



Qausuittuq  
**National Park**

Statement of Work  
for Design Renovation of Administrative Office  
Resolute, Nunavut

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## 1 Introduction

### 1.1 Background

- 1.1.1 Qausuittuq National Park recently acquired a building in Resolute, Nunavut and plans to use it as an administrative office.
- 1.1.2 The building, located on Lot 6, Block 5, is a two story, single-detached dwelling built in 1968.
- 1.1.3 Prior to being acquired by Parks, the building served as staff housing for the Resolute RCMP detachment. It is currently not optimized for office use.
- 1.1.4 During the summer of 2018, a consultant contracted by Parks Canada travelled to Resolute to evaluate the condition of the building and identified several deferred maintenance items.

Figure 1: QANP House in Resolute, NU



### 1.2 Objectives

- 1.2.1 To develop design documents for the procurement of construction services to complete renovations and repairs to the QANP building in Resolute, Nunavut to make it suitable for office use and address deferred maintenance items.
- 1.2.2 To improve the efficiency of the building mechanical systems and envelope.
- 1.2.3 To prepare the building for other future changes when other infrastructure becomes available.

## 2 Scope

### 2.1 General

- 2.1.1 The Consultant is required to complete construction drawings and specifications for the concept design provided by Parks Canada.



- 2.1.2 All designs 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 Architectural Design
  - 2.4.1.1 The Consultant must complete a detailed design in accordance with the design philosophy and principals expressed in the concepts design drawings within this package.
- 2.4.2 Structural
  - 2.4.2.1 The Consultant must complete a detailed design to repair and upgrade existing foundation to prevent further shifting, design new foundation for the new airlocks and coordinate structural modifications with new work.
  - 2.4.2.2 The structural designer shall work closely with the building envelope designer to ensure thermal bridging is minimized at all structural connections.
- 2.4.3 Building Envelope Design
  - 2.4.3.1 The Consultant must complete a detailed envelope design to meet the performance targets and design principles outlined in the concept design drawings provided within this package.
- 2.4.4 Mechanical and Electrical Design

- 2.4.4.1 The Consultant must complete design of upgrades for mechanical and electrical systems based on the site-specific requirements. The Consultant will retain all necessary professional services required to perform the design.
- 2.4.4.2 The design must at a minimum include the following:
  - 2.4.4.2.1 Plumbing systems upgrades including domestic cold & hot water distribution, sanitary drainage, new domestic water heating system, new plumbing fixtures;
  - 2.4.4.2.2 HVAC systems upgrades including new heating system, new mechanical ventilation system with outdoor air intake and heat recovery unit, new exhaust systems, new controls;
  - 2.4.4.2.3 Electrical power systems upgrades including electrical service, electrical distribution with new electrical panels and receptacles, new back-up power system;
  - 2.4.4.2.4 Electrical lighting systems upgrades including new interior & exterior lighting, new switching;
  - 2.4.4.2.5 Fire protection systems upgrades including all required emergency lighting, fire alarm, CO alarm, exit signs
- 2.4.5 Demolition:
  - 2.4.5.1 Based on the extensive renovation, include specifications for the demolition and disposal of material of the existing building prior to installing the new systems.

### 3 Detailed Requirements

#### 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 provided conceptual drawings and specifications as well as the performance parameters included herein.

#### 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 Offices complies with the following mandatory codes, regulations, and policies:

- 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 62.1 (2019) – Ventilation and Acceptable Indoor Air Quality
- 3.3.1.9 ASHRAE Standard 62.2 (2019) – Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings;
- 3.3.1.10 ASHRAE Standard 90.2 (2018) – Energy Efficient Design of Low-Rise Residential Buildings;
- 3.3.1.11 CSA F326 – Residential Mechanical Ventilation Systems;
- 3.3.1.12 CSA B139 (2019) – Installation Code for Oil Burning Equipment;
- 3.3.1.13 CCME PN1326, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products;

### 3.4 Seasonality & Design Parameters

- 3.4.1 The Office will be occupied 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 on the airlocks 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.

### 3.5 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 Over-The-Range Exhaust Fan: Exhaust fan to match look the electric range. See section 3.8.2c below for ventilation requirements.
  - 3.6.1.3 Electric Range: Dimensions 28 1/4" x 37 1/4" x 29 7/8" / Cooktop Surface is Ceramic Glass / Finishes Stainless Steel, Black. Acceptable product: 30" Slide-In Front Range Model Number: PHS930SLSS by GE or equivalent as approved by the Departmental Representative.
  - 3.6.1.4 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.
  - 3.6.1.5 Dishwasher: Dimensions 18" x 32" x 24" / Style Built In / Finishes: Stainless Steel, Black. Acceptable product: Built-In Dishwasher Model Number PDW1860KSS by GE or equivalent as approved by the Departmental Representative.
  - 3.6.1.6 Washer dryer : Combo unit, high efficiency (HE) top load washer with minimum capacity of 1.5cu ft for the washer and 3cu ft for the dryer

### 3.7 Electrical

- 3.7.1 The existing electrical power systems are not entirely suited for the new architectural layout, new building occupancy and new mechanical/ electrical systems, also, there are a number of code deficiencies that need to be corrected. The electrical power systems shall be upgraded as follows.
- 3.7.1.1 There is an existing 120-240V aerial electrical service with a mast and meter on the east façade of the building. The Consultant shall confirm whether 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. Current estimates are for a 5 to 8kW generator. The portable backup generator will be supplied by the Client. 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 The two existing panelboards will be demolished and properly disposed. Provide new normal power and back-up power panelboards with sufficient circuits to suit the electrical design with spaces for future breakers. Provide one new sub-panel that will feed all the second-floor loads. Install it on the second floor such that it will be readily accessible to occupants on the second floor. Do not install panelboards recessed in exterior walls so as not to reduce the R-value of the walls.
  - 3.7.1.4 Replace code deficient wiring. Provide new wiring as needed. Remove and properly dispose of obsolete wiring.
  - 3.7.1.5 Provide new wiring for exit signs.
  - 3.7.1.6 Provide single circuit, double circuit, GFCI, AFCI receptacles to meet code requirements and with additional receptacles as required to suit architectural and furniture layouts;
  - 3.7.1.7 Provide receptacles for office workstations, coordinate locations with Client;
  - 3.7.1.8 A number of receptacles will have integral USB charging ports, i.e. kitchen counters, office spaces,
  - 3.7.1.9 Weatherproof outdoor receptacles, i.e. for car block heaters, for plug-in tools.
  - 3.7.1.10 Remove and properly dispose of obsolete receptacles.
  - 3.7.1.11 Power to mechanical and electrical equipment

- 3.7.1.12 Provide power to all M&E equipment, including domestic water heating equipment, building heating equipment, ventilation/exhaust equipment, water pumps, sanitary pumps, heat tracing, control panels, etc.
- 3.7.1.13 The existing lighting systems are not entirely suited for the new architectural layout and new building occupancy, also, there are a number of code deficiencies that need to be corrected.
- 3.7.1.14 The Building will have interior light fixtures in all rooms, closets, stairs / landings, corridors, and exterior light fixtures at all entrance doors, stairs / landings, entrance air locks.
- 3.7.1.15 LED indoor light fixtures will be controlled by switches, timers/motion sensors. Illumination levels to meet the Illuminating Engineering Society (IES) standards.
- 3.7.1.16 Exterior light fixtures will be as efficient as possible and function in -50°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.
- 3.7.1.17 Remove and properly dispose of obsolete light fixtures and switching devices.

### 3.8 Mechanical – HVAC

- 3.8.1 The existing heating system is old and not entirely suited for the new architectural layout and new building occupancy. The heating system shall be upgraded as follows:
  - 3.8.1.1 Demolish and properly dispose of the existing oil furnace and venting, ductwork, grilles, controls;
  - 3.8.1.2 The Consultant shall design a hydronic heating system of sufficient capacity to heat the building under design conditions, plus the domestic hot water. The heating system shall be designed as a low temperature (less than 49°C) system to achieve a higher efficiency.
  - 3.8.1.3 Select pipe size and material for fluid medium, and design conditions.
  - 3.8.1.4 Provide reverse return piping on heating system.
  - 3.8.1.5 Provide drain capability at low points, auto vents for high points.
  - 3.8.1.6 Locate isolation valves at branches, at connection to equipment, and at flow control balancing valves as required.
  - 3.8.1.7 Provide flexible connections and vibration isolation supports and hangers at connection to equipment. Do not support piping from equipment.
  - 3.8.1.8 Protect equipment and components against freezing.
  - 3.8.1.9 Provide for chemical cleaning of piping.

- 3.8.1.10 Provide dielectric unions at connections between different materials.
- 3.8.1.11 Provide means to add chemicals and glycol to systems in operation.
- 3.8.1.12 Insulate piping to minimize heat loss and as required to maintain design temperature at every terminal device.
- 3.8.1.13 Provide new sealed combustion oil fired boiler with venting & combustion air, safety devices, chemical feed system, air/ dirt separator, hydraulic separator decoupler, water feed system, expansion tank, controls with outdoor air temperature reset, etc.
- 3.8.1.14 The boiler will supply hot water to heat the building and the domestic hot water.
- 3.8.1.15 Hydronic heating system with low temperature wall panel radiators or in-floor heating, zoned with one thermostat per room, reverse return HWS/HWR piping, primary/secondary loops, variable flow pumps with ECM motors, two-way control valves, etc.
- 3.8.1.16 Heating water with propylene glycol solution to prevent freezing.
- 3.8.1.17 Hot water circuit for domestic hot water heating via indirect domestic hot water tank.
- 3.8.1.18 Fuel oil piping from tank located outdoors, fuel filter, etc.
- 3.8.1.19 The existing ventilation system is not entirely suited for the new architectural layout and new building occupancy, also, there are a number of code deficiencies that need to be corrected. The ventilation system shall be upgraded as follows.
- 3.8.1.20 The Consultant shall design a mechanical ventilation system as required by Code, minimum fresh air: not less than required by ASHRAE Standard 62. A heat recovery ventilator will be installed to recover energy from exhausted air.
- 3.8.1.21 Heat recover ventilator with large surface high efficiency heat recovery core, fans with ECM motors, control panel, noise mitigation measures, core defrost cycle. The efficiency of the HRV shall be 85% or better.
- 3.8.1.22 Kitchen hood exhaust systems: fan with ECM motor, integral LED light.
- 3.8.1.23 Washroom exhaust systems: fans with ECM motor, speed control for balancing, will be controlled by wall mounted timer switch.
- 3.8.1.24 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.

- 3.8.1.25 Locate fresh air intakes to prevent contamination by external sources such as road traffic, smokestacks or exhaust outlets.
- 3.8.1.26 Insulate ductwork to minimize heat loss.
- 3.8.1.27 Ductwork to SMACNA HVAC Duct Construction Standards.
- 3.8.1.28 Perform air and water balancing, to minimum requirements specified in AABC.
- 3.8.1.29 Perform Commissioning (CX) of HVAC systems.
- 3.8.1.30 Submit TAB and CX reports.

### 3.9 Mechanical – Plumbing

- 3.9.1 The existing plumbing systems are not entirely suited for the new architectural layout and new building occupancy also, there are a number of code deficiencies that need to be corrected. The plumbing systems shall be upgraded as follows.
- 3.9.2 The Building is connected to the municipal sanitary sewer service. The Consultant shall confirm whether the sanitary service is adequately sized for the plumbing design loads and upsize the sanitary service if required. The Consultant shall upgrade the sanitary drainage system to suit the new plumbing fixture layout.
- 3.9.3 All sanitary drainpipes shall be located away from exterior walls to minimise the risk of freezing.
- 3.9.4 Heat trace sanitary drain/ sewer pipes to prevent freezing, where required.
- 3.9.5 The Building is connected to the municipal water service. The Consultant shall confirm whether the water service is adequately sized for the plumbing design loads and upsize the water service if required. The Consultant shall upgrade the potable water supply system to suit the new plumbing fixture layout.
  - 3.9.5.1 Replace existing potable water storage tank. Reconnect existing water pressure pump, expansion tank, water meter.
  - 3.9.5.2 Domestic water pipes shall be insulated to minimize heat loss and condensation.
  - 3.9.5.3 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.
  - 3.9.5.4 All water pipes shall be located away from exterior walls to minimise the risk of freezing , with exception of the connection point from the municipal lines.
  - 3.9.5.5 Heat trace domestic water pipes to prevent freezing, where required.
  - 3.9.5.6 Provide water hammer arrestors on water supply pipes to clothes washers.
  - 3.9.5.7 Slope pipes and provide drain valves at low points so piping can be drained easily.



- 3.9.6 Demolish and properly dispose of existing oil-fired domestic water heater and venting.
  - 3.9.7 Provide new indirect hot water tank piped to the boiler, located in the Mechanical room. Install on a housekeeping pad. Provide circulating pump, controls, valves, etc.
  - 3.9.8 Pump: all bronze or stainless steel, with ECM motor.
  - 3.9.9 Demolish and properly dispose of all existing plumbing fixtures.
  - 3.9.10 Provide new plumbing fixtures as shown on the Architectural drawings, connect to sanitary drain, plumbing vent, domestic cold water and domestic hot water, provide stop valves at each fixture.
  - 3.9.11 Double compartment sink in 2nd floor kitchen;
  - 3.9.12 Bathtub with shower head, water closet and lavatory in 2nd floor bathroom;
  - 3.9.13 Laundry sink and connection for clothes washer in mechanical room;
  - 3.9.14 Single compartment sink in ground floor boardroom;
  - 3.9.15 Water closet, lavatory, shower and connection for clothes washer in ground floor bathroom;
  - 3.9.16 Water closets will be vitreous china, tank type, dual-flush high efficiency (HET) with MaP ratings of at least 1,000 grams, with seat and cover.
  - 3.9.17 Lavatories with vitreous china bowls, overflow opening, manual chrome plated metal faucet.
  - 3.9.18 Kitchen sinks with stainless steel self-rimming bowl with under coating, chrome plated metal faucet with swing spout and aerator.
  - 3.9.19 Shower with acrylic stall and base, thermostatic/ pressure balance shower valve, fixed non-clogging shower head. The shower on the ground floor may need to be installed on a platform to avoid installing the drain pipe in the crawl space.
  - 3.9.20 Bathtub: acrylic, combination shower and over-rim bath fittings, thermostatic/ pressure balance shower valve, fixed non-clogging shower head.
  - 3.9.21 Provide floor drains, funnel drains, sanitary lift pumps, macerating toilet with integral lift station for ground floor bathroom group (toilet, shower, lavatory, clothes washer) For example: [www.saniflo.ca](http://www.saniflo.ca).
  - 3.9.22 Provide low flow fixtures meeting requirements of the National Plumbing Code.
- 3.10 Telecom
- 3.10.1 Provide network connections for office computers. Coordinate locations with Client.
- 3.11 Safety and Warning Devices
- 3.11.1 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.
  - 3.11.2 Provide new exit signs as required by code.

### 3.12 Schedule

- 3.12.1 The tentative schedule is listed below in table 1.
- 3.12.2 The consultant shall advise and justify any deviations
- 3.12.3 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	March 2021
Kick off meeting	2 weeks of award
50% Completion	2 months of award
90% Completion	4 months of award
Design Complete	6 months of award
Tender for Construction	7 months of award
Construction Start:	September 2021
Substantial Completion:	December 2022

## 4 Deliverables

- 4.1.1 Submit electronic copies of the 50%, 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