5.01 Fabricates and assembles work pieces

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Essential Skills      Numeracy, Document Use, Thinking

---

#### Performance Criteria

- 5.01.01      Identify **fabrication requirements** and **materials**
- 5.01.02      Identify fit and assembly requirements
- 5.01.03      Lay out work pieces
- 5.01.04      **Perform fabrication** of work pieces
- 5.01.05      Inspect fabricated work pieces

#### Range of Variables

**fabrication requirements:** size, strength, materials, weight

**materials:** ferrous and non-ferrous

**perform fabrication:** cutting, drilling, sanding, grinding

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#### B-5.02 Performs leveling and alignment of components and systems

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Essential Skills      Thinking, Numeracy, Digital Technology

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#### Performance Criteria

- 5.02.01      Select and use **leveling and alignment tools**
- 5.02.02      Level and alignment **components**
- 5.02.03      Record leveling and alignment data

#### Range of Variables

**leveling and alignment tools:** levels (optical, laser, spirit), piano wire, plumb bob

**components:** rails, hydraulic jacks, brackets, sills

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#### B-5.03 Uses mechanical fastening and retaining devices

---

---

|                  |                                  |
|------------------|----------------------------------|
| Essential Skills | Numeracy, Document Use, Thinking |
|------------------|----------------------------------|

---

### **Performance Criteria**

- 5.03.01 Select fastening and retaining devices
- 5.03.02 Select and apply chemical fasteners
- 5.03.03 Achieve predetermined torque or tensioning
- 5.03.04 Select and verify thread pitch (imperial or metric) on fastener
- 5.03.05 Select **fluids and compounds** associated with threaded fasteners
- 5.03.06 Clean, chase, drill and tap threads
- 5.03.07 Restore threads

### **Range of Variables**

**tools and equipment:** torque wrenches, impact wrenches, hydraulic tensioning devices, hand tools (snap-ring pliers, riveting tools)

**fluids and compounds:** lubrication, thread lockers, gap filling compounds, sealants

---

## **TASK B-6 Performs measuring and layout**

---

### **Task Descriptor**

Elevating device mechanics ensure installation of equipment by utilizing precision measuring tools and measuring practices to lay out and assemble components and systems.

---

### **B-6.01 Prepares work area, tools and materials**

---

|                  |  |
|------------------|--|
| Essential Skills | Numeracy, Digital Technology, Document Use |
|------------------|--|

---

### **Performance Criteria**

- 6.01.01 Acclimatize optical precision, measuring, layout and leveling tools
- 6.01.02 Verify optical precision, measuring, layout and leveling tools
- 6.01.03 Prepare material to be measured
- 6.01.04 Clean and prepare **work area**

### **Range of Variables**

**work area:** table, floor, wall, component (both inside and outside)

---

### **B-6.02 Measures material and components**

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Numeracy, Writing, Document Use |
|------------------|---------------------------------|

---

### **Performance Criteria**

- 6.02.01 Select and use **measuring tools and equipment**
- 6.02.02 Read and interpret measurements
- 6.02.03 Transfer measurements to **components**, work area and material

6.02.04 Take *inside and outside measurements*

**Range of Variables**

**measuring tools and equipment:** tape measures, calipers, micrometers

**inside and outside measurements:** diameters, bores, lengths, thicknesses

**components:** runway, pit and machinery space equipment

---

**B-6.03 Lays out components**

---

Essential Skills Numeracy, Digital Technology, Document Use

---

**Performance Criteria**

6.03.01 Select and use **layout tools** and equipment

6.03.02 Transfer measurements from benchmark and datum points to work area

6.03.03 Transfer measurements from drawings to work material

**Range of Variables**

**layout tools:** straightedges, squares, combination sets, surface plates, scribes, hermaphrodite calipers, dividers, trammels, prick and centre punches, angle plates, parallels, v-blocks, surface gauges, layout dye

**Please note: Task B-7, Performs rigging and hoisting/lifting and moving, is not a part of the Class B Occupational Standard. Instead, please refer to Sub-task 2.07, Performs rigging, hoisting/lifting and moving equipment, which is in Task A-2, Uses tools and equipment, under MWA A, Performs Common Occupational Skills.**

---

**MAJOR WORK ACTIVITY C**

**MWA C Installs and maintains elevator systems**

---

**TASK C-8 Installs and maintains runway equipment**

---

**Task Descriptor**

Class B elevating device mechanics install and maintain runway equipment on barrier-free lifts and are restricted to stair chair lifts, stair platform lifts and vertical platform lifts in accordance with government safety regulations, manufacturer's recommendations and approved industry standards.

---

**C-8.01 Installs counterweight and carriage guide systems**

---

Essential Skills Numeracy, Thinking, Document Use

---

### **Performance Criteria**

- 8.01.01 Install plumb lines
- 8.01.02 Survey runway (to determine rail position and clearance)
- 8.01.03 Position machine
- 8.01.04 Install rail brackets or pit steel
- 8.01.05 Install guide rails
- 8.01.06 Adjust and align rails

---

## **C-8.02 Installs carriage and counterweight assemblies**

---

Essential Skills Oral Communication, Thinking, Document Use

---

### **Performance Criteria**

- 8.02.01 Assemble platform and counterweight frames
- 8.02.02 Install **carriage** and isolation
- 8.02.03 Install sheaves and suspension hitches
- 8.02.04 Install safety devices
- 8.02.05 Attach guiding means
- 8.02.06 Balance carriage for temporary operation

### **Range of Variables**

**carriage:** stair chairs, platform lifts

---

## **C-8.03 Maintains counterweight and carriage guide systems and assemblies**

---

Essential Skills Writing, Thinking, Document Use

---

### **Performance Criteria**

- 8.03.01 Inspect carriage and counterweight assemblies
- 8.03.02 Clean, lubricate and verify operation of carriage top and bottom guiding means
- 8.03.03 Clean, lubricate and verify operation of carriage and counterweight safety devices
- 8.03.04 Reassemble and adjust safety devices

---

## **C-8.04 Installs carriage and counterweight suspension means**

---

Essential Skills Oral Communication, Thinking, Document Use

---

### **Performance Criteria**

- 8.04.01 Inspect and install **suspension means**
- 8.04.02 Establish runby clearances



- 8.04.03 Install compensating ropes and chains
- 8.04.04 Terminate suspension means
- 8.04.05 Tension **suspension means**
- 8.04.06 Install and adjust keepers/guards

**Range of Variables**

**suspension means:** wire rope, elastomeric belts, aramid fiber

---

**C-8.05 Maintains carriage and counterweight suspension means**

---

Essential Skills Writing, Thinking, Document Use

---

**Performance Criteria**

- 8.05.01 Inspect **suspension means** for **condition**
- 8.05.02 Check carriage and counterweight runby
- 8.05.03 Verify tension of **suspension means**
- 8.05.04 Inspect compensating ropes and chains
- 8.05.05 Inspect terminating suspension means
- 8.05.06 Lubricate wire ropes
- 8.05.07 Replace carriage and counterweight suspension means

**Range of Variables**

**suspension means:** wire rope, elastomeric belts, aramid fiber

**condition:** loss of diameter, broken wire, rouging

---

**C-8.06 Installs runway door entrance assemblies**

---

Essential Skills Document Use, Numeracy, Thinking

---

**Performance Criteria**

- 8.06.01 Establish elevation of finished floors
- 8.06.02 Build, align and install door frames
- 8.06.03 Install runway doors and **components**
- 8.06.04 Adjust door clearances

**Range of Variables**

**components:** hangers, locks, unlocking means, closers, door guides, rollers, safety retainers

---

**C-8.07 Maintains runway door entrance assemblies**

---

Essential Skills Writing, Thinking, Document Use

---

### Performance Criteria

- 8.07.01 Examine and test the mechanical operation of runway doors and **components**
- 8.07.02 Clean and lubricate door entrance assemblies
- 8.07.03 Adjust, repair and/or replace runway doors and components

### Range of Variables

**components:** hangers, locks, unlocking means, closers, door guides, rollers, safety retainers

---

## **C-8.08** Installs travelling cables

---

Essential Skills Document Use, Numeracy, Working with Others

---

### Performance Criteria

- 8.08.01 Determine length of travelling cables
- 8.08.02 Install **hanger suspension methods**
- 8.08.03 Hang the travelling cables
- 8.08.04 Determine size of loop
- 8.08.05 Install travelling cable protection means

### Range of Variables

**hanger suspension methods:** spool, strain gauge and wedge

---

## **C-8.09** Maintains travelling cables

---

Essential Skills Writing, Thinking, Document Use

---

### Performance Criteria

- 8.09.01 Inspect travelling cables suspension means
- 8.09.02 Inspect travelling cables for wear and damage

---

## **C-8.10** Installs runway wiring

---

Essential Skills Reading, Document Use, Thinking

---

### Performance Criteria

- 8.10.01 Determine the location and method for **wire raceways**
- 8.10.02 Determine sizing and number of conductors
- 8.10.03 Select the size and material
- 8.10.04 Plan wire raceway, conduit and fittings
- 8.10.05 Mount trough and/or conduit
- 8.10.06 Ground and bond the electrical circuit

### Range of Variables

*wire raceways* include: trough or conduit

---

## **C-8.11** Maintains runway wiring

---

Essential Skills      Writing, Thinking, Document Use

---

### Performance Criteria

- 8.11.01      Inspect the trough and conduit covers and fittings
- 8.11.02      Inspect the grounding and bonding points

---

## **C-8.12** Installs runway electrical components

---

Essential Skills      Reading, Document Use, Thinking

---

### Performance Criteria

- 8.12.01      Determine location of the *runway switches*
- 8.12.02      Pull runway wiring branch circuits
- 8.12.03      Mount *runway switches*
- 8.12.04      Ground and bond the electrical circuit
- 8.12.05      Wire *runway switches*

### Range of Variables

*runway switches*: pit, final limit, direction limit, terminal speed monitoring, access and stop

---

## **C-8.13** Maintains runway electrical components

---

Essential Skills      Writing, Thinking, Document Use

---

### Performance Criteria

- 8.13.01      Inspect and test the *runway switches*
- 8.13.02      Inspect the grounding and bonding points
- 8.13.03      Repair, replace and/or adjust *runway switches*

### Range of Variables

*runway switches*: pit, final limit, direction limit, terminal speed monitoring, access and stop

---

## **TASK C-9** Installs and maintains pit equipment

---

### Task Descriptor

Class B elevating device mechanics install and maintain pit equipment on barrier-free lifts and are restricted to stair chair lifts, stair platform lifts and vertical platform lifts in accordance with government safety regulations, manufacturer's recommendations and approved industry standards.

---

### **C-9.01**      **Installs pit hydraulic components**

---

|                  |                                  |
|------------------|----------------------------------|
| Essential Skills | Document Use, Thinking, Numeracy |
|------------------|----------------------------------|

---

#### **Performance Criteria**

- 9.01.01      Verify layout
- 9.01.02      Assemble and install the **required components**
- 9.01.03      Install the **jack unit**
- 9.01.04      Plumb the jack unit
- 9.01.05      Measure and connect the oil lines
- 9.01.06      Install fittings, valves and **auxiliary safety devices**

#### **Range of Variables**

**required components:** casing, ram, PVC

**jack unit:** above-ground, in-ground

**auxiliary safety devices:** flow control, plunger grippers

---

### **C-9.02**      **Maintains pit hydraulic components**

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Writing, Thinking, Document Use |
|------------------|---------------------------------|

---

#### **Performance Criteria**

- 9.02.01      Inspect **oil collection means**
- 9.02.02      Examine PVC encapsulation
- 9.02.03      Examine **cylinder protection means**
- 9.02.04      Verify integrity of the cylinder head packing
- 9.02.05      Examine the integrity of the oil lines and the supports
- 9.02.06      Inspect and test fittings, valves and **auxiliary safety devices**
- 9.02.07      Guard against mechanical stored energy

#### **Range of Variables**

**oil collection means:** scavenger pump, overflow pail

**cylinder protection means:** cathodic

**auxiliary safety devices:** flow control, plunger grippers

---

### **C-9.03**      **Installs pit equipment**

---

|                  |                                  |
|------------------|----------------------------------|
| Essential Skills | Thinking, Numeracy, Document Use |
|------------------|----------------------------------|

---

### **Performance Criteria**

- 9.03.01 Install **sheaves**
- 9.03.02 Install counterweight guards
- 9.03.03 Install ladders
- 9.03.04 Install pit channels
- 9.03.05 Adjust sheaves and tensioning assemblies
- 9.03.06 Install spring, elastomeric or oil buffers and stands
- 9.03.07 Verify seismic components

### **Range of Variables**

**sheaves:** compensating, governor

---

## **C-9.04 Maintains pit equipment**

---

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Writing, Thinking, Document Use |
|------------------|---------------------------------|

---

### **Performance Criteria**

- 9.04.01 Check and verify stop switch
- 9.04.02 Clean, lubricate and adjust sheaves and tensioning assemblies
- 9.04.03 Check and adjust carriage counterweight runbys
- 9.04.04 Verify buffer oil level
- 9.04.05 Verify pit lighting and receptacle
- 9.04.06 Inspect buffers, stands and pit channels for damage
- 9.04.07 Verify the integrity of the counterweight guards and ladders
- 9.04.08 Verify seismic components

---

## **TASK C-10 Installs and maintains machine/control room/space equipment**

---

### **Task Descriptor**

Class B elevating device mechanics install and maintain machine/control room/space equipment on barrier-free lifts and are restricted to stair chair lifts, stair platform lifts and vertical platform lifts in accordance with government safety regulations, manufacturer's recommendations and approved industry standards.

---

## **C-10.01 Installs hydraulic control equipment**

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---

|                  |   |
|------------------|---|
| Essential Skills | Document Use, Working with Others, Thinking |
|------------------|---|

---

### **Performance Criteria**

- 10.01.01 Verify layout and clearances
- 10.01.02 Set and mount equipment
- 10.01.03 Install carriage positioning and ***monitoring devices***
- 10.01.04 Adjust and test equipment operation

### **Range of Variables**

***monitoring devices***: encoders, tachometers, tape reader

---

## **C-10.02 Maintains hydraulic control equipment**

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Writing, Thinking, Document Use |
|------------------|---------------------------------|

---

### **Performance Criteria**

- 10.02.01 Inspect and clean controller components, ***ancillary components*** and carriage positioning and monitoring devices
- 10.02.02 Repair or replace controller components, ***ancillary components*** and carriage positioning and monitoring devices
- 10.02.03 Adjust and test controller components, ***ancillary components*** and carriage positioning and monitoring device operation

### **Range of Variables**

***ancillary components***: dispatchers, selectors

---

## **C-10.03 Installs traction control equipment**

---

|                  |   |
|------------------|---|
| Essential Skills | Document Use, Working with Others, Thinking |
|------------------|---|

---

### **Performance Criteria**

- 10.03.01 Verify controller ratings and clearances
- 10.03.02 Set and mount equipment
- 10.03.03 Install carriage ***positioning and monitoring devices***
- 10.03.04 Adjust and test equipment operation

### **Range of Variables**

***positioning and monitoring devices***: encoders, tachs

---

## **C-10.04 Maintains traction control equipment**

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Writing, Thinking, Document Use |
|------------------|---------------------------------|

---

### **Performance Criteria**

- 10.04.01 Inspect and clean controller components, **ancillary components** and carriage positioning and monitoring devices
- 10.04.02 Repair or replace controller components, ancillary components and carriage positioning and monitoring devices
- 10.04.03 Adjust and test controller components, **ancillary components** and carriage positioning and monitoring device operation
- 10.04.04 Inspect, clean and lubricate machine and related equipment

### **Range of Variables**

**ancillary components:** dispatchers, selectors

---

## **C-10.05 Installs governors**

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Document Use, Thinking, Reading |
|------------------|---------------------------------|

---

### **Performance Criteria**

- 10.05.01 Verify equipment rating
- 10.05.02 Mount and align governor
- 10.05.03 Install governor rope and fastenings
- 10.05.04 Test, calibrate and verify operation

---

## **C-10.06 Maintains governors**

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Writing, Thinking, Document Use |
|------------------|---------------------------------|

---

### **Performance Criteria**

- 10.06.01 Clean and lubricate governors and components
- 10.06.02 Repair and replace governors and components
- 10.06.03 Test, calibrate and verify operation

---

## **C-10.07 Installs machine/control room/space wiring and electrical components**

---

|                  |   |
|------------------|---|
| Essential Skills | Thinking, Document Use, Working with Others |
|------------------|---|

---

### **Performance Criteria**

- 10.07.01 Verify and terminate all required **electrical connections**
- 10.07.02 Verify rated electrical **protection devices**
- 10.07.03 Add/remove temporary jumpers

10.07.04 Complete wiring to *permanent devices*

### **Range of Variables**

**electrical connections:** brake, motor, governor, travelling cable, runway switches and encoder

**protection devices:** fuses and circuit breakers

**permanent devices:** safety, door lock and ascending carriage overspeed device circuits

---

## **C-10.08 Maintains machine/control room/space wiring and electrical components**

---

Essential Skills      Writing, Thinking, Document Use

---

### **Performance Criteria**

- 10.08.01 Inspect the condition and integrity of connections, contacts, leads, relays, contactors, solid state components, electrical protective devices, and overload and overheat protection devices
- 10.08.02 Repair or replace defective wiring and components
- 10.08.03 Adjust and test power and control equipment

---

## **TASK C-11 Installs and maintains carriage equipment**

---

### **Task Descriptor**

Class B elevating device mechanics install and maintain carriage equipment on barrier-free lifts and are restricted to stair chair lifts, stair platform lifts and vertical platform lifts in accordance with government safety regulations, manufacturer's recommendations and approved industry standards.

---

## **C-11.01 Installs work platforms**

---

Essential Skills      Working with Others, Oral Communication, Document Use

---

### **Performance Criteria**

- 11.01.01 Verify device for the specific job
- 11.01.02 Verify attachment points
- 11.01.03 Erect carriage sling
- 11.01.04 Verify operation of safeties
- 11.01.05 Observe load limits and balance

---

## **C-11.02 Installs carriage enclosure**

---

Essential Skills      Working with Others, Oral Communication, Document Use

---

### **Performance Criteria**



- 11.02.01 Construct cab, walls, ceiling, floor, apron and carriage top railing
- 11.02.02 Mount handrails, lighting and fans
- 11.02.03 Install carriage operating panel, position indicator and direction arrows
- 11.02.04 Install **emergency systems** and **accessories**

**Range of Variables**

**emergency systems:** emergency lighting, communication system, annunciator

**accessories:** carriage readers, cameras, touch screens, protective padding

**C-11.03 Maintains carriage enclosure**

Essential Skills Writing, Thinking, Document Use

**Performance Criteria**

- 11.03.01 Inspect and repair cab, walls, ceiling, floor, apron and carriage top railing
- 11.03.02 Inspect and repair handrails, lighting and fans
- 11.03.03 Inspect, test and repair carriage operating panel, position indicator and direction arrows
- 11.03.04 Inspect, test and repair **emergency systems** and accessories

**Range of Variables**

**emergency systems:** emergency lighting, communication system, annunciator

**accessories:** carriage readers, cameras, touch screens, protective padding

**C-11.04 Installs barrier-free lift door operators**

Essential Skills Document use, Working with Others, Numeracy

**Performance Criteria**

- 11.04.01 Verify device configuration and voltages
- 11.04.02 Set clutch, pick-up rollers and restrictor assemblies
- 11.04.03 Mount and align components
- 11.04.04 Terminate electrical connections
- 11.04.05 Verify and adjust door forces and clearances

**C-11.05 Maintains barrier-free lift door operators**

Essential Skills Writing, Thinking, Document Use

**Performance Criteria**

- 11.05.01 Repair and replace clutch, pick-up rollers and restrictor assemblies
- 11.05.02 Adjust and test clutch, pick-up restrictor assemblies

- 11.05.03 Adjust and test electrical components
- 11.05.04 Verify and adjust door forces and clearances

---

## **TASK C-12 Performs testing and inspection of barrier-free lifts**

---

### **Task Descriptor**

Class B elevating device mechanics perform testing and inspections on barrier-free lifts to ensure public safety and are restricted to stair chair lifts, stair platform lifts and vertical platform lifts. Initial inspections and other mandated inspections are to be performed in the presence of the authority having jurisdiction in accordance with government safety regulations, manufacturer's recommendations and approved industry standards.

---

### **C-12.01 Performs pre-inspection procedures on barrier-free lifts**

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Document Use, Writing, Thinking |
|------------------|---------------------------------|

---

#### **Performance Criteria**

- 12.01.01 Complete elevator pre-inspection checklist and field data reports
- 12.01.02 Execute manufacturer's testing procedures
- 12.01.03 Remove device from temporary operation
- 12.01.04 Remove all temporary jumpers
- 12.01.05 Test and verifying all safety and door lock circuits
- 12.01.06 Set ***door operations***
- 12.01.07 Set contract, ***levelling and inspection speeds***
- 12.01.08 Test and verify all ***communication systems***

#### **Range of Variables**

***door operations***: opening and closing speeds and closing force  
***levelling and inspection speeds***: valves and drives  
***communication systems***: alarm bells, annunciators and phones

---

### **C-12.02 Performs initial inspection on barrier-free lifts**

---

|                  |   |
|------------------|---|
| Essential Skills | Document Use, Working with Others, Oral Communication |
|------------------|---|

---

#### **Performance Criteria**

- 12.02.01 Provide completed *Passenger and Freight Elevator Pre-Inspection Checklist*
- 12.02.02 Demonstrate manufacturer's submitted testing procedures
- 12.02.03 Test all safety and door lock circuits
- 12.02.04 Verify ***door operations***
- 12.02.05 Verify contract, ***levelling and inspection speeds***
- 12.02.06 Test and verifying all ***communication systems***
- 12.02.07 Verify removal of all temporary jumpers

### Range of Variables

**door operations:** opening and closing speeds, closing force

**levelling and inspection speeds:** valves, drives

**communication systems:** alarm bells, annunciators, phones

---

## **C-12.03** Performs mandated maintenance tests on barrier-free lifts

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Document Use, Writing, Thinking |
|------------------|---------------------------------|

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### Performance Criteria

- 12.03.01 Remove device from public operation
- 12.03.02 Execute required testing procedures for Category 1, 3 and 5 tests
- 12.03.03 Test all safety and door lock circuits
- 12.03.04 Verify door operations
- 12.03.05 Verify contract, levelling and inspection speeds
- 12.03.06 Test and verifying all communication systems
- 12.03.07 Verify removal of all temporary jumpers

### Range of Variables

**door operations:** opening and closing speeds, closing force

**levelling and inspection speeds:** valves, drives

**communication systems:** alarm bells, annunciators, phones

---

## **C-12.04** Performs return to service procedures on barrier-free lifts

---

|                  |                                 |
|------------------|---------------------------------|
| Essential Skills | Document Use, Writing, Thinking |
|------------------|---------------------------------|

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### Performance Criteria

- 12.04.01 Verify fusing and electrical protective devices
- 12.04.02 Verify removal of all temporary jumpers and wiring
- 12.04.03 Verify **device operation**
- 12.04.04 Verify safety and door lock circuits
- 12.04.05 Record data in maintenance log
- 12.04.06 Remove all temporary signage and barricades

### Range of Variables

**device operation:** contract, levelling, inspection speeds, doors

# APPENDIX A: TOOLS AND EQUIPMENT

Digital Voltmeter: Category III or Category IV rated

Door wedge tool

Hand tools: screwdrivers, wrenches, sockets

Runway door unlocking devices

PPE: gloves, glasses, work boots, face mask

Rope gauges

Tachometer

## APPENDIX B: GLOSSARY

Lunar Key: runway door unlocking device