



August 29, 2025

Housing, Infrastructure and Communities Canada
180 Kent Street, Suite 1100
Ottawa, Ontario K1P 0B6

Reference: OSPE Submission on Build Canada Homes

Sent via email to: bchengagement-mobilisationmc@infcc.gc.ca

The Ontario Society of Professional Engineers (OSPE) appreciates the opportunity to provide feedback on the proposed design of **Build Canada Homes**. Engineers are central to ensuring housing is **safe, sustainable, resilient, and cost-effective**. As Canada confronts the urgent challenge of affordable housing, engineering expertise is essential to evaluate the technical, environmental, and economic implications of construction approaches.

While OSPE strongly supports the objectives of **building affordable housing at scale** and **modernizing construction methods**, we urge Build Canada Homes to ground its investments in **evidence-based engineering guidance** to avoid unintended costs, higher embodied carbon, and future safety risks.

Key Considerations

1. Risks of 3D-Printed Concrete Housing

OSPE does **not recommend 3D printing of housing at scale**. Although innovative, 3D-printed concrete has substantial drawbacks:

- **Embodied Carbon:** 3D-printed concrete typically has a much higher cement content than conventional reinforced concrete, and cement accounts for ~90% of the embodied carbon of concrete. This creates a major climate liability compared to **light frame or timber-based construction**.

- **Structural Implications:** 3D-printed buildings are heavier, requiring larger foundations and increasing seismic loads, further adding embodied carbon and cost.
- **Material Waste:** The use of high-cement-content concrete for low-rise residential housing is inefficient and unnecessary given alternatives.

We recommend Build Canada Homes **deprioritize 3D printing** and instead focus on lower-carbon, scalable construction systems such as **mass timber and advanced light frame assemblies**.

2. Prefabrication and Modular Construction

Prefabrication and modular approaches can accelerate timelines and improve quality, but history shows risks if poorly engineered. In the 1950s, prefabricated concrete housing in the UK and France developed severe durability and robustness issues, leading to costly retrofits or demolition.

OSPE Recommendations:

- **Require engineered design standards** for prefabrication to ensure robustness and prevent disproportionate collapse.
- **Prioritize timber-based prefabrication (mass timber or light frame)** which offers lower embodied carbon, lighter weight, and easier handling compared to concrete modules.
- Establish procurement guidelines that emphasize **life-cycle durability** and not just upfront cost.

3. Adaptive Reuse of Existing Buildings

The guide does not address **adaptive reuse**—a missed opportunity. Thousands of underutilized or vacant buildings across Canada could be converted into housing faster and with much lower embodied carbon than new builds.

OSPE Recommendations:

- Incorporate **adaptive reuse** as a core strategy for Build Canada Homes.
- Develop financing tools to de-risk adaptive reuse, which currently faces higher upfront costs due to non-standard workflows.
- Recognize adaptive reuse as the **fastest path to creating affordable units** in urban areas.

4. Vertical and Lateral Extensions for Density

Instead of defaulting to low-density suburban models, Build Canada Homes should encourage **vertical and lateral extensions** of existing housing stock:

- Adding storeys or lateral units to existing buildings is often more cost-effective and environmentally sustainable than greenfield sprawl.
- Encourages **urban densification** near transit, services, and green space, reducing car dependency and improving livability.
- Supports climate goals by minimizing land-use change and infrastructure duplication.

5. Reuse of Salvaged Materials

Material reuse is the **lowest embodied carbon strategy** for new construction and should be systematically encouraged:

- Divert usable construction materials (steel, timber, brick, fixtures) from demolition waste streams.
- Create standards and incentives for reuse in **small-scale residential projects** where material recovery is most feasible.
- Position Build Canada Homes as a leader in **circular construction practices**.

Conclusion

Build Canada Homes has the potential to **reshape Canada's housing sector** by combining affordability goals with climate and productivity imperatives. To succeed, it must avoid short-term fixes that increase long-term costs and emissions, and instead prioritize:

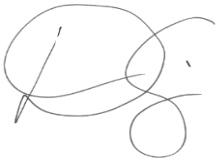
- **Timber-based prefabrication and modular methods** over high-carbon 3D printing.
- **Adaptive reuse and densification strategies** to unlock existing assets.
- **Circular economy principles** through material salvage and reuse.

Engineers stand ready to partner with government, industry, and communities to deliver housing that is **affordable, safe, low-carbon, and resilient**. OSPE urges Build Canada Homes to integrate these engineering-informed recommendations into its design and investment strategy.

OSPE would be pleased to meet with you to discuss these recommendations further and ensure that engineering expertise is well-represented in Build Canada Homes' design.

Please contact Paola Cetares, OSPE Director of Public Affairs, at 416-223-9961 Ext. 225 or at pcetares@ospe.on.ca to arrange a meeting.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'D.C.', with a stylized, circular flourish at the end.

David Carnegie, P.Eng., MBA
President and Chair
Ontario Society of Professional Engineers

A handwritten signature in black ink that reads 'Sandro Perruzza' in a cursive, flowing script.

Sandro Perruzza
Chief Executive Officer
Ontario Society of Professional Engineers