

Advance Contract Award Notice (ACAN)

ACAN 21-58094

Flood Load Factors and Load Combinations for Design of Flood-resistant Buildings

1. Advance Contract Award Notice (ACAN)

An ACAN is a public notice indicating to the supplier community that a department or agency intends to award a contract for goods, services or construction to a pre-identified supplier, thereby allowing other suppliers to signal their interest in bidding, by submitting a statement of capabilities. If no supplier submits a statement of capabilities that meets the requirements set out in the ACAN, on or before the closing date stated in the ACAN, the contracting officer may then proceed with the award to the pre-identified supplier.

2. Definition of the requirement:

Within the Climate Resilient Built Environment project, the National Research Council Canada has a requirement to develop guidelines for the design of flood-resistant buildings across Canada. This work would involve development of various load factors and load combinations and related guidance documents for flood-resistant buildings for implementation in the future editions of the Canadian National Building Code (NBC), Standards and Design Guides.

This contract seeks to enter into an agreement with Coulbourn Consulting to develop: (1) structural reliability targets consistent with the limit state design approach adopted in the NBC; (2) recommendations for reliability-based flood load factors; (3) recommendations for reliability-based load combinations, including flooding; and (4) compile a professionally written technical document detailing the description of the methods used to develop flood load factors and associated load combinations.

As deliverables of this contract, the NRC requests Coulbourn Consulting to provide:

- An execution plan that describes how each of the targeted deliverables are to be developed including research, data needs and schedules.
- An analysis of flood loads data, developed by Canadian consultants for various locations around the country, to develop empirical probability distributions for the range of flood elevations and flow velocities with mean recurrence intervals (MRIs) ranging from 10 to 2500 years. The flood levels and velocities to be used in Monte Carlo simulations to develop probability distributions of flood loads and probability of failure for normal building elements.
- Outputs of Monte Carlo simulations using the flood load formulas from the design of flood-resistant buildings guidelines and equations of expected resistance for normal construction to determine probabilities of flood loads for normal building elements when impacted by flood depths and velocities, generated through flood loads data generation case studies.

- A set of flood load factors and load combinations based on the information generated from Monte Carlo simulations and load combinations from the NBC for riverine, lake, and coastal environments for Canada. Load combinations would include flood loads combined with dead load, live load, wind load, snow/ice loads, and other potential companion loads acting on buildings during flood events.
- Outputs from a reliability analysis using the recommended flood load factors to determine their appropriateness in complying with current NBC reliability targets. Results from structural reliability testing, using new flood load factors on beams, columns and 2-3 primary structural connections subject to bending and shear.
- A professionally written report on study methodology, findings and recommendations, as well as supporting data.
- Virtual briefings to the NRC Technical Committee or other groups chosen by the NRC for participation.
- Quarterly reports for the NRC on the status of tasks and deliverables and activities planned for future work.

3. Criteria for assessment of the Statement of Capabilities (Minimum Essential Requirements)

Any interested supplier must demonstrate by way of a statement of capabilities that it meets the following requirements:

- Significant experience (minimum of 20 years) in the design of flood-resistant buildings.
- Significant knowledge of major standards and guides for design of flood-resistant buildings.
- Active member in major standards for design of flood-resistant buildings, such as ASCE -7 (Minimum Design Loads and Associated Criteria for Buildings and other Structures) and ASCE-24 (Flood-Resistant Design and Construction).
- Extensive experience (minimum 20 years) in the development of design solutions for buildings subject to flooding.
- Deep understanding of flood hazards and hazards arising from compound events in riverine, coastal and great lakes locations.
- In-depth experience of floodplain management and flood hazard mitigation through improving flood-resistance of existing buildings.
- Demonstrated track record in the design of flood-resistant buildings and in retrofit of existing buildings to resist flood loads and various load combinations from other climatic hazards.
- Substantial experience with prescriptive flood-resistant design guidelines; performance-based design of buildings; reliability and risk-based design methods; Monte Carlo simulations for generating load factors and load combinations.

- Substantial familiarity with Building Codes, as well as knowledge of different flooding conditions that contribute to building failure in riverine, coastal and Great Lakes environments.
- Significant experience in developing professional design guidelines, technical briefing notes and guidance for policy makers.

4. This procurement is subject to the following trade agreement(s)

- Canadian Free Trade Agreement (CFTA)
- World Trade Organization - Agreement on Government Procurement (WTO-AGP)
- North American Free Trade Agreement (NAFTA)

5. Justification for the Pre-Identified Supplier:

There are no alternative sources of supply for this contract. Coulbourne Consulting is unique in the level of pertinent technical knowledge, design experience, and a proven track record in the development and delivery of codes, standards and design guides.

6. Government Contracts Regulations Exception(s)

The following exception(s) to the *Government Contracts Regulations* is (are) invoked for this procurement under subsection:

6(d) - "only one person is capable of performing the work"

7. The following exclusion or limited tendering reasons are invoked under the:

North American Free Trade Agreement (NAFTA) – Article(s) 1016.(b)

Where, for works of art, or for reasons connected with the protection of patents, copyrights or other exclusive rights, or proprietary information or where there is an absence of competition for technical reasons, the goods or services can be supplied only by a particular supplier and no reasonable alternative or substitute exists.

8. Ownership of Intellectual Property

Canada intends to retain ownership of any Foreground Intellectual Property arising out of the proposed contract.

Government of Canada's Policy on Title to Intellectual Property Arising Under Crown Procurement Contracts, Appendix A – Exceptions to Contractor Ownership and Treasury Board Exemption 4. Where the main purpose of the Crown Procurement Contract, or of the deliverables contracted for, is:

4.1 to generate knowledge and information for public dissemination.

9. Period of the proposed contract or delivery date
The contract period will be 36 months with an expected start date of January 27, 2022.
The anticipated completion date is December 16, 2024.

10. Cost estimate of the proposed contract
The contract value will be approximately of USD \$275,975 (Taxes not included).

11. Name and address of the pre-identified supplier

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12. Suppliers' right to submit a statement of capabilities:

Suppliers who consider themselves fully qualified and available to provide the goods, services or construction services described in the ACAN may submit a statement of capabilities in writing to the contact person identified in this notice on or before the closing date of this notice. The statement of capabilities must clearly demonstrate how the supplier meets the advertised requirements.

13. Closing date and time for a submission of a statement of capabilities:

[January 27, 2022 at 2:00 p.m. EST.](#)

14. Inquiries and submission of statements of capabilities are to be directed to:

[Katie Homuth](#)

[Procurement Officer](#)

[National Research Council Canada](#)

Telephone: 343-549-4539

E-mail: Katie.Homuth@nrc-cnrc.gc.ca