STATEMENT OF WORK

Pacific Rim National Park Reserve
Telegraph Hill Communications Tower
Tofino, BC

1.0 OBJECTIVE

Parks Canada Agency (PCA) is seeking services to design, supply, and install a new communications tower and shelter at Telegraph Hill in Tofino, BC. The new infrastructure will provide improved radio signal reliability throughout Pacific Rim National Park Reserve (PRNPR).

2.0 BACKGROUND

PCA relies on radio communications for all communications within PRNPR. As improvements to signal strength and reliability are necessary, Telegraph Hill has been identified as a viable location to stage a communications tower to provide improved radio services. The Telegraph Hill site is located on land owned by Transport Canada just outside of the boundary of PRNPR. The hill-top site is already serviced by power and can be accessed by an existing road. There is an existing tower and shelter, owned and operated by NAV CANADA, at the site, as well as an existing unused concrete pad. PCA requires a design build radio contractor to test the existing concrete pad for useability to stage the new tower and shelter; and to provide design, supply, and install services for a communications tower and shelter at the Telegraph Hill location.

3.0 SCOPE

The Contractor's scope of work is as follows:

3.1 Conduct, at minimum, one site visit following contract award. For context, Appendices A and B show the site location and site photos respectively.

3.2 Evaluate the condition and useability of the existing concrete pad at the Telegraph Hill site for staging and anchoring the new radio tower and shelter.

3.3 Supply, design, and install a communications tower to support the antennas and all other tower accessories described in this scope of work. The tower must have a total height just less than 15m (49.2') including the height of the structure on which it is mounted. The total height does not include antennas. The tower must be designed for the local weather conditions at the site.

3.3.1 Perform an engineering structural load-analysis on all tower antennas, cables, and mounting configurations to ensure they do not exceed structural capacity for the tower.

3.3.2 Supply and install proper grounding of the antennas to the tower for lightning protection.

3.3.3 Supply and install an anti-climb structure on the tower to prevent unwanted access.

3.3.4 Supply and install an access ladder and fall arrest safety system for maintenance work on the tower.

3.3.5 Supply and install two (2) new AVA4-50 / LDF4-50 (1/2 inch Heliax) cable runs for the two antennas, N-Type Female antenna side termination and N-Type Male equipment side termination. A different cable may be substituted upon approval of Parks Canada.

3.3.6 Supply and install all required tower hangers for the new AVA4-50 / LDF4-50 (1/2 inch Heliax) cables.

3.4 Supply, design a mounting solution for, and install a VHF antenna to be placed at the top-most position on the tower. Mounting solution to conform to all applicable standards and codes pertaining to the mounting of antennas on towers (CSA). The preferred antenna selection is:

3.4.1 4-dipole VHF Antenna: Comprod 874F-70, Black Anodized, 1/2 wave spacing, azimuth 35 degrees TN (roughly NE). *Equivalent replacement antenna acceptable upon approval by Parks Canada.*

3.4.2 The Contractor must propose either top-mounting or side-mounting the selected antenna, based upon what the tower will accept and applicable standards and codes, and order the appropriate version (either side mount or top mount).

3.5 Supply, design a mounting solution for, and install a UHF antenna 10’ below the topmost antenna. Mounting solution to conform to all applicable standards and codes pertaining to the mounting of antennas on towers (CSA). The preferred antenna selection is:

3.5.1 UHF Radome Antenna: Comprod 426-70-R, Horizontal Polarization, Frequency 414-419 MHz, azimuth 119 degrees TN. Equivalent replacement antenna acceptable upon approval by Parks Canada.

3.6 Supply and install a communications shelter with interior lighting, dehumidification, and heating systems. The Contractor must propose a cost-effective shelter and accessories that are appropriate for the location and local weather conditions with a shelter footprint between 6’ x 6’ to 8’ x 10’. The shelter must be lockable from both the exterior and interior.

3.6.1 Supply and install a waveguide bridge to guide the two cable runs from the tower to the shelter at a standard above ground height. The exact distance will be determined by the site layout, but the expectation is that this waveguide bridge will be less than 10’.

3.6.2 Supply and install a weathertight building ingress system for the cables entering the shelter.

3.6.3 Supply and install a copper ground bar inside the shelter, at the location of the cable ingress.

3.6.4 Supply and install a direct connection to earth ground from the copper grounding bar using standard gauge grounding cable.

3.6.5 Supply and install two (2) polyphaser lightning arresters onto the copper bar and terminate the cables as to directly connect to these devices. Preferred polyphaser selection is: IS-B50LN-C0 (N-F to N-F).

3.7 Test and verify the installed cable runs and antennas. Antenna sweeps with a VSWR and/or return-loss meter must be supplied.

4.0 DELIVERABLES

The Contractor shall provide the following deliverables to the PCA Departmental Representative:

4.1 Final stamped and sealed as-built engineering drawings of the communications tower and tower accessories including antennas.

4.1.1 Submit as one digital copy in PDF format.

4.1.2 Submission due upon project handover to PCA personnel.

4.2 Operation & Maintenance (O&M) manual to include all materials and product information sheets and shop drawings, maintenance requirements/manuals, supplier contract information, warranty certificates etc.

4.2.1 Submit as one digital copy in PDF format and one paper copy in a 3-ring binder, with dividers for each section.

4.2.2 Submission due upon project handover to PCA personnel.

4.3 Construction of communications tower and shelter complete, including testing, and handed over to PCA personnel.

4.3.1 PCA is responsible for the installation of radio equipment and connecting to power at the site.

4.3.2 All construction and installation work to occur between January 15th and March 25th, 2024. Site visits can be arranged prior to this period for viewing the site and testing the existing concrete pad.

5.0 CONTRACTOR RESPONSIBILITIES

Contractor responsibilities are as follows:

5.1 Provide all resources to complete, upon written approval to proceed, the scope of work.

5.2 Coordinate with the PCA Departmental Representative to gain access into the work area.

6.0 PARKS CANADA AGENCY RESPONSIBILITIES

PCA's responsibilities are as follows:

6.1 Provide access to the site as required.

6.2 Review all work to confirm completion.

6.3 Process progress claims for payment of completed work.

6.4 The following items are the responsibility of PCA and are therefore excluded from the Contractor's scope of work:

6.4.1 Clearing of vegetation along the access road and topping vegetation surrounding the site at Telegraph Hill.

6.4.2 Supply and install of all radio equipment in the communications shelter.

6.4.3 Coordination with BC Hydro and supply and install of electrical panel, meter box, mast head, and wiring to connect to power at the site.

7.0 HEALTH & SAFETY

7.1 Contractor to comply with all federal occupational health and safety requirements including the use of proper Personal Protective Equipment (PPE) while on-site.

7.2 Should any unforeseen safety-related factor, hazard, or condition become evident during performance of work, immediately stop work, and advise PCA verbally and in writing.

7.3 Contractor to supply a Health and Safety Plan to PCA after the start-up meeting and prior to beginning any work on site.

8.0 ENVIRONMENTAL CONSIDERATIONS

8.1 An environmental impact assessment is currently underway, coordinated by PCA in conjunction with Transport Canada. Any routine environmental conditions will be provided to the contractor, with no foreseen issues to impact work.

9.0 QUALIFICATIONS

The Contractor must meet the following qualifications:

9.1 The Contractor will perform the work outlined in a substantial, cost-effective, complete, and professional manner. The Contractor must furnish any associated sundries necessary for undertaking the work and shall not omit any details necessary for its proper performance and completion, even if specific mention of such details is not made in this

scope of work. It is expected that the Contractor shall employ scientifically defensible, appropriate, and most reliable investigative practices.

9.2 The stamped and sealed as-built engineering drawings must be completed by an engineer accredited with Engineers and Geoscientists British Columbia (EGBC) or equivalent provincial accreditation.

10.0 MEETINGS

10.1 A start up meeting via MS Teams will be held within one week after contract award subject to availability of personnel.

10.0 COST OF SERVICES

The project will be completed as a fixed lump sum contract with agreed hourly rates of applicable roles for additional work if required.

11.0 SITE LOCATION

Telegraph Hill, 49°05'22.7"N 125°51'10.8"W, Tofino, BC V0R 2Z0

APPENDIX A: PROJECT LOCATION & SITE MAP

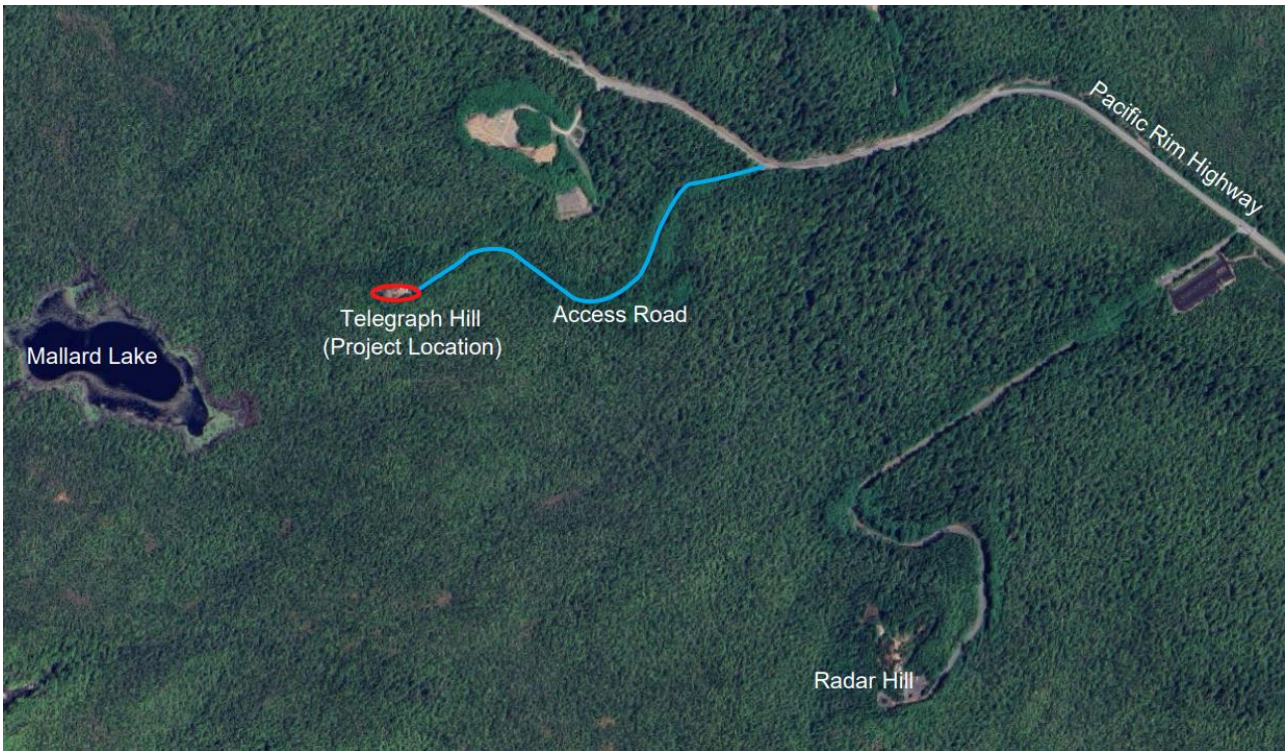

Figure 1: Project Location

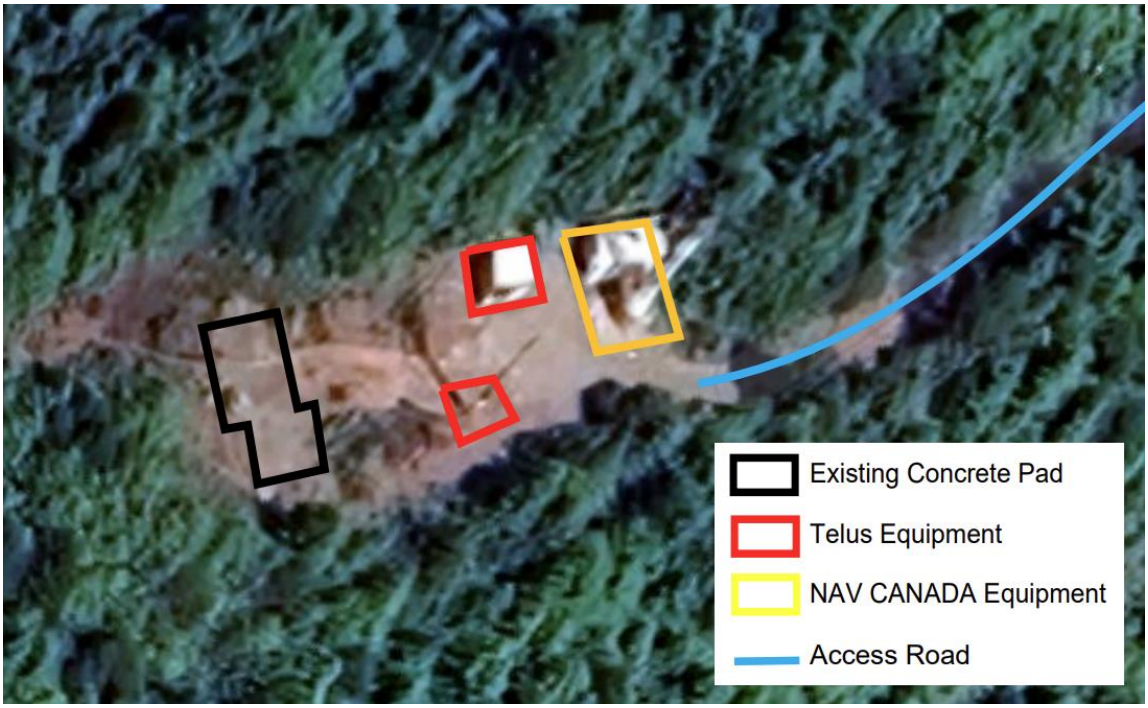

Figure 2: Site Map. The Telus equipment will be decommissioned and removed from the site prior to January 1st, 2024.

APPENDIX B : SITE PHOTOS

Figure 3: View of Telegraph Hill site looking towards the access road. The NAV CANADA tower and shelter are shown in the background. The Telus tower and shelter in the foreground will be decommissioned and removed from the site prior to January 1st, 2024.

Figure 4: View of Telegraph Hill site facing away from the access road. People shown standing on the existing concrete pad.

Figure 5: Top view of concrete pad.

Figure 6: Side view of concrete pad.