Professional qualification of construction contractors

Competency profile

1.4 - Contractor – Roads and mains

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

The person who passes the exam can act as a guarantor for construction work included in subclass 1.4 - Contractor – Roads and mains.

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

1.4 - Contractor – Roads and mains

This subclass authorizes construction work on roads and public thoroughfares, sewers, water mains, pipelines, railroad structures and tunnels.

It also authorizes construction work included in subclasses 3.1, 4.1, 5.1 and 6.1[1] of Schedule II, when said work relates to a civil engineering structure governed by this subclass.

This subclass also authorizes construction work in subclass 1.6,[1] but only to have it carried out, when it is related to a civil engineering structure covered by this subclass.

Finally, it authorizes similar or related construction work.

[1] 1.6 - Contractor – Underwater civil engineering structures
3.1 - Contractor – Concrete structures
4.1 - Contractor – Masonry structures
5.1 - Contractor – Metallic structures
6.1 - Contractor – Wood structures

Module 1 – DEFINITIONS AND PRINCIPLES

Elements of competency covered in this module:

1. Explain the notions, terms, concepts and materials relating to road and mains work
2. Explain the notions, terms, concepts and materials relating to the civil engineering work authorized by this subclass

Module 1 – DEFINITIONS AND PRINCIPLES

Elements of competency	Minimum skills required
1. Explain the notions, terms, concepts and materials relating to road and mains work	1.1. Define the different soil classifications (clay, silt, sand, gravel, pebbles, boulders, etc.)
	1.2. Define the terms shallow foundation, deep foundation and soil reinforcement
	1.3. Define terms related to roads and mains: rigid or flexible pavement, etc.
	1.4. Define terms relating to temporary structures
	1.5. Explain concepts relating to temporary water supply networks
	1.6. Define concepts related to contaminated soil management
	1.7. Explain the principal characteristics of different types of backfill, crushing and aggregate
	1.8. Explain the main characteristics of different types of materials (concrete [15 MPa, 30 MPa, 50 MPa], pipes, precast parts, asphalt mixes, granular materials, rails, etc.)
	1.9. Explain the steps involved in concrete pouring (placement, vibration, etc.)
	1.10. Explain particularities relating to concrete injection
2. Explain the notions, terms, concepts and materials relating to the civil engineering work authorized by this subclass	2.1. Explain concepts relating to parks
	2.2. Explain the concepts relating to retaining structures
	2.3. Explain the concepts relating to hydraulic structures
	2.4. Explain the concepts relating to railway work
	2.5. Explain the concepts relating to underground work
	2.6. Explain the concepts relating to sanitary landfills
	2.7. Explain the concepts related to transportation of gas or petroleum
	2.8. Explain the concepts relating to roads, public thoroughfares and transportation

MODULE 2 – DIFFERENT TYPES OF CIVIL ENGINEERING WORKS AUTHORIZED BY SUBCLASS 1.4 CONTRACTOR – ROADS AND MAINS[2].

Elements of competency covered in this module:

3. Understand the work involved in civil engineering structures relating to parks
4. Understand the work involved in civil engineering structures related to shoring
5. Understand the work involved in hydraulic civil engineering structures
6. Understand the work involved in civil engineering structures relating to railway work
7. Understand the work involved in civil engineering structures relating to underground work
8. Understand the work involved in civil engineering structures relating to sanitary landfills
9. Understand the work involved in civil engineering structures related to transportation of gas or petroleum
10. Understand the work involved in civil engineering structures relating to roads, public thoroughfares and transportation

MODULE 2 – DIFFERENT TYPES OF CIVIL ENGINEERING WORKS AUTHORIZED BY SUBCLASS 1.4 CONTRACTOR – ROADS AND MAINS.

Elements of competency	Minimum skills required
3. Understand the work involved in civil engineering structures relating to parks	3.1. Understand the main concepts relating to parks, playgrounds, outdoor spaces, pedestrian and bicycle paths, equestrian centres, running tracks
	3.2. Understand the main concepts relating to roadside parks: rest areas, lookouts, service areas
	3.3. Know the main concepts relating to underpasses for pedestrians, cyclists, etc.
	3.4. Know the main concepts involved in setting up and anchoring playground equipment and furniture in a public park
	3.5. Know the main concepts relating to public campgrounds
	3.6. Know the main concepts relating to tennis, baseball, football, soccer and outdoor golf courses
	3.7. Know the main concepts related to the installation of engineered constructions
4. Understand the work involved in civil engineering structures related to shoring	4.1. Know the concepts relating to intake canals, jetties, breakwaters, booms, wharves, dikes, fixed or floating docks, locks, basins, cofferdams, boat launches, lighthouses
	4.2. Know the main concepts relating to dams and dikes other than for electricity generation
	4.3. Know the main concepts relating to retaining walls for civil engineering structures, gabions, riprap

Elements of competency	Minimum skills required
5. Understand the work involved in hydraulic civil engineering structures	5.1. Know the main concepts relating to aqueducts and hydrants
	5.2. Know the main concepts relating to water towers
	5.3. Know the main concepts relating to sewers and sewer outfalls
	5.4. Know the main concepts relating to water intakes, reservoirs and water retention ponds
	5.5. Know the main concepts relating to pumping stations (booster stations, lift stations)
	5.6. Know the main concepts relating to watering, irrigation and drainage systems for parks and sports fields
	5.7. Know the main concepts relating to dams, dikes, jetties, etc.
6. Understand the work involved in civil engineering structures relating to railway work	6.1. Know the main concepts relating to railway structures and monorails
7. Understand the work involved in civil engineering structures relating to underground work	7.1. Know the main concepts relating to tunnels and other underground civil engineering works
8. Understand the work involved in civil engineering structures relating to sanitary landfills	8.1. Know the main concepts relating to layout of sanitary landfills
9. Understand the work involved in civil engineering structures related to transportation of gas or petroleum	9.1. Know the main concepts relating to pipelines
	9.2. Know the main concepts relating to gas pipelines
	9.3. Know the main concepts relating to oil pipelines

Elements of competency	Minimum skills required
10. Understand the work involved in civil engineering structures relating to roads, public thoroughfares and transportation	10.1. Know the main concepts relating to roads and public thoroughfares
	10.2. Know the main concepts relating to culverts as part of road infrastructure
	10.3. Know the main concepts relating to weighing stations for road vehicles on public thoroughfares
	10.4. Know the main concepts relating to public parking lots
	10.5. Know the main concepts relating to cast or precast concrete curbs for sidewalks
	10.6. Know the main concepts relating to lighting and signalling systems for roads and public thoroughfares
	10.7. Know the main concepts relating to railway and monorail structures
	10.8. Know the main concepts relating to work near water, but not submerged, such as canals and harbours
	10.9. Know the main concepts relating to tunnels

Module 3 – LEGISLATIVE, NORMATIVE AND REGULATORY FRAMEWORK

Elements of competency covered in this module:

11. Understand the scope of laws affecting the construction of civil engineering structures
12. Know the *Building Act* (CQLR, c. B-1.1) and the main regulations affecting civil engineering works
13. Know the regulations concerning the construction of facilities intended for use by the public
14. Explain the regulations related to roadwork
15. Know the regulations related to railroads
16. Understand the scope of application of these laws to civil engineering works
17. Know the legislation and regulations governing prevention

Module 3 – LEGISLATIVE, NORMATIVE AND REGULATORY FRAMEWORK

Elements of competency	Minimum skills required
11. Understand the scope of laws affecting the construction of civil engineering structures	11.1. Explain the impact of information on civil engineering at the level of the *Building Act* (CQLR, c. B-1.1)
	11.2. Explain the impact of the rules of the *Engineers Act* (CQLR, c. I-9) on civil engineering work
	11.3. Explain the impact of the *Act respecting labour relations, vocational training and workforce management in the construction industry* (CQLR., c. R-20)
	11.4. Explain the impact of the *Act respecting land use planning and development* (CQLR, c. A-19.1)
	11.5. Name the standard laws governing civil engineering in Quebec
	11.6. Explain the impact of the *Environment Quality Act* (CQLR, c. Q-2) and its regulations on civil engineering works • *Regulation respecting compensation for adverse effects on wetlands and bodies of water* (CQLR, c. Q-2, r.9.1) • *Regulation respecting the environmental impact assessment and review of certain projects* (CQLR, c. Q-2, r.23.1) • *Regulation respecting municipal wastewater treatment works* (CQLR, c. Q-2, r.34.1) • *Policy for the protection of lakeshores, riverbanks, littoral zones and floodplains* (CQLR, c. Q-2, r.35) • *Regulation respecting the burial of contaminated soils* (CQLR, c. Q-2, r.18) • *Regulation respecting the landfilling and incineration of residual materials* (CQLR, c. Q-2, r.19) • *Québec residual materials management policy* (CQLR, c. Q-2, r.35.1)
	11.7. Know the impact of the *Act respecting threatened or vulnerable species* (CQLR, c. E-12.01)
	11.8. Determine the legislative framework according to the structure to be built
	11.9. Determine the possible types of structures depending on the type of civil engineering structure to be built
	11.10. Explain the impact of the *Civil Code of Québec* (CQLR, c. C-1991) on the construction industry

Elements of competency	Minimum skills required
12. Know the *Building Act* (CQLR, c. B-1.1) and the main regulations affecting civil engineering works	12.1. Explain the broad lines of the *Building Act* (CQLR, c. B-1.1)
	12.2. Define the terms contractor and construction work
	12.3. Explain the process of professional qualification for construction contractors
	12.4. Explain the scope of each of the different subclasses authorizing civil engineering work
	12.5. Explain the general operation of measures to combat undeclared work
	12.6. Understand the scope of regulations adopted under the *Building Act* that may have an impact on civil engineering work
13. Know the regulations concerning the construction of facilities intended for use by the public	13.1. Define facilities intended for use by the public under the *Building Act*
	13.2. Recognize the types of civil engineering work to which the *Building Act* applies
14. Explain the regulations related to roadwork	14.1. Know the rules of the *Act respecting the Ministère des Transports* (RLRQ., c. M-28) that may affect civil engineering work
	14.2. Know the rules of the *Building Act* (CQLR, c. c. V-9) that may affect civil engineering work
	14.3. Know the rules of the *Highway Safety Code* (RLRQ., c. C-24.2) that may apply to road signage during or after work, or to any other aspect of civil engineering work
15. Know the regulations related to railroads	15.1. Know the rules of the *Railway Act* (CQLR, c. C-14.1)
16. Understand the scope of application of these laws to civil engineering works	16.1. Explain the impact of these laws on civil engineering works • *Natural Heritage Conservation Act* (CQLR, c. C-61.01) • *Cultural Property Act* (CQLR, c. B-4) • *Sustainable Forest Development Act* (CQLR, c. A-18.1) • *Act respecting the conservation and development of wildlife* (R.S.Q., c. C-61.1) • *Watercourses Act* (CQLR, c. R-13) • *Dam Safety Act* (CQLR, c. S-3.1.01)

Elements of competency	Minimum skills required
17. Know the legislation and regulations governing prevention	17.1. Refer to the *Regulation respecting concrete pumps and distribution masts* (CQLR, c. S-2.1, r.9)

Module 4 – DEVELOPMENT OF THE EXECUTION PHASES OF A PROJECT

Elements of competency covered in this module:

18. Take sustainable development principles into account
19. Understand the critical elements of civil engineering project design
20. Start a civil engineering construction project
21. Plan the execution of a civil engineering project
22. Plan a quality control or quality assurance program
23. Determine the site requirements
24. Manage site preparation
25. Coordinate the execution of a civil engineering construction project
26. Apply work execution procedures
27. Have a responsible attitude towards the customer and the work
28. Interact with the various people involved on the site
29. Take decisions concerning the execution of work
30. Manage work execution
31. Ensure quality control for work performed

Module 4 – DEVELOPMENT OF THE EXECUTION PHASES OF A PROJECT

Elements of competency	Minimum skills required
18. Take sustainable development principles into account	18.1. Determine the construction techniques to limit mains leakage
	18.2. Propose structures that integrate as well as possible into the ecosystem (e.g. gabions)
	18.3. Propose types of structures corresponding to the durability of the civil engineering structure
	18.4. Encourage designers to preserve existing structures to limit waste (rehabilitate an existing structure)
	18.5. Suggest environmentally friendly materials to the design team (recycle, revitalize, revalue, salvage, give preference to local materials)
19. Understand the critical elements of civil engineering project design	19.1. Work with professionals on site to carry out detailed pre-project studies
	19.2. Understand the rules and limits imposed by the *Engineers Act*
	19.3. Take into account the co-responsibilities between professionals and contractors imposed by the *Civil Code*
	19.4. Understand the choice of materials or construction methods that are most in harmony with nature, while respecting the client's requirements
20. Start a civil engineering construction project	20.1. Ensure that all required authorizations and permits have been issued (environmental, right-of-way, CN, CP, MTQ, city, etc.)
21. Plan the execution of a civil engineering project	21.1. Establish the chronology of operations (start and end dates, delivery date, etc.)
	21.2. Determine a strategy for carrying out the work
	21.3. Estimate the cost of civil engineering work in order to respond to calls for tender
	21.4. Integrate the project into a set of master plans
	21.5. Determine the division of tasks according to the responsibilities of each person involved
	21.6. Plan according to seasons and weather
	21.7. Ensure the safety of workers on site (working at heights, near water, etc.)
	21.8. Ensure the safety of nearby users (neighbours, noise levels, traffic detours, etc.)
	21.9. Evaluate work feasibility methods (execution strategy, soil survey, etc.)

Elements of competency	Minimum skills required
22. Plan a quality control or quality assurance program	22.1. Ensure that tests and trials have been carried out on materials (before, during and after performance of work) and on parts of the finished work
	22.2. Train and motivate personnel for the project
	22.3. Identify and implement preventive measures
	22.4. Identify and implement appropriate measures in the event of a fault
23. Determine the site requirements	23.1. Identify equipment requirements (access control, signage, fixed equipment, equipment storage, materials storage, toilets, fencing, office space, containers, borrow pits, lighting, etc.)
	23.2. Limit noise and dust to ensure good neighbourliness with local residents
	23.3. Carry out recovery and/or recycling operations where possible
24. Manage site preparation	24.1. Ensure site preparation (land clearing, demolition, rehabilitation)
25. Coordinate the execution of a civil engineering construction project	25.1. Plan the details of the project (timetable, constraints, co-activity, etc.)
	25.2. Plan work to avoid inconsistent overlapping of specialties on the site
	25.3. Manage the various trades and subcontractors involved in civil engineering projects
	25.4. Determine the tools and machinery needed to carry out the work
	25.5. Prepare ground for work (earthworks, demarcation, layout, etc.)
	25.6. Execution of temporary or preparatory work (shoring wall, piling, scaffolding, etc.)
	25.7. Carry out foundation work (formwork, reinforcement, concrete placement, etc.)
	25.8. Ensure the safety of the public on site (pedestrians, road traffic, etc.)
	25.9. Distribute work related to the divisions of the National Master Specification (NMS)
	25.10. Identify provisional and final acceptance criteria
	25.11. Depending on the situation, provide details of operation and maintenance
26. Apply work execution procedures	26.1. Apply the various technical and administrative project management procedures derived from

Elements of competency	Minimum skills required
	specifications and widespread, recognized practices
27. Have a responsible attitude towards the customer and the work	27.1. Record and transmit information useful to the owner in using the structure (such as changes to the initial project for the final version of the plans, warranties, maintenance manuals, etc.)
28. Interact with the various people involved on the site	28.1. Communicate instructions and information on methods, as well as desired and required precautions, to the relevant workers
29. Take decisions concerning the execution of work	29.1. Monitor completion times and take appropriate measures
30. Manage work execution	30.1. Determine work methods (based on plans and specifications or a technical proposal and site survey) and rules for using equipment and tools
	30.2. Communicate relevant information on work techniques and methods, tips and tricks of the trade
	30.3. Explain the impact of obstacles specific to this type of work on work methods (current, tide, rock, etc.)
	30.4. Explain the particularities of work carried out in different phases of execution (e.g. on a 5 km stretch of road, there are several simultaneous jobs at different locations)
	30.5. Explain the rules of good practice in environmental protection (water, dust, noise, etc.)
	30.6. Explain the impact of weather conditions on work execution (special equipment required, type of work postponed, etc.)
	30.7. Explain the steps involved in laying pipes (checking slopes, backfilling, etc.)
	30.8. Explain the steps involved in building a pavement structure
	30.9. Explain the steps involved in building railway structures
	30.10. Explain the steps involved in pipeline installation work
	30.11. Explain tunnel construction requirements (blasting methods, equipment required, special formwork and concreting methods)
31. Ensure quality control for work performed	31.1. Explain quality control measures for roads and mains work (leak testing of pipes, etc.)
	31.2. Explain quality control measures for work on railroad structures

Elements of competency	Minimum skills required
	31.3. Explain quality control measures for tunnel building work
	31.4. Explain quality control measures for pipeline installation work

Module 5 – STRENGTH OF MATERIALS AND LOAD TRANSFER

Elements of competency covered in this module:

32. Ensure basic knowledge of civil engineering disciplines relevant to the work authorized by this subclass (1.4)
33. Ensure compliance with load calculation requirements
34. Understand load transfer mechanisms and the different types of structures according to the types of building and work authorized by the subclass
35. Know the basic characteristics related to the structural strength of materials
36. Meet structural strength requirements
37. Manage the execution of structural work
38. Ensure safety on site when very heavy loads are being lifted

Module 5 – STRENGTH OF MATERIALS AND LOAD TRANSFER

Elements of competency	Skills required
32. Ensure basic knowledge of civil engineering disciplines relevant to the work authorized by this subclass (1.4)	32.1. Understand the basic principles of geotechnical engineering (soil mechanics, rock mechanics, underground hydraulics)
	32.2. Understand the basic principles of strength of materials (tension, compression, shear, torsion, bending)
	32.3. Understand the basic principles of static mechanics (forces and moments)
	32.4. Understand the basic principles of structural stability (dead weight, permanent loads, operating loads, climatic loads, seismic loads)
	32.5. Understand the basic principles of structural dynamics (stochastic dynamics, generalized structural displacements, etc.)
	32.6. Understand the basic principles of fluid mechanics
33. Ensure compliance with load calculation requirements	33.1. Identify any errors or constraints on the plans that could hinder project completion
	33.2. Ensure compliance with requirements for temporary structures, scaffolding and formwork
	33.3. Understand the different loads that can affect the structure
	33.4. Comply with foundation requirements (materials used for foundations, soil types, etc.)
34. Understand load transfer mechanisms and the different types of structures according to the types of building and work authorized by the subclass	34.1. Understand the vocabulary related to different types of loads
	34.2. Identify the consequences on the building of loads caused by wind, earthquake, etc.
	34.3. Understand the effects of loads on the structure
	34.4. Know the characteristics of different types of loads
	34.5. Identify critical components and locations for load transfer
	34.6. Understand the role of bracing and the possible impacts of its modification or absence
35. Know the basic characteristics related to the structural strength of materials	35.1. Know the specifications and characteristics of different types of concrete structures (precast concrete, cast-in-place concrete, slab-on-grade, structural slab, etc.)
	35.2. Know the specifications and characteristics of masonry structures (concrete blocks, bricks, refractory bricks, etc.)
	35.3. Know the specifications and characteristics of steel structures and precast concrete elements

Elements of competency	Skills required
	35.4. Know the specifications and characteristics of the different types of timber framing (roundwood, solid framing, glulam, cross-laminated panels, beam-column assembly, etc.)
	35.5. Know how to assemble different types of composite structures (steel-concrete, concrete-prefabricated concrete, metal-wood [sheet piling])
	35.6. Understand the types of work that can be carried out to repair civil engineering structures
36. Meet structural strength requirements	36.1. Comply with regulatory requirements for concrete structures
	36.2. Comply with regulatory requirements for masonry structures
	36.3. Comply with regulatory requirements for steel structures and precast concrete elements
	36.4. Comply with the regulatory requirements for different types of timber framing
37. Manage the execution of structural work	37.1. Comply with structural plans and specifications, paying particular attention to spans and alignment of supports (Part 4 of the *Québec Construction Code, Chapter I, Building)*
	37.2. Recognize the possible impacts of non-compliance with structural plans and specifications
	37.3. Ensure that structural elements comply with regulatory requirements
	37.4. Ensure the quality of materials and proper storage
	37.5. Comply with span requirements for structural elements
	37.6. Order the appropriate materials needed to erect the structure
	37.7. Properly handle and brace roof trusses and large structural components according to manufacturer's specifications
	37.8. Ensure that structural elements are properly secured and braced
	37.9. Ensure that lintels in load-bearing walls are adequately supported up to the sill plate
	37.10. Ensure that building mechanicals and electrical work do not affect the integrity of the building structure

Elements of competency	Skills required
38. Ensure safety on site when very heavy loads are being lifted	38.1. Respect the lifting limits of the different equipment

Module 6 – READING AND INTERPRETING PLANS AND SPECIFICATIONS

Elements of competency covered in this module:

39. Read and interpret civil engineering plans and specifications
40. Identify the particularities or difficulties of a civil engineering construction project

Module 6 – READING AND INTERPRETING PLANS AND SPECIFICATIONS

Elements of competency	Skills required
39. Read and interpret civil engineering plans and specifications	39.1. Recognize the different types of plans used for civil engineering projects
	39.2. Explain the standards governing the creation of each sheet
	39.3. Have an overview of plans and specifications
	39.4. Ensure that the plans supplied are complete
	39.5. Locate, read and interpret the symbols used on a roads and mains plan (survey, roads, existing and/or projected terrain conditions, etc.)
	39.6. Locate and interpret geotechnical elements on drawings or plans
	39.7. Understand the dimensioning of the various elements of a civil engineering drawing
	39.8. Understand plans and specifications for civil engineering work
	39.9. Identify the standard specifications generally used for roads and/or mains work and explain their role
	39.10. Interpret the information in the special clauses associated with roads and/or mains works
	39.11. Interpret the information in the geotechnical report
	39.12. Locate, read and interpret standard drawings referred to in plans and specifications
40. Identify the particularities or difficulties of a civil engineering construction project	40.1. Identify the particularities or difficulties associated with the work location, site access, soil (morphology), environment, non-standard connections and specialized equipment required
	40.2. Identify the particularities or difficulties associated with the work schedule and timetable

Module 7 – COST ESTIMATES AND BIDS

Elements of competency covered in this module:

41. Prepare the quantity survey
42. Estimate the cost of work

Module 7 – COST ESTIMATES AND BIDS

Elements of competency	Skills required
41. Prepare the quantity survey[3]	41.1. Name the units of measurement normally used for each type of material
	41.2. Explain how the particularities of different soils can have an impact on the quantity survey
	41.3. Estimate the amount of excavation and backfill required (soil classified by type)
	41.4. Calculate tonnage of crushed stone or other granular materials for road construction (anticipate the density of materials)
	41.5. Estimate the quantity of concrete required for civil engineering work
	41.6. Evaluate the quantity of asphalt mix and/or granular materials required
	41.7. Calculate the pipe quantities required
	41.8. Estimate the required quantity of materials likely to be used in civil engineering work
	41.9. Estimate the volume of excavated soil to be transported once the soil has been graded
42. Estimate the cost of work	42.1. Breakdown costs by specification item
	42.2. Explain how location and temperature can influence the cost of work
	42.3. Calculate unit prices for labour, materials, machinery and subcontractors
	42.4. Analyze quotations received (conformity, price, deadline, etc.)
	42.5. Include environmental protection costs

3 Prepare the quantity survey: measure the structure and calculate the quantities of materials required.

Module 8 – PREVENTION MANAGEMENT SPECIFIC TO ROADS AND MAINS WORKS

Elements of competency covered in this module:

44. Identify the health and safety risks associated with the different types of work specific to the work authorized by this subclass and the measures to manage them
45. Plan health and safety management activities on the worksite, integrating prevention into premises, equipment, materials and operating procedures
46. See to worker training

Module 8 – PREVENTION MANAGEMENT SPECIFIC TO ROADS AND MAINS WORKS

Elements of competency	Skills required
43. Identify the health and safety risks associated with the different types of work specific to the work authorized by this subclass and the measures to manage them	43.1. Identify high-risk construction sites (asbestos, excavation, trenching, underground, hyperbaric environment, demolition, etc.)
	43.2. Identify the risks associated with digging, excavation and trenching work (utilities, neighbouring construction, wall stability, shafts, piles and sheet piling, etc.) and the measures to manage them
	43.3. Identify health and safety (WHMIS) risks (environment, climate, hazardous materials, wastewater, etc.) and the measures to manage them
	43.4. Identify the risks associated with drilling operations, including the handling and use of explosives, and the measures to manage them
	43.5. Identify the risks associated with the movement and use of heavy machinery (excavation, backfilling, concrete spreading, scarification of pavement, asphalting, etc.) and the measures to manage them
	43.6. Identify the risks associated with site traffic, fire protection, emergency measures, etc., and the measures to manage them
	43.7. Identify the risks associated with moving and lifting heavy loads and the measures to manage them
	43.8. Identify the risks associated with underground construction sites and the measures to manage them
	43.9. Identify the risks associated with working on roads open to traffic and the measures to manage them
44. Plan health and safety management activities on the worksite, integrating	44.1. Draw up a prevention program adapted to the specific activities of the construction site (according to business sector)

Elements of competency	Skills required
prevention into premises, equipment, materials and operating procedures	44.2. Determine in advance the procedures and timetables for implementing the preventive measures to which the prime contractor and employers are bound
	44.3. Draw up an emergency plan
45. See to worker training	45.1. Organize an induction and training session for new workers on construction site prevention
	45.2. Organize refresher prevention training for workers
	45.3. Organize occupational health and safety planning meetings on the construction site with workers