

**SARITA RIVER NEAR BAMFIELD – 08HB014  
CABLEWAY UPGRADES AND REPAIRS  
SPECIFICATIONS**

ENVIRONMENT AND CLIMATE CHANGE CANADA  
NATIONAL HYDROLOGICAL SERVICES  
HYDROLOGICAL OPERATIONS & ENGINEERING SERVICES – NORTH & WEST

101 – 401 Burrard Street  
Vancouver, British Columbia  
V6C 3R2

**Project Location**

Sarita River near Bamfield  
Lat : 48° 53' 33.0" N  
Long : 124° 58' 09.9" W

## 1.0 Introduction

Environment and Climate Change Canada – National Hydrological Services (ECCC–NHS) maintains a hydrometric station at Sarita River consisting of a cableway system for the purpose of collecting and transmitting water level data. The cableway is condemned due to various infrastructure components that failed to meet NHS’s safety requirements. NHS plans to repair and upgrade the cableway to return it to operational conditions.

## 2.0 Location and Access

The site is located 0.5 km downstream from south fork of Sarita River, approximately 74 km SW of Port Alberni. The station coordinates are approximately 48.89250 N, 124.96944 W NAD83. The cableway is located in the Huu-ay-aht First Nations territory. The Contractor must not enter the site without approval from the Huu-ay-aht First Nations and the Technical Authority, contact the Technical Authority.

The cableway is **out of service** and **should not** be used under any circumstance for the transportation of people/goods. An advanced approval from the Technical Authority is required for the use of the cableway for the transportation of goods only. It is the Contractor’s responsibility to ensure safety for any goods on the cableway.

There is no known road access to the right bank far side. It is recommended that the proponents visit the site to determine the best method of mobilizing and demobilizing materials, tools and equipment to the right bank far side. Please see below a list of considerations regarding location and access:

- In the past, ECCC personnel found a road on the far side that **does not** lead all the way to the cableway location. There is a gate along the road that would need to be opened for vehicle access. ECCC **does not** have the key. Further, vegetation clearing to construct an access path from the road to the cableway **will not be permitted**.
- Machine stream crossing **will not be permitted** due to existing water levels and fish presence.
- There is no space for landing a helicopter on the right bank far side.
- The far side bank is steep (approximately 50% grade and vertical in some areas).
- There is a variety of trees present on the right bank far side. Tree removal for laydown space and excavation should be minimized to maintain bank stability and requires approval from the Technical Authority.
- General observation of the geology on the right bank far side infers rock in excavation, rock outcrops and boulders visible on the bank face.

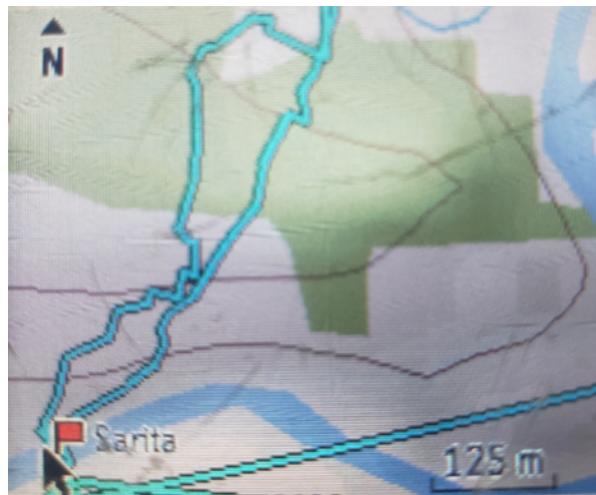


Photo 1. ECCC walked path – difficult to access

### 3.0 Existing Infrastructure

The cableway spans approximately 60.5 meters across Sarita River. The spanning cable consists of a main 7/8" diameter IWRC and 3/8" 1x7 cable with 2 attached marker balls.

Left Bank Home Side: The home-bank cable support consists of a 16' tall steel HD pipe A-frame resting on concrete footings. The A-frame components consist of a ladder and platform. An aluminum stand-up cable car is attached to the main cable and rests above the platform.

Left Bank Home Side: The main cable and marker cable are attached to a single concrete mass anchor buried behind the A-frame. The anchor dimensions are approximately 8.5' x 6' x 6'. A 3/8" 1x7 tieback cable is attached to the concrete anchor and the A-frame to provide additional support.

Right Bank Far Side: There is no A-frame or ladder on this side.

Right Bank Far Side: The main cable is attached to a single steel plate side-hill anchor. The marker cable is attached to a cross plate anchor. There is no tieback cable on this side.

### 4.0 Scope of Work

The Work for this project consists of the construction services for infrastructure upgrades/repairs of the National Hydrological Services Cableway Station located at Sarita River, identified as Sarita River near Bamfield (08HB014). The Contractor will provide all aspects of the Work for which generally consists of the following:

- Submittals
- Project management and coordination
- Mobilization and demobilization
- Supply materials, equipment, labour and incidentals
- Remove and dispose existing non-required infrastructure components
- Installation, replacement and setting of required infrastructure components
- Site restoration

Information regarding submittals required can be found in Section 14.0. The infrastructure Work can be broken down to the following:

- Left Bank Home Side:
  - Remove 3/8" tieback cable and replace with two (2) new 1/2" 6x26 EIPS IWRC cables along with specified cable clamps and thimbles.
  - Install Crosby J&J 3/4" x 18" Turnbuckles on new tieback cables.
  - Replace marker cable turnbuckle.
  - Install cableway danger sign.
  - Install main cable safety loop.
  - Install A-frame safety bars and platform gate.
  - Replace ladders and brackets.
- Right Bank Far Side:
  - Remove existing single side-hill anchor and install new double plate side-hill anchor system and bridle.
  - Existing marker cable, hardware and anchor to be undisturbed.
- General:
  - Set main cable sag to sag table shown in Section 18.0
  - Set marker cable sag until mid-span sag matches sag in the mid-span of the main cable.
  - The Contractor is not allowed to pull the cable across the river with a boat due to safety concerns.

- Conduct works during favorable weather conditions. Work should not occur during heavy rain periods.
- New cable must be within 6 inches of center line of existing cable.
- Cost for tree removal and rock excavation will be considered incidental to the work and no additional payment will be made.

## **5.0 Work Sequence**

- Schedule Work progress to allow ECCC Department Representative unrestricted access to inspect all phases of the Work.
- Co-ordinate Work with other ECCC Department Representative(s) doing maintenance, survey, inspection, or testing works.
- Unless otherwise agreed upon, the project is to be completed between **May 2, 2022 and June 3, 2022.**
- ECCC standard work schedules are Monday to Friday 8:00am to 4:00pm. ECCC work outside of these hours will require advance approval. ECCC cannot guarantee the availability of a representative for on-site support outside of these hours.

## **6.0 Contractor Use of Premises**

- Limit use of premises to allow work by ECCC Staff and Departmental Representative.
- Co-ordinate use of premises under direction of ECCC Departmental Representative.
- Repair or replace portions of existing Work that have been altered during construction operations to match existing or adjoining Work, as directed by Departmental Representative.
- Ensure that operational condition of existing Work at completion are still the same, equal to or better than that which existed before new Work started.

## **7.0 ECCC Supplied Items**

- ECCC Responsibilities:
  - Supply Contractor with anchor and cable materials.
  - Supply Contractor with ladder and ladder brackets for attachment to the A-frame.
  - Supply Contractor with danger sign, safety loop, platform gate and safety bar components.
- Contractor Responsibilities:
  - Supply materials not listed under ECCC Supplied Items needed for completion of the project.
  - Pick up all ECCC supplied items from ECCC's warehouse:
    - Warehouse Address: 140 – 13160 Vanier Pl, Richmond BC, V6V 2J2
  - Review relevant Contract Documents. Submit to Departmental Representative notification of observed discrepancies or problems anticipated due to non-conformance with Contract Documents.
  - Deliver all provided items to site.
  - Repair, replace, or pay for all provided items damaged by Contractor or subcontractor during transportation and/or on site.
  - Extra materials are to be returned to ECCC at the completion of the project.

## **8.0 Use of Site and Facilities**

While the Work Site is under the Contractor's control, the Contractor must be entirely responsible for the security of the Work Sites and of the Work, and for the security of the Work of other contractors located on the Work Site.

Any damage to the Work Site caused by the Contractor must be repaired by the Contractor at its own expense.

Any damage caused to the access road/trails by construction equipment must be repaired which may include re-grading, levelling and seeding, to the satisfaction of the Departmental Representative at the sole expense of the Contractor.

### **9.0 Work Conducted Over or Adjacent to Waterways**

All components of the Work must be conducted in accordance with the Environmental Protection Plan prepared for the project.

All components of the Work must be conducted above the high water mark, and without equipment or any infrastructure components entering into the river.

### **10.0 Survey of Existing Site Conditions**

Submission of a tender is deemed to be confirmation that the Contractor has reviewed all available site information and is familiar with all condition or restrictions affecting execution and completion of the Work.

Regularly monitor the condition of the Work Site throughout the construction period.

Monitor river flows and ensure Work is protected from high flows at all times.

### **11.0 Protection of Persons and Property**

The Contractor must comply with all applicable provincial safety regulations, Industrial First Aid Regulations, and Workplace Hazardous Materials Information System Regulations.

The Contractor must take all necessary precautions and measures to prevent injury or damage to persons and property on or adjacent to the Work Site to the extent that may be affected by conduct of Work.

The Contractor must promptly take such measures as are required to repair, replace or compensate for any loss or damage caused by the Contractor to any property at the Contractor's own expense.

### **12.0 Waste Disposal**

Deposits of any construction debris into any waterway are strictly forbidden unless specifically instructed to within the contract documents or by the Departmental Representative.

Cost for waste disposal will be considered incidental to the Work and no additional payment will be made.

### **13.0 Project Meetings**

The Departmental Representative will request a meeting with the Contractor prior to mobilization to site to discuss and review Pre-mobilization Submittals.

Progress and status meetings will be held on a weekly basis, or more frequently as directed by the Departmental Representative. Schedule one (1) hour per week during construction for Progress Meetings with the Department Representative.

The Departmental Representative will request a meeting with Contractor to review Closeout submittals and warranties.

## 14.0 Submittals

- Cost Breakdown Submittal
  - The Contractor must submit a Cost Breakdown to the Department Representative within five (5) business days of Contract Award.
  - The Cost Breakdown must be accepted by the Department Representative before mobilization.
  - The cost breakdown submittal must include, as a minimum, the following sections:
    - Submittals
    - Mobilization
    - Removal of existing and installation of new anchor systems
    - Removal of existing and installation of new tieback cables and hardware
    - Removal of existing and installation of new marker cable turnbuckle
    - Installation of danger sign
    - Installation of main cable safety loop
    - Installation of A-frame safety bar and platform gate
    - Replacement of ladders and brackets
    - Set main cable sag
    - Set marker cable sag
    - Demobilization
    - Others, listing items as applicable
- Pre-Mobilization Submittals
  - The Contractor must submit the following plans and programs to the Departmental Representative for review within five (5) business days of contract award.
    - Project Schedule that is practical and remains within specified Contract duration. At a minimum, it should include milestones and activity types listed in Section 4.0.
    - Contractor Chain of Command, listing key Contractor personnel, including names and positions, telephone, and cell phone numbers including contact persons who are available on a 24-hour basis, in the event of emergencies.
    - Work Plan, describing the Contractor's intended methods of construction including but not limited to the environmental mitigation strategies and projected number of personnel on site. Indicate proposed method of erection of cables, or method of supporting cables during excavation. Indicate proposed tools to be used for the work.
    - Quality Control Plan.
    - Health and Safety Plan per Section 15.0.
    - Environmental Protection Plan per Section 16.0.
    - Emergency Response Plan: address standard operating procedures to be implemented during emergencies.
    - WorkSafe BC Certification.
  - The Contractor will not mobilize until the Departmental Representative has accepted acceptance of the submittals in writing.
- Construction Phase Submittals
  - The Contractor must submit copies of reports or directions issued by Federal and Provincial health and safety inspectors to the Departmental Representative.
  - The Contractor must submit copies of incident and accident reports within 24 hours of incident or accident to the Departmental Representative.
- Project Close-Out Submittals
  - The Contractor must submit a construction report outlining the work completed daily to date including photographs to the Departmental Representative.

- Waste manifests – The Contractor must submit a manifest of the type and quantity of the waste to the Departmental Representative.

### **15.0 Health and Safety**

- The Contractor must submit site-specific Health and Safety Plan: within 5 days of contract award. Health and Safety Plan must include:
  - Results of site-specific safety hazard assessment, including safety of users of the river during Work.
  - Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative.
- Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- The Contractor is responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- The Contractor must comply with Workers Compensation Act, B.C. Regulations.
- The Contractor must comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.
- The Contractor must immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- The Contractor must provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

### **16.0 Environmental Procedures**

Before mobilizing to site or picking up of materials, the Contractor will prepare and submit a site Access and Layout Plan indicating proposed locations of access routes, lay down areas, and vegetation clearing required to complete the Work. Plan must also include remediation of access and laydown areas.

Submit Environmental Protection Plan for review by Departmental Representative and ECCC's Qualified Environmental Professional (QEP) within 5 days of contract award. Include in Environmental Protection Plan:

- Name of personnel responsible for ensuring adherence to Environmental Protection Plan.
- Name and qualifications of personnel responsible for manifesting hazardous waste to be removed from site.
- Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- Construction Waste Management Plan outlining the methods for collection, transportation, and disposal of the waste generated at the construction site.
- Material Safety Data Sheets (MSDS).

- Erosion and Sediment Control Plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations. Additional information provided below.

At a minimum, the Erosion and Sediment Control Plan is to include the following:

- No substance, sediment, debris or material that could adversely impact the stream is to enter or leach into the stream.
- Machinery is to be operated from the top of the bank, where possible, or above the high water mark.
- Ground disturbance is to be scheduled to avoid inclement weather (i.e. heavy rain).
- The area of ground disturbance, including laydown areas, is to be minimized.
- Vegetation removal is to be avoided and minimized. Wildlife trees (e.g. snags, rotting trees or trees with burrows, cavities, feeding holes, etc.) should be maintained wherever possible. If possible, trees should be limbed, pruned or topped, as opposed to being fallen. If required, trees should be limbed, topped or felled in a way that prevents plant matter from entering into the stream. Tree and vegetation debris should be left on site as coarse woody debris and distributed throughout the site at a natural density, as opposed to being left in a stockpile.
- Any vegetation that exists between the stream and excavation should be left in place and, if possible, improved via native planting. This vegetation buffer will promote infiltration of stormwater and help protect the stream from sedimentation.
- Temporary excavation pits and stockpiled material should be covered with poly, erosion blankets or equivalent if inclement weather is forecasted. The coverings should be secured while in place and removed upon completion of works.
- Erosion controls (e.g. silt fencing, wattles or suitable alternative) is to be properly installed between the works area and the stream if inclement weather is forecasted. If used, silt fencing is to be removed once vegetation has re-established and the risk of sedimentation has abated.
- Biodegradable erosion control blankets (e.g. coconut blankets or alternative with no plastic) can be used, as necessary, to minimize erosion of any bare soils. Preventing erosion will help grass recolonize the slope.
- All bare soils are to be seeded with a native grass seed mix and revegetated as soon as possible following works. A native Coast Roadside Riparian seed mixture is recommended (e.g. Meadow Barley, Alaska Sitka Brome, Native Red Fescue, Tufted Hairgrass and Spike Bentgrass). Red Alder seed could be added to the mixture.
- Any lost vegetation is to be replaced. Trees should be replaced according to the [BC Tree Replacement Criteria](#). Shrubs should be replaced at a 2:1 ratio or better. The riparian area is to be restored to its previous state, or better, upon completion of the works. All replacement plants are to be of a species that occurs naturally on or near the subject site.
- If applicable, ensure that material placed on the banks of a stream is inert and free of silt, overburden, debris, invasive species or other substances deleterious to aquatic life.
- The addition of top soil is to be avoided, as nutrients within top soil can leach into watercourses, causing algal blooms.

Other mitigation measures:

- Equipment and machinery are to be in good operating condition (power washed), free of leaks, excess oil and grease.
- No equipment refuelling or servicing should be undertaken within 30m of any watercourse or surface water drainage. If required, refuelling should occur as far from the stream as possible and include secondary containment.
- A spill containment kit is to be readily accessible on site in the event of a release of a deleterious substance to the environment. On site staff are to be trained in its use.



- Immediately report any spills of a substance that is toxic, polluting or deleterious to aquatic life of reportable quantities to the Provincial Emergency Program 24-hour phone line at 1-800-663-3456.
- Vehicles and equipment should be turned off whenever not in use. Idling should be avoided.
- Raptors nest, if present, are to be protected year-round.

Protect trees and plants on site and adjacent properties. Where necessary to work adjacent to existing trees and shrubs, the Contractor shall exercise all possible care to avoid injury to vegetation. Minimize stripping of topsoil and vegetation. Restrict tree removal to areas designated and approved by Departmental Representative.

Work near Waterways in accordance with the British Columbia Water Sustainability Regulation, Part 03 – Changes in and about a Stream. Construction equipment and all cableway components are not allowed in any waterway. Waterway beds for borrow material is not permitted. Keep waterways free of excavated fill, waste material and debris. All works are to be conducted above the high water mark.

Protect archeological materials in accordance with the British Columbia Heritage Conservation Act. If Archeological materials are exposed/discovered during Work, stop all Work and notify the Departmental Representative immediately.

### **17.0 Cleaning**

The Contractor will:

- Maintain Work in tidy condition, free from accumulation of waste products and debris.
- Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- Clear snow and ice from access to site, bank/pile snow in designated areas only.
- Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- Provide on-site dump containers for collection of waste materials and debris.
- Provide and use marked separate bins for recycling.
- Dispose of waste materials and debris off site.
- Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- Separate waste materials for reuse and recycling.

### **18.0 Steel Wire Rope Cabling**

- Storage and Handling Requirements:
  - Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - Replace defective or damaged materials with new.
- Verify location and elevation of structure before erection of cables; report discrepancies to Departmental Representative.
- Lift and place components using appropriate lifting equipment, temporary bracing, guys or stiffening devices to prevent overloading or instability. Obtain approval to provide additional permanent material to ensure that the member capacities are not exceeded during erection.
- Design, furnish, maintain and remove all false work, including necessary foundations, required for safe erection. Obtain approval to use material in finished structure for temporary purposes during erection.

- Remove temporary bracing or guys when no longer required for the stability unless otherwise approved.
- Main span cables will be tightened until mid-span sag matches expected sag interpolated from the below table using construction temperatures, within 5% difference.

**Sag Table**

Temperature (°C)	Unloaded Sag (m)
-15	0.570
-10	0.603
-5	0.638
0	0.675
5	0.712
10	0.750
15	0.780
20	0.819
25	0.859
30	0.898
35	0.938

- Messenger cable will be tightened until mid-span sag matches sag in the mid-span of the main cable.
- Wire rope grips will be installed and torqued to manufacturer’s procedures and per fist grip spacing notes and diagrams. Fist grips are to be fully torqued only once.

### **19.0 Excavating and Backfilling**

The Contractor will:

- Submit to Departmental Representative written notice when the bottom of excavation is reached prior to completing any further construction works associated with the excavation.
- Use in-situ material for backfill.
- Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and waterways.
- Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- Stockpile fill materials in areas of the work zone designated to allow access for reuse or disposal.
  - Stockpile granular materials in manner to prevent segregation.
  - Cover stockpile with polyethylene sheeting or tarps during rain events.
  - Stockpile height not to exceed 2 m and should be protected from erosion.
- Protect fill materials from contamination.
- Provide and use pumps as required to reduce water in excavations to an acceptable level. Obtain ECCC Departmental Representative guidance on placement of outlet pump.

- Keep excavated and stockpiled materials a safe distance away from the edge of excavation.
- Do not proceed with backfilling operations until completion of following:
  - Departmental Representative has inspected and approved installations.
  - Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- All backfill material, regardless of type shall be placed in lifts not exceeding 150 mm in thickness of loose material, and each lift shall be mechanically tamped with pneumatic tampers or an ECCC approved equivalent. Compact each layer before placing succeeding layer. Each layer shall be brought to its required degree of compaction throughout its entire width before successive layers are placed. The rate of placing the backfill material shall be such that the tamper can compact thoroughly and uniformly.
- Backfilling around installations:
  - Backfill layers to be placed simultaneously on both sides of installed Work to equalize loading.
- On slopes greater than 25 degrees use woven, biodegradable matting suitable for 30 degree or greater slope. Secure per manufacturer's guidelines.
- Clean and reinstate areas affected by Work.
- Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

## **20.0 Documents Required**

The Contractor will maintain at job site, one copy of each document as follows:

- Statement of Work.
- Drawings.
- Environmental Protection Plan.
- Health and Safety Plan.
- Quality Control Plan.
- Waste Management Plan.
- Emergency Response Plan.
- Other documents as specified.