



2022-2023 PRECAST CONCRETE STUDENT DESIGN COMPETITION

THE 2022-2023
WELLNESS
BENCH

PRECAST CONCRETE
STUDENT COMPETITION



CANADIAN PRECAST/PRESTRESSED CONCRETE INSTITUTE
INSTITUT CANADIEN DU BÉTON PRÉFABRIQUÉ ET PRÉCONTRAINT

2022-2023 PRECAST CONCRETE STUDENT DESIGN COMPETITION

About the Canadian Precast/Prestressed Concrete Institute (CPCI)

CPCI is the prime source of technical information about precast and prestressed concrete in Canada, whose mission is to be the body of knowledge for precast and prestressed concrete in Canada and to educate, advocate and raise awareness with key decision makers on the outstanding attributes of precast concrete products and systems. The inherent benefits of precast, prestressed concrete make it the best choice for many projects. Higher structural strength provides long clear spans. Fast production, delivery and erection saves time and money. The creative dimensions of shape, texture, colour and pattern produce attractive buildings. Durability means unsurpassed low maintenance and life-time cost effectiveness. CPCI Members have the facilities, the people, the products and the desire to make a meaningful contribution to the planning and completion of your next project.

COMPETITION OVERVIEW

CPCI is pleased to announce the second annual Wellness Bench Design Competition for the 2022-2023 academic year. The competition is hosted by the CPCI and is intended to challenge both architecture and engineering students (undergraduate and/or graduate) to investigate the design and technical opportunities of precast concrete. Submissions should highlight the opportunities precast concrete offers in terms of construction, structural strength, design innovation, social value, maintenance and durability.

Eligibility

Any student enrolled in an accredited Canadian University or College in the following areas:

- Architecture Science, Technician or Technology
- Civil Engineering or Civil Technology

Note: Team members can be from different colleges and universities.

Teams

- Maximum 5 team members
- Minimum 1 architecture science, technician, or technology student
- Minimum 1 civil engineering or civil technology student

Note: 1 supervisor in Architecture and 1 in Engineering/Technology must approve and sign off on the submission.



Design Theme

This year's theme focuses on wellness. Students will need to design a bench using precast concrete and the theme of wellness should be carefully considered along with the technical understanding of precast concrete systems.

What is Wellness?

The National Wellness Institute defines wellness as “a conscious, self-directed and evolving process of achieving full potential.”

According to The Institute, the six dimensions of wellness are:

- | | |
|-----------------|-----------------|
| 1. Occupational | 2. Physical |
| 3. Social | 4. Intellectual |
| 5. Spiritual | 6. Emotional |

What are the ways this definition of wellness can be expressed through architecture, engineering, and construction?

(National Wellness Institute, The Six Dimensions of Wellness, <https://nationalwellness.org/resources/six-dimensions-of-wellness/>)

SUBMISSION REQUIREMENTS

Entries must be submitted electronically (PDF) to CPCI.

Please email info@cpci.ca for instructions.

Each entry should contain, in order, the following documents (in English):

Poster (1 page maximum in electronic PDF)

- Project description and understanding of Wellness goals (200-word max)
- Sketches
- Drawings: Plan(s), Section(s), Elevation(s), Detail(s)
- Renderings or other key drawings and photos
- Must include the project title and names of team members

Written Report (10 pages maximum including cover page and table of contents – in electronic PDF)

- **Project Statement:** Describe project goals and how the submitted proposal achieves them.
- **Architectural:** The report should demonstrate the cultural (intellectual and artistic contribution), social (community contribution and impact), and environmental (durability and sustainability) value of the project:
 - **Wellness Theme** — Excellent understanding of Wellness goals and how the proposal achieves them.
 - **Creativity** — Design has artistic value of form, texture, design, materials used and sound creative and intellectual motivation.
 - **Impact** — Demonstrates exceptional benefit to the user and/or community.



Fabrication of the winning bench from Guelph University (winners of the 2020-21 Wellness Bench Design Competition)

- o **Usability in Design** — Demonstrates that the functionality of the design carries out the tasks envisaged for it, to its efficiency, practical utility and value to the end user.
- o **Environmental Value** — Clearly demonstrates durability and sustainability of project. Proposals should include a material schedule (describing each material's durability, recyclability and reuse, and critical dimensions). Proposals should demonstrate a metric measuring the embodied carbon of the mixture and design, explain the selection of materials and design in regard to the environmental impact.
- **Engineering:** The report should clearly describe the approach to structural analysis, design assumptions, followed by a discussion on the loading scenarios, material factors, design calculations and the final design. Note that if a computer program is used for analysis and or design, some hand calculations should also be provided to support the program output. The final design should meet the requirements of the concrete design standard CSA A23.3.
 - o **Materials** — A good rationale is provided on the selection of materials and the impact on the efficiency of the design, and potential environmental impact.
 - o **Structural Analysis** — Concise discussion on the structural analysis of the individual components and of the assembly.
 - o **Design Approach** — The design approach is reasonable, and assumptions made are justified and the final design is safe, innovative, efficient and comfortable.
 - o **Design Calculations** — Comprehensive information provided on the design calculations, assumptions, load combinations and factors, safety and stability, and efficient use of materials while providing reasonable safety factors.
 - o **Constructability** — The final design is safe, buildable, and practical solutions are provided for the fabrication process including the formwork, casting, lifting, transporting and assembly onsite.

Review from a Supervisor

One supervisor in architecture and one in engineering/technology will need to review the poster and written report before it is submitted and validate the information. Please include the supervisor's name, department and contact information in the written report.

Selection Process

- The jury will consist of an Architect, Design Engineer, Precast Concrete Producer, and a member of the CPCI Staff.
- The Jury panel will select 3 winning projects.



Image of the winning bench of the 2021-2022 Wellness Bench Contest (Dalhousie University)

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Awards

FIRST

- \$2,500 (CAD) and
- Travel to CPCI 2023 Fall Committee Meetings in Toronto (up to 5 team members and 1 supervisor).
- Published in CPCI Imagineering Magazine, the CPCI Design and Building Express eNewsletter and shared on CPCI's social media channels.

SECOND

- \$1,500 (CAD) and
- Published in CPCI Imagineering Magazine, the CPCI Design and Building Express eNewsletter and shared on CPCI's social media channels.

THIRD

- \$1,000 (CAD) and
- Published in CPCI Imagineering Magazine, the CPCI Design and Building Express eNewsletter and shared on CPCI's social media channels.

HONOURABLE MENTION(S)

- Shared through CPCI's communication channels.

Fabrication and Installation (For the Winning Projects Only)

The winning team will be invited to fabricate their design project and the second and third place teams will have the option to build their bench as well. The teams will be paired with a local CPCI producer member to fabricate their bench.

Location of the Wellness Bench is the choice of the team. The proposed location must be publicly accessible and should be pre-approved by the local jurisdictional authority (ie. University, city, etc.).

COMPETITION SCHEDULE

November 30, 2022	Registration deadline
January 30, 2023	Submission Deadline: Posters and report submitted to CPCI
March 9, 2023	Announcement of the winners
March 31, 2023	Winners will be contacted with details on how to build their bench and will be paired with a local precaster to build and install their benches
October 2023	The team that places first will be invited to CPCI's Fall Committee Meetings in Toronto, ON

EVALUATION CRITERIA

The following criteria form a basis for evaluation, supported by the architectural, engineering, and construction expertise of the jury. Each member of the jury is committed to fair and equitable review of all submissions.

CRITERIA	SCORE
Poster	15
Project Statement	10
Architectural	
Theme	10
Creativity	10
Impact	5
Usability in Design	5
Environmental Value	10
Engineering	
Materials	5
Structural Analysis	5
Design Approach	5
Design Calculations	10
Constructability	10
TOTAL	100

CPCI and CPCI industry members can assist your school Student Design Competition entry and can provide additional information to professors and students who wish to learn more about this exciting initiative.

For more information on the precast concrete Student Design Competition and to find out how you can get involved, please contact us by email at info@cpci.ca or by phone at **1-877-937-2724**.