CWB Group x Building Officials' Association of B.C. (BOABC)

CSA Certification Requirements For Prefabricated Buildings, Modules, And Panels

June 26, 2025

Agenda

- CWB Group Overview
- Modular Construction Standards
- CSA A277 Certification Standard
- Building Material Certification Standards
- Engagement Benefits
- Questions

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CWB Group Overview

Who We Are

The Canadian Welding Bureau (CWB) Group is an **industry-supported private sector not-for-profit** organization with headquarters in Milton, ON and offices across Canada.

CWB provides:

- **Welding and joining certification;**
- **Management systems registration; and**
- **Multiple training services to support labour skills related to welding.**

The Standards Council of Canada accredited CWB as a certification body for the administration of Canadian Standards Association welding standards.

CWB is a trusted global leader in welding certification and education with a strong focus on public safety.

Edison Welding Institute (EWI): Is a US-based organization that provides innovative applied R&D and engineering services to industry and government with approximately 150 staff.

In 2022, CWB Group and EWI entered an affiliate partnership, allowing both organizations to maximize their value proposition to clients, employees and partners.

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Our Structure:

CWB Association: National **member-driven** association mandated to promote and support the welding and joining industry.

CWB Education: CWB Education boasts over 18 core products, **resource publications, and training courses** to support the industry.

CWB Certification: Certifies companies, inspection organizations, inspectors, and welding consumables through a review and qualification process to ensure that they meet the requirements for ~~a~~ variety of products, safety codes and standards.

CWB Consulting: A welding **engineering technical group of experts** sharing their knowledge and training for welders and industry

CWB Registration: Auditing and ISO certification services that cover over 40 industry sectors throughout Canada and the U.S.

CWB Welding Foundation: A national registered **charity** that delivers a **suite of programs** and supports initiatives for **youth, underrepresented populations and educators** to advance welding skills and the trade in Canada.

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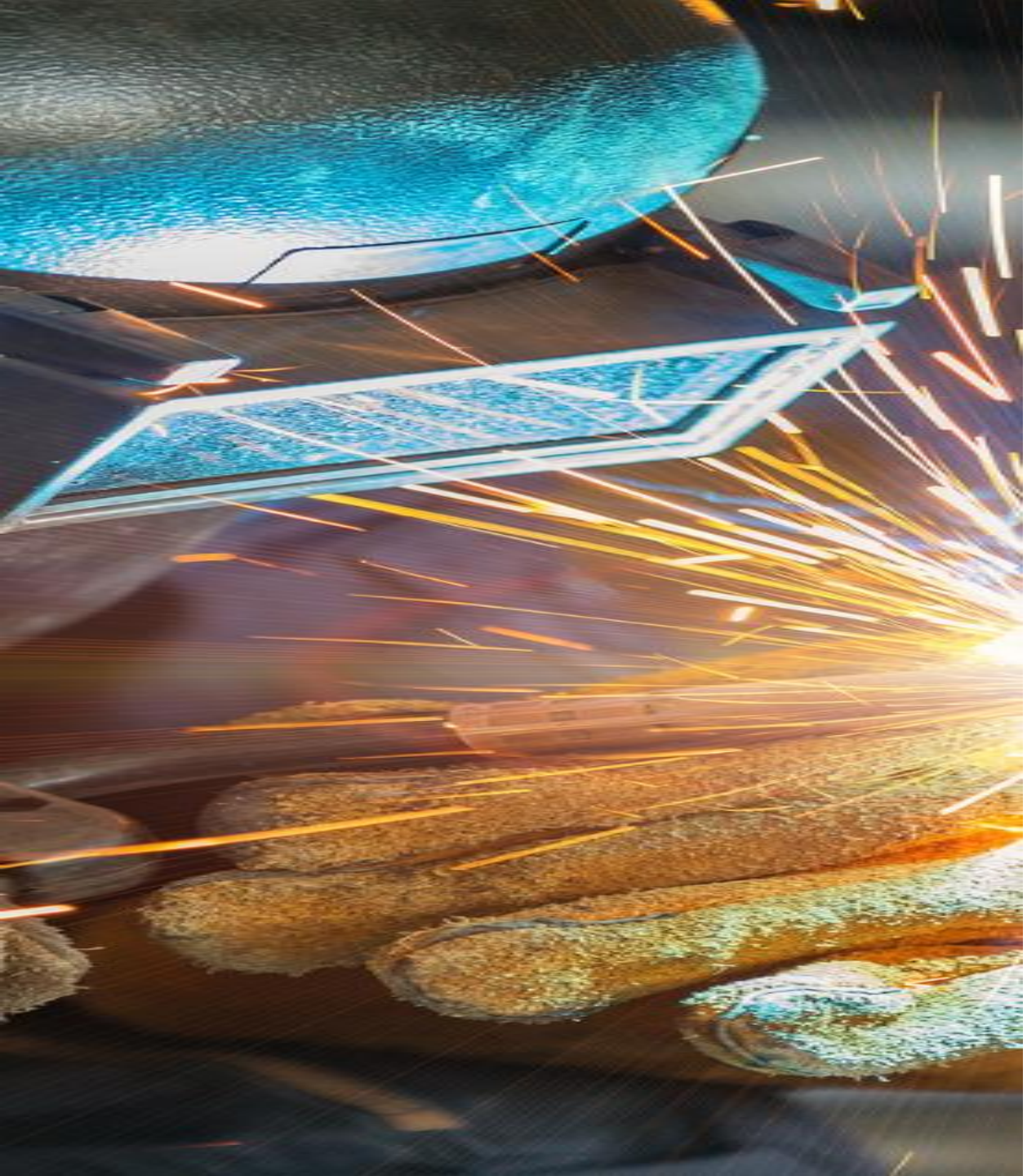

CWB Group's Value Proposition

A comprehensive and integrated global service for CSA welding-related standards to the welding and joining industry.

CWB's value proposition is expressed by four distinct elements:

- **Technical expertise:** built on our legacy of pioneering innovation to address and overcome the dire welding technical challenges faced by our clients.
- **Local resources:** that deliver a consistent standard of quality with precision, pace, and expertise - always operating with safety in mind**.**
- **Full breadth of welding services:** to satisfy the multiple welding needs of our customers**.**
- **Innovative technology:** that provides end-to-end welding intelligence to inform better, faster decision-making and to deliver our solutions, knowledge and experience to our clients and unlock latent value in clients' supply chains.

CWB supports its clients across their supply chains to eliminate the risk of expensive and debilitating quality failures thus minimizing your total cost of quality.

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Modular Construction Standards

2020 National Building Code

Division A of the NBC

Application of this Code

- Except for farm buildings, this Code applies to both site-built and factory-constructed buildings. (See Note A-1.1.1.1.(2).)

- "Factory-constructed" is not defined in the NBC

- CSA A277 defines "factory" as: "a manufacturing facility that provides protection of construction materials, components, equipment, and products against adverse environmental effects during storage and fabrication."

Division C of the NBC

2.2.7.5. Off-Site Review

Where a *building* or component of a *building* is assembled off the *building* site in such a manner that it cannot be reviewed on-site, off-site reviews shall be provided to determine compliance with this Code.

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Administrative And Technical Standards

Administrative Standards

- Compliance Assurance
  - CSA A277, *Procedure for Certification of Prefabricated Buildings, Modules and Panels*
- Delivery Process
  - CSA Z250, *Process for Delivery of Volumetric Modular Buildings*
- Compliance Information Guide
  - CSA Z252, “Volumetric modular construction—guide to compliance and approval processes”. Best practices for inspecting and approving modular construction projects

Technical Standards

- Single-storey homes
  - CSA Z240 MH Series, *Manufactured homes*
- Surface-mount foundations
  - CSA Z240.10.1, *Site Preparation, Foundation and Installation of Buildings*

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Regional References

The table below provides information on which provinces or territories require CSA A277 certification, and where it is recognized either by provincial or territorial regulation or through municipal policy or regulation as of May 2024

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL	YT	NT	NU
Required		✓				✓					✓		
Recognized	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓

In case there are no codes in place, it is mandatory to follow the NBCC (National Building Code of Canada) or any other relevant codes.

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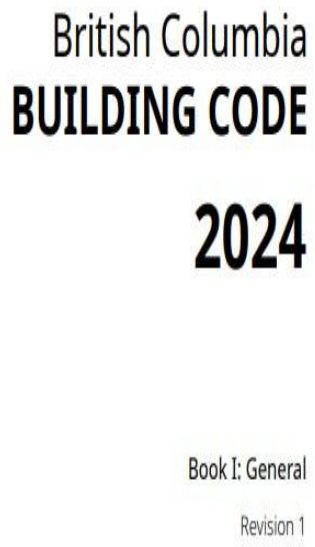
2024 British Columbia Building Code



Part 1 Compliance

This Code applies to both site-built and factory-constructed buildings. (See Note A-1.1.1.1.(3).

A-1.1.1.1.(3) Factory-Constructed Buildings. The British Columbia Building Code applies the same requirements to site-built and factory-constructed buildings

If a factory-constructed building bears the label of an accredited certification agency indicating that compliance with the National Building Code has been certified using the CSA A277 procedure, the accepting authority will have some assurance that the concealed components do not require re-inspection on site.

BRITISH COLUMBIA | Ministry of Housing

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CSA Z250: Process for Delivery of Volumetric Modular Buildings

- Describes processes for the delivery of permanent modular buildings, where partial or complete modules are constructed in the factory, delivered, and installed on-site.
- Specifies procedures for
  - design, quality control and approvals
  - logistics, transportation and storage
  - non-modular and modular site work
  - lifting, placement and setting
  - installation and finishing
  - commissioning and handover
- Does not cover in-factory certification—this is covered in CSA A277
- CSA Z250 provides a framework for structural connections and welding certification programs for installing on-site factory-constructed modular buildings and modules for panelized buildings.
- The structural connections shall be made following: CSA S16, CSA S157, CSA S136, CSA A23.3, CSA W59, or CSA A660 as applicable.
- The requirements for fabrication, repairs and modification of modular buildings should be performed following CSA W47.1, CSA W47.2, CSA W55.3, CSA W186, CSA W59. and CSA W59.2 as applicable.

CSA Z240 MH Series-16 Manufactured Homes

Z240.0.1-16 General requirements for manufactured Homes

This Standard specifies general requirements for manufactured homes, including technical requirements, and requirements on quality control, markings, and provision of printed instructions

Z240.1.1-16 Vehicular requirements for manufactured homes

This Standard specifies minimum vehicular requirements for manufactured homes and covers couplings, tongues, A-frames, and limited-use or returnable running gear

Z240.2.1-16 Technical requirements for manufactured homes

This Standard specifies the minimum requirements for materials, products, equipment, and practice

Z240.4.1-16 Installation requirements for oil- and gas-fired appliances in manufactured homes

This Standard applies to the factory installation of oil- and gas-fired appliances, equipment, components, accessories, piping and tubing in manufactured homes, and specially designed or modified units.

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CSA A277 Certification Standard

Understanding CSA A277 Certification Standard

- A modular building refers to a structure designed and built in sections or modules within a manufacturing facility.

- In Canada, modular buildings have a specific certification designation known as **CSA A277**

- **CSA A277 -Procedure for Certification of Prefabricated Buildings, Modules and Panels**

  - The CSA A277 standard is a certification standard and **NOT A BUILDING CODE**.
  - Provides a framework for certification programs
  - Enables conformity assessment
  - Applies to residential and non-residential buildings
  - Consistent with CAN/CSA-ISO 9001
  - Discussed in NBC A-1.1.1.1.(2) Division A
  - The certification may be relied on to confirm compliance with the required regulations.

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Understanding CSA A277 Certification Standard

- The certification is the primary standard for offsite construction compliance assurance, which complements the required on-site inspections and testing.

- The purpose of CSA A277 is to ensure that modular homes are built to a consistently high standard of quality, safety, and durability

- **Local codes or regulations in force**

  Where codes or other regulations addressing building design and construction are in force at the installation location, prefabricated buildings, prefabricated modules, and prefabricated panels shall be designed and constructed to comply with those codes and regulations as applicable.

- **No local codes in force**

  Meet the National Building Code or CSA Z240 MH Series and other applicable national codes.

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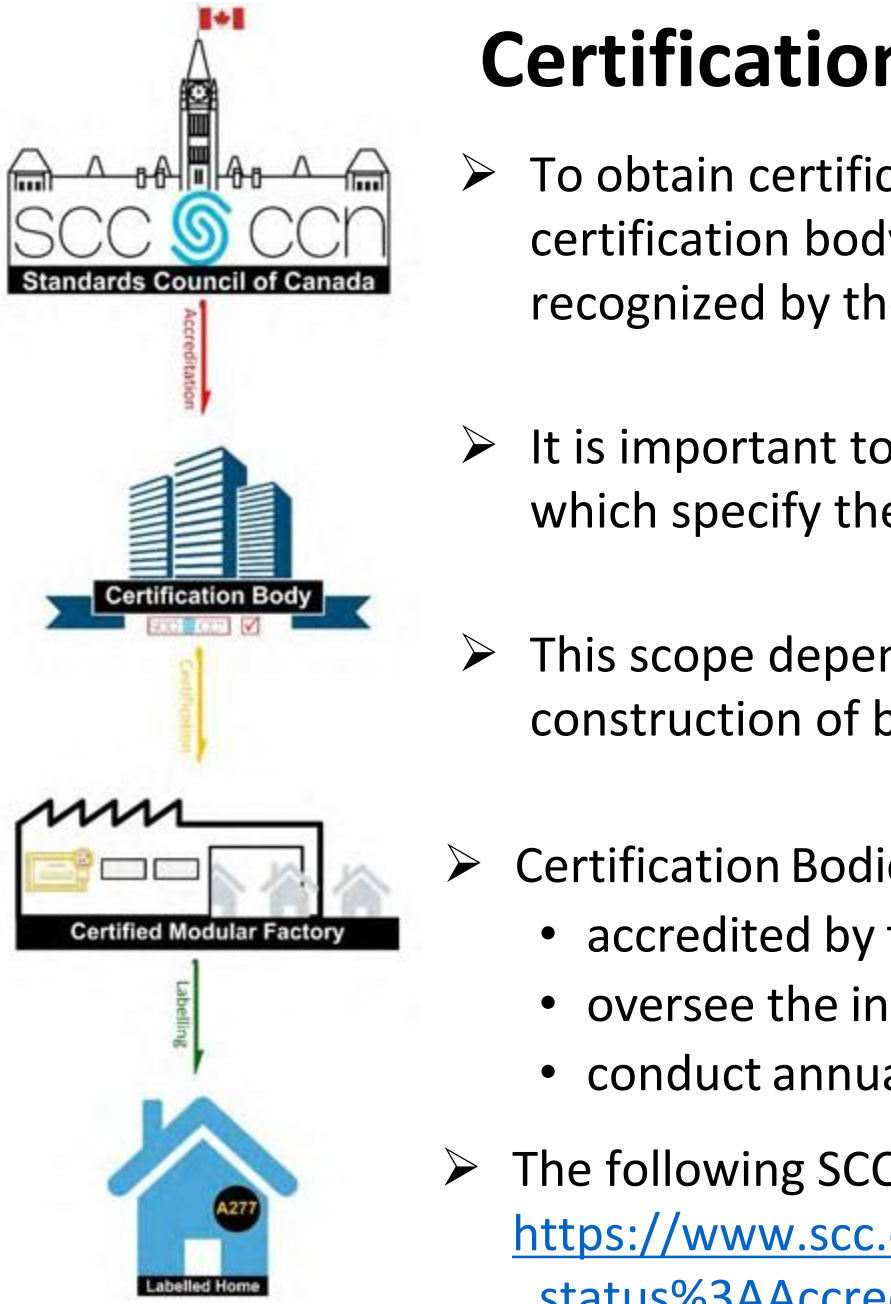
Certification Body Accreditation



- To obtain certification for CSA A277, manufacturing facilities must choose a certification body that is accredited by the Standards Council of Canada (SCC) and recognized by the AHJ.
- It is important to carefully review the certification body's accreditation and scope, which specify the types of products the certification body is qualified to certify.
- This scope depends on the certification body's ability to assess the design and construction of buildings, modules, and panels with varying levels of complexity
- Certification Bodies
  - accredited by the Standards Council of Canada
  - oversee the in-plant quality process
  - conduct annual audits and random inspections
- The following SCC website link lists the accredited certification bodies for a given scope. https://www.scc.ca/en/search/accredited_bodies/MODULAR?f%5B0%5D_status%3AAccredited

Product Labelling

- The certification body labels the buildings, modules, and panels before shipping them from the manufacturing facility.
- The label serves as proof of compliance with the requirements of CSA A277 standards.
- The label indicates that the building module and panel were produced in a certified manufacturing facility and meet applicable local codes and regulations.
- The label assures building officials and end-users that the concealed components of a building module or panel that were constructed in a manufacturing facility do not require re-inspection on-site.

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Building Material Certification Standards

Images sourced from CSA Group

Building Material Certification Standards

- Manufacturing facilities can construct buildings, modules, and panels using any building material, as long as they comply with the requirements of the building code, regulation or standard that applies at the installation site.

- Manufacturing facilities should also be certified by other standards if they produce buildings, modules, and panels made of other materials (steel, aluminum or concrete).

- In addition to having CSA A277 certification, manufacturing facilities should maintain CWB certification following the table below. This certification should be based on the building material chosen for the project and the applicable design code.

CWB Certification Requirements for Prefabricated Buildings, Modules, and Panels to CSA A277							
Design Delivery	Design Codes	Steel				Aluminium	
		S16 - Structures & S136 - Cold Form			A23 Series - Concrete	S157	
	Certification standards	A660	W47.1	W55.3	W186	W47.2	W55.3
Building "Owners/ EPC Design"			✓	✓	✓	✓	✓
Building "Manufacturers Design"		✓	✓	✓	✓	✓	✓

✓ - CWB certification required Blank - CWB certification not required
W47.1:Arc Welding of Steel, W47.2: Arc Welding of Aluminum, W55.3: Resistance Welding of Steel and Aluminum, W186: Arc Welding of Reinforcement for Concrete Construction

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CSA Standard References

STEEL BUILDING SYSTEMS

National & Provincial Building Codes-
Section 4.3.4.3
Steel Building Systems
"Steel building systems shall be manufactured by companies certified in accordance with the requirements of CSA A660, 'Certification of Manufacturers of Steel Building Systems' "

- CSA A660 Certification of Manufacturers of Steel Building Systems
  - Clause 8.2 Conformance
    - CSA W55.3 Certification of Companies for Resistance Welding of Steel and Aluminum

STRUCTURAL STEEL

National & Provincial Building Codes-
Section 4.3.4.1
Design Basis for Structural Steel
"Buildings and their structural members made of structural steel shall conform to CAN/CSA S16, Design of Steel ' Structures "

- CSA S16 Design of Steel Structures
  - Clause 16.5.15 Joist Fabrication
  - Clause 16.8.5 Installation of Steel Deck
  - Clause 24.3 Fabricator and Erector Qualification
  - Clause 24.2 Resistance Welding
    - CSA W55.3 Certification of Companies for Resistance Welding of Steel and Aluminum
    - CSA W47.1 Certification of Companies for Fusion Welding of Steel

COLD FORMED STEEL

National & Provincial Building Codes-
Section 4.3.4.2
Design Basis for Cold Formed Steel
"Buildings and their structural members made of cold formed steel shall conform to CAN/CSA S136 North American Specification for the Design of Cold Formed Steel Structural Members"

- CSA S136 North American Specification for the Design of Cold-formed Steel Structural Members
  - Clause J2a Welded Connections

CONCRETE

National & Provincial Building Codes-
Section 4.3.3.1
Design Basis for Plain, Reinforced and Pressed Concrete
"Buildings and their structural members made of plain, reinforced or prestressed concrete shall conform to CSA A23.3 Design of Concrete Structures"

- CSA A23.3 Design of Concrete Structures
  - CSA A23.1 Concrete Materials and Methods of Concrete Construction
    - Clause 6.6.10 Welding of Reinforcement
      - CSA W186 Welding of Reinforcing Bars in Reinforced Concrete Construction
    - Clause 6.7.4 Welding of Hardware
      - CSA W59 Welded Steel Construction (Metal Arc Welding)

STRUCTURAL ALUMINUM

National & Provincial Building Codes-
Section 4.3.5.1
Design Basis for Aluminum
"Buildings and their structural members made aluminum shall conform to CSA S157 Strength Design in Aluminum"

- CSA S157 Strength Design in Aluminum
  - Clause 18.8 Welding
    - CSA W47.2 Certification of Companies for Fusion Welding of Aluminum
    - CSA W59.2 Welded Aluminum Construction

What about Other National Standards / Equivalency?

- There are no domestic or international equivalents to CWB certification requirements for structural metal or pre-engineered buildings.
- Other national systems, such as that of the American Welding Society (AWS) do not include key concepts such as independent and ongoing verification and welding supervisors/engineer approval.
- Regardless of the country of manufacture, structural metal destined for Canada must comply with CSA Standards.
- CWB certification is available to fabricators worldwide.

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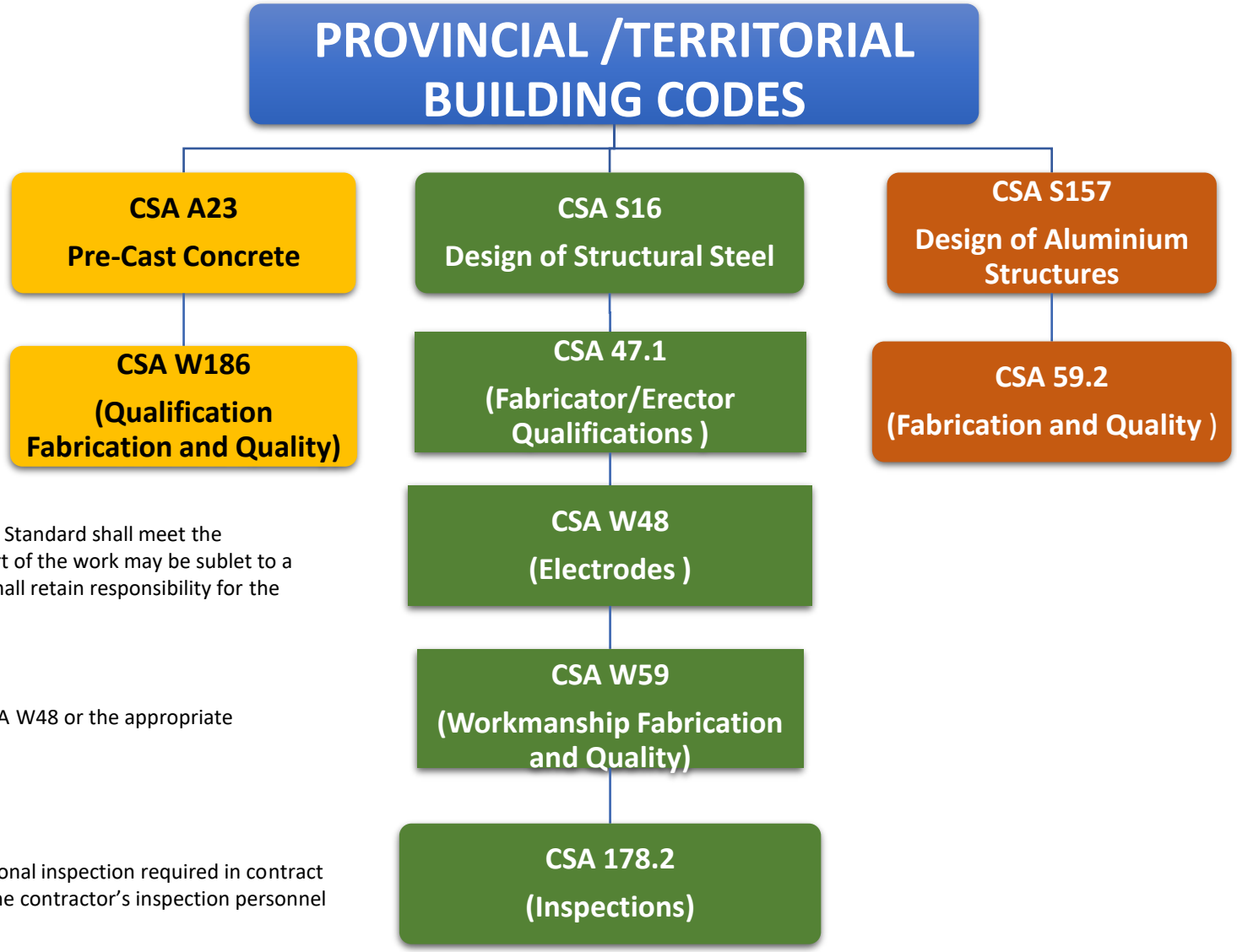
Steps to Determine CSA Welding Standard

3-step process to determine the welding standards

1. Determine the **design standard** used for the design of the structure
2. Determine the **fabrication and erector qualification** required for Welding the structure
3. Determine the **workmanship,** fabrication techniques, and quality of welds requirements required to evaluate the welding of the structure.



CSA S16
24.3 Fabricator and erector qualification
Fabricators and erectors responsible for welding structures fabricated or erected under this Standard shall meet the requirements of CSA W47.1 (Division 1 or Division 2), CSA W55.3, or both, as applicable. Part of the work may be sublet to a Division 3 fabricator or erector; however, the Division 1 or Division 2 fabricator or erector shall retain responsibility for the sublet work.

CSA W 47.1
9.3 Consumables
Electrodes used for the test shall be certified to the requirements of the latest edition of CSA W48 or the appropriate standards in the AWS A5 Series of Standards.

CSA W59
7 Welding inspection
7.1 General 7.1.1 Contractor's inspector
The contractor shall be responsible for visual inspection of all welds regardless of any additional inspection required in contract documents. Such inspection shall be carried out by the contractor's inspection personnel.The contractor's inspection personnel may be
a) an individual(s) deemed competent by the contractor;
b) a certified welding inspector certified in accordance with CSA W178.2 or in conformance with the requirements of AWS QC1.

CSA S16
24.1.2 Workmanship requirements
Unless otherwise specified in this Standard, workmanship, fabrication techniques, and quality of welds shall meet the requirements of CSA W59.

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Why CWB Certification

CWB certification is crucial for suppliers of EPC and Owner companies

- ✓ Reduces Your Liability
- ✓ Decrease Risk Of Non-compliance With Laws And Regulations
- ✓ Reduces Project Delivery Issues
- ✓ Independent Verification Of Suppliers Welding Processes And Operations
- ✓ Fosters Team Commitment And Promotes Best Practices
- ✓ Ensures Suppliers Deliver High-quality Welding Work
- ✓ Improves The Quality Of Processes And Products In Your Supply Chains
- ✓ Reduce Risk For Clients And Shareholders

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CWB Certifications Divisions

Fabricators can be certified to 1 of 3 "divisions".

	Division 3	Division 2	Division 1
Qualified Welders	Yes	Yes	Yes
Qualified Welding Supervisor(s)	Yes	Yes	Yes
Qualified Welding Engineer(s)	No	Yes – Retained	Yes - Employed
Accepted Welding Procedures	Yes	Yes	Yes
Quality Management System	Yes	Yes	Yes

Division 3 a welding engineer is not required. The company cannot fabricate any bridge components and cannot be responsible for the fabrication of any buildings and building service components.

BC allows Div 3 for certain bridge components and secondary structure and field welding.

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CWB Certifications

Fabricator and Erector

There are 4 available programs for fabricators and erectors :

1. CSA W47.1 "Certification of Companies for the fusion welding of steel"
2. CSA W47.2 "Certification of Companies for the fusion welding of aluminum"
3. CSA W186 "Welding of reinforcing bars"
4. CSA W55.3 "Certification of companies for resistance welding of steel and aluminum"

Manufacturers

1. CSA A660 "Certification of manufacturers of steel building systems"

Inspection Organizations

1. CSA W178.1 "Certification of welding inspection organizations"

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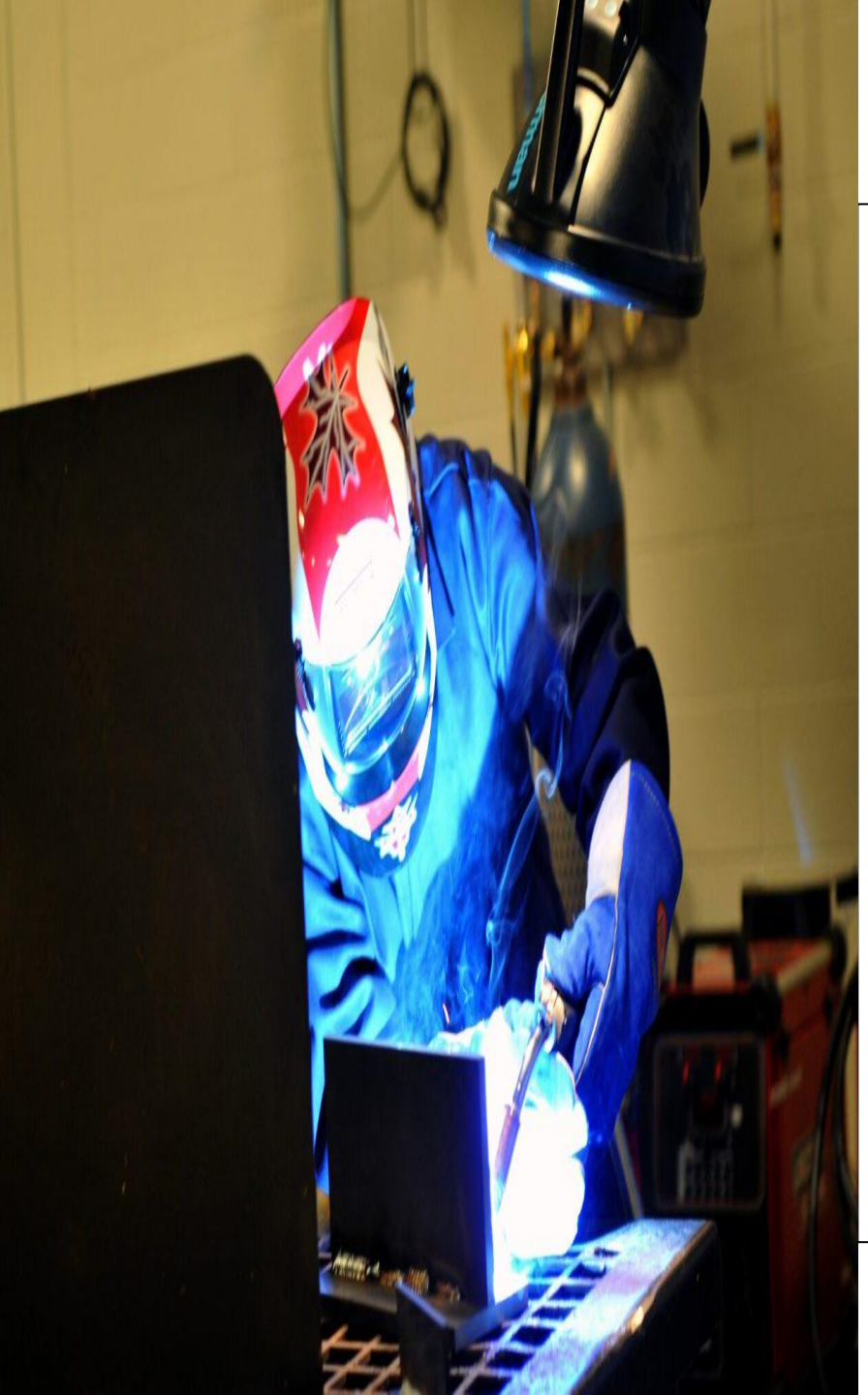

Elements of CWB Certifications Program

- There are 5 key elements to a fabricator and erectors certification program:
  1. Qualified welder(s)
  2. Qualified welding procedures
  3. Qualified welding supervisor(s)
  4. Qualified welding engineer(s)
  5. Quality Management system

- In practical terms, this means that a **welding fabricator must have**:
  - **Competent individuals** making the welds, who are…
    - Following **proven and documented "recipes",** in a shop…
      - **Overseen by competent "bosses**".

- When all Five are in place, high-quality welds will result equating to public safety
  - Certification ensures these key elements are in place and working

CWB Certification Pathway

Company size	Steps	Steps Description	Duration	Cost
Large Medium Small Sole Proprietor	1	**Complete the Forms** • Submit CWB Forms 151, 155, and 159 If applicable	Between 3 to 6 months from the submission of the application form	**Within Canada** **Initial**: CAN $ 3500 **Annual**: CAN $ 2000 **International** **Initial**: US $ 8– 12 K **Annual**: US $ 3355 * The above amount will vary based on the number of welders under the company work scope.
	2	**Qualify your Welding Supervisor(s)** • Minimum of five (5) years of welding-related experience • Complete written examinations on welding symbols, weld faults, quality control, and inspection methods, and codes and standards .		
	3	**Qualify your Professional Engineer(s)** • Div 1 – Employed, Div 2 – Retained, Div 3 – Not required(Designated Supervisor assumes this role)		
	4	**Submit your Company's Welding Procedures for Review and Approval**		
	5	**Qualify your Welders as per the submitted datasheet**		
	6	**Audit Review and Recommendation for Certification audit**		

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Maintaining CWB Certification

- Certification is an ongoing process.

- To maintain certification, companies must:

  - Qualify new and check test existing welders every 2 years
  - Submit new or revised welding procedures, as required
  - Continually verify visual acceptance of the welded product(s)
  - Ensure any CWB "scope" work is subcontracted to a CWB-certified company

- Bi-annual CWB verification audits are conducted

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Verification of CWB Certification

- Verify company, inspector & consumable certification, and welding engineer qualification status on the CWB website

  Select (Certified Directory Search | CWB Group)

- **Ask fabricators/erectors for their current Letter of Validation**
  - Annual letter of validation issued to certified clients
  - Verify the date of certification validity
  - Verify the scope of certification relates to buildings

- **Call the CWB**
  - 1.800.844.6790

- **The following documents are part of the certification program, but none can be used on their own as proof of certification**
  - Welder Tickets
  - Welding Procedures
  - Wall Certificates
  - Welding Supervisor Certificates

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LETTER OF VALIDATION

The CWB acknowledges that

ABC Welding Company

123 Main St

Anytown, ON Canada

is certified to **CSA Standard W47.1**

Certification of Companies for Fusion Welding of Steel"

In DIVISION 2

for the period **April 04, 2021** to **May 03, 2022**

Company Code: ABCDE1

Scope:

Custom fabrication, structural steel fabrication and industrial maintenance. Custom fabrication at customer request.

Registrar

8260 Parkhill Drive, Milton, Ontario L9T 5V7
1-800-844-6790 | Int 905-542-1312 | Fax: 905-542-1318
Email: info@cwbgroup.org | Web: www.cwbgroup.org

Only the company name at the location indicated on the CWB certificate is certified

Certification Standard

Division 1 employs a welding engineer

Division 2 retains a welding engineer

Division 3 a welding engineer is not required. The company cannot fabricate any bridge components and cannot be responsible for the fabrication of any buildings and building service components.

Period of Certification

Like all quality systems, the work that falls within the control of the system must be clear to the employees of the organization, the independent certification body, and the customers

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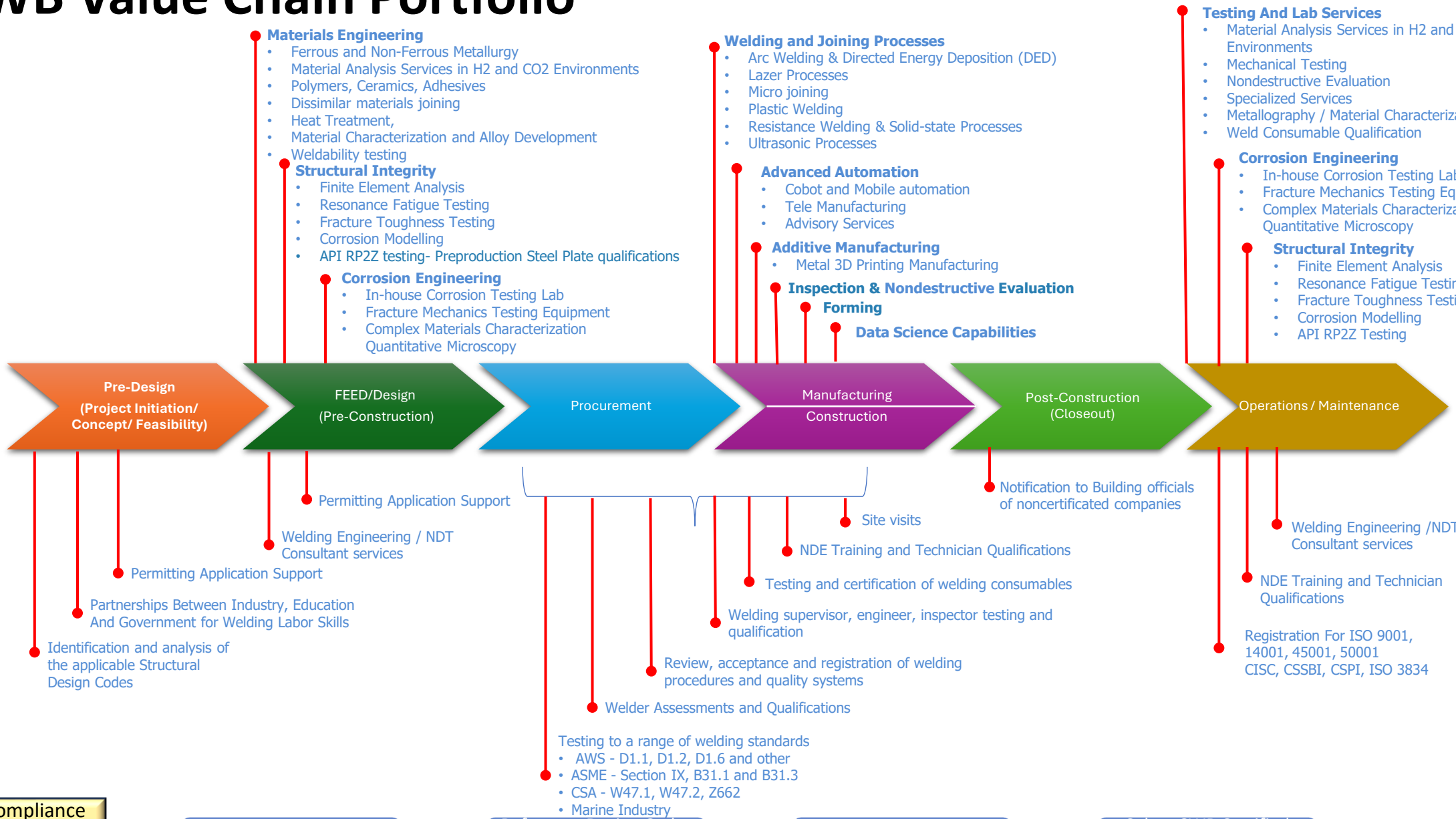
Engagement Benefits

CWB Value Chain Portfolio

Raise Awareness, Build Partnerships, Reduce Risk



Code Compliance for Owners and EPC Companies =

Determine Applicable Design Codes → Reference Design Codes Into Design And Procurement Specifications → Select CWB Certified Fabricators → Select CWB Certified General Contractors, Erectors And Subcontractors

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CWB Advantage

- ✓ Commitment to superior customer service
- ✓ Valued and trusted independence
- ✓ Insurmountable expertise
- ✓ Globally positioned and responsive 24/7
- ✓ Trusted industry leader with over 75 years of experience
- ✓ No domestic or international equivalents to CSA welding-related standards
- ✓ Reduces your liability and decreases risk Of non-compliance with Laws and Regulations
- ✓ Fast turnaround times
- ✓ State-of-the-art technology
- ✓ Bespoke and innovative solutions

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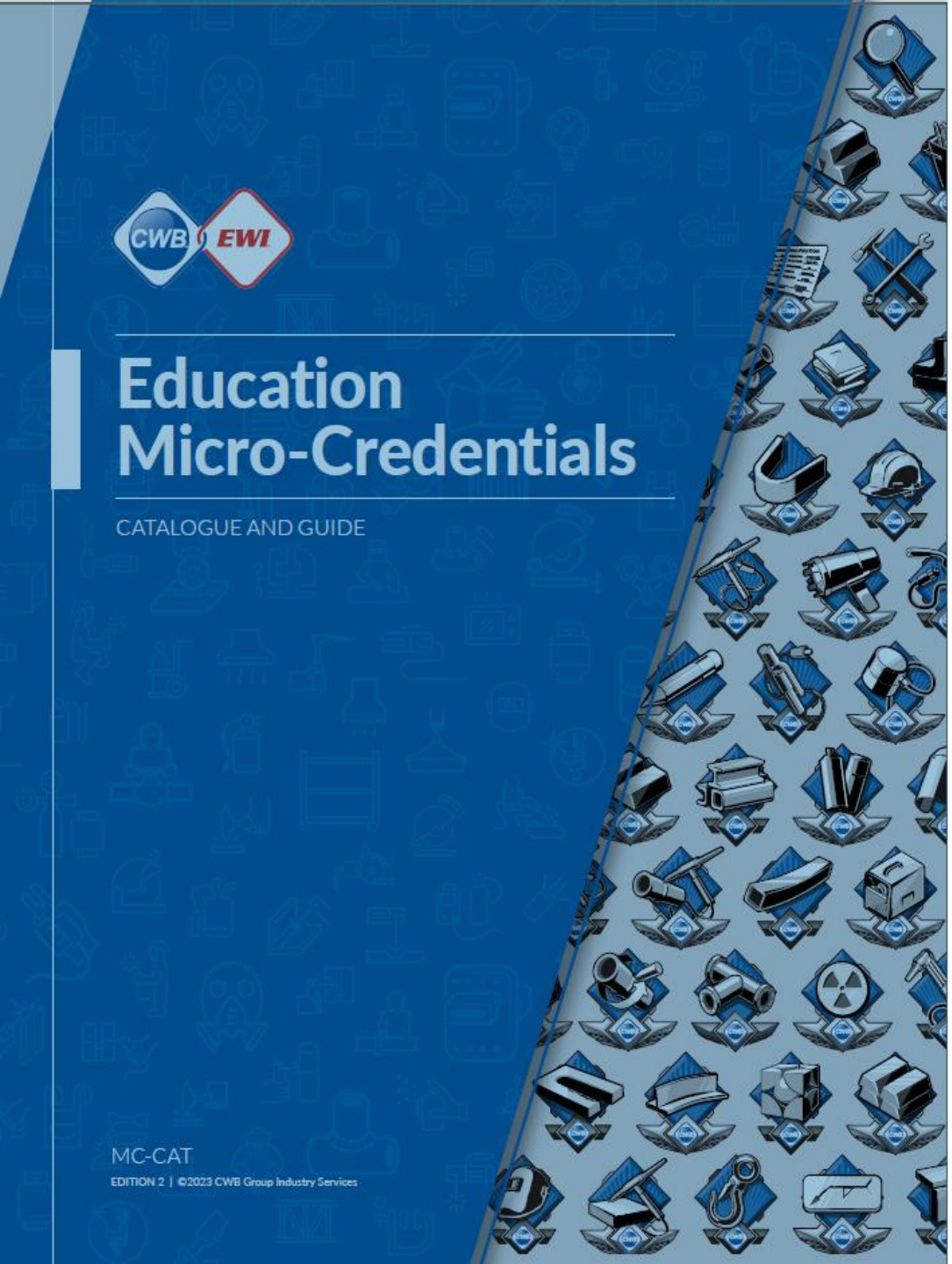

CWB Micro Credentialing

- Engineers can contact CWB or sign up on the CWB website to take micro-credentialing courses.

- **Continuous Professional Development (CPD)**

  - ✓ Completing a micro-credential course awards a certificate of completion and professional development hours (PDHs), which can be used to re-certify or satisfy other professional requirements.

- Recommend Engineers at the minimum sign up for the below courses.

1. Weld Quality and Discontinuities
2. Destructive And Non-Destructive Testing
3. Welding Faults: Inspection And Causes
4. Welding for Design Engineers *

*The Welding for Design Engineers is currently available as a textbook, not for Micro-credentials. Engineers can purchase this textbook for their reference.

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Trusted Solutions For Your Business

CWB Solutions value to the Building Officials' Association of B.C. (BOABC)

INDEPENDENT ASSURANCE

RISK MITIGATION
Mitigate Regulatory Compliance Liability

BESPOKE AND INNOVATE SOLUTIONS

We will respond to your core risks areas mitigation needs because we are

LOCALLY AND GLOBAL POSITIONED

TRUSTED AND DEDICATED PARTNER

TECHNICAL EXPERTISE

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Some of CWB's Partners

Coastal GasLink

Thank you!

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