

**CABLEWAY UPGRADES AND REPAIRS AT DICKEBUSCH CREEK
NEAR THE MOUTH (07FB004)**

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

1.0 Introduction

Environment and Climate Change Canada (ECCC) maintains cableway and hydrometric gauging stations across approximately 500 sites in the Pacific and Yukon areas. The hydrometric data support activities such as policy development, infrastructure design, water allocation, flood and drought response, recreation, navigation, ecosystem protection, and scientific study.

Hydrometric stations typically consist of a “walk-in” or “look-in” instrument shelter and a cableway or metering bridge to measure discharge. Other structures include helicopter pads and access stairways.

Many of the hydrometric stations were built decades ago and structural degradation has occurred over time. As such, infrastructure deficiencies and safety concerns have been identified; requiring repairs and upgrades to return these stations to operational condition.

1.1 Objective

ECCC requires a Contractor to conduct design, installation and testing of two rock anchors on the far side (side without road access) of the river. These anchors must be designed and installed to resist the load at angle of pull provided by ECCC, as well as placed and spread within tolerances provided by ECCC.

2.0 Project Station Location and Access

The subject station is located approximately 8.7 km south of the intersection between Highway 29 and Lone Prairie Rd in Twidwell Bend SE of Chetwynd. The station's coordinates are approximately 55.53778° N and 121.59681° W NAD83. See Figure 1 below for the station location. There is road access to the left bank home side, however, there is no road access to the right bank far side and none will be approved.

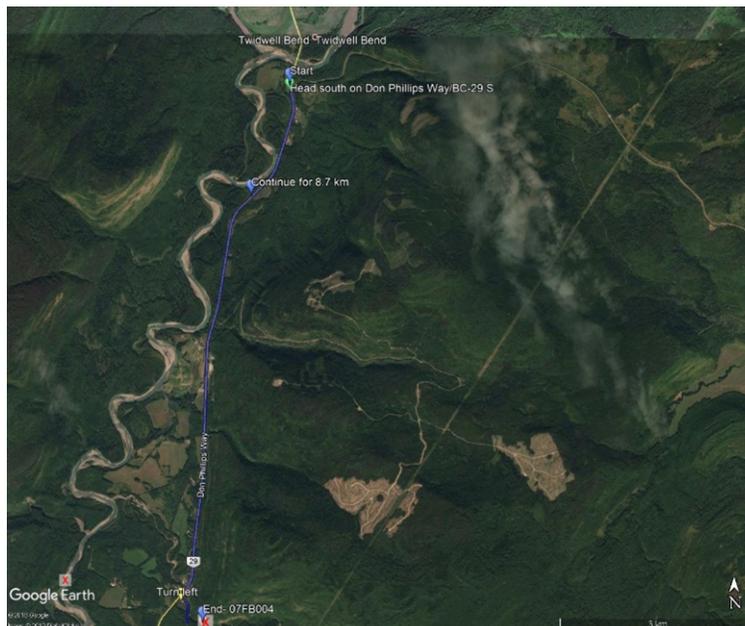


Figure 1: Station Location

3.0 Existing Infrastructure

The existing cableway spans approximately 36m across Dickebusch Creek (Figure 2). The spanning cables consist of a main 7/8" diameter IWRC and 5/16" 1x7 marker cable with no marker balls or cones.

Left Bank Home Side Existing Infrastructure

The home-bank cable support consists of a 8' tall steel pipe A-frame resting on galvanized HD pipe footings. An aluminum sit-down cable car is attached to the main cable and rests adjacent to the A-frame.

The main cable and marker cable are attached to a single plate anchor buried behind the A-frame. The anchor has a 0.18m stick-out length and 11 degree rod angle. A 5/16" 1x7 tieback cable is attached to the plate anchorage and the A-frame to provide additional support.

Right Bank Far Side Existing Infrastructure

The far-bank cable supports for the main and marker cables each consist of a single anchor of unknown type. There is no tieback cable on this bank.

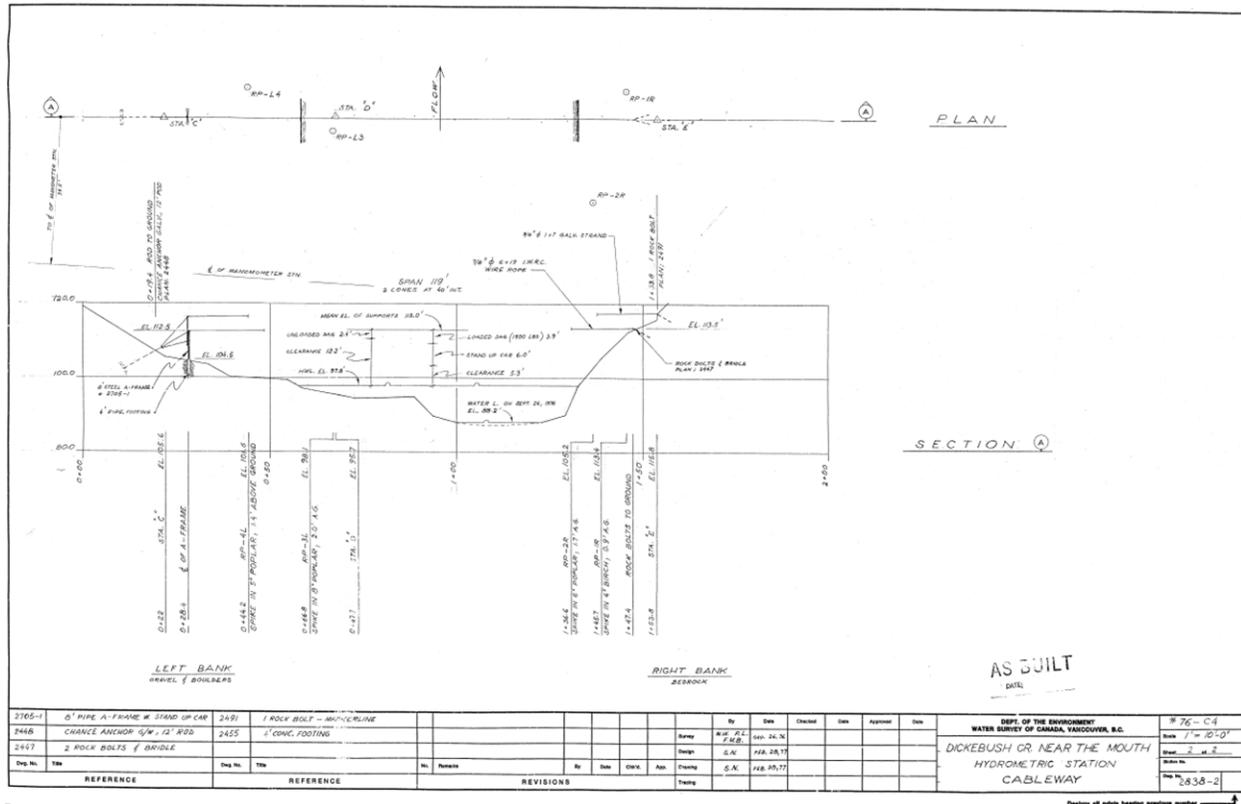
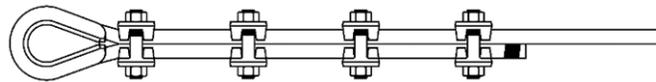


Figure 2: Dickebusch Creek As-Built Drawing (1977)

4.0 Scope

The Contractor will provide design services, mobilization and demobilization, all labour, supervision/project management, equipment, and supplies, as required, to complete the requested services. The scope includes, but is not limited to, the following:

- Review existing information regarding the site provided by ECCC;
- Conduct a site visit to review site conditions. The site visit is expected to be conducted in conjunction with ECCC representatives;
- Engage in ongoing communications with ECCC representative, as required;
- Design two (2) rock anchors for the main cable connection on the far side
 - o All parts must be hot dipped galvanized;
 - o Each anchor must be able to resist a tension force of 60kN with main cable angle at anchor connections ranging from 4 to 10 degrees below horizontal;
 - o Design connection (far side system) from ECCC designed main cable termination (main cable is 3/4" diameter 6x26 IWRC with fist grips and thimble as shown below) to anchors;



3/4" MAIN CABLE TERMINATION

- o Design far side system such that if any one part fails, the remaining system will withstand 60kN;
- o Design far side system to withstand temperatures ranging between 40°C and -40°C;
- o Far side system design life of minimum 60 years;
- o Provide ECCC with design at different stages for review (i.e. 33% and 100%). Do not proceed with design development until approval of 33% completion by ECCC;
- o Accepted 100% design drawings to become Issued for Construction (IFC) drawings.
- Mobilization and demobilization including transportation of materials and equipment to/from the project site;
- Install two (2) new main cable rock anchors on the far side per design above
 - o All works must be conducted above the high water mark;
 - o Construction equipment and materials are not allowed in any waterway;
 - o Contractor to assess slope stability conditions and assess rock conditions below the surface;
 - o Existing main cable and marker cable anchors to remain;
 - o Install means of connection to the main cable, as designed.
- Load test two (2) new main cable rock anchors
 - o The main cable anchors shall be proof and performance tested, respectively, in accordance with the Post Tensioning Institute's (PTI) recommendations;
 - o Each anchor shall be tested to the design load of 60kN;
 - o The system shall be tested to 100kN;
 - o Main cable not to be used in testing.
- Develop a post-construction report documenting the anchor installation, including ECCC approved changes to the design, if required to accommodate actual geological conditions;
- Disposal of infrastructure that is being replaced/upgraded and construction waste;
- Restoration of the site to similar conditions as before construction work started, per Section 5.1.6;
- Monitor river flows and ensure Work is protected from high flows at all times;

- Any trees that are required to be removed to provide access or safe working conditions for the work to be completed are included in the scope of work and must be pre-approved in writing by the Technical Authority.

5.0 Considerations and General Requirements

5.1 General Requirements and Procedures

The above-noted cableway is **out of service** and **should not** be used under any circumstance for the transportation of people. Goods may be transported with the cableway with advanced approval from the Technical Authority. It is the Contractor's responsibility to ensure safety for any goods on the cableway.

The home-bank A-frame has a pin base connection, meaning it is unstable under reduced tension in the existing cables - the A-frame is required to be stabilized in all directions during construction.

5.1.1 Cost Breakdown Submittal

The selected proponent must submit a Cost Breakdown to the Department Representative within 5 business days of Contract Award. The Cost Breakdown must be accepted by the Department Representative before commencement of any work. The Cost Breakdown must include, as a minimum, the following sections:

- Site visit
- 33% design completion accepted by ECCC
- 100% design completion accepted by ECCC
- All construction submittals
- Mobilization
- Installation of new main cable rock anchors and connection to main cable
- Load testing of new main cable rock anchors
- Demobilization
- Others, listing items as applicable

5.1.2 Work Plan

The Contractor must provide a Work Plan, clearly stating their methodology for the relevant points below:

- Installation of the new rock anchors and means of connection to the main cable;
- Load testing of the new main cable rock anchors;
- Care is to be taken by the Contractor to ensure the cable does not cause a safety concern for any traffic within the river. Care must be taken to notify and highlight any danger to river traffic.

ECCC Technical Authority has five (5) business days to review and provide comments.

5.1.3 Quality Control Plan

The Contractor must provide a Quality Control Plan. The Quality Control Plan must outline the Contractor's plan to ensure all work is executed to the required quality.

The Contractor must maintain daily inspection reports that itemize the results of all Quality Control inspection conducted by the Contractor. All reports must be made available for review by the Departmental Representative upon request.

5.1.4 Waste Management Plan

Deposits of any construction debris into any waterway are strictly forbidden. The Waste Management Plan must include:

- Alternative Waste Disposal: Prepare a listing of each material proposed to be salvaged, reused, recycled or composted during the course of the project, and the proposed local market for each material;

- Landfill Materials: Identify materials that cannot be recycled, reused or composted and provide explanation or justification;
- Landfill: Name of the landfill where rubbish will be disposed.

5.1.5 *Health and Safety Plan*

The Contractor must provide a Health and Safety Plan, clearly stating the procedures for ensuring safety throughout the project. This should include steps in the case of emergency, in the case of potential construction problems, and everyday procedures to promote safety. If at the time of construction the COVID-19 pandemic is ongoing, the Contractor must include measures to reduce the risk of COVID-19 spread between individuals on site. Health and Safety Plan must be in conformity with all regulations and requirements outlined in Section 7.0.

The Contractor is responsible for site safety and should address worker access and safety in the Health and Safety Plan. This includes ensuring worker safety during the installation of the new rock anchors, with focus on preventing and addressing potential rock fall near and around workers.

5.1.6 *Environmental Protection Plan*

The Contractor must provide an Environmental Protection Plan, which should include the following:

- Name of personnel responsible for ensuring adherence to Environmental Protection Plan;
- Identification of type and location of erosion and sediment controls to be used, including monitoring and reporting requirements to ensure that control measures are in compliance with Federal, Provincial, and Municipal laws and regulations;
- Plan in the event of unforeseen spill of regulated substance, which includes procedures, instructions, and reports;
- 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;
- Material Safety Data Sheets (MSDS);
- Disturbed areas above excavation levelled, then inspected by ECCC, then large woody debris placed on top perpendicular to estimated direction of surface water flow to reduce water movement. Smaller woody debris placed ovetop to assist in regeneration of vegetation;
- Trees requiring removal are to be left on site;
- Replace removed trees of diameter breast height greater than 150mm with same species of tree/seeding/sapling/plug at 2:1 ratio.

Reference Standards:

- Canadian Landscape Standard 2016, First Edition;
- British Columbia Heritage Conservation Act, 1996;
- BC Water Sustainability Act – Water Sustainability Regulation, B.C. Reg. 36/2016;
- Fisheries Act (R.S.C., 1985, c. F-14);
- Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22) ;
- Species at Risk Act (S.C. 2002, c. 29).

5.1.7 *Site Access and Layout Plan*

The Contractor shall 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.

Snow clearing/access path clearing/fixing, removal of vegetation if required (based on recommendation and approval of an Environmental Consultant and/or Technical Authority), is the responsibility of the Contractor. If access requires removal of vegetation, pre-approval must be sought from ECCC Technical Authority, a Qualified Environmental Professional may be required on-site for this work.

5.1.8 *Inspection*

- Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress;
- Give timely notice (i.e. 72 hours) requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions;
- If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work;
- Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

5.1.9 *Rejected Work*

- Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

5.1.10 *Anchor Installation*

The Contractor is required to abide by the following requirements.

- The Contractor is required to have sufficient equipment and experience to carry out the rock anchors installation;
- Full documentation including photographs must be provided to ECCC's Technical Authority. ECCC will conduct a field review to ensure adherence to requirements;
- All excavation must be properly shored in accordance with the Canadian Labour Code and Worker's Compensation Board Guidelines;
- 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;
- Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

5.1.11 *Property and Public Safety*

Property belonging to ECCC or a private entity on-site or related to any project must not be damaged. Any damage must be repaired prior to demobilization at the Contractor's expense. ECCC is responsible for notifying the Landowners, Parks, etc.; the Contractor must not enter the site without approval from the Technical Authority.

The Contractor is responsible for the health and safety of the public during and outside construction hours. Lowered cables are not allowed to be left unattended and open holes must be clearly marked and barricaded. If the cable must be lowered, the contractor is responsible for ensuring the safety of any persons within the vicinity of the project, including the public using trails or the river system, a flagger with suitable warning devices may be required.

5.2 Work Authorization

A construction methodology (see Section 5.1.2) for all parts of the Work must be submitted to ECCC Technical Authority for review. ECCC Technical Authority has five (5) business days to review and provide comments.

The Contractor must provide photos of its work at the site, before, during, and after construction activities. This includes photos of all major installations and changes on the construction site. Extra measures must be taken for installation of the rock anchors.

Receipt of disposal at an approved facility must be provided to ECCC by the Contractor. Photos of the material being disposed at an approved facility are also required. All photos must be provided to the Technical Authority within ten (10) business days from completion of the Work. ECCC reserves the right to withhold payment in the case of inadequate photos or receipt.

The following documents will be maintained on-site by the Contractor, one copy of each document as follows:

- Statement of Work;
- Work Plan;
- Schedule;
- Quality Control Plan;
- Waste Management Plan;
- Health and Safety Plan;
- Environmental Protection Plan;
- Site Access and Layout Plan;
- Contract Documents, as agreed upon;
- Addenda, as agreed upon;
- Reviewed drawings, as created by the Contractor and accepted by the Technical Authority;
- Other Modifications to Contract, as agreed upon;
- Other documents as required.

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.

The Contractor must ensure the site is left at the same grade and ground layout as was found. No piles of soil are to be left, any leftover fill must be scattered uniformly through the site. All excess materials, waste, and tools must be removed from the site during demobilization.

5.3 Project Related Materials

The Contractor is responsible for the supply and transportation of the required materials and components to the project site. It is the Contractor's decision to determine the most efficient and cost-effective method of transporting the equipment and materials to either side of the cableway. Any transportation methods are the responsibility of the Contractor.

The Contractor is responsible for the removal and disposal of old material from the project site. Existing/used cable hardware must be marked and is not to be re-used. Receipt of disposal at an approved facility must be provided to ECCC by the Contractor.

Any unused material must be returned within one (1) month from the completion of the project to ECCC in Richmond, B.C. unless otherwise directed by ECCC Technical Authority. Address will be provided upon contract award.

6.0 Deliverables

6.1 Pre-Construction

The Contractor must ensure that all pre-construction deliverables are completed and accepted by the ECCC Technical Authority per the table below:

Deliverable	Timeline
Site visit	Completion by May 25, 2022
33% design completion	Design acceptance by ECCC by May 27, 2022
Schedule	Schedule acceptance by ECCC by June 03, 2022
Work Plan Methodology	Acceptance by ECCC by June 16, 2022
100% design completion and IFC drawings	Design acceptance by ECCC by June 23, 2022
Quality Control Plan	Acceptance by ECCC at least ten (10) days prior to mobilization
Waste Management Plan	
Health and Safety Plan	
Environmental Protection Plan	
Site Access and Layout Plan	

Details of construction methodology to be per Section 5.1.2. ECCC Technical Authority has **5 business days** to review and provide comments.

6.2 Construction

The Contractor must ensure that all deliverables related to the construction are completed. The Contractor must:

- Provide all services outlined in Section 0;
- Submit copies of reports or direction issued by Federal or Provincial health and safety inspectors;
- Submit copies of incident and accident reports within 24 hours of incident or accident.

6.3 Post-Construction

Upon completion, the Contractor must submit all post-construction deliverables to the Technical Authority within ten (10) business days. This includes:

- Photos of before, during, and after construction;
 - o See Section 5.2 for photo requirements;
- Receipt of disposal;
- Return of unused materials;
- Construction report outlining the work completed daily to date.

7.0 Safe Work Procedures

The Contractor must remain in compliance with the Canada Labour Code and WorkSafeBC Guidelines.

The Contractor is expected to follow safe work procedures, including proper Personal Protective Equipment (PPE) use at all times. A Personal Flotation Device (PFD) must be worn if there is a risk of drowning. A complete Basic First Aid Kit must be carried and on-site. Protection against wildlife is included within PPE.

The Contractor is responsible for circulation of the Health and Safety Plan to all individuals on-site and ensuring that all individuals are in adherence to the Health and Safety Plan.

The Contractor must have an on-site communication device for two-way text communication. This device must be available and usable at all times during construction while on site.

All guidelines and regulations provided by the Government of Canada, the Province of BC, WorkSafeBC, and the British Columbia Construction Association relating to the COVID-19 pandemic must be practiced throughout all construction activities.

8.0 Notifications of Non-Compliance

The following procedures will be followed in the case that non-compliance is observed by ECCC.

1. The Technical Authority will notify Contractor in writing of observed non-compliance related to Health and Safety, Environment, Private Property, or any other regulations and requirements;
2. After receipt of such notice, the Contractor shall inform the Technical Authority of proposed corrective action within one (1) day to obtain the approval from the ECCC Technical Authority. Technical Authority will provide review and approval in one (1) day;
3. Once acceptance has been provided by the ECCC Technical Authority, the Contractor may proceed with the proposed actions;
4. If warranted, the ECCC Technical Authority will issue a Stop Work Order until satisfactory corrective action has been taken by the Contractor;
5. Suspensions will be lifted once the corrective action(s) have been proposed and taken by the Contractor, with the acceptance of the Technical Authority;
6. No time extensions will be granted or equitable adjustments will be given to the Contractor for such suspensions;
7. In the case where there is immediate danger to the health and safety of a worker or integrity of infrastructure, the Contractor must take immediate actions.

9.0 Schedule

Unless otherwise agreed upon, the final detailed design is to be submitted allowing sufficient time for acceptance by ECCC before **June 23rd, 2022**, and construction is to be completed by **August 12th, 2022**. The final invoice must be submitted once work has been completed, no later than **September 12th, 2022**.

A pre-commencement meeting between ECCC and the Contractor shall be scheduled within five (5) **business days** of contract award. Meeting to be arranged and led by the representative of ECCC.

The Contractor must submit to ECCC for acceptance a comprehensive schedule of the project work/task(s). Required on-site presence of an ECCC employee should be included in the schedule. Schedule changes must be accepted in writing by ECCC.

Weekly progress meetings are to be arranged by the Contractor to provide weekly updates to ECCC. This should include reporting of ongoing project schedule during the construction phase.

Standard work schedules for members of ECCC are Monday to Friday 8:00 AM to 4:00 PM. A minimum of 72-hour notice must be provided when an ECCC member is required outside of these hours. ECCC cannot guarantee the availability of a representative for on-site support outside of these hours.

The Contractor must provide 72-hour advance notice when requesting the on-site presence of an ECCC member. See Section 10.0 for a list of items requiring ECCC field review.

10.0 Environment and Climate Change Canada Responsibilities

ECCC will provide the following:

- Acquisition of relevant permits and background information with the Province of British Columbia and the Department of Fisheries and Oceans;
 - o BC Water Act Notification;
 - o Archaeological Assessment;
 - o Desktop Study - Environmental Assessment;
 - o Working around Water Permit, as applicable;

- Providing drawings and descriptions of all components related to the work;
- Supply of Qualified Environmental Professional (QEP) services, as required;
- Will provide on-site and remote support during all phases of the project;
 - o Will be on-site at the beginning of construction and to conduct a final sign-off and survey upon completion;
 - o ECCC will provide field review of the following installations:
 - Depth, angle, and location of two new rock anchors and means of connection to the main cable;
 - Inspection of cableway at completion of construction and prior to hand over

11.0 Photos



Photo 1. View of cable and cable car from right bank far side



Photo 2. Dickebusch Creek



Photo 3. Dickebusch Creek



Photo 4. Unknown main cable anchor (right bank far side)



Photo 5. Marker cable anchor (right bank far side)