Professional qualification of construction contractors

Competency profile

13.4 – Contractor – Local fire extinguishing systems

Régie du bâtiment Québec

This document was produced with the collaboration of the team of competency assessment advisors (Direction de la qualification) of the Régie du bâtiment du Québec.

In this document, the masculine gender is used without discrimination and solely for the sake of brevity.

Changes to the content may be made at any time.

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Introduction

Successful candidates may act as guarantors for construction work included in subclass 13.4 - Contractor – Local fire extinguishing systems.

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

13.4 - Contractor – Local fire extinguishing systems

This subclass authorizes construction work relating to local fire extinguishing systems using a product stored in a tank and 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 local fire extinguishing systems
2. Describe the characteristics of different local fire extinguishing systems

Module 1 – DEFINITIONS AND TYPES OF SYSTEMS

Elements of competency	Skills required
1. Define and explain concepts and terms related to local fire extinguishing systems	1.1. Define the concepts of "fire risk" and "risk zone"
	1.2. Define "extinguishing agent tank," "distribution system," "discharge nozzle" and "auxiliary equipment"
	1.3. Define the use of the types of manuals associated with local fire extinguishing systems: design, owner, operation, maintenance, etc.
	1.4. Define the different parts of a hood: plenum, ventilation ducts, etc.
	1.5. Define the concepts involved in selecting and installing a local fire extinguishing system: engineered system, certified system, detection device, activation device, etc.
	1.6. Define the concepts associated with maintenance and testing of local fire extinguishing systems: refill, signal, hydrostatic test, etc.
	1.7. Name the units of measurement associated with local fire extinguishing systems (volume, score, etc.)
2. Describe the characteristics of different local fire extinguishing systems	2.1. Explain the difference between a pre-engineered local extinguishing systems and an engineered local extinguishing system
	2.2. Describe the various types of extinguishing agents in a local fire extinguishing system, their components, characteristics, uses and actions
	2.3. Name the areas where a local fire extinguishing system can and/or must be installed (commercial kitchen, laboratory, technology equipment room, etc.)

Elements of competency	Skills required
	2.4. Identify the most common equipment to be protected by a local fire extinguishing system
	2.5. Describe the different types of local fire extinguishing systems and how they operate (power supply, detection, activation, shutdown of power sources, etc.)
	2.6. Name the components of a local fire extinguishing system (tank, nozzle, etc.) and specify their characteristics (materials, performance, etc.)
	2.7. Describe the equipment and power sources to which local fire extinguishing systems can be connected (electricity, hood, ventilation, etc.)

Module 2 – LEGISLATIVE, NORMATIVE AND REGULATORY FRAMEWORK

Elements of competency covered in this module:

3. Situate work related to local fire extinguishing systems in relation to the various codes and standards in force

Module 2 – LEGISLATIVE, NORMATIVE AND REGULATORY FRAMEWORK

Elements of competency	Skills required
3. Situate work related to local fire extinguishing systems in relation to the various codes and standards in force	3.1. Identify the organizations (and their compliance standards) that affix their marks to local fire extinguishing systems to guarantee compliance (FM, UL and ULC)
	3.2. Identify and define the scope of the *Québec Construction Code, Chapter I: Building*, and the *National Building Code of Canada: 1995* (amended) (NRC) in relation to the installation of local fire extinguishing systems
	3.3. Identify and describe the scope of the main standards that apply to pre-engineered local fire extinguishing systems, such as NFPA 96 *(Standard for ventilation control and fire protection of commercial cooking operation*), NFPA 17 *(Standard for Dry Chemical Extinguishing Systems*) and NFPA 17A *(Standard for Wet Chemical Extinguishing Systems*)
	3.4. Identify the scope of the main standards that apply to engineered fire extinguishing systems, such as NFPA 12 *(Standard on Carbon Dioxide Extinguishing Systems*), NFPA 2001 *(Standard on Clean Agent Fire Extinguishing Systems*) and CAN/ULC-S524 *(Standard for Installation of Fire Alarm Systems*)
	3.5. Identify standards for testing and maintenance of local fire extinguishing systems
	3.6. Recognize the scope of work performed under the local fire extinguishing systems contractor's licence and that performed under other contractor licences (e.g. ventilation contractor)

Module 3 – PLANS AND SPECIFICATIONS

Elements of competency covered in this module:

4. Interpret plans and specifications for engineered local fire extinguishing systems

Module 3 – PLANS AND SPECIFICATIONS

Elements of competency	Skills required
4. Interpret plans and specifications for engineered local fire extinguishing systems	4.1. List the types of plans for local fire extinguishing systems
	4.2. Locate on a plan the area and elements to be protected by a local protection system
	4.3. Locate on a plan the various elements of a local fire extinguishing system
	4.4. Interpret an identification chart for symbols used in local fire extinguishing systems
	4.5. Locate, read and interpret the main dimensions and annotations associated with local fire extinguishing systems
	4.6. Locate, read and interpret cross-sections and details associated with local fire extinguishing systems
	4.7. Read and interpret general notes and tables associated with local fire extinguishing systems
	4.8. Read and interpret specifications for local fire extinguishing systems

Module 4 – RISKS AND SYSTEMS

Elements of competency covered in this module:

5. Identify a fire hazard and associate a pre-engineered local extinguishing system with the equipment to be protected
6. Adapt a pre-engineered local fire extinguishing system to an installation context

Module 4 – RISKS AND SYSTEMS

Elements of competency	Skills required
5. Identify a risk and propose a technical solution for an existing building (without plans and specifications)	5.1. Name the types of fuel that can feed a fire
	5.2. Identify local fire hazards in relation to given premises and equipment
	5.3. Identify the area in a given location where equipment must be protected by a local fire extinguishing system
	5.4. Propose a pre-engineered local extinguishing system on the basis of a fire risk, the type of equipment to be protected and a particular room
6. Adapt a pre-engineered local fire extinguishing system to an installation context	6.1. Analyze documentation from manufacturers of certified systems related to a given fire hazard
	6.2. Estimate extinguishing capacity based on equipment to be protected, room volume, etc.
	6.3. Produce the cross-section view of the parts of a local fire extinguishing system required for installation (graphic representation, calculation of lengths and volumes, etc.)
	6.4. Reproduce in 3D the parts of a local fire extinguishing system based on an installation context (graphic representation, determine and adjust lengths, volumes and pressures according to duct types, etc.)
	6.5. Ensure that the system complies with the appropriate standards in the case of systems certified by a manufacturer

Module 5 – STANDARDS AND EXECUTION OF WORK

Elements of competency covered in this module:

7. Plan and organize work in relation to local fire extinguishing systems
8. Prepare installation of local fire extinguishing systems
9. Install and modify local fire extinguishing systems
10. Maintain local fire extinguishing systems
11. Ensure health and safety in connection with installation, inspection and maintenance work on local fire extinguishing systems

Module 5 – STANDARDS AND EXECUTION OF WORK

Elements of competency	Skills required
7. Plan and organize work in relation to local fire extinguishing systems	7.1. Explain the importance of properly coordinating the interface (common boundaries) between the various disciplines on the site
	7.2. Ensure that the required authorizations and permits for work in relation to a local fire extinguishing system have been obtained
	7.3. Order and receive the materials required for the installation of a local fire extinguishing system (comply with manufacturer's specifications, etc.)
	7.4. Determine the logical order of execution of local fire extinguishing system installation and maintenance work
8. Prepare installation of local fire extinguishing systems	8.1. Check that installation sites and equipment comply with initial design (validity of design criteria)
	8.2. Take note of additional user and customer requirements, if any
	8.3. Determine the impact on the system when adapting the installation (recognize modifications that can have an impact on the design from those that do not)
	8.4. In the case of pre-engineered local fire extinguishing systems, adapt the installation to the equipment to be protected, in compliance with the manufacturer's standards and specifications
	8.5. In the case of engineered local fire extinguishing systems, inform professionals of any adaptations required

Elements of competency	Skills required
9. Install and modify local fire extinguishing systems	9.1. Provide adequate clearances for the distribution system, reservoir, detection devices and other system components
	9.2. Install the cylinder in accordance with the manufacturer's standards and recommendations, and secure the cylinder during installation
	9.3. Install the extinguishing agent distribution system and discharge nozzles in accordance with the manufacturer's instructions (technical manual) and drawings
	9.4. Install detection and activation systems in accordance with plans and standards
	9.5. Explain the requirements concerning protection of exhaust ducts
	9.6. Install annunciator panels indicating the protection zone
	9.7. Ensure proper operation of the local fire extinguishing system and prime it
	9.8. Ensure that the required manuals and certificates are given to the owner or the owner's representative
	9.9. Ensure the structural integrity of firewalls
10. Maintain local fire extinguishing systems	10.1. Name the types of tests associated with local fire extinguishing systems (visual, hydrostatic, weighing, etc.)
	10.2. Check that the area and equipment to be protected are identical to those in the initial design
	10.3. Check expiration dates on tanks and equipment

Elements of competency	Skills required
	10.4. Perform tests associated with local fire extinguishing systems (storage, pressure, access, refills, elements and inspection periods)
	10.5. Replace defective cylinders and components if necessary
	10.6. Transport and refill tanks
	10.7. Ensure that components are identified by the appropriate labels
	10.8. Dispose of extinguishing products and agents in an environmentally friendly manner
	10.9. Keep local fire extinguishing system maintenance manual up to date
11. Ensure health and safety in connection with work on a local fire extinguishing system	11.1. Identify and explain the WHMIS sections that apply to extinguishing agents used in local fire extinguishing systems
	11.2. Identify the risks associated with the installation and maintenance of local fire extinguishing systems
	11.3. Explain the precautions to be taken when installing and maintaining a local fire extinguishing system
	11.4. Explain the precautions to be taken when handling, transporting and refilling tanks and cylinders
	11.5. Ensure safe placement of scaffolding
	11.6. Identify manufacturers' additional requirements for the safe use of local fire extinguishing systems