Professional qualification of construction contractors

Competency profile

1.8 - Contractor – Petroleum equipment installation

Régie du bâtiment Québec

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Introduction

The person who passes the exam can act as a guarantor for construction work included in subclass 1.8 - Contractor – Petroleum equipment installation.

This competency profile is based on the scope of application of the *Building Act*, as well as on Section (21-22-23 or 24) of the *Regulation respecting the professional qualification of contractors and owner-builders*.

Subclass definition

1.8 - Contractor – Petroleum equipment installation

This subclass authorizes construction work on installations designed for the use, storage or distribution of one or many petroleum products, as well as similar or related construction work.

Module 1 – DEFINITIONS AND TYPES OF SYSTEMS

Elements of competency covered in this module:

1. Define and explain concepts and terms related to petroleum equipment installations
2. Describe the characteristics and operating principles of various petroleum equipment installations

Module 1 – DEFINITIONS AND TYPES OF SYSTEMS

Elements of competency	Skills required
1. Define and explain concepts and terms related to petroleum equipment installations	1.1. Define types of petroleum products: automotive gasoline, diesel fuel, diesel fuel containing biodiesel, oxygenated automotive gasoline containing ethanol, aviation fuel, heating fuel oil, etc.
	1.2. Define the characteristics of petroleum products: flash point, vapour pressure, flammability, corrosiveness, etc.
	1.3. Define high-risk petroleum equipment
	1.4. Define the different types of petroleum equipment used in bulk plants, motor fuel dispensing outlets, storage facilities used to power generators or heaters, etc.
	1.5. Define concepts associated with the components of a petroleum equipment installation: safety valve, leak and overflow protection, fuel management system, transfer area and other areas, vents, pumps, etc.
	1.6. Explain the leak tests performed on petroleum equipment
	1.7. Define installation and measurement tools for petroleum equipment installation work: pressure gauge, measurement standard (seraphin), thermometer, etc.
	1.8. Identify the units of measurement associated with petroleum equipment: °C, L, mV, kPa, etc.
2. Describe the characteristics and operating principles of various petroleum equipment installations	2.1. Explain the characteristics of materials used in petroleum equipment
	2.2. Describe the different applications of petroleum equipment installations: bulk plant, motor fuel

Elements of competency	Skills required
	dispensing outlets, etc., and specify their specific features
	2.3. Describe the features of the various components of petroleum equipment and specify their field of application: valves, vents, etc.
	2.4. Describe the characteristics of the different types of piping and materials used (metallic and non-metallic), as well as the types of fittings and joints (parts and welding)
	2.5. Describe the various risks associated with petroleum products
	2.6. Describe the different types of motor fuel dispenser and explain how they work (electric, explosion-proof, etc.)

Module 2 – LEGISLATIVE, NORMATIVE AND REGULATORY FRAMEWORK

Elements of competency covered in this module:

3. Situate work related to petroleum equipment installations in relation to current laws, regulations, codes and standards
4. Situate petroleum equipment installation work in relation to environmental legislation and regulations

Module 2 – LEGISLATIVE, NORMATIVE AND REGULATORY FRAMEWORK

Elements of competency	Skills required
3. Situate work related to petroleum equipment installations in relation to current laws, regulations, codes and standards	3.1. Explain the impact of the *Building Act* (CQLR, c. B-1.1) in relation to petroleum equipment installation work
	3.2. Explain the application of the *Engineers Act* (CQLR, c. I-9) in relation to petroleum equipment installation work
	3.3. Identify standardization or approval bodies: ASTM, CSA, ULC, API, etc.
	3.4. Define the scope of the *Construction Code – Chapter I, Building* in relation to petroleum equipment installation work
	3.5. Define the scope of the *Construction Code – Chapter VIII, Petroleum Equipment Installation*
	3.6. Define the scope of the *Safety Code – Chapter VI, Petroleum Equipment Installation*
	3.7. Define the scope of CSA B139 in relation to the application of article 8.05.01 of the *Construction Code – Chapter VIII, Petroleum Equipment Installation*
	3.8. Define the scope of CSA Z662 in relation to the application of article 8.05.01 of the *Construction Code – Chapter VIII, Petroleum Equipment Installation*
	3.9. Define the scope of the *National Fire Code* (NFC) in relation to the application of article 8.05.01 of the *Construction Code – Chapter VIII, Petroleum Equipment Installation*

Elements of competency	Skills required
	3.10. Define the scope of application of the requirements for high-risk petroleum equipment of the *Construction Code – Chapter VIII, Petroleum Equipment Installation* and the *Safety Code – Chapter VI, Petroleum Equipment Installation*
	3.11. Define the scope of the codes and standards referenced in the *Construction Code – Chapter VIII, Petroleum Equipment Installation* and in the *Safety Code – Chapter VI, Petroleum Equipment Installation*
	3.12. Explain working conditions in the field *(Décret sur l'installation d'équipements pétroliers* [c. D-2, r.13])
	3.13. Explain the application of the *Workplace Hazardous Materials Information System* (WHMIS) in relation to petroleum equipment installation work
	3.14. Explain Measurement Canada's role in relation to petroleum equipment installations (recommendation and approval of measuring devices)
	3.15. Explain the role of the Régie du bâtiment du Québec in relation to petroleum equipment installations
4. Situate petroleum equipment installation work in relation to environmental legislation and regulations	4.1. Explain the scope of the *Environment Quality Act* (CQLR, c. Q-2) and the *Regulation respecting the application of the Environment Quality Act* (CQLR, c. Q-2, r. 3) in relation to petroleum equipment installation work
	4.2. Identify the scope of the *Regulation respecting hazardous materials* (CQLR, c. Q-2, r. 32) in relation to petroleum

Elements of competency	Skills required
	equipment installation work and allied petroleum products
	4.3. Identify the scope of the *Land Protection and Rehabilitation Regulation* (CQLR, c. Q2, r. 37) in relation to petroleum equipment installation work and allied petroleum products
	4.4. Identify the scope of the *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products*, under the responsibility of the Canadian Council of Ministers of the Environment (CCME)
	4.5. Explain the role of the Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques and Environment Canada in relation to petroleum equipment installations
	4.6. Identify the scope of the *Canadian Environmental Protection Act* and the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* in relation to petroleum equipment installations
	4.7. Identify the scope of the *Petroleum Resources Act* in relation to petroleum equipment installations
	4.8. Identify the scope of the *National Energy Board Act* and the *National Energy Board Onshore Pipeline Regulations* in relation to petroleum equipment installations

MODULE 3 – PLANS, SPECIFICATIONS AND ESTIMATES

Elements of competency covered in this module:

5. Read and interpret plans and specifications for petroleum equipment installations
6. Estimate petroleum equipment installation work

Module 3 – PLANS AND SPECIFICATIONS

Elements of competency	Skills required
5. Read and interpret plans and specifications for petroleum equipment installations	5.1. Locate the various components of petroleum equipment installations on a plan
	5.2. Interpret the symbols used for petroleum equipment installations
	5.3. Locate, read and interpret the main dimensions and annotations associated with petroleum equipment installations
	5.4. Locate, read and interpret cross-sections and details associated with petroleum equipment installations
	5.5. Read and interpret general notes and tables associated with petroleum equipment installations
	5.6. Interpret information relating to petroleum equipment installation in the general clauses of specifications
	5.7. Interpret information relating to petroleum equipment installation in the special clauses of specifications
6. Estimate petroleum equipment installation work	6.1. Review the site to validate design criteria or assess a need
	6.2. Prepare the quantity survey[1] required for petroleum equipment installations
	6.3. Determine daily production rate (worker, equipment) and work schedule
	6.4. Propose a modification or addition that complies with regulations and standards
	6.5. Choose a petroleum equipment installation that complies with plans and specifications, regulations and standards

[1] Prepare the quantity survey: measure the structure and calculate the quantities of materials required.

Module 4 – STANDARDS AND EXECUTION OF WORK

Elements of competency covered in this module:

7. Plan and organize work in relation to petroleum equipment installation
8. Ensure proper interpretation of plans and drawings for petroleum equipment installations
9. Manage the execution of work related to petroleum equipment installation
10. Ensure computerized management of petroleum equipment installations
11. Carry out tests on petroleum equipment installations
12. Repair and maintain petroleum equipment installations
13. Ensure health and safety in relation to petroleum equipment installation work

Module 4 – STANDARDS AND EXECUTION OF WORK

Elements of competency	Skills required
7. Plan and organize work in relation to petroleum equipment installation	7.1. Determine the logical order of execution of work for petroleum equipment installation
	7.2. Order and receive materials required for petroleum equipment installation
	7.3. Plan installation method in accordance with manufacturer's recommendations
8. Ensure proper interpretation of plans and drawings for petroleum equipment installations	8.1. Ensure the production and approval of petroleum equipment shop drawings when required
	8.2. Transmit drawings, specifications and sketches required to complete the work to the various parties involved
	8.3. Explain the particulars of the work as specified on plans (symbols, dimensions, annotations, sections, details)
	8.4. Produce installation or modification sketches, as required
9. Manage the execution of work related to petroleum equipment installation	9.1. Plan the locations and clearances for the various components and equipment (measurement point, finished ground height, etc.)
	9.2. Ensure preparation and compliance of site work (excavation, slab, membrane, reservoir, etc.)
	9.3. Ensure that tanks are correctly positioned for different installation situations (underground, anchored, etc.)
	9.4. Ensure correct installation of piping and fittings (rigid, flexible, single- or double-walled)

Elements of competency	Skills required
	9.5. Ensure the correct installation of required equipment (vents, safety devices, dispensers, etc.)
	9.6. Ensure compliance of backfilling, compaction and protection of tanks and piping (materials, standards, etc.)
	9.7. Ensure the correct installation of measurement, control and automated management equipment, where applicable
	9.8. Explain special requirements for different types of installations
	9.9. Explain special requirements for piping and underground versus aboveground tanks
	9.10. Control the quality of work in progress
	9.11. Solve technical and management problems
	9.12. Ensure component operation in accordance with manufacturer's recommendations
	9.13. Ensure that work complies with regulations, plans and specifications
	9.14. Ensure the production and transmission of as-built plans and drawings
	9.15. Explain system operation to owner or user, train them if necessary
	9.16. Explain the principle and purpose of the "equivalent measures" process
10. Ensure computerized management of petroleum equipment installations	10.1. Configure the computerized management system as required (designer, owner)
	10.2. Test the operation of the computerized system in relation to the equipment installed
	10.3. Ensure documentation of finalized sequences of operations integrated into the system

Elements of competency	Skills required
	10.4. Register the system with the manufacturer to validate the warranty
	10.5. Maintain records and produce usage reports
11. Carry out tests on petroleum equipment installations and commissioning	11.1. Explain the requirements for testing and commissioning petroleum equipment
	11.2. Explain how to perform tests and checks (visual, hydrostatic, nitrogen, etc.)
	11.3. Ensure that petroleum equipment is put in operation in accordance with manufacturers' recommendations
	11.4. Ensure that use, maintenance and warranty manuals are given to the owner or owner's representative
12. Repair and maintain petroleum equipment installations	12.1. Diagnose an operating problem on petroleum equipment installations
	12.2. Provide a solution to repair petroleum equipment installations
	12.3. Produce a periodic maintenance schedule for petroleum equipment installations
	12.4. Explain maintenance requirements for petroleum equipment
	12.5. Dismantle tanks and other petroleum equipment no longer in use
	12.6. Ensure production of maintenance and repair reports
13. Ensure health and safety in relation to petroleum equipment installation work	13.1. Name the risks associated with petroleum equipment installation work (explosion, noxious vapours, fire, skin contamination, welding-related risks, etc.)
	13.2. Identify the precautions associated with petroleum equipment installation (confined space work methods, WHMIS for petroleum

Elements of competency	Skills required
	and allied petroleum products, work and protection methods, etc.)