

Conditions for Licensure of Architects in Canada

This document is endorsed by the following regulatory authorities
(*Canadian Architectural Licensing Authorities*):

- Architectural Institute of British Columbia
- Alberta Association of Architects
- Northwest Territories Association of Architects
- Saskatchewan Association of Architects
- Manitoba Association of Architects
- Ontario Association of Architects
- Ordre des architectes du Québec
- Architects' Association of New Brunswick/Association des architectes du Nouveau-Brunswick
- Nova Scotia Association of Architects
- Architects Association of Prince Edward Island
- Architects Licensing Board of Newfoundland and Labrador

TABLE OF CONTENTS

- 1 Empowerment of the Architects Acts
- 2 Standard of Competency
- 3 Definitions of Competencies
 - 3.1 Programming
 - 3.2 Site Analysis
 - 3.3 Schematic Design
 - 3.4 Engineering Systems Coordination
 - 3.5 Building Cost Analysis
 - 3.6 Code Research
 - 3.7 Design Development
 - 3.8 Construction Documents
 - 3.9 Procurement and Contract Award
 - 3.10 Construction Phase
 - 3.11 Project Management
 - 3.12 Professionalism and Professional Practice
- 4 Forms of Comprehension
- 5 Roadmap to Licensure
- 6 Components of the Pathways to Licensure and Governing Documents
 - 6.1 Canadian Education Standard for Architects
 - 6.2 Canadian Architectural Experience Standard (IAP)
 - 6.3 Canadian Architectural Examination Standard (ExAC)
 - 6.4 Broadly Experienced Foreign Architects Program (BEFA)
 - 6.5 International Agreements

Appendix A Canadian Standard of Competency for Architects, Full Version

Conditions for Licensure of Architects in Canada

1 Empowerment of the Architects Acts

Provincial and Territorial legislation has given each professional governing body both the authority and the responsibility to establish standards of admission and competence for candidates seeking to become licensed/ registered as architects in their respective jurisdictions.

2 Standard of Competency

The Canadian Architectural Licensing Authorities (CALA) is a non-governmental body with representatives of each of the Provincial and Territorial Architectural Licensing Authorities established by statute under Canadian provincial and territorial laws. CALA has worked collectively to develop and adopt nationally recognized standards of competence.

These standards are embodied in the *Canadian Standard of Competency for Architects*, which is the primary document that establishes consistent criteria that candidates must meet regardless of their chosen path to licensure. These standards must be read in conjunction with the *Definitions of Competencies*, as well as the *Forms of Comprehension*.

The *Canadian Standard of Competency for Architects, Full Version*, found in Appendix A, includes additional detail in terms of activities that can be used in the BEFA Program to demonstrate required competencies.

Canadian Standard of Competency for Architects		
Abbreviated Version		
February 2020		Required Form of Comprehension (See last page for details)
1	PROGRAMMING	
	1.1 Prepare an architectural functional program	3
	1.2 Incorporate principles of sustainable development within an architectural program	3
	1.3 Evaluate the architectural program	5
2	SITE AND ENVIRONMENTAL ANALYSIS	
	2.1 Propose solutions to the siting of a building in relation to its environment	5
3	SCHEMATIC DESIGN	
	3.1 Define schematic design principles and approaches	2
	3.2 Analyze design principles and solutions in relation to context	4
	3.3 Evaluate aesthetics of design solutions	5
	3.4 Utilize conceptual and representational skills to imagine and communicate design concepts and solutions	3
	3.5 Assess technical aspects of the schematic design solutions	5
	3.6 Produce schematic design solutions for a project	6
	3.7 Consider the principles of energy efficiency and environmental impacts	5
4	ENGINEERING SYSTEMS INTEGRATION	
	4.1 Describe the structural systems and their influence on design	2
	4.2 Understand the mechanical systems (passive and active) and their influence on sustainability and design	2
	4.3 Describe the electrical systems (lighting, electricity supply and distribution, fire alarm systems, security and communication systems) and their influence on sustainability and design	2
	4.4 Describe civil engineering systems (water management – supply, drainage, infrastructure) and their influence on sustainability and design	2
	4.5 Analyze the choice of engineering system options relative to a project	4

5	BUILDING COST ANALYSIS		
	5.1	Understand factors influencing cost	2
	5.2	Understand methods of estimating costs (range of options)	2
	5.3	Apply cost estimating methods to a project	3
	5.4	Develop cost planning/ cost control methodology	6
	5.5	Understand principles of life cycle costs	2
6	CODE RESEARCH		
	6.1	Understand the scope and application of the national and local building codes to the design construction and occupancy of a building	2
	6.2	Apply code requirements to the design process	3
	6.3	Apply code requirements to construction documents	3
	6.4	Demonstrate awareness of alternate solution provisions in national and local building codes	1
	6.5	Apply energy-related code requirements to a project	1
7	DESIGN DEVELOPMENT		
	7.1	Assess factors influencing design development	5
	7.2	Assess engineering systems and regulatory factors	5
	7.3	Develop a solution that responds to the factors influencing the design	6
	7.4	Evaluate alternatives in finalizing a detailed solution	5
	7.5	Evaluate detailed solutions with regards to client/user group program needs	5
	7.6	Develop design documentation (for review and approval of the proposed solution)	6
	7.7	Incorporate principles of energy efficiency and environmental concepts	3
8	CONSTRUCTION DOCUMENTS		
	8.1	Understand components of construction documents	2
	8.2	Understand construction materials, their properties and influence on design and documentation	2
	8.3	Create assemblies with consideration to their properties and influence on design and documentation	6
	8.4	Create building envelope (design and detailing)	6
	8.5	Apply the principles of a project manual and its technical specifications	3
	8.6	Coordinate construction documents	4
9	PROCUREMENT AND CONTRACT AWARD		
	9.1	Summarize methods of realizing construction projects/ forms of project delivery	2
	9.2	Summarize major types of construction contracts, including purpose and obligations	2
	9.3	Evaluate bids submitted by contractors	5
	9.4	Apply process for considering and awarding construction contracts	3
10	CONSTRUCTION PHASE		
	10.1	Analyze the role of architects and others in the administration of the construction contract (office and site)	4
	10.2	Administer construction phase office tasks	4
	10.3	Administer construction phase site tasks	6
	10.4	Administer appropriate forms and documents	5
11	MANAGEMENT OF THE PROJECT		
	11.1	Apply the principles of managing an architectural project	3
	11.2	Develop and implement work plans	6
12	PROFESSIONALISM AND PROFESSIONAL PRACTICE		
	12.1	Consider external relationships in practice management	5
	12.2	Consider internal relationships in practice management	5
	12.3	Understand the role of a self-governing profession in contemporary Canadian society	2

Forms of Comprehension (Blooms Levels)	
1	Remember
2	Understand
3	Apply
4	Analyze
5	Evaluate
6	Create
	Refer to <i>Forms of Comprehension</i> for description of each level

This document should be read in conjunction with
Definitions of Competencies and Forms of Comprehension

3 Definitions of Competencies

3.1 Programming

Programming is the process of understanding and setting forth in writing the owner's requirements for a given project. Steps in this process include: establishing goals, considering a budget, collecting, organizing and analyzing data, identifying and developing approaches, and determining particular needs. Sometime owners employ the architect to assist them in preparing a functional program. The project will also be affected by public officials involved in health, welfare and safety; future tenants, and the people who will work in the built environment. Their input at the programming stage is essential to maintain an orderly and successful design process.

Typical Activities include the following:

- Seek and participate in learning opportunities with clients, such as conferences, presentations and facility tours, to increase awareness in advances in relevant facility type design and operations. Document learning for future reference and implementation.
- Establish space requirements, including determining sizes of spaces, the activities they will accommodate, their technical requirements and relationships between them.
- Evaluate and summarize data and functional requirements obtained from all sources.
- Research current literature pertaining to architectural programming.

3.2 Site Analysis

Site analysis includes land planning, urban design and consideration of environmental factors – often obtained from reports/assessments by subject matter experts. Land planning and urban design are concerned with relationships to surrounding areas and involve consideration of the physical, economic and social impact of proposed land use on the environment, ecology, traffic and population patterns. Environmental analysis takes into consideration such things as geotechnical conditions, seismic, climate, water, air and other processes or phenomena.

Typical Activities include the following:

- Analyze alternative sites to assess the feasibility of their use for a proposed project.
- Analyze specific land use and location for a project.
- Formulate the most appropriate land use strategy to achieve a desired environmental impact.
- Research site restrictions such as zoning, easements, utilities, etc.
- Participate in public hearings about land use issues and prepare reports for future reference.

3.3 Schematic Design

From the owner-approved program and proposed budget, the architect develops alternative conceptual solutions to satisfy functional, site, technical and aesthetic requirements and deal with the full range of constraints ranging from regulatory to environmental.

Typical Activities include the following:

- Develop and prepare preliminary design concepts to determine the spatial relationships that best satisfy the owner's program.
- Develop and coordinate program requirements with consultants.
- Evaluate massing, site location & orientation, response to environmental factors & regulatory requirements.
- Prepare presentation drawings and models.
- Analyze and select engineering systems.
- Participate in design review and approval meetings with clients, user groups, authorities having jurisdiction, and the community.

3.4 Engineering Systems Coordination

The architect is usually responsible for the selection and coordination of all building systems, including the engineering systems. These traditionally have included structural, mechanical and electrical systems as well as special requirements, such as telecommunications and computer applications. Responsibility for design requires the architect to coordinate the necessary engineering expertise and to integrate their designs and recommendations into the architectural designs/plans.

Typical Activities include the following:

- Evaluate construction methods and performance of different engineering systems.
- Understand safety requirements and the selection process for engineering systems.
- Participate in research, analysis and selection of engineering systems during the schematic design and development phases.
- Coordinate engineering systems provided by consultants into the construction documents produced by the architect.
- Review consultants' drawings for conceptual understanding of systems, space requirements and possible conflicts or interference of structure, ductwork, plumbing lines, electrical fixtures, etc.
- Obtain and review manufacturers' literature for engineering systems and components.
- Become familiar with relevant codes and regulatory standards applicable to various engineering systems.

3.5 Building Cost Analysis

This activity involves estimation and evaluation of the probable construction costs using a range of possible measures. They influence decisions involving basic design, selection of building products and systems and construction scheduling. Long-term maintenance, as well as sustainability of material and system selection, are additional factors that bear on development of the project.

Typical Activities include the following:

- Calculate the area and volume of a project and its characteristic components.
- Make a simplified quantity takeoff of selected materials and prepare comparative cost analyses.
- Prepare cost estimates of the project.
- Review available references and texts utilized in cost estimating.
- Prepare cost analyses for current, similar projects, using a variety of indices.

3.6 Code Research

Federal, provincial, municipal, and other local regulatory authorities issue regulations and policies governing and affecting aspects of building design, and construction. Building codes, for example, often require complex analysis and design decisions of an architect. Familiarity with such regulations and demonstrated ability to deal with such requirements in design and construction is a necessary part of every architect's skill set.

Typical Activities include the following:

- Determine which codes, regulations, etc. pertain to the project.
- Understand procedures necessary to obtain relief or variances from particular requirements as they relate to a project.
- Calculate certain variables (i.e. numbers and size of exits, stair dimensions, public toilet rooms, ramps) to satisfy code requirements.
- Determine a project's building area as well as maximum floor areas for compliance with the building code or other related ordinances.

3.7 Design Development

Development, to greater level of spatial and technical detail, of approved schematic design incorporating results of site and environmental analysis, code and cost implications and building systems selection and describing the size and character of the project – including selection of materials and specifics of engineering systems.

Typical Activities include the following:

- Prepare detailed design development drawings from schematic design documents.
- Develop outline specifications for materials, finishes, fixed equipment, fixtures, along with updated anticipated construction cost and schedule.
- Coordinate engineering systems proposed for the project.
- Attend design review and approval meetings with clients, user groups, Authorities Having Jurisdiction, etc.

3.8 Construction Documents

Documentation for the construction, contract management and handover of an architectural project, will include, but is not limited to; architectural drawings, specifications and schedules, which must conform to relevant codes and industry standards. The drawings describe in graphic form all of the essentials of the work to be done: location, size, arrangement and details of the project, its systems and materials, in compliance with applicable codes. The specifications describe in detail the materials, hardware and equipment indicated in the drawings, and include information on detailed descriptions of the product or material, conditions of installation, and standards to be met. The compliance of documentation, supplied by consultants, with codes and regulations is to be confirmed. The consistency of all project documentation (in the selection and disposition of building elements, components, finishes and fittings) with design objectives and budgetary constraints must be demonstrated.

Typical Activities include the following:

- Prepare detailed drawings, demonstrating technical skills in drawing accuracy, completeness and clarity.
- Coordinate all documents produced by the architect and the consultants.
- Assemble the finished construction documents.
- Review construction specifications, purpose and format.

- Review and understand bid forms, insurance and bonding requirements, lien provisions, and contract and its supplementary and special conditions.
- Evaluate data for products specified, including information regarding availability, cost, code acceptability and manufacturers' reliability.
- Cross-check specified products and materials for consistency with corresponding terminology and descriptions on the working drawings.
- Review and coordinate drawings prepared by others for applicability and accuracy of dimensions, notes, abbreviations and indications, and consistency.
- Review and coordinate consultants' drawings with architectural drawings and other consultants' drawings for possible conflicts and interference of plumbing lines, ductwork, electrical fixtures, etc.
- Undertake the final project review for compliance with applicable codes, regulations, etc.

3.9 Procurement and Contract Award

This process involves establishing and administering bidding procedures, issuing addenda, evaluating proposed alternatives, reviewing the qualifications of bidders, analyzing bids or negotiated proposals, reviewing the effect of cost considerations on budgeted and actual tender costs, and making recommendations for the selection of the contractor(s). The construction contract and related documents are the formal conditions that bind the parties together during the construction phase.

Typical Activities include the following:

- Review the bidding/award process stages of previous projects.
- Assist in the pre-qualification of bidders, if required.
- Receive, analyze and evaluate bids, including any alternative or unit prices.
- Establish what information and submittals are required prior to issuance of the Letter of Intent.
- Evaluate product considerations in preparing addenda.
- Meet with contractors and material suppliers to approve alternates or equals and issue relevant addenda.
- Assist Owner in preparation and negotiation of construction contracts, including the conditions of the contract for construction in order to clarify the roles of the architect, contractor, owner, bonding company and insurer in the administration of the construction phase.
- Review the contract for compatibility with client-architect agreements.

3.10 Construction Phase

During the construction phase an architect typically handles the following matters: processing contractors' applications for payment, preparing change orders, reviewing shop drawings and samples, adjudicating disputes. The architect's primary function is to conduct field reviews in order to determine if the contractor's work generally conforms to the requirements of the contract documents. To evaluate the quality of material and workmanship, the architect must be thoroughly familiar with all of the provisions of the construction contract as well the drawing and specifications.

Typical Activities include the following:

- Assemble Building Permit Application documentation for the client.
- Communicate with the Authority Having Jurisdiction to seek resolution of Building Permit issues.
- Process applications for payment and prepare architectural certificates for payment for construction claims.

- Review shop drawings, evaluate samples submitted and maintain records of all submittals.
- Evaluate requests for information and changes, interpret documents and prepare change orders.
- Resolve disputes/conflicts arising from the contract documents.
- Visit the job site and participate in observation of the work in place and material stored and prepare field reports of such routine field reviews.
- Attend job site construction meetings and assist in recording and documenting all actions taken and agreed to at such meetings.
- Participate in the substantial performance review process and assist in the deficiency list verification.
- Participate in the final occupancy field review with the owner and other involved parties and assemble documentation for occupancy.
- Review and assemble closeout documentation as required by the contract.

3.11 Project Management

The Project Management process includes the creation, maintenance and monitoring of systems to achieve timely, efficient and cost-effective delivery of the architectural project. Project Management may include establishment of project teams, the development of client and project team agreements, the identification and implementation of appropriate contractual administration and compliance monitoring regimes, and project record keeping.

Typical Activities include the following:

- Assign project management responsibilities and the project managers role in the acquisition process.
- Develop a project work plan including identification of goals, client requirements, responsibilities, as well as development of a schedule and the project record.
- Review the work plan against all project related contractual agreements.
- Develop team communication methods and frequency and maintain project files.
- Review design documentation standards and understand expected levels of documentation at each phase of the project.
- Prepare project status assessments including schedule and scope variances and actions required to maintain project budget control.
- Review the project management file for close-out activities such as contractual fulfillments, final fee for services, invoicing and modifications (e.g. change orders).
- Attend post occupancy evaluation trips to completed project sites.

3.12 Professionalism and Professional Practice

Members of self-governing professions in Canada are granted exclusive rights of title and/or practice in return for commitments to meet professional obligations. These obligations include protection of the public interest first and foremost – above expectation of reward or gain. They also include commitments to maintain one’s level of knowledge and learning throughout one’s career and to act in accordance with prescribed codes of conduct. Every practitioner is expected to know the requirements of being a member of a self-governing profession and to understand the special obligations that attach to their professional status.

Typical Activities include the following:

- Understand the Act and Bylaws of the Association*.
- Complete educational activities as required by the Association.
- Attend annual meetings and informational sessions arranged by the Association.
- Understand the structure of an office and the requirements of record keeping and financial responsibilities.
- Understand the contracts used by Architects and the level of architectural services and fees.

* Various regulatory documents (including Acts, Regulations and Bylaws) can typically be found on each Association’s website.

4 Forms of Comprehension

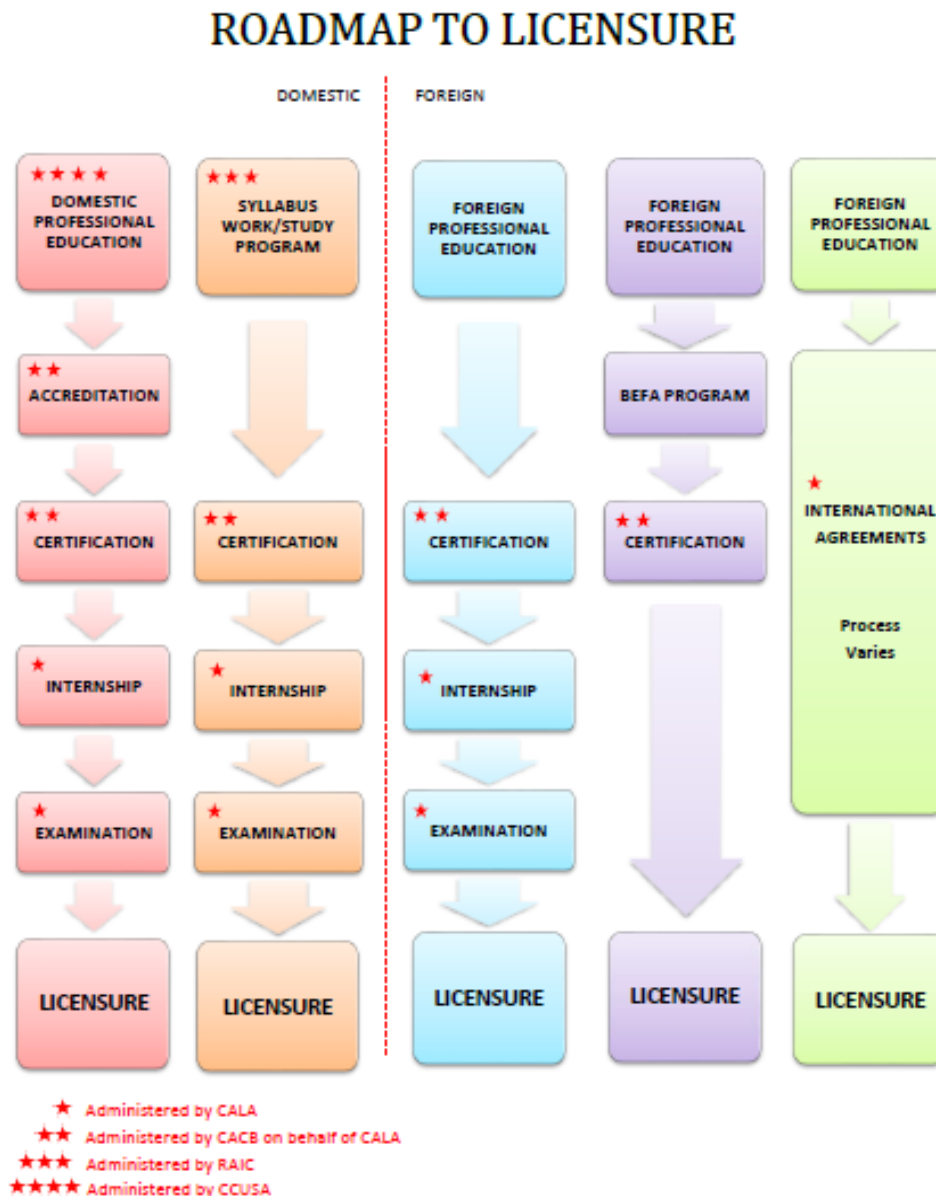
The Forms of Comprehension noted below are based on Bloom’s Taxonomy and the cognitive domain, which involves knowledge and the development of intellectual skills. It should be noted that the highest number is not necessarily the appropriate assignment for an area of knowledge or skill. For example, architects do not “create” building codes, so requiring the number 6 for that component of the competency standard would be inappropriate.

1	<p>Remember: recalling, retrieving relevant knowledge from long-term memory; remembering facts and information through memorization in approximately the form in which they were learned <i>For example, you know and are able to name, cite, describe, define (but only if recall is involved), etc.</i></p>
2	<p>Understand: perceiving the intended meaning of, explaining in your own words; interpreting information <i>For example, you can explain, summarize, describe/define (if not based solely on recall), interpret, give examples of, etc.</i></p>
3	<p>Apply: carrying out; implementing a task; using information previously learned in new situations; using data, methods, and principles previously learned to solve a problem or carry out a task <i>For example, you can use your knowledge and experience in new situations to solve, calculate, apply rules, laws, and methods, etc.</i></p>
4	<p>Analyze: breaking material or concepts into parts; determining how the parts relate to each other or to an overall structure or purpose; researching elements of a process, problem, organization, system and the relationships between/among them <i>For example, you are able to compare, contrast, explain why, classify, differentiate, select, etc.</i></p>
5	<p>Evaluate: appraising, assessing a plan or process based on specific standards and criteria for a given purpose; making judgements based on criteria and standards <i>For example, you can judge, recommend, critique, defend, appraise, propose, justify, etc.</i></p>
6	<p>Create: putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure <i>For example, you are able to create, develop, produce, plan, modify, construct, etc.</i></p>

5 Roadmap to Licensure

Within Canada, the required professional competence is normally obtained and demonstrated through a combination of formal education, supervised experience and professional examinations. However, jurisdictions may choose to exempt a candidate from some of these normal requirements if competency can be demonstrated by other reliable means.

The regulators have collectively agreed to endorse a variety of pathways to licensure in order to allow broad but comprehensive and robust access to the profession for candidates from diverse circumstances. These include options for domestic candidates and foreign candidates, and are included in the *Roadmap to Licensure* diagram.

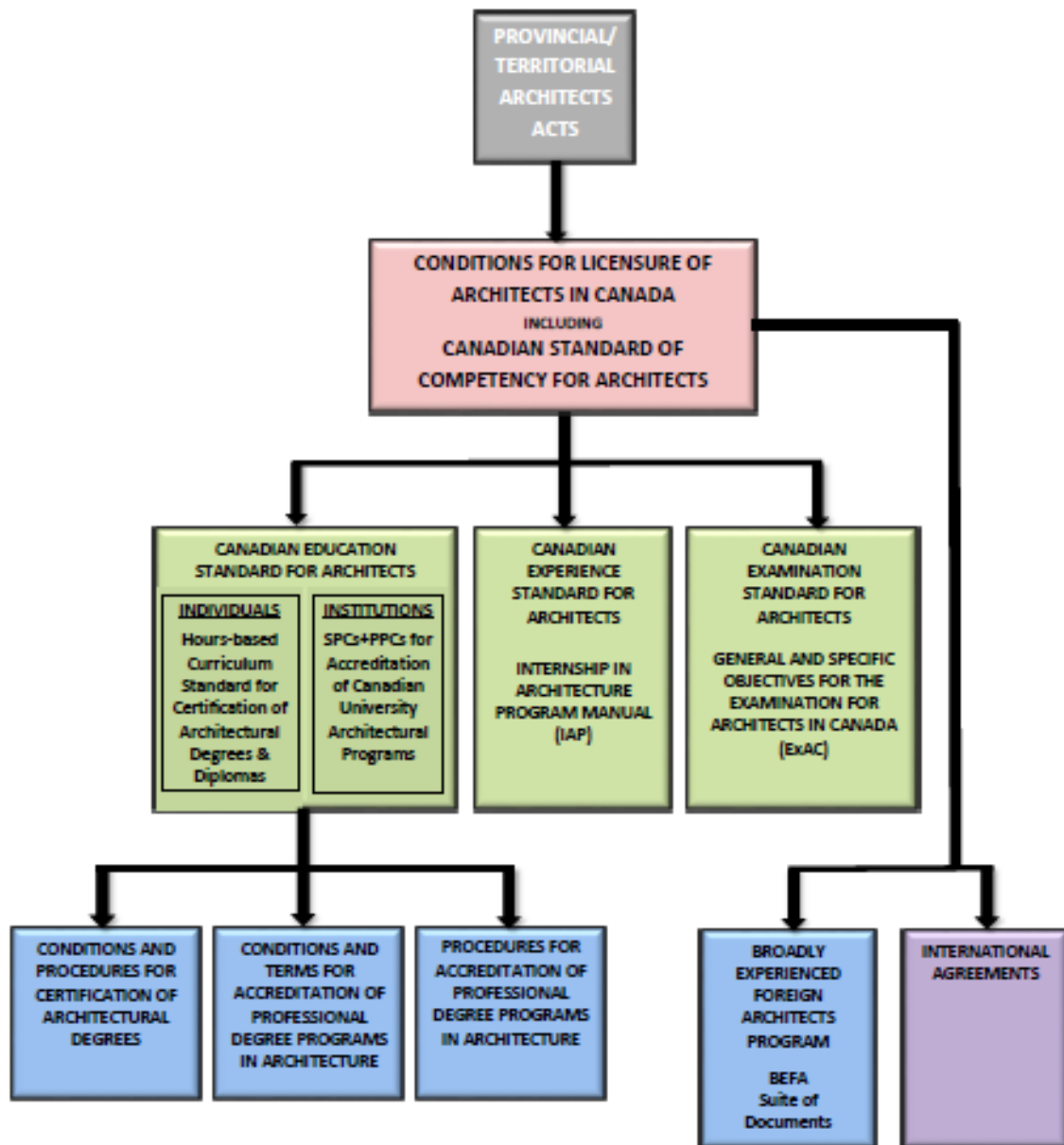


All pathways to licensure must deliver registered/ licensed professionals who have demonstrated conformity with the *Canadian Standard of Competence for Architects*. To this end, robust programs have been developed to complement the various pathways and ensure the desired outcome.

6 Components of the Pathways to Licensure and Governing Documents

Each pathway to licensure (and its components) was developed by CALA and is administered according to guiding/ governing documents as outlined in the *CALA Governing Documents Chart*. In some cases, CALA has empowered an agent to administer components of the pathway on its behalf. In addition to the overarching *Canadian Standard of Competency for Architects*, the key documents specific to the pathways are identified in the following:

CALA GOVERNING DOCUMENTS



A brief description of each pathway follows, but reference should be made to the documents relevant to each pathway for the details.

6.1 Canadian Educational Standard for Architects

The Canadian Education Standard for Architects defines the academic qualification requirements established by CALA for candidates seeking to practice architecture in Canada.

It sets out standards for professional architectural education and forms the basis for determining that the educational requirement for entry into the profession has been met. It also establishes the standards that are applied when assessing foreign degrees. Refer to *The Canadian Architectural Education Standard* for details.

6.2 Canadian Experience Standard for Architects

The experience component of the professional competence requirements has been established by CALA to be meaningful to, and effective in, a candidate's path to licensure, and is specified in the *Internship in Architecture Program (IAP) Manual*.

6.3 Canadian Examination Standard for Architects

The examination component of the professional competence requirements is embodied in the *ExAC General and Specific Objectives* and governs the Examination for Architects in Canada (ExAC), that have successfully completed the *Internship in Architecture Program*.

6.4 Broadly Experienced Foreign Architects Program

The Broadly Experienced Foreign Architect (BEFA) program, is an alternative pathway to licensure for foreign-trained architects meeting the mandatory program eligibility requirements, that assesses their broadly-based experience against the Canadian Standard of Competency for Architects.

6.5 International Agreements

Further to the pathways to licensure discussed in Section 5 above, international agreements have been negotiated between CALA and architectural authorities in other countries that allow for mutual recognition, and where the competencies provided by those jurisdictions have been determined to meet the Canadian standards.

Canadian Standard of Competency for Architects

Full Version

February 2020

Required Form of Comprehension
(See last page for details)

1	PROGRAMMING		
	1.1	Prepare an architectural functional program	3
	1.1.1	Assemble and organize components and information related to an architectural functional program	
	1.1.2	Apply the components and information required to prepare an architectural functional program for a client	
	1.2	Incorporate principles of sustainable development within an architectural program	3
	1.2.1	Identify design issues that maximize the benefits of existing environmental conditions	
	1.2.2	Apply the principles of sustainable development	
	1.3	Evaluate the architectural program	5
	1.3.1	Evaluate the feasibility of the program with respect to project constraints and opportunities	
	1.3.2	Evaluate the feasibility of the program relative to the site	
	1.3.3	Evaluate the project and construction cost, and budget implications of the program	
	1.3.4	Evaluate the program against stated client objectives	
2	SITE AND ENVIRONMENTAL ANALYSIS		
	2.1	Propose solutions to the siting of a building in relation to its environment	5
	2.1.1	Propose grading and storm water management solutions	
	2.1.2	Evaluate the siting of the building in relation to energy consumption and sustainability	
	2.1.3	Propose solutions for the siting of the building in relation to access and circulation	
	2.1.4	Evaluate the siting of the building in relation to the data derived from engineering, geotechnical and environmental reports, land surveys and land title searches	
	2.1.5	Evaluate the siting of a building in relation to zoning and other regulatory requirements	
3	SCHEMATIC DESIGN		
	3.1	Define schematic design principles and approaches	2
	3.1.1	Understand the history of architecture – globally and locally	
	3.1.2	Understand the theory of architecture – historic and current	
	3.1.3	Understand the evolution of aesthetic design	
	3.1.4	Understand the evolution of environmental theory and practice	
	3.1.5	Understand the process of community consultation	
	3.2	Analyze design principles and solutions in relation to context	4
	3.2.1	Explain social consequences – positive and negative	
	3.2.2	Explain contextual/ environmental/ community influences	
	3.3	Evaluate aesthetics of design solutions	5
	3.3.1	Evaluate massing/form and proportion/scale	
	3.3.2	Evaluate materials in relation to selection criteria	
	3.3.3	Evaluate aesthetic rigour and coherence	
	3.3.4	Evaluate siting in relation to its impact to the aesthetic of the design solution	
	3.4	Utilize conceptual and representational skills to imagine and communicate design concepts and solutions	3
	3.4.1	Convey design concept using 3D visualization	
	3.4.2	Prepare graphic representations to illustrate the design concept and solution	
	3.4.3	Prepare a physical model to validate the design concept and solution	
	3.5	Assess technical aspects of the schematic design solutions	5
	3.5.1	Assess information required for schematic design	
	3.5.2	Assess the impact of factors such as human behaviour, historic precedent and design theory on schematic design	
	3.5.3	Assess engineering services required for the schematic design of the project	
	3.5.4	Assess the scheduling implications for construction	

	3.6	Produce schematic design solutions for a project	6
	3.6.1	Create a schematic design solution that complies with building codes, specialist codes, zoning and other regulatory requirements	
	3.6.2	Develop design concepts that integrate programming requirements that establish spatial relationships	
	3.6.3	Create a schematic design solution that integrates consultant input	
	3.6.4	Evaluate design solution alternatives	
	3.6.5	Create a building site solution for a specific site, given existing physical factors and design criteria	
	3.6.6	Prepare documentation required for the client's approval	
	3.7	Consider the principles of energy efficiency and environmental impacts	5
	3.7.1	Evaluate passive and active design solutions	
	3.7.2	Evaluate strategies for compliance with applicable energy objectives	
4	ENGINEERING SYSTEMS INTEGRATION		
	4.1	Understand structural systems and their influence on design	2
	4.1.1	Outline the general principles of the structural design approach	
	4.1.2	Outline the code and regulatory requirements related to structure	
	4.1.3	Illustrate the implications of design decisions on the selection of systems, materials, technology and construction detail	
	4.1.4	Describe the influence of site and environmental characteristics on the selection, design and construction of structural systems	
	4.1.5	Illustrate the principles of primary and lateral forces and their effect on the building design	
	4.1.6	Understand soil mechanics and its influences on foundation design	
	4.2	Understand mechanical systems (passive and active) and their influence on sustainability and design	2
	4.2.1	Summarize factors affecting selection of mechanical systems	
	4.2.2	Explain code requirements relative to passive and active mechanical systems	
	4.2.3	Understand the environmental and sustainability impact of the mechanical system design	
	4.2.4	Explain the influence of the mechanical system on the overall design	
	4.3	Understand electrical systems (lighting, power supply and distribution, fire alarm systems, security and communication systems) and their influence on sustainability and design	2
	4.3.1	Rationalize the selection of lighting systems and its influence on the design in relation to the environment and sustainability	
	4.3.2	Explain the influence of power supply and distribution systems on the design in relation to the environment and sustainability	
	4.3.3	Explain the impact of fire alarm, security and communication systems on design	
	4.4	Understand civil engineering systems (water management – supply, drainage and infrastructure) and their influence on sustainability and design	2
	4.4.1	Explain the impact of the civil engineering system on sustainability, and site and building design	
4.4.2	Explain the interface with municipal systems and approval process, service agreements (where applicable), etc.		
4.5	Analyze the choice of engineering system options relative to a project	4	
4.5.1	Analyze the advantages and limitations of the choice of structural systems		
4.5.2	Analyze the advantages and limitations of the choice of mechanical systems		
4.5.3	Analyze the impact of the choice of structural, mechanical and lighting systems on the building and site design		
5	BUILDING COST ANALYSIS		
	5.1	Understand factors influencing cost	2
	5.1.1	Outline factors influencing project budget and financing	
	5.1.2	Summarize cost implications of alternate design solutions	
	5.1.3	Illustrate the cost implications of scheduling of construction	

5.2	Understand methods of estimating costs (range of options)		2
	5.2.1	Understand methods of estimating costs at various stages of a project (schematic design, design development, contract documents)	
5.3	Apply cost estimating methods to a project		3
	5.3.1	Organize resources available to prepare a cost estimate	
	5.3.2	Apply cost estimating methods to different building types and/or delivery models	
	5.3.3	Apply preferred methods of cost estimation (unit price, elemental, divisional, assembly, etc.)	
5.4	Develop cost planning/ cost control methodology		6
	5.4.1	Develop client's budget in conjunction with the program and the conditions for completing the project	
	5.4.2	Produce recommendations for the client following a value analysis	
5.5	Understand principles of life cycle costs		2
	5.5.1	Understand principles of life cycle costs relative to a project	
6	CODE RESEARCH		
6.1	Understand the scope and application of the national and local building codes to the design, construction and occupancy of a building		2
	6.1.1	Understand which parts of the code(s) apply to specific building projects	
	6.1.2	Understand the use of reference standards within the code	
	6.1.3	Understand the use of Division B Appendices within the code and/or its local equivalent	
6.2	Apply code requirements to the design process		3
	6.2.1	Apply building classification and construction requirements for a proposed building	
	6.2.2	Apply fire safety requirements for a proposed building	
	6.2.3	Apply floor area safety requirements for a proposed building	
	6.2.4	Apply barrier free requirements for a proposed building	
6.3	Apply code requirements to construction documents		3
	6.3.1	Apply code requirements for fire safety	
	6.3.2	Apply code requirements for sound separations	
	6.3.3	Apply code requirements for safety in floor areas	
	6.3.4	Apply code requirements for exits	
	6.3.5	Apply code requirements for health	
	6.3.6	Apply code requirements for barrier-free design	
6.4	Demonstrate awareness of alternate solution provisions in national and local building codes		1
	6.4.1	Have awareness of code objectives and their application	
	6.4.2	Have awareness of acceptable application of an alternative solution in building design	
	6.4.3	Have awareness of functional statements associated with a code requirement	
	6.4.4	Have awareness of documents and information required to file an alternative solution	
6.5	Apply energy-related code requirements to a project		3
	6.5.1	Apply energy-related code requirements to the design process for a project	
	6.5.2	Apply energy-related code requirements to the construction documents for a project	
7	DESIGN DEVELOPMENT		
7.1	Assess factors influencing design development		5
	7.1.1	Assess information required for design development given specific conditions	
	7.1.2	Assess building construction system choices made for a particular design	
	7.1.3	Assess material choices made for a particular design	
	7.1.4	Propose engineering services required for the design development of a given project	
	7.1.5	Develop schedules and outline specifications for materials, finishes, fixed equipment and fixtures	
	7.1.6	Assess issues related to indoor quality and energy conservation and compare alternative solutions relating to these issues	
7.2	Assess engineering systems and regulatory factors		5
	7.2.1	Assess the implications of mechanical, electrical and structural systems on design	
	7.2.2	Assess the implications of building codes on design	
7.3	Develop a solution that responds to the factors influencing the design		6
	7.3.1	Develop detailed design solutions in response to project criteria	

7.4	Evaluate alternatives in finalizing a detailed solution	5
7.4.1	Evaluate aesthetic assumptions as they apply to detailed solutions	
7.4.2	Evaluate emotional, psychological and spatial implications of a detailed solution	
7.4.3	Evaluate final form and function	
7.4.4	Evaluate solutions in relation to contextual, social, environmental and other criteria/constraints	
7.5	Evaluate detailed solutions with regards to client/user group program needs	5
7.5.1	Evaluate spatial implications of detailed solutions	
7.5.2	Evaluate spatial inter-relationships of detailed solutions	
7.6	Develop design documentation (for review and approval of the proposed solution)	6
7.6.1	Develop appropriate documentation for client approval	
7.6.2	Develop appropriate documentation for authorities' approval	
7.6.3	Produce communication methodology with clients and user groups	
7.7	Incorporate principles of energy efficiency and environmental concepts	3
7.7.1	Apply the principle to exterior wall assemblies	
7.7.2	Evaluate the building in relation to various sustainability programs	
8	CONSTRUCTION DOCUMENTS	
8.1	Understand components of construction documents	2
8.1.1	Explain components of project manual (bidding requirements, contract forms, contract conditions and specifications)	
8.1.2	Explain components of working drawings	
8.1.3	Explain hierarchy of importance among various components of construction documents	
8.2	Understand construction materials, their properties and influence on design and documentation	2
8.2.1	Understand appropriate use of materials for a given project	
8.2.2	Understand structural properties of materials (wood, metal, concrete, masonry)	
8.2.3	Understand the properties of different types of assembly materials (wood, metal, concrete, masonry)	
8.2.4	Understand the properties of main types of insulating materials	
8.2.5	Understand the properties of main types of air, vapour and water barriers	
8.2.6	Understand the properties of main types of finishing materials	
8.2.7	Understand the impact of materials and processes on health and environment	
8.3	Create assemblies with consideration to their properties and influence on design and documentation	6
8.3.1	Develop acoustic assemblies using sound-rating requirements	
8.3.2	Create fire-resistant building and fire stop assemblies	
8.4	Create a building envelope (design and detailing)	6
8.4.1	Select and assemble the components of a building envelope	
8.4.2	Design assemblies in relation to thermal resistance, moisture control and air tightness	
8.4.3	Design approach to glazing systems	
8.4.4	Apply building code requirements to non-combustible cladding and insulation	
8.5	Apply the principles of a project manual and its technical specifications	3
8.5.1	Develop a coordinated and complete project manual, including technical specifications	
8.5.2	Select bidding requirements and general conditions applicable to the project (contract forms, contract conditions, etc.)	
8.5.3	Apply principles related to writing an appropriate specification	
8.6	Coordinate construction documents	4
8.6.1	Review, modify and coordinate architectural construction documents (products, material assemblies) to standards and codes	
8.6.2	Review, modify and coordinate architectural construction documents for compliance with project criteria (cost, timing, durability, aesthetics, performance, sustainability and environmental conditions)	
8.6.3	Coordinate architectural documents with sub-consultant documents (structural, mechanical, electrical, etc.)	

9	PROCUREMENT AND CONTRACT AWARD		
	9.1	Summarize methods of realizing construction projects/ forms of project delivery	2
	9.1.1	Summarize common forms of project delivery	
	9.2	Summarize major types of construction contracts, including purpose and obligations	2
	9.2.1	Compare different type of construction contracts	
	9.2.2	Explain the purposes of common CCDC contracts as they relate to project delivery methods	
	9.2.3	Describe the responsibilities of parties to, or referenced in, a construction contract (owner/client, contractor, consultant, etc.)	
	9.3	Evaluate bids submitted by contractors	5
	9.3.1	Clarify the architect's responsibility to the client in making recommendations	
	9.3.2	Evaluate submitted tenders for technical compliance	
	9.3.3	Explain bid and performance bonds and their role in the tendering process	
	9.3.4	Prepare required post-tender addenda and contract award documents	
	9.4	Apply process for considering and awarding construction contracts	3
	9.4.1	Compare responsibilities of each party involved in the tendering process	
	9.4.2	Clarify the role of local construction associations in the tendering process	
	9.4.3	Prepare documentation required during the tendering process (addenda, clarifications, etc.)	
	9.4.4	Apply the process of awarding a construction contract	
10	CONSTRUCTION PHASE		
	10.1	Analyze the role of architects and others in the administration of the construction contract (office and site)	4
	10.1.1	Clarify the roles and responsibilities of the architect and others in the administration of the construction contract	
	10.1.2	Select mechanisms to resolve differences in interpretation, disputes and conflicts arising from the contract documents	
	10.1.3	Identify steps to assemble evidence in preparation for arbitration or court proceedings	
	10.1.4	Clarify contracts and professional obligations related to the observation of construction	
	10.2	Administer construction phase office tasks	4
	10.2.1	Administer tasks required in the construction phase (from initial construction meeting, through construction and close out, until end of warranty period)	
	10.2.2	Analyze documentation required from the contractor prior to commencement of construction	
	10.2.3	Administer tasks involved in processing payment for work	
	10.2.4	Administer tasks involved in review of shop drawings and submittals	
	10.2.5	Administer the terms of the contract related to deficiencies, take-over procedures, commissioning, indemnification and warranty	
	10.3	Administer construction phase site tasks	4
	10.3.1	Administer tasks related to the construction phase on site (from initial construction meeting, through construction and close out, until end of the warranty period)	
	10.3.2	Select procedures for monitoring construction progress	
	10.3.3	Administer tasks related to field review	
	10.3.4	Administer tasks related to contract closeout, takeover and occupancy	
	10.3.5	Administer tasks related to hazardous materials	
	10.3.6	Understand the responsibilities of the contractor and the architect relative to site safety	
	10.4	Administer appropriate forms and documents	5
	10.4.1	Prepare certificates for payment	
	10.4.2	Select and prepare contemplated/proposed changes, change directives and changes orders	
	10.4.3	Prepare other relevant forms or reports (field review, final, review, etc.)	
	10.4.4	Evaluate claims of substantial performance/completion	
	10.4.5	Appraise professional obligations relating to lien and other related legislation	
	10.4.6	Assess professional obligations related to letters of assurance/schedules (if applicable)	

11	MANAGEMENT OF THE PROJECT		
11.1	Apply the principles of managing an architectural project		3
	11.1.1	Implement a project management process	
	11.1.2	Organize role(s) of the individuals involved in a project	
	11.1.3	Organize the contents of a project file	
11.2	Develop and implement work plans		6
	11.2.1	Create and implement the main components of a work plan	
	11.2.2	Organize essential elements of effective team management (communications, objectives, etc.)	
	11.2.3	Create quality assurance process and quality control processes for a project	
12	PROFESSIONALISM AND PROFESSIONAL PRACTICE		
12.1	Consider external relationships in practice management		5
	12.1.1	Assess management of consultants, personnel and teams	
	12.1.2	Establish fees for services relative to a project	
	12.1.3	Evaluate consultant service agreements	
	12.1.4	Demonstrate negotiation and dispute resolution skills	
12.2	Consider internal aspects of practice management		5
	12.2.1	Understand the business of (legal structure options for) architectural practice in relevant jurisdiction(s)	
	12.2.2	Understand finance, accounting and legal requirements for successful professional practice	
	12.2.3	Understand financial forecasting and planning for professional firm success	
	12.2.4	Assess risk management, insurance and professional business ethics	
	12.2.5	Evaluate human resource and administration planning	
	12.2.6	Apply human resource management – fair workplace, human rights, diversity and equity	
	12.2.7	Apply strategic management of information technology	
	12.2.8	Describe organizational management	
	12.2.9	Describe office administration	
12.3	Understand the role of a self-governing profession in contemporary Canadian society		2
	12.3.1	Understand relevant Architects Act, and related documents	
	12.3.2	Understand the implications and obligations of a self-governing profession	
	12.3.3	Understand the legal, professional and ethical obligations of an architect as a member of a self-governing profession, including competency and conduct requirements	

This document should be read in conjunction with
Definitions of Competencies and Forms of Comprehension

Forms of Comprehension (Blooms Levels)

- 1 Remember
- 2 Understand
- 3 Apply
- 4 Analyze
- 5 Evaluate
- 6 Create

Refer to
Forms of Comprehension
for description of each level