

Scope of Work

Construction Inspection Services with Engineering Support

Tallurutiup Imanga Duplex Construction in Pond Inlet

1.0 Project Overview

- 1.1 Construction of a new energy efficient, 3-bedroom, 2 storey duplex will be undertaken on a greenfield in Pond Inlet. The work is to begin in the Fall of 2022 and extend through the winter to ultimately be commissioned for operations in Winter 2024. The building construction includes:
 1. Material transportation, site preparation,
 2. Ground preparation and foundation construction,
 3. Construction of a 3 bedroom, 2 storey duplex with a gross total area of 409 square metres with associated exterior parking, external tanks and associated decking and stairs.
- 1.2 The work being requested is to provide periodic construction inspection services with non-resident engineering/architectural support for the duration of the project for the works described above and included in the project drawings and specifications that are issued for construction. The Issue for Tender documents are available with this Request for Proposal.
- 1.3 The house is designed to be as energy efficient as practical in Nunavut. Although it is not intended to be Passive House or Net Zero qualified, it uses some of the practical efficiency design elements from these standards.

2.0 Services Required

Services required under this RFP are for a Consultant to provide engineering and architectural support services supported by Non-resident Construction Inspection services. The following describes the various requirements for the services under the RFP:

2.1 Non-Resident Building Construction Inspector Services

- 2.1.1 The non-resident Building Construction Inspector shall be an architectural or a building engineering technologist with at least 5 years' experience in inspection of building construction and licensed to practice in the territory where the work occurs.
- 2.1.2 The Building Inspector will be required to visit the site at key construction milestones as agreed by Parks Canada representative and the inspector throughout the project to ascertain the progress of the work and inspect the current state of the Works. The timings of these site visits will be agreed to upon Contract Award.
- 2.1.3 During these inspections, the building inspector will note the progress achieved to date and as per contract documents, materials delivered on site, number of individuals working and determine what is planned to be completed over the next period between inspections.
- 2.1.4 It is estimated that the Building Inspector will travel to site for 15 trips with each trip to last approximately 1 week. Note due to weather and construction activities,

duration of travel and time on site may be more or less than 1 week and will be adjusted according to conditions and circumstances as needed.

- 2.1.5 Establish a written understanding with contractors as to what stages or aspect of the work are to be inspected prior to being covered up.
- 2.1.6 Perform inspections timed to be able to confirm progress that is to be used in submission of progress billings from the contractor for work completed to date.
- 2.1.7 Be fully versed in the project specifications and drawings issued for construction for the project and be able to answer questions and provide direction regarding the design and intent of the documents. The Building Inspector will refer any questions regarding potential issues with the design or design changes to the Parks Canada Representative for action and response.
- 2.1.8 Assess quality of work and identify, in writing to the Parks Canada Representative, all defects and deficiencies observed at time of such inspections.
- 2.1.9 Any recommendations, clarifications or deficiency lists shall be issued in writing to the Parks Canada Representative, with a copy to the Contractor.
- 2.1.10 Keep the Parks Canada Representative informed of the progress and quality of the work and report any defects or deficiencies in the work observed during the course of the site reviews.
- 2.1.11 The Building Inspector shall keep a daily log when on-site, recording weather activities, major material and equipment deliveries, daily activities and major work done, start, stop or completion of activities, unusual site conditions, special visitors on site, authorities given contractor to undertake certain or hazardous work, environmental incidents, health and safety notices and incidents, reports, instructions from Parks Canada Representative and any associated response actions. A summary is to be communicated to the Parks Canada Representative via e-mail to keep them informed of the activities on site.
- 2.1.12 Maintain all pertinent contract documents on site (Drawings, specifications, shop drawings, change orders, field orders, red line mark-ups, etc.) as the work progresses.
- 2.1.13 In the case of emergency where safety of persons or property is concerned, or work is endangered by the actions of the Contractor or the elements, to safeguard the interests of PCA, the Building Inspector shall give immediate written notice to the Project Manager and to the Contractor of the possible hazard. The Building Construction Inspector shall, if necessary, stop the work to protect the safety of the workers or Crown property and contact the Parks Canada Representative for instructions on further actions.
- 2.1.14 The Building Inspector shall not: Authorize deviations from the agreement documents; approve shop drawings or samples; accept any work or portions of the project; enter into the area of the responsibility of the Contractor's Field Superintendent; stop the work unless convinced that an emergency exists as noted above; authorize any payments.
- 2.1.15 The Building Inspector will review and make comments on various documents submitted by the Contractor including Progress Payments and Schedules.
- 2.1.16 Assist the Parks Canada Representative to complete the required inspection and prepare the Certificate of Substantial Completion and provide sign-off.

- 2.1.17 Attend weekly progress meetings throughout construction (on-site or via teleconference when not on site) and prepare minutes to record discussions and decisions. To be issued to the Parks Canada Representative.
- 2.1.18 Provide training to onsite Parks Canada staff as to what to look for and areas of importance in review. Provide guidance to onsite staff on inspection protocols and documentation required
- 2.2 Non-Resident Engineering and Architectural Contract Administration Services
 - 2.2.1 Over the course of construction of the duplex, non-resident engineering and architectural services will be required in support of the project. These services will include the following:
 - 2.2.1.1 The consultant will be responsible to familiarize themselves with the contract drawings and specifications as necessary to sign off on the Commitment for Field Review prior to work beginning and the Assurance of Professional Field Review upon completion of the work.
 - 2.2.1.2 Consultant is responsible to bring forward any issues or concerns identified with the design to the attention of the Parks Canada Representative. The Parks Canada Representative will review and then coordinate with the Architect/Engineer/Designer of Record. The Consultant will be required to attend any meetings or provide the necessary documentation to resolve the issue or concern.
 - 2.2.1.3 Reviewing shop drawings and RFIs (request for information).
 - 2.2.1.4 Review submittals and recommend for approval to Parks Canada Representative.
 - 2.2.1.5 Providing clarifications to the Building Inspector in the field.
 - 2.2.1.6 Review and provide advice to PCA regarding contemplated change notices, change orders and requested material or product alternatives by the Contractor.
 - 2.2.1.7 Review contractor monthly progress payment requests.
 - 2.2.1.8 Review O&M Manual submitted by the contractor.
 - 2.2.1.9 Sign off on Substantial Completion and Final Completion Certificates when required.
 - 2.2.2 Providing the required specialists to visit the site to provide formal sign-off and acceptance at specific stages of the project. These disciplines will include, but not be limited to, the following:
 - Civil Engineer
 - Geotechnical Engineer
 - Architect
 - Building Scientist/Envelope Specialist
 - Energy Consultant (see section 3.0 below)
 - Electrical Engineer
 - Mechanical Engineer
 - Structural Engineer

2.2.3 The discipline specialists shall be an architect or engineer with at least 5 years' directly related experience in their relevant discipline and licensed to practice in the territory where the work occurs. The timing of a required inspection will depend on the type of construction being signed off and will be based on the logical completion of the critical stage of work. The exact timing will be decided at the start-up meeting with the Contractor and should include, as an example, the following stages:

1. Site preparation, fencing, material storage and review of space frame design.
2. Grading of site and construction of the space frame and decking.
3. Prior to drywall/interior siding install: inspect all framing, mechanical rough-in, and electrical rough-in. Ask for photographs identifying correction of any deficiencies identified during inspection.
4. Exterior finishing installation to verify performance specifications are met.
5. Substantial Completion Inspection: this is when the building is completed for its intent, and all warranties start and holdback is released.
6. Final Completion Inspection: to conclude the completion of the project and review (accept) the final certificate. Closing out the project by recommending to the Department Representative to issue Occupancy Permit.

2.2.4 The Consultant shall be responsible to determine the appropriate disciplinary specialist are required throughout the duration of the Works.

2.2.5 Provide redline as-built drawings of the completed works, both related to the civil works and building construction.

2.2.6 Provide support during the commissioning process including witnessing commissioning tests, and reviewing and signing off on reports of results of commissioning. The Consultant shall make provisions for one (1) site visit by a qualified engineer or architect to observe commissioning of building systems.

2.2.7 Provide a Project Close-Out Report that summarizes the work completed on the project, issues that arose and how they were addressed, changes to the work and an assessment of how the project progressed and any impacts that occurred to schedule, scope, and budget.

2.2.8 Provide support during warranty period including warranty inspections, building inspection services during warranty repair and sign-off of repairs. The Consultant shall make provisions for two (2) site visits by the Building Inspector for warranty inspection and repair.

3.0 Energy Consultant and Commissioning Authority

3.1 The Consultant shall retain a certificated Energy Advisor (this means an individual or consultant who have been registered by Service Organizations licensed by Natural Resources Canada (NRCAN) to deliver NRCAN's EnerGuide Rating System (ERS), ENERGY STAR® for New Homes and R-2000 programs) to act as a Commissioning Authority.

3.2 The Commissioning Authority is responsible for providing oversight and quality assurance of the project commissioning activities and documentation. The Commissioning Authority maintains the overall responsibility for the project commissioning and ensures the

performance and completion of commissioning in the delivery of a fully functional and operational project.

3.3 The Commissioning Authority provides planning and technical support and advice on the project and O&M matters and coordinates the commissioning services and activities from the project initiation/planning phase to acceptance and close-out. During the design stage, the Commissioning Authority reviews all aspect of the design.

3.4 As the design has been completed, the Commissioning Authority will review submittals from the contractor from their early development to final construction. During the project implementation, acceptance and close-out, the Commissioning Authority provides quality assurance, monitors and reviews commissioning services, deliverables and documentation including training.

3.5 The Commissioning Authority will adhere to the following standards, policy and guidelines PWGSC Commissioning Manual CP-1 - 4th Edition – November 2006 (<https://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/bi-rp/tech/miseenservice-commissioning/documents/manuel-manual-eng.pdf>).

- PWGSC Commissioning Guidelines CP.3 to CP.13.
- CSA Z320 Building Commissioning Standards and Check Sheets,
- ASHRAE Standard 202, The Commissioning Process for Buildings and Systems
- ASHRAE Guideline 0 – The Commissioning Process.
- ASHRAE Guideline 1 – The HVAC Commissioning Process.

3.6 Testing and Commissioning Plan

3.6.1 The Consultant must provide the Parks Canada Representative with a commissioning plan to prove the construction meets the current energy model.

3.6.2 Include all tests in the specifications, identify with a detail breakdown of the types of testing equipment and types required. List the conditions that the test will be done, under the observation of the consultant.

3.6.3 The Consultant shall coordinate with Contractor for the test and review Contractor's proposed testing agency's qualification and make recommendations to Parks Canada Representative for approval prior for the testing agency's services. Follow up with testing, and distribute test reports.

3.6.4 The Consultant must review all test reports and take necessary action with Contractor when work fails to comply with contract requirements. The Parks Canada Representative must be immediately notified when test fails to meet project requirements and when corrective work will affect the schedule.

3.7 Interim Completion

3.7.1 Prior to Interim Completion site review, and once building exterior is completed, and major mechanical and electrical heating and ventilation (HVAC) systems are in operation, the Energy Advisor should provide:

1. an analysis of the real world data versus what was predicted with the design energy modelling,
2. a full thermal scan of the building,
3. and prepare a report of the finding to PCA with any recommendations to correct any deficiency,

4. once correction and remediation work are completed, Energy Advisor to redo testing to confirm that it is acceptable, then inform PCA with final report in order to proceed with Interim Completion process.
5. The Contractor shall propose the site review when the project is at Interim Completion stage and provide a list of deficiencies prior to the site review. Commissioning must be completed. Commissioning Report reviewed and accepted by the Consultants and Parks Canada Representative.

3.8 Final Completion

- 3.8.1 The consultant will provide final energy performance of the duplex and compare with the design energy performance.
- 3.8.2 Where there is a difference in the actual performance from to the energy model, provide an explanation or source of the difference.
- 3.8.3 Provide recommendations where the design or construction could be improved to ensure energy performance targets can be met or exceeded.

4.0 Cost Management

- 4.1 The Consultant shall provide an interactive and continuous cost consulting service from the commencement of the project to the completion of all the works as defined in the specifications and drawings.
- 4.2 The Consultant team shall advise the Department/Agency of the costs of individual project components. Fee estimates should be prepared in detail and broken down by work task.

5.0 Travel and Accommodations

- 5.1 All travel and accommodation costs required to perform the Work are the responsibility of the Consultant and shall be included in the Consultant's fee proposal.
- 5.2 All travel and accommodation costs will be charged as per the Treasury Board Travel Directive – National Joint Council rates and allowances.

6.0 Schedule

- 6.1 The work is expected to begin in Fall 2022 when the sealift arrives to site. It is expected that limited if any activity will occur during the fall and winter of 2022. The main construction activity is expected to occur at the beginning of spring 2023 and be completed by winter 2024. Inspection services will be required through all phases of the Work, though frequency of visits may be adjusted depending on Contractor's progress and construction schedule.
- 6.2 Monthly or regular construction meetings will occur virtually when not on site and is the responsibility of the contractor to set up and the consultant to attend.

7.0 Constraints/Client Support

- 7.1 PCA has a full time project manager (Parks Canada Representative assigned for this Project) that will be looking after the project as a whole and will be the principle contact for the Consultant providing the inspection and engineering services and contract administration services. All communications and direction will be through the PCA project manager. The PCA project manager may have other Park staff on site to help oversee other parts of the project,

however all decisions impacting cost, schedule, scope, quality, contracting, risk, and communications on the project lay solely with the designated PCA project manager.

- 7.2 PCA will provide the completed Issue for Construction drawings and specifications to the consultant prior to commencement of the project. These documents will form the basis and terms of reference for the consultant.
- 7.3 All inspection works will be to check and verify conformance to these documents.
- 7.4 The consultant will need to be well versed in the logistics and travel challenges in the high arctic and take in considerations of all issues of traveling to Pond Inlet, Nunavut.