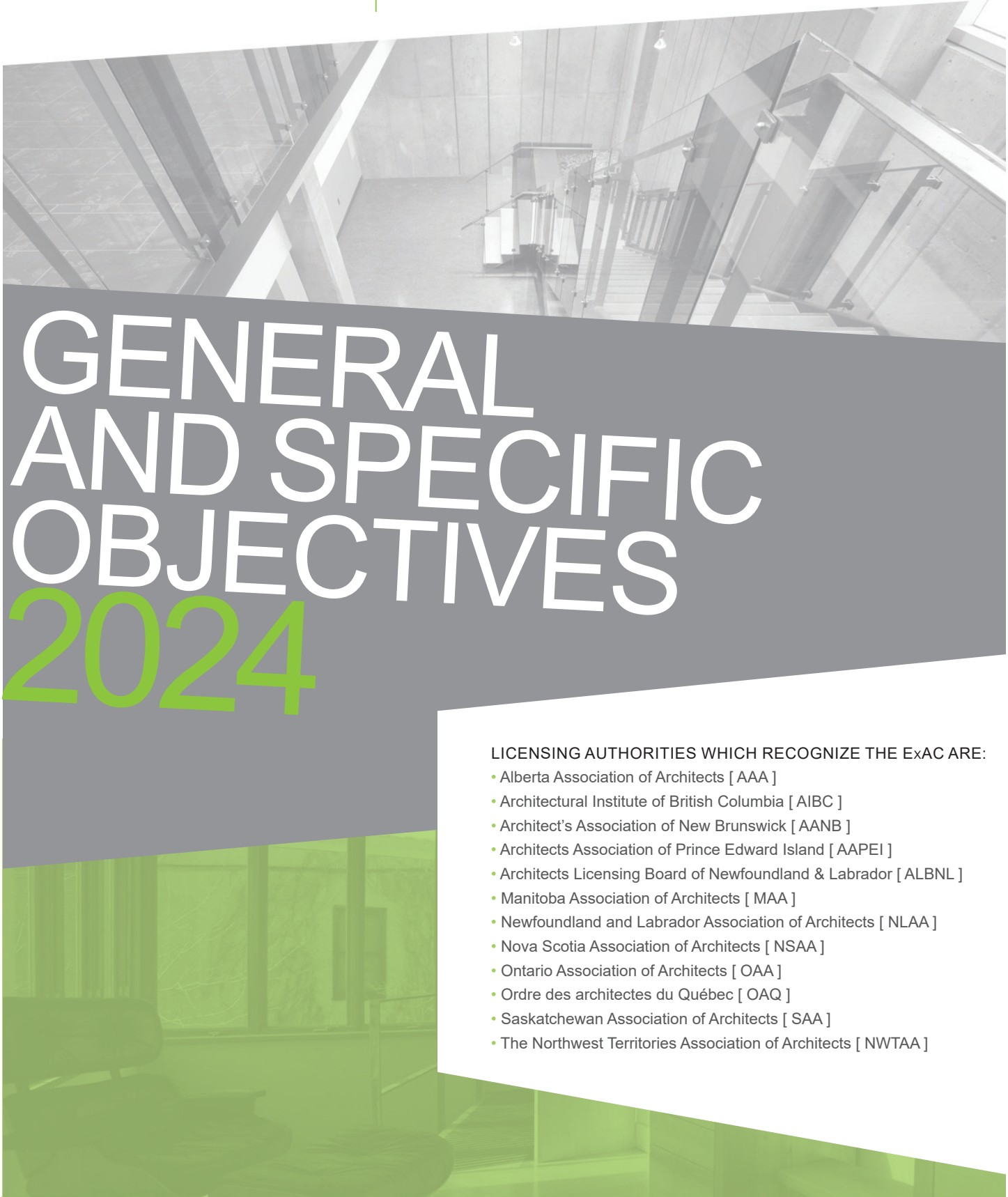




Examination for Architects in Canada
Examen des architectes du Canada

A large, high-angle photograph of a modern architectural interior, possibly a staircase or a large atrium, with a complex network of metal beams and glass panels. The image is partially obscured by a dark grey banner containing the title and a green-tinted area at the bottom.

GENERAL AND SPECIFIC OBJECTIVES 2024

LICENSING AUTHORITIES WHICH RECOGNIZE THE ExAC ARE:

- Alberta Association of Architects [AAA]
- Architectural Institute of British Columbia [AIBC]
- Architect's Association of New Brunswick [AANB]
- Architects Association of Prince Edward Island [AAPEI]
- Architects Licensing Board of Newfoundland & Labrador [ALBNL]
- Manitoba Association of Architects [MAA]
- Newfoundland and Labrador Association of Architects [NLAA]
- Nova Scotia Association of Architects [NSAA]
- Ontario Association of Architects [OAA]
- Ordre des architectes du Québec [OAQ]
- Saskatchewan Association of Architects [SAA]
- The Northwest Territories Association of Architects [NWTAA]

THEME PROGRAMMING

- general objective **1.1** Understand the process involved in developing an architectural program
- specific objectives **1.1.1** Identify the components of an architectural program.
- 1.1.2** Describe the process involved in developing an architectural program.
- 1.2** Analyze an architectural program
- 1.2.1** Analyze an architectural program from the point of view of project constraints and opportunities.
- 1.2.2** Analyse the program from the point of view of the site components.
- 1.2.3** Analyse the program from the point of view of the proposed budget.
- 1.2.4** Analyse the program from the point of view of the client's objectives.
- 1.2.5** Analyse the program from the point of view of the spatial requirements.
- 1.2.6** Analyse the program from the point of view of sustainable design principles.

THEME SITE AND ENVIRONMENTAL ANALYSIS

- general objective **2.1** Understand the principles related to the siting of a project
- specific objectives **2.1.1** Explain the physical, cultural and regulatory factors associated with site planning.
- 2.1.2** Explain urban design issues and planning processes that influence the design of a building on a specific site.
- 2.1.3** Identify strategies for addressing with environmental issues during the evaluation of a site.
- 2.2** Apply the principles of site design
- 2.2.1** Given a specific site, selected physical factors and design criteria, determine the site design options.
- 2.2.2** Apply the principles of grading and storm water management to site design.
- 2.2.3** Describe the relationship between the energy performance of a building, its placement on the site and the site design.
- 2.2.4** Describe impacts of universal accessibility on site design.
- 2.3** Analyze data relevant to the site for a project
- 2.3.1** Explain data obtained from environmental and engineering reports.
- 2.3.2** Explain data obtained from a land surveyor's drawing and a topographical map.
- 2.3.3** Compare site design solutions based on specific criteria.

THEME COORDINATING ENGINEERING SYSTEMS (STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL)

general objective **3.1 Understand engineering systems**

- specific objectives
- 3.1.1 Explain the principles and properties of the structural system (foundations, superstructure).
 - 3.1.2 Explain the principles and properties of the mechanical system (plumbing, heating, ventilation, air conditioning, fire protection).
 - 3.1.3 Explain the principles and properties of the electrical system (lighting, electricity supply and distribution, fire alarm system, security and communications systems).
 - 3.1.4 Explain the principles and properties of the civil engineering system (drainage, water supply, infrastructure).

3.2 Analyze engineering systems and their impacts on the project

- 3.2.1 Analyze the advantages and limitations of structural systems.
- 3.2.2 Analyze the advantages and limitations of the mechanical systems.
- 3.2.3 Analyze the advantages and limitations of electrical systems.
- 3.2.4 Analyze the advantages and limitations of civil engineering systems.
- 3.2.5 Analyze the impact of the integration of the engineering systems on building performance.

3.3 Coordinate engineering systems documentation

- 3.3.1 Describe ways to coordinate with the consultants.
- 3.3.2 Identify the key stages at which coordination should occur.
- 3.3.3 Coordinate the engineering systems documentation with the architectural documentation.

THEME COST MANAGEMENT

general objective **4.1 Understand the factors influencing cost**

- specific objectives
- 4.1.1 Identify the factors influencing cost.
 - 4.1.2 Explain how these factors influence cost.

4.2 Evaluate cost

- 4.2.1 Evaluate the project cost in relation to the program and the conditions for the budget for completing the project.
- 4.2.2 Provide recommendations to a client on following a value analysis.

4.3 Compare the various cost estimating methods

- 4.3.1 Differentiate between cost estimating methods.

4.4 Apply estimating methods within the framework of a project

- 4.4.1 Identify the resources available for the preparation of a cost estimate.
- 4.4.2 Differentiate between construction costs, project costs and overall costs.
- 4.4.3 Apply the appropriate estimating method to a specific situation.

THEME NATIONAL BUILDING CODE OF CANADA

- general objective 5.1 Understand the scope and application of the National Building Code of Canada to the design, construction and occupancy of buildings
- specific objectives
- 5.1.1 Identify the parts of the Code apply to various building types.
 - 5.1.2 Explain the Division B appendices and notes in Volume 1 and 2 of the Code.
 - 5.1.3 Determine the scope and application of the standards which are referenced in the Code.
- 5.2 Apply the minimum standards of the National Building Code to a building governed by part 3 of Division B
- 5.2.1 Apply the classification and construction requirements to a building projet.
 - 5.2.2 Interpret the Code requirements concerning fire safety.
 - 5.2.3 Interpret the Code requirements concerning floor area safety.
 - 5.2.4 Interpret the Code requirements concerning barrier-free design.
 - 5.2.5 Interpret the Code requirements concerning sound transmission.
 - 5.2.6 Interpret the Code requirements concerning exits.
 - 5.2.7 Interpret the Code requirements concerning health.
- 5.3 Apply the minimum standards of the National Building Code to a building governed by Part 9 of Division B which is in the construction documents phase
- 5.3.1 Apply prescriptive Code requirements concerning structural design.
 - 5.3.2 Apply prescriptive Code requirements concerning safety.
 - 5.3.3 Apply prescriptive Code requirements concerning health.
 - 5.3.4 Apply prescriptive Code requirements concerning envelope design.
- 5.4 Understand the requirements for achieving design compliance using alternative solutions, as set out in Division A and in subsection 1.1.2 of Division B of the National Building Code
- 5.4.1 Identify the proper application of an alternative solution in a building design.
 - 5.4.2 Identify Code objectives and their application.
 - 5.4.3 Identify the functional statements associated with a Code requirement.
 - 5.4.4 Identify the documents and information required to file an alternative design solution.
- 5.5 Apply the principles of the National Energy Code of Canada for Buildings (NECB)
- 5.5.1 Apply the NECB requirements to the design process for a project.
 - 5.5.2 Apply the NECB requirements to the construction documents for a project.

THEME SCHEMATIC DESIGN

general objective **6.1** Understand aspects of schematic design

- specific objectives
- 6.1.1 Identify the information required for schematic design phase.
 - 6.1.2 Determine the engineering services required at the schematic design phase.
 - 6.1.3 Identify the documentation required to obtain the client's approval of the schematic design.
 - 6.1.4 Explain the scope of the analysis of the building Code and of universal accessibility at the schematic design phase.
 - 6.1.5 Explain the principles of sustainable design as they relate to schematic design.

THEME DESIGN DEVELOPMENT

general objective **7.1** Understand aspects of design development

- specific objectives
- 7.1.1 Identify the information required at the design development phase.
 - 7.1.2 Determine the engineering services required at the design development phase.
 - 7.1.3 Identify the documentation required to obtain the client's approval of the design development.
 - 7.1.4 Describe the impact of the analysis of the building Code and of universal accessibility at the design development phase.
 - 7.1.5 Describe the impact of sustainable design at the design development phase.

THEME FINAL PROJECT

general objective **8.1** Be knowledgeable about construction materials and their properties

- specific objectives
- 8.1.1 Choose the appropriate materials for a project.
 - 8.1.2 Identify the properties of load-bearing materials (metal, wood, concrete, masonry).
 - 8.1.3 Identify the properties of the main types of insulating materials.
 - 8.1.4 Identify the properties of the main types of air, vapour, water, barriers.
 - 8.1.5 Identify the properties of the main types of finishing materials.
 - 8.1.6 Identify the properties of fire resistance materials.
 - 8.1.7 Identify the impact of materials and processes on health and the environment.
 - 8.2 Understand construction principles and systems in order to be able to choose the most appropriate construction methods**
 - 8.2.1 Explain the principles of soil mechanics.
 - 8.2.2 Describe foundation systems as they relate to soil types and conditions.
 - 8.2.3 Explain the design principles for the building envelope and the functions of its components.
 - 8.2.4 Explain the principles of acoustical design for a building.
 - 8.2.5 Choose construction methods that are appropriate to specific criteria (cost, timing, durability, performance) and environmental conditions.

general objective **8.3 Evaluate assemblies and details**

- specific objectives
- 8.3.1 Evaluate an acoustical assembly.
 - 8.3.2 Evaluate a firestop assembly.
 - 8.3.3 Evaluate a building envelope in relation to its thermal resistance.
 - 8.3.4 Evaluate a building envelope in relation to moisture control.
 - 8.3.5 Evaluate a building envelope in relation to its weathertightness.
 - 8.3.6 Evaluate a building envelope in relation to its durability.
 - 8.3.7 Evaluate a wood frame structural assembly.
 - 8.3.8 Evaluate a building envelope in relation to its life cycle.

8.4 Understand the components of the construction documents

- 8.4.1 Describe the contents of the project manual.
- 8.4.2 Describe the role of the project manual.
- 8.4.3 Describe the role of the working drawings.
- 8.4.4 List the main components of the working drawings.
- 8.4.5 Explain how the construction documents are related to each other.
- 8.4.6 Explain the different methods of specifying.

8.5 Understand the principles of specification writing

- 8.5.1 Explain the connection between the MasterFormat and the National Master Specification (NMS).
- 8.5.2 Distinguish which divisions of the NMS are common or specific to each of the disciplines (architectural, structural, mechanical, electrical, etc.)
- 8.5.3 Assign a construction element to the appropriate division of the MasterFormat.
- 8.5.4 Describe the components of a typical MasterFormat specification section.
- 8.5.5 List the maxims which govern the writing of a good specification.

8.6 Evaluate the components of the construction documents

- 8.6.1 Verify that products, materials and assemblies conform to standards and codes.
- 8.6.2 Check that the architectural documents are coordinated and complete.

THEME BIDDING AND CONTRACT NEGOTIATIONS

general objective **9.1 Compare the different types of construction project delivery**

- specific objectives
- 9.1.1 Differentiate between the types of project delivery.

9.2 Understand the types of construction contracts

- 9.2.1 Identify the different types of construction contracts.
- 9.2.2 Explain the purpose of the CCDC construction documents.
- 9.2.3 Describe the responsibilities of the parties to a construction contract.

- general objective **9.3 Understand the procedures for the awarding of a construction contract**
- specific objectives 9.3.1 Describe the responsibilities of each party involved in the bidding process.
- 9.3.2 Describe the role of local construction associations and bid depositories in the bidding process.
- 9.3.3 Describe the methods for awarding a construction contract.
- 9.3.4 Describe the phases of a typical bidding process.
- 9.3.5 Describe the documentation required for each phase of the bidding process.
- 9.4 Evaluate the bids submitted by the contractors**
- 9.4.1 Assess the conformity of the bid submissions.
- 9.4.2 Describe the architect's responsibility in making recommendations.

THEME CONSTRUCTION PHASE — OFFICE

- general objective **10.1 Understand the roles of the architect and other participants in the administration of the construction contract**
- specific objectives 10.1.1 Explain the roles and responsibilities of the architect.
- 10.1.2 Explain the roles and responsibilities of the client/owner.
- 10.1.3 Explain the roles and responsibilities of the contractor.
- 10.2 Understand the office-function tasks associated with the construction phase**
- 10.2.1 Explain the tasks associated with the construction phase (from the initial meeting, before, during and at the end of the work, until the end of the warranty period).
- 10.2.2 Describe the documentation required of the contractor prior to the commencement of construction.
- 10.2.3 Describe the type of documentation result in changes to effect changes to the construction contract.
- 10.2.4 Explain the tasks associated with payment for the work.
- 10.2.5 Explain the tasks associated with the review of shop drawings, other documents and submittals.
- 10.2.6 Explain the terms and conditions of a contract concerned with deficiencies, take-over procedures, commissioning, indemnification and warranty.
- 10.3 Demonstrate the use of administration forms appropriate to different aspects of construction**
- 10.3.1 Complete a certificate for payment.
- 10.3.2 Complete a change request.
- 10.3.3 Complete relevant forms and reports (field review, substantial completion, etc.).

THEME CONSTRUCTION PHASE — SITE

- general objective **11.1 Understand the roles of the architect and the other participants in the administration of a construction contract**
- specific objectives 11.1.1 Explain the roles and responsibilities of the architect.
- 11.1.2 Explain the roles and responsibilities of the client/owner.
- 11.1.3 Explain the roles and responsibilities of the contractor.
- 11.1.4 Explain the roles and responsibilities of the architect with respect to inspection and testing firms.

general objective **11.2 Understand the field functions associated with the construction phase**

- specific objectives
- 11.2.1 Explain the field functions associated with the construction phase (from the initial construction meeting, through construction and close-out, until the end of the warranty period).
 - 11.2.2 Explain the procedures for monitoring construction progress.
 - 11.2.3 Explain the terms of the construction contract concerned with field review.
 - 11.2.4 Explain the terms of the construction contract concerned with the takeover procedures.
 - 11.2.5 Explain the terms of the construction contract concerned with issues of hazardous materials and toxic substances.

THEME MANAGEMENT OF THE PROJECT AND BUSINESS/PRACTICE MANAGEMENT

general objective **12.1 Understand the principles of project management and the delivery of professional services**

- specific objectives
- 12.1.1 Explain the project management process.
 - 12.1.2 Describe the role of the individuals involved in a project (project manager, in-house and external resources).
 - 12.1.3 Describe the contents of a project file.
 - 12.1.4 Explain the main components of a work plan.
 - 12.1.5 Explain the essential elements of effective team management (communications, objectives, etc.).
 - 12.1.6 Describe the quality assurance process for a project.
 - 12.1.7 Explain the methods used to calculate the architect's fees.

THEME SUSTAINABLE DESIGN LITERACY

general objective **13.1 Analyze the impacts of climate change on design**

- specific objectives
- 13.1.1 Apply predictive climate data to the design process.
 - 13.1.2 Analyze climate change risks impacting design (resilience).

13.2 Apply the principles of life cycle analysis

- 13.2.1 Explain life cycle analysis process.
- 13.2.2 Modify an assembly to improve the results of the life cycle analysis of a building.
- 13.2.3 Choose building materials which minimize embodied carbon.
- 13.2.4 Explain how operational carbon can be minimized.

13.3 Apply sustainable architectural design strategies

- 13.3.1 Apply strategies to address occupant wellness concerns.
- 13.3.2 Describe green building rating system concepts.
- 13.3.3 Describe renewable and low energy systems used in the design of buildings.
- 13.3.4 Apply results of a whole building energy analysis to the design process.



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