



Qausuittuq  
**National Park**

Project Brief  
for Design of a Garage  
Resolute, Nunavut

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## 1 Introduction

### 1.1 Background

- 1.1.1 Qausuittuq National Park is in the process of securing a vacant lot in Resolute, Nunavut and plans to construct a garage to support park operations.
- 1.1.2 The lot identified for this purpose is Lot 121, Block 2, Plan 4064 CLSR# 95904 and is zoned for community use.

Figure 1: Lot 121, Block 2 Resolute, NU



### 1.2 Objectives

- 1.2.1 To develop design documents for the procurement of construction services to complete the build of the QANP garage, with kitchenette, lavatory, and workstation in Resolute, Nunavut.
- 1.2.2 For Parks Canada to own the design documents (drawings and specifications) upon completion for future use.
- 1.2.3 To achieve a high degree of building envelop efficiency and to utilize high energy efficient appliances and mechanical systems, to ensure best efforts are made to reduce the buildings carbon footprint.

## 2 Scope

### 2.1 General

- 2.1.1 The Consultant is required to complete construction drawings and specifications based on the sketch in Appendix A.

2.1.2 All designs including the appropriate levels of cost estimate shall be submitted for approval by the Departmental Representative in the form of stamped plans and specifications.

2.1.3 All drawings shall be drawn to scale, using metric units, and in compliance with PSPC National CADD standard which will be provided by the Departmental Representative

## 2.2 Travel

2.2.1 Due to the existing COVID situation travel may not be readily possible and the Consultant may not have a chance to visit the site prior to the design completion. Changes to the contract will be made if and when travel to site is possible.

2.2.2 The Department Representative will work with the Consultant to determine the appropriate consultant team members to travel to site.

## 2.3 Meetings

2.3.1 All meetings with the client group will be by telephone or video conference.

2.3.2 The consultant is responsible for minutes of all meetings. Minutes are to be submitted within 1 week of the meeting.

2.3.3 Schedule a kick off meeting within 2 weeks of award.

2.3.4 Schedule a meeting within 2 weeks of submitting each deliverable.

2.3.5 If and when an in person meeting is required, a change to the contract will be required.

2.3.6 The Department Representative will work with the Consultant to determine the appropriate consultant team members to travel to attend the meeting.

## 2.4 Drawings and Specifications

### 2.4.1 Site Data

2.4.1.1 Parks Canada to supply geotechnical data

2.4.1.2 Topographic survey information must be obtained by the consultant to ensure drainage and landscape designs are complete.

### 2.4.2 Architectural Design

2.4.2.1 The Consultant must complete a detailed design in accordance with the design philosophy and principles expressed in the drawings in Appendix A.

### 2.4.3 Structural and Civil

2.4.3.1 The Consultant must complete a detailed design for a concrete foundation and floor.

2.4.3.2 The concrete floor is sitting on an active layer of the permafrost and the design should incorporate a system to minimize possible shifting and cracking of the floor.

- 2.4.3.3 The structural designer shall work closely with the building envelope designer to ensure thermal bridging is minimized at all structural connections.
- 2.4.4 Building Envelope Design
  - 2.4.4.1 The Consultant must complete a detailed envelope design to meet the performance targets and design principles outlined in the drawings provided in Appendix A.
- 2.4.5 Mechanical and Electrical Design
  - 2.4.5.1 The Consultant must complete design of mechanical and electrical systems based on the site-specific requirements. The Consultant will retain all necessary professional services required to perform the design.
  - 2.4.5.2 The design must at a minimum include the following:
    - 2.4.5.2.1 Plumbing systems; including domestic cold & hot water distribution, sanitary drainage, new domestic water heating system and fixtures. Water and Sewer tank systems will be required as only trucked services are available for this lot. Pipes containing water to a water mix to be away from doorway to prevent the possibility of freezing.
    - 2.4.5.2.2 Provide dedicated exhaust ventilation capable of clearing vehicle exhaust in the building especially in the winter where all the doors are closed.
    - 2.4.5.2.3 Heating system, mechanical ventilation system with outdoor air intake and heat recovery unit, exhaust systems, and controls;
    - 2.4.5.2.4 Electrical power system including electrical service, electrical distribution, panels and receptacles, and a back-up power system;
    - 2.4.5.2.5 Electrical lighting systems including new interior & exterior lighting, and switches;
    - 2.4.5.2.6 Required fire protection, emergency lighting, fire alarm, CO alarm and exit signs.
    - 2.4.5.2.7 Phone line to the desk / work station

### 3. Detailed Requirements – Required Services (RS)

#### 3.0.1RS 1 Project Planning Services:

- 3.0.1.1 The objective is to ensure accurate and timely execution of the project by identifying key components, potential risks and mitigations and allow for appropriate monitoring and controls.

3.0.1.2 Arrange meeting with PCA representatives to review scope

3.0.1.3 Define roles and responsibilities of team members and any sub-contractors

3.0.1.4 Provide Master Plan and project schedule with activities and milestones

3.0.1.5 Risk analysis, material availability and site logistics

3.0.1.6 Site specific Permit and by-law requirements

### 3.0.2 RS 2 Pre-design Services

3.0.2.1 Code Compliance review

3.0.2.2 Confirm services and resources available in each community

3.0.2.3 Research high efficiency and sustainable options suitable for application in the Arctic

### 3.0.3 RS 3 Schematic Design Services

3.0.3.1 The objective of the Schematic design phase is to first develop a scheme, that conforms with project requirements and confirms a design approach

3.0.3.2 All work shall conform to applicable Acts, Regulations, Codes and Standards as per Section 3.3

3.0.3.3 Consultant shall prepare and present a schematic design and report that includes site analysis/plan, functional/operational analysis, A statement on the architectural design approach including greening and sustainability, building envelop options, energy efficiency, structural, mechanical and electrical engineering services, cost estimates and recommendations.

3.0.3.4 Present the scheme to PCA; compile notes and distribute minutes from the review.

3.0.3.5 Provide 1 electronic copy (PDF format) of all documents.

3.0.3.6 After the PCA review, the Departmental Representative will provide direction to the Consultant about revisions and ensure PCA comments are incorporated into the final schematic design and report before proceeding to the next design stage.

### 3.0.4 RS 4 Design Development Services

3.0.4.1 The objective of the Design Development stage is to further refine and develop the design.

3.0.4.2 Consultant is to organize review sessions with PCA representatives at 33%, 66%, 90%, stages

3.0.4.3 Refine and prepare a code analysis and regulations analysis.

3.0.4.4 Architectural services shall be based on the schematic design from the RS3 phase. The Consultant is responsible for all design activities including but not limited to: Drawings and specifications for Site, Structural, Mechanical, and Electrical as described in Section 2 and 3.

3.0.4.5 A budget, project schedule and risk analysis shall be included in the design development report as well as confirmation of the architectural design approach and philosophy to meet project objectives, Architectural, structural, mechanical and electrical building systems, a detailed summary of the greening and sustainability design, outline specifications and architectural Site plans/Floor plans/Elevations/Building Sections.

### 3.0.5 RS 5 Construction Documents

3.0.5.1 The objective of the Construction Document stage is to prepare tender-ready construction drawings and specifications, along with a Class B, then a Class A cost estimate.

3.0.5.2 Organize Review Sessions at 33%, 66%, 90%, stages through the construction documentation stage, as required.

3.0.5.2 Update Code analysis

3.0.5.3 Submit drawings and specifications at 33%, 66%, 90% and 100% stages.

3.0.5.4 Obtain acceptance for each submission at 33%, 66%, 90% and 100% stages.

3.0.5.5 Provide written response to all comments from PCA and incorporate them into Construction Documents.

3.0.5.6 Confirm format of drawings and specifications (National Master Specification).

3.0.5.7 Submit updated cost estimates as the project develops.

3.0.5.8 Update the project schedule.

3.0.5.9 Prepare a Class B estimate at the 66% complete design stage and a Class A estimate at the 90% complete design stage.

- 3.0.5.10 Review and approve materials, construction processes and specifications to meet sustainable development and energy efficiency objectives.
- 3.0.5.11 Deliverables are similar at all three – 33%, 66% and 90% stages, though the level of detail presented is meant to increase as the project progresses through the stages while the level of uncertainty and items outstanding to decrease.
- 3.0.5.12 Deliverables at 100% stage are to be tender ready and issued for construction and should include:
- 1) Written response to the Project Authority review comments made at 90% stage.
  - 2) All original reproducible drawings, tender documents and specifications for tendering purposes, 100% reviewed and coordinated, incorporating all PCA comments.
  - 3) All specification sections and an index of specifications.
  - 4) Updated project schedule.
  - 5) Class A cost estimate

Optional Services (OS) – (subject to funding availability)

### 3.0.6 OS6 Tendering services

- 3.0.6.1 The Consultant's original Construction Documents (signed and sealed) are used to issue to the Government Electronic Tendering System (GETS) ([Buyandsell.gc.ca](http://Buyandsell.gc.ca))
- 3.0.6.2 Consultant is to provide the Project Authority with all information required by bidders to fully interpret the Construction Documents, including sample boards, colour boards and other special reports. Respond to and address questions raised by bidders during the bid period.
- 3.0.6.3 Prepare Addenda to Tender Documents as required and submit to the Project Authority for review and issue by the Contracting Authority.
- 3.0.6.4 Pending notification from the Project Authority, be prepared to revise and amend the construction documents to bring the cost of the work within the stipulated limits of the Class A budget.
- 3.0.6.5 If PCA decides to re-tender the project, provide advice and assistance to the Project Authority.
- 3.0.6.6 Provide revised Construction Documents if the tender costs were too high (more than 15% over the accepted Class A budget). Consultant is not entitled to additional fee

### 3.0.7 OS7 Post Construction Services

3.0.7.1 All work under the Construction Contract carries a standard twelve (12) month warranty commencing on the effective date of the issuing of Substantial Certificate of Completion. Certain parts of the work, such as roofing, structure, joints and bearings, window and exterior door(s), building envelope and distribution systems may have extended warranties as specified

3.0.7.2 New buildings shall meet and exceed all the requirements to satisfy the warranty program and coverage for materials and systems.

3.0.7.3 The Contractor is responsible for correcting and/or replacing all defects in the work during the warranty period, except for damage caused by misuse, abuse or neglect by others.

3.0.7.4 The Project Authority will promptly notify the Consultant in the event that defects or alleged defects appear in the work of the Contractor.

3.0.7.5 The Consultant shall investigate all defects and alleged defects in the work promptly and issue appropriate information and advice to the Project Authority.

3.0.7.6 The Consultant shall arrange a lesson-learned meeting with the Contractor, Project Authority and stakeholders within four (4) weeks of Final Completion. Consultant shall provide information, advice, improvement, suggestions, constructive inputs and lessons learned for the benefit of future projects.

#### 3.0.7.7 Warranty Inspection

After Interim Completion acceptance, the Consultant shall:

1) Arrange a warranty site review with the Project Authority, sub-Consultants,

Contractor, sub-Contractors, and PCA maintenance staff.

2) Prepare deficiency list prior to the site review

3) Inform the Project Authority in writing when all items listed on the Warranty

Inspection report have been completed satisfactorily.

### 3.1 General

3.1.1 The Consultant must perform the work as per the contract. The design must comply with and meet the intent of the drawings as well as the performance parameters included in Appendix A.

### 3.2 Design Approach

- 3.2.1 The Consultant is required to review the concept design drawings prepared by PCA (see Appendix A) in order to gain understanding of Parks Canada's vision and of the desired project outcome.
- 3.2.2 The Consultant will adapt the concept design and develop a solution to meet the mandatory design requirements. It is the responsibility of the Consultant to retain all necessary professional services to complete the design described herein.
- 3.2.3 The Departmental Representative must sign off on the design that must then be stamped by a licensed professional engineer.
- 3.2.4 The Consultant is solely responsible for the final design and therefore must communicate to the Contract Authority any issues present in the concept design which contradict the design requirements presented herein. Where contradiction exists between the statement of work and the concept design it is the requirements of the statement of work, detailed herein, that govern.

### 3.3 Applicable Codes

- 3.3.1 The Consultant is responsible to ensure the Qausuittuq National Park Garage complies with all applicable mandatory codes, regulations, and policies including but not limited to:
  - 3.3.1.1 National Building Code of Canada (2015);
  - 3.3.1.2 National Energy Code of Canada for Buildings (2017);
  - 3.3.1.3 Nunavut Good Practice Guidelines, latest edition
  - 3.3.1.4 National Fire Code of Canada (2015);
  - 3.3.1.5 CSA C22.1 (2018) – Canadian Electric Code;
  - 3.3.1.6 Treasury Board Fire Protection Standard (2009);
  - 3.3.1.7 ASHRAE Standard 55 (2017) – Thermal Environmental Conditions for Human Occupancy;
  - 3.3.1.8 ASHRAE Standard 62 (2019) – Ventilation and Acceptable Indoor Air Quality
  - 3.3.1.9 ASHRAE Standard 90 (2010) – Energy Standard for Buildings Except Low-Rise Residential Buildings;
  - 3.3.1.10 CSA B139 (2019) – Installation Code for Oil Burning Equipment;
  - 3.3.1.11 CCME PN1326, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products;
  - 3.3.1.12 CSA B126 Series) for potable water storage.
  - 3.3.1.13 CSA B66-16 for prefabricated septic tanks and sewage holding tanks
- 3.3.2 Where there is a more recent version of the codes, regulations and policies, the most recent will apply unless otherwise approved by Parks Canada.

### 3.4 Seasonality & Design Parameters

- 3.4.1 The Garage will be used year-round and shall be designed based on the climatic data detailed in the NBCC 2015, NECB 2017, ASHRAE and local climatic information. Indoor design conditions shall be in accordance with ASHRAE guidelines and sound engineering practice.
- 3.4.2 The design shall resist environmental conditions present at the specified site in Resolute Bay, NU.
- 3.4.3 Gravity, Wind, Snow, and Seismic Loads are to be determined in accordance with Part 4 of the National Building Code of Canada 2015 for the specified site in Resolute, NU.
- 3.4.4 The design must consider the effect of drifting snow at the base of the building as well as adjacent to the structure.
- 3.4.5 The design must consider evacuation of rain and surface water from the roof.
- 3.4.6 The drainage must not conflict with the points of entry and must drain away from the building and its foundations.
- 3.4.7 Exhaust that may have freeze and clog are accessible such that snow and ice may be cleared as required.

### 3.5 Design Specifications

- 3.5.1 The design must meet the following mandatory design specifications. Alternatives to the specifications will be considered if the integrity and quality of the design is enhanced.
- 3.5.2 Refer to the plans within this package. Deviation will not be allowed unless it can be demonstrated to the satisfaction of the Departmental Representative that alternates will enhance the integrity and quality of building and environment within.

### 3.6 Appliances

- 3.6.1 Turnkey solution including all appliances as follows:
  - 3.6.1.1 Countertop Microwave: Capacity Min. 1.5 cu ft. / Wattage Min. 1500W / Finishes Stainless Steel, Black. Acceptable product: Microwave Model Number: CEB1599SJSS by GE or equivalent as approved by the Departmental Representative.
  - 3.6.1.2 Combination Refrigerator/Freezer: Capacity Min. 23.8 cu ft / Freezer full width bottom drawer / Refrigerator French Door / Finishes Stainless Steel, Black. Acceptable product: French-Door Refrigerator Model Number: GFE24JSKSS by GE or equivalent as approved by the Departmental Representative.

### 3.7 Electrical

- 3.7.1 Electrical power systems are required and must meet all codes and standards.
  - 3.7.1.1 120-240V electrical service with exterior mast and meter is needed. The Consultant shall ensure the service is adequately sized for the design loads with an allowance for future additional loads and upsize the electrical service if required.

- 3.7.1.2 Provide new emergency power system with a power inlet box to allow connecting a portable generator outside of the building, manual transfer switch, emergency distribution sub-panel. The Consultant shall size the portable generator to suit the emergency load. The backup generator will be used to power the heating system, pumps and heat tracing for the water and drainage systems, a few light fixtures, a few electrical outlets, etc.
- 3.7.1.3 Provide new normal power and back-up power panelboards with sufficient circuits to suit the electrical design with spaces for future breakers.
- 3.7.1.4 Provide receptacles for office desk / workstation, counter appliances in kitchenette, workbench and at least one on all walls, coordinate locations with Client;
- 3.7.1.5 A number of receptacles will have integral USB charging ports, i.e. kitchen counters, office spaces,
- 3.7.1.6 Weatherproof outdoor receptacles, i.e. for car block heaters, for plug-in tools.
- 3.7.1.7 Provide power to all M&E equipment, including domestic water heating equipment, building heating equipment, ventilation/ exhaust equipment, control panels, etc.
- 3.7.1.8 The Building will have interior light fixtures in all rooms, closets, stairs / landings, corridors, and exterior light fixtures at all entrance doors, stairs / landings.
- 3.7.1.9 LED indoor light fixtures will be controlled by manual switches, Illumination levels to meet the Illuminating Engineering Society (IES) standards.
- 3.7.1.10 Provide the required emergency lighting for exits as required by Code. Exterior light fixtures will be as efficient as possible and function in  $-50^{\circ}\text{C}$  temperature. They will be controlled by switches, photocells and/or timers. Illumination levels to meet the Illuminating Engineering Society (IES) standards and Dark Sky Guidelines.

### 3.8 Mechanical – HVAC

- 3.8.1 The Consultant shall design a heating system of sufficient capacity to heat the building under design conditions. The heating system shall be designed to achieve a higher efficiency.
- 3.8.2 Protect equipment and components against freezing.
- 3.8.3 Provide new oil fired heating system with venting & combustion air, safety devices, air/dirt separator, controls with outdoor air temperature reset, etc.
- 3.8.4 Fuel oil piping from tank located outdoors, fuel filter, etc.

The Consultant shall design a mechanical ventilation system as required by Code, minimum fresh air: not less than required by ASHRAE Standard 62.

- 3.8.5 Washroom exhaust systems: fans with ECM motor will be controlled by wall mounted switch.
- 3.8.6 The exhaust air outlets and outdoor air intakes shall be located and/or be provided with protection shields to prevent wind and snow from blowing into the exhaust/ intake hoods.
- 3.8.7 Locate fresh air intakes to prevent contamination by external sources such as road traffic, smokestacks or exhaust outlets
- 3.8.8 All intakes and exhausts are to be easily accessible such that any ice build up or any other obstructions may be cleared.
- 3.8.9 Perform Commissioning (CX) of HVAC systems.
- 3.8.10 Submit TAB and CX reports.

### 3.9 Mechanical – Plumbing

- 3.9.1 The Building will require a tanked water and tanked sanitary sewer system with shut off floats. Exterior fill and dispose connections are required as only trucked services are available for this lot. The Consultant shall adequately size the plumbing design loads and sanitary drainage system to suit the new plumbing fixture layout.
- 3.9.2 All sanitary drainpipes shall be located away from exterior walls to minimise the risk of freezing.
- 3.9.3 Insulation and heat trace water/sanitary drain/ sewer pipes to prevent freezing, where required.
- 3.9.4 The Consultant shall adequately size the plumbing design loads for the potable water supply system to suit the new plumbing fixture layout.
  - 3.9.4.1 Domestic water pipes shall be insulated to minimize heat loss and condensation.
  - 3.9.4.2 Provide shut-off ball valves to allow isolation of sections of the piping for ease of maintenance without having to turn off water to the entire building.
  - 3.9.4.3 All water pipes shall be located away from exterior walls and doorway to minimise the risk of freezing,
  - 3.9.4.4 Heat trace domestic water pipes to prevent freezing, where required.
  - 3.9.4.5 Slope pipes and provide drain valves at low points so piping can be drained easily.
- 3.9.5 Provide new electric mini hot water unit for sinks.
  - 3.9.5.1 Provide new plumbing fixtures, connect to sanitary drain, plumbing vent, domestic cold water and domestic hot water, provide stop valves at each fixture.
- 3.9.6 Utility sink

- 3.9.6.1 Single compartment sink in ground floor lavatory;
- 3.9.7 The toilet will be vitreous china, tank type, dual-flush high efficiency (HET) with MaP ratings of at least 1,000 grams, with seat and cover.
- 3.9.8 Lavatories with vitreous china bowls, overflow opening, manual chrome plated metal faucet.
- 3.9.9 Kitchenette sink with stainless steel self-riming bowl with under coating, chrome plated metal faucet with swing spout and aerator.
- 3.9.10 Ensure sanitary drains are designed to tie into the sewage tank
- 3.9.11 Provide low flow fixtures meeting requirements of the National Plumbing Code.

### 3.10 Safety and Warning Devices

- 3.10.1 Photoelectric CSA/ULC certified Smoke Detector and CSA/ULC certified Carbon Monoxide Alarm. Smoke alarms must be hardwired with battery back-up, quantity and location as required by code.
- 3.10.2 Provide new exit signs as required by code.

### 3.11 Schedule

- 3.11.1 The tentative schedule is listed below in table 1.
- 3.11.2 The consultant shall advise and justify any deviations
- 3.11.3 Allow for 2 weeks for review and comments before continuing with next submission unless otherwise directed by the Department Representative.

Table 1: Schedule

<b>Activity</b>	<b>Completion date</b>
Award	July 2021
Kick off meeting	1 week of award
Concept	3 weeks of award
Schematic Design	5 weeks of award
33% Completion of design development	2 months of award
66% Completion	3 months of award
90% Completion	5 months of award
Design Complete	6 months of award

## 4 Deliverables

- 4.1.1 Submit electronic copies of the concept, schematic design, 33%, 66%, 90% and 100% complete specifications and drawings meeting the requirements and design intent of the attached concept and the requirements in section 2 and 3 above.
- 4.1.2 Provide construction cost estimates with each submission. The final construction document should include Class A cost estimates.

## 5 References

- 5.1 Nunavut good building practices
- 5.2 Federal, Territorial and Municipal Acts, Codes and Regulations

Appendix A

