

KLINAKLINI RIVER EAST CHANNEL (MAIN) NEAR THE MOUTH – 08GE002 CABLEWAY UPGRADES AND REPAIRS

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

Klinaklini River East Channel (Main) near the Mouth
Lat : 51° 08' 41.2" N
Long : 125° 35' 39.7" W



Part 1 General

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Part 1 General

1.1 INTRODUCTION

- .1 Environment and Climate Change Canada – National Hydrological Services (ECCC–NHS) – maintains a hydrometric station at Klinaklini 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.

1.2 LOCATION AND ACCESS

- .1 Klinaklini River East Channel (Main) near the Mouth (08GE002)
 - .1 The site is located at the head end of Knight Inlet 136 km north of Campbell River, British Columbia. It is located just downstream of the bridge on the left bank.
 - .2 The station coordinates are approximately 51.14478 N, 125.59436 W NAD83.
 - .3 The contractor must not enter the site without approval from the Technical Authority.
 - .4 The cableway is **out of service** and **should not** be used under any circumstance for the transportation of people. 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.

1.3 EXISTING INFRASTRUCTURE

- .1 Klinaklini River East Channel (Main) near the Mouth (08GE002):
 - .1 The cableway spans approximately 193 meters across Klinaklini River. The spanning cables consist of a main 1” diameter and 3/8” diameter cable with 5 attached marker cones.
 - .2 Left Bank Home Side: The home-bank cable support consists of a 2.44m tall steel pipe A-frame resting on footings. The A-frame components consist of a ladder. An aluminum stand-up cable car is attached to the main cable and rests adjacent to the A-frame.
 - .3 Left Bank Home Side: The main cable and marker cable are attached to a single plate anchor buried behind the A-frame. A 3/8” diameter tieback cable is attached to the plate anchorage and the A-frame to provide additional support.
 - .4 Right Bank Far Side: The far-bank cable support consists of a 10.44m tall HSS HD A-frame resting on footings. The A-frame components consist of a ladder and platform.
 - .5 Right Bank Far Side: The main cable and marker cable are attached to double steel plate anchors buried behind the A-frame. A 3/8” diameter tieback cable is attached to the plate anchorage and the A-frame to provide additional support.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract consists of the construction services for infrastructure upgrades/repairs of the National Hydrological Services Cableway Station located at Klinaklini River, identified as Klinaklini River East Channel (Main) near the Mouth (08GE002). The Work generally consists of the following:
 - .1 Project management and coordination
 - .2 Mobilization and demobilization
 - .3 Supplying materials, equipment, and labour and incidentals
 - .4 Remove and dispose existing non-required infrastructure components
 - .5 Site restoration
- .2 The infrastructure Work can be broken down to the following:
 - .1 Left Bank Home Side:
 - .1 Remove existing single anchor and install new double plate anchor system.
 - .2 Install anchor tieback plates.
 - .3 Remove 3/8" tieback cable and replace with two (2) new 1/2" 6x26 EIPS IWRC cables along with specified cable clamps and thimbles.
 - .4 Install Crosby J&J 3/4" x 18" Turnbuckles on new tieback cables.
 - .5 Remove existing steel footings, and install new steel pipe footings and components.
 - .6 Re-set A-frame, with new footings, to plumb.
 - .7 Replace A-frame ladder and components.
 - .8 Install cableway danger sign.
 - .9 Install main cable safety loop.
 - .2 Right Bank Far Side:
 - .1 Remove existing double anchors and install new triple plate anchor system.
 - .2 Install anchor tieback plates.
 - .3 Remove 3/8" tieback cable and replace with two (2) new 1/2" 6x26 EIPS IWRC cables along with specified cable clamps and thimbles.
 - .4 Install Crosby J&J 3/4" x 18" Turnbuckles on new tieback cables.
 - .5 Remove existing steel footings, and install new steel pipe footings and components.
 - .6 Reset A-frame, with new footings, to plumb.
 - .7 Replace A-frame ladder and components, including ladder cage and safety gate.
 - .8 Install A-frame safety bar.
 - .9 Replace one platform board.
 - .10 Install main cable safety loop.

- .3 General:
 - .1 Remove existing 1” main cable and replace with new 1” galvanized 6x26 EIPS IWRC cable with specified cable clamps, thimbles, and turnbuckle.
 - .2 Set main cable sag to NHS specifications sag table shown in Section 05 16 33 – Steel Wire Rope Cabling.
 - .3 Remove existing 3/8” marker cable and replace with new 3/8” galvanized 6x26 EIPS IWRC cable with specified cable clamps, thimbles and turnbuckle.
 - .4 Set marker cable sag until mid-span sag matches sag in the mid-span of the main cable.
 - .5 The Contractor is not allowed to pull the cable across the river with a boat due to safety concerns.

1.5 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

1.6 WORK SEQUENCE

- .1 Schedule Work progress to allow ECCC Department Representative unrestricted access to inspect all phases of the Work.
- .2 Co-ordinate Work with other ECCC Department Representative doing maintenance, survey, inspection, or testing Works.
- .3 Unless otherwise agreed upon, the project is to be completed between **July 1, 2021 and July 21, 2021**.
- .4 ECCC standard work schedules are Monday to Friday 8:00am to 4:00pm. ECCC work outside of these hours will require advance approval.

1.7 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises to allow:
 - .1 Work by ECCC Staff and Departmental Representative
- .2 Co-ordinate use of premises under direction of ECCC Departmental Representative.
- .3 Refer to Section 01 51 00 – Temporary Utilities, Section 01 52 00 – Construction Facilities, for temporary facilities, access roads and parking areas, traffic regulations, and utilities.
- .4 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.

1.8 ECCC SUPPLIED ITEMS

- .1 Refer to Section 01 61 00 – Common Product Requirements, Section 05 16 33 – Steel Wire Rope Cabling.
- .2 ECCC Responsibilities:
 - .1 Supply Contractor with anchor and cable materials.

- .2 Supply Contractor with steel pipe footings and footing materials.
- .3 Supply Contractor with ladders and ladder brackets.
- .4 Supply Contractor with danger sign, safety bar, safety loops and platform board.
- .3 Contractor Responsibilities:
 - .1 Pick up all ECCC supplied items from ECCC's warehouse and/or storage facility:
 - .1 Warehouse Address: 140 – 13160 Vanier Pl, Richmond BC, V6V 2J2
 - .2 Storage Address: 37400 N Parallel Rd, Abbotsford BC, V3G 2K1
 - .2 Review relevant Contract Documents. Submit to Departmental Representative notification of observed discrepancies or problems anticipated due to non-conformance with Contract Documents.
 - .3 Deliver all provided items to Site.
 - .4 See Section 01 61 00 – Common Product Requirements regarding handling and protecting items prior to and during Work.
 - .5 Any damage to provided items during transportation and/or on site caused by negligent or deliberate acts or omissions of the Contractor or its Subcontractor(s) will be repaired or replaced by the Contractor at the Contractor's expense.
 - .6 Extra materials are to be returned to ECCC at the completion of the project.

1.9 REFERENCE DOCUMENTS

- .1 Drawings.

1.10 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Contract Drawings.
 - .2 Environmental Protection Plan.
 - .3 Specifications.
 - .4 Addenda.
 - .5 Reviewed Shop Drawings.
 - .6 List of Outstanding Shop Drawings.
 - .7 Change Orders.
 - .8 Other Modifications to Contract.
 - .9 Copy of Accepted Work Schedule.
 - .10 Health and Safety Plan.
 - .11 Other documents as specified.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not Used.

1.2 ACCESS AND EGRESS

- .1 Refer to Section 01 11 00 – Summary of Work for access and staging information.
- .2 All components of access construction and restoration must be conducted in accordance with Section 01 35 43 – Environmental Procedures; the Access and Layout Plan prepared for the project, the Environmental Protection Plan prepared for the project and Section 31 11 00 – Clearing and Grubbing.

1.3 USE OF SITE AND FACILITIES

- .1 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.
- .2 The Contractor must provide sanitary facilities for Work force in laydown area in accordance with governing regulations and the Environmental Procedures for this project. The Contractor must post notices and take such precautions as required by local health authorities and keep area and premises in sanitary condition.
- .3 Any damage to the Work Site caused by the Contractor must be repaired by the Contractor at its own expense.
- .4 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.

1.4 SNOW CLEARING OF TRAILS

- .1 Snow clearing is not anticipated, however if required will be the responsibility of the Contractor.

1.5 WORK CONDUCTED OVER OR ADJACENT TO WATERWAYS

- .1 All components of the Work must be conducted in accordance with Section 01 35 43 – Environmental Procedures and the Environmental Protection Plan prepared for the project.
- .2 All components of the Work must be conducted without equipment or any infrastructure components entering into the river. The use of construction methodology which requires instream Work must have prior written acceptance of the Departmental Representative and may require the project be delayed up to 45 days from the time of request.

1.6 UTILITIES

- .1 There are no known utilities at the site. The presence and location of utilities is subject to verification by the Contractor. Any crossing agreements and/or utility crossing requirements are the responsibility of the Contractor and are considered incidental to the contract.

1.7 SURVEY OF EXISTING SITE CONDITIONS

- .1 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.
- .2 Regularly monitor the condition of the Work Site throughout the construction period.
- .3 Monitor river flows and ensure Work is protected from high flows at all times.

1.8 PROTECTION OF PERSONS AND PROPERTY

- .1 The Contractor must comply with all applicable provincial safety regulations, Industrial First Aid Regulations, and Workplace Hazardous Materials Information System Regulations.
- .2 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.
- .3 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.

1.9 SUPERVISORY PERSONNEL

- .1 After award notification, the Contractor will submit to the Departmental Representative confirmation of the names of the supervisory personnel and other key staff designated for assignment on the Contract.
- .2 The following personnel will be included in the list:
 - .1 Project Superintendent;
 - .2 Health and Safety Coordinator.
- .3 The Project Superintendent will be employed full time and will be present on the Work Site each and every Workday that Work is being performed, from the commencement of Work to Total Performance of the Work.
- .4 Health and Safety Coordinator must:
 - .1 Have minimum 2 years related working experience.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for implementing, enforcing daily and monitoring site-specific Health and Safety Plan.
 - .4 Be on site during execution of Work.

1.10 WASTE DISPOSAL

- .1 Refer to Section 01 35 43 – Environmental Procedures.
- .2 Refer to Section 01 74 19 – Waste Management and Disposal.
- .3 Deposits of any construction debris into any waterway are strictly forbidden unless specifically instructed to within the contract documents or by the Departmental Representative.

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 The Work includes attending meetings between the Contractor and the Departmental Representative. The meetings will be called and chaired by the Departmental Representative as and when required. The Contractor, its Subcontractors, field inspectors, and supervisors must be represented at such meetings to the satisfaction of the Departmental Representative.
 - .1 The Departmental Representative will distribute notice of each meeting, indicating time and location, five days in advance of meeting date to Contractors and affected parties.
 - .2 The Departmental Representative will prepare meeting agenda and record the meeting minutes. Minutes will include significant proceedings and decisions and identified actions by parties. Copies of meetings will be reproduced and distributed within 24 hours after meeting to participants and affected parties not in attendance.
 - .3 Representative of Contractor, its Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRE-CONSTRUCTION MEETING

- .1 The Departmental Representative will request a meeting with Contractor prior to mobilization to site to discuss and review Pre-mobilization Submittals as per Section 01 33 00 – Submittal Procedures.

1.3 PROGRESS MEETINGS

- .1 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.

1.4 CLOSE-OUT MEETING

- .1 The Departmental Representative will request a meeting with Contractor to review Closeout submittals and warranties per Section 01 33 00 – Submittal Procedures and Section 01 78 00 – Closeout Submittals.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not Used.

1.2 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In a typical bar chart, activities or other Project elements are listed down on left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.3 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and timeframe.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit to Departmental Representative within 15 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

- .3 Submit Project Schedule to Departmental Representative within 15 working days of receipt of acceptance of Master Plan.

1.5 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule.
- .2 Refer to 1.4 WORK COVERED BY CONTRACT DOCUMENTS in Section 01 11 00 – Summary of Work for details.
- .3 Milestones for Klinaklini River East Channel (Main) near the Mouth (08GE002) are to include, at a minimum:
 - .1 Left Bank: Excavation and removal of existing plate anchor and anchor components.
 - .2 Left Bank: Installation of new double plate anchor and anchor components.
 - .3 Left Bank: Removal of existing tieback cable and cable hardware.
 - .4 Left Bank: Installation of new tieback cables and cable hardware.
 - .5 Left Bank: Removal of existing steel footings.
 - .6 Left Bank: Installation of new footings and resetting of A-frame to plumb.
 - .7 Left Bank: Replacement of A-frame ladder.
 - .8 Left Bank: Installation of cableway danger sign.
 - .9 Left Bank: Installation of main cable safety loop.
 - .10 Right Bank: Excavation and removal of existing plate anchors and anchor components.
 - .11 Right Bank: Installation of new triple plate anchor and anchor components.
 - .12 Right Bank: Removal of existing tieback cable and cable hardware.
 - .13 Right Bank: Installation of new tieback cables and cable hardware.
 - .14 Right Bank: Removal of existing steel footings.
 - .15 Right Bank: Installation of new footings and resetting of A-frame to plumb.
 - .16 Right Bank: Replacement of A-frame ladder.
 - .17 Right Bank: Installation of A-frame safety bar.
 - .18 Right Bank: Replacement of one platform board.
 - .19 Right Bank: Installation of main cable safety loop.
 - .20 Removal of existing and installation of new main cable and cable hardware.
 - .21 Removal of existing and installation of new marker cable and cable hardware.
 - .22 Adjustment of main cable sag to NHS Specifications.
 - .23 Adjustment of marker cable sag to match main cable sag at mid-span.
 - .24 Remediation of Work site.
 - .25 Disposal of unrequired infrastructure components.
 - .26 Completion of all Work by July 21, 2021.

1.6 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as listed in 1.5 PROJECT MILESTONES.

1.8 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on daily basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.9 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

1.10 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 11 00 – Clearing and Grubbing.

1.2 ADMINISTRATIVE

- .1 Submit to Department Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Where items or information is not produced in SI Metric units, converted values are acceptable.
- .4 Review submittals prior to submission to Department Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .5 Notify Department Representative in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Verify field measurements and affected adjacent Work are coordinated.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by Department Representative's review of submittals.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Department Representative's review.
- .9 Keep one reviewed copy of each submission on site.

1.3 COST BREAKDOWN SUBMITTAL

- .1 The selected proponent must submit a cost breakdown to the Department Representative within five (5) business days of contract award.
- .2 The cost breakdown must be approved by the Department Representative before commencement of work.
- .3 The cost breakdown must include, as a minimum, the following sections:
 - .1 Submittals
 - .2 Mobilization
 - .3 Removal of existing and installation of new anchor systems and tieback plates
 - .4 Removal of existing and installation of new tieback cables and hardware
 - .5 Removal of existing and installation of new footings and components
 - .6 Re-setting A-frames to plumb
 - .7 Replacement of A-frame ladders

- .8 Installation of A-frame safety bar and replacement of platform board
- .9 Installation of danger sign
- .10 Installation of main cable safety loops
- .11 Removal of existing and installation of new main cable and hardware
- .12 Removal of existing and installation of new marker cable and hardware
- .13 Set main cable sag
- .14 Set marker cable sag
- .15 Demobilization
- .16 Others, listing items as applicable (e.g. supply of equipment)

1.4 REQUIRED CONTRACTOR SUBMITTALS

- .1 General
 - .1 This Clause identifies the plans, programs, and documentation required prior to mobilization on site and during the construction phase.
- .2 Pre-Mobilization Submittals
 - .1 Submit the following plans and programs to the Departmental Representative for review a minimum of 15 days prior to mobilization to the project site. The Contractor will not construe the Departmental Representative's authorization of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety or environmental concerns. Authorization of the programs will not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal or Provincial regulations, this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor will remain solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.
 - .1 Bar (GANTT) Chart in accordance with Section 01 32 16.19 – Construction Progress Schedule – Bar (Gantt) Chart.
 - .2 Project Schedule in accordance with Section 01 32 16.19 – Construction Progress Schedule – Bar (Gantt) Chart.
 - .3 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.
 - .4 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, including erection sequence. Indicate proposed tools to be used for the work.

- .5 Quality Control Plan in accordance with Section 01 45 00 – Quality Control.
- .6 Environmental Protection Plans (EPP), which must meet the requirements of Section 01 35 43 – Environmental Procedures.
- .7 Health And Safety Plan in accordance with Section 01 35 29.06 – Health and Safety Requirements.
- .8 Waste Management Plan in accordance with Section 01 74 19 – Waste Management and Disposal.
- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergencies.
- .10 Site Access and Layout Plan in accordance with Section 01 35 43 – Environmental Procedures.
- .11 Creek Crossing Plan in accordance with Section 01 35 43 – Environmental Procedures.
- .12 WorkSafe BC Certification.
- .2 The Contractor will not begin any site Work until the Departmental Representative has authorized acceptance of the submittals in writing.
- .3 Construction Phase Submittals
 - .1 Daily Progress Reports that outline the Work completed to date as well as the anticipated Work to be performed for the following week on a day-by-day basis.
 - .2 Quality Control Inspection Reports in accordance with Section 01 45 00 – Quality Control.
 - .3 Progress Photographs:
 - .1 Format: electronic .jpg files, minimum five mega pixels.
 - .2 Submission requirements: one set of electronic files.
 - .3 Identification: typewritten name and number of project, description of photograph, jpg file name, and date of photograph in upper right hand corner.
 - .4 Submission Frequency: prior to commencement of work and weekly thereafter with progress statement, key milestones, or as directed by the Departmental Representative.
 - .1 Photos of all major installations and changes on the construction site; with extra measures taken for steel plate anchor installation to meet the adequate depth and angles per shop drawings and figures.
 - .2 Photos of materials being disposed at an accepted facility.
 - .3 Photos showing the backfilling of soil into disturbed areas, if applicable.
 - .4 Photos of the site prior to Work, during Work, and after Work.

- .5 Submit all electronic pictures as part of closeout package.
- .4 Submit copies of Contractor’s authorized representative’s Work Site Health and Safety inspection reports to the Departmental Representative.
- .5 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .6 Submit copies of incident and accident reports within 24 hours of incident or accident.
- .4 Project Close-out Submittals
 - .1 Record Drawings – The Contractor must submit copies of all Contractor's Drawings revised as necessary to record all as-built changes to the Work and the Contractor must submit a set of Contract Drawings clearly marked to record as-built changes to the Work.
 - .2 Quality Control/Quality Assurance Records in accordance with Section 01 45 00 – Quality Control.
 - .3 Waste manifests – The Contractor must submit a manifest of the type and quantity of the waste, instruction of handling the waste and the signature lines for all transporters and facilities involved in the process.

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status to Department Representative.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Workers Compensation Act.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: 15 days prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site-specific safety hazard assessment, including safety of users of the river during Work.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 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.
- .4 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.

1.3 MEETINGS

- .1 Refer to Section 01 31 19 – Project Meetings.

1.4 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.5 RESPONSIBILITY

- .1 Be 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.

1.6 COMPLIANCE REQUIREMENTS

- .1 Comply with Workers Compensation Act, B.C. Regulations.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.7 HEALTH AND SAFETY COORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
 - .1 Have working knowledge of occupational safety and health regulations.
 - .2 Have minimum 2 years related working experience.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work.

1.8 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected. Stop-work order suspension will be lifted once the corrective action(s) have been proposed and taken by the Contractor, with the approval of the Departmental Representative. No time extensions will be granted or equitable adjustments will be given to the Contractor for such suspensions.

1.9 BLASTING

- .1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Departmental Representative.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not Used.

1.2 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.3 REFERENCE STANDARDS

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

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Before commencing construction activities or delivery of materials to site, 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.
- .3 Contractor shall submit a Creek Crossing Plan, outlining their methodology of mobilizing equipment to the far-side bank.
- .4 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review by Departmental Representative.
- .5 Include in Environmental Protection Plan:
 - .1 Name of personnel responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Name and qualifications of personnel responsible for manifesting hazardous waste to be removed from site.
 - .3 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. Refer to Section 01 51 00 – Temporary Utilities.

- .4 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .5 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.
- .6 Construction Waste Management Plan outlining the methods for collection, transportation, and disposal of the waste generated at the construction site. Refer to Section 01 74 19 – Waste Management and Disposal.
- .7 Material Safety Data Sheets (MSDS).

1.5 DRAINAGE

- .1 Provide temporary drainage and pumping as required to keep excavations on site free of standing water.
 - .1 Obtain Departmental Representative approval before pumping standing water, which is free of suspended materials, into waterways, sewer or drainage systems.

1.6 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties.
- .2 Where necessary to work adjacent to existing trees and shrubs, the Contractor shall exercise all possible care to avoid injury to vegetation.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas designated and approved by Departmental Representative.

1.7 WORK ADJACENT TO WATERWAYS

- .1 Work near Waterways in accordance with the British Columbia Water Sustainability Regulation, Part 03 – Changes in and about a Stream.
- .2 Construction equipment and all cableway components are not allowed in any waterway.
- .3 Waterway beds for borrow material is not permitted.
- .4 Keep waterways free of excavated fill, waste material and debris.

1.8 HISTORICAL/ARCHAEOLOGICAL CONTROL

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

1.9 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial environmental laws and regulations or Municipal environmental bylaws, permits, and other elements of site-specific plans as applicable.
- .2 Contractor after receipt of such notice shall inform Departmental Representative of proposed corrective action and take such action to obtain the approval of Departmental Representative.
 - .1 Take action only after receipt of written approval by Departmental Representative
- .3 Departmental Representative will issue stop order of Work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Burying of rubbish and waste materials on site is not permitted unless approved in writing by Departmental Representative.
- .3 Ensure waterways are free of waste and volatile materials disposal.
- .4 Proceed with final cleaning upon completion and removal of surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 – Cleaning.
- .5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 – Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not Used.

1.2 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit Quality Control Plan a minimum of 15 days prior to mobilization outlining Contractor’s plan to ensure all Work are to be executed to the required quality.
- .3 Quality Control Inspection Reports during Construction.
 - .1 The Contractor must maintain daily inspection reports that itemize the results of all Quality Control inspections conducted by the Contractor.
 - .2 Reports must be made available for review by the Departmental Representative upon request.

1.3 INSPECTION

- .1 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.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions.
- .3 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.
- .4 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.

1.4 REJECTED WORK

- .1 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.
- .2 Ensure all Work affected/damaged by such removals or replacements are made good promptly.
- .3 If in opinion of Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, ECCC will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Not Used.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
 - .1 Provide Departmental Representative with list of temporary utilities required by the Contractor.

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 DEWATERING

- .1 If necessary, provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.5 WATER SUPPLY

- .1 Costs for temporary water services are considered incidental to the work and no separate or additional payment will be made.

1.6 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on Site.

1.7 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 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.

- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction.
- .3 Remove erosion and sedimentation controls. Restore and stabilize areas disturbed during removal.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location of staging area and types of required construction facilities.
- .2 Indicate use of supplemental or other staging area.
- .3 Provide necessary construction facilities, fencing, and any other on-site facilities in order to execute Work expeditiously.
- .4 Remove from site all such Work after use.

1.2 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.3 SANITARY FACILITIES

- .1 Provide sanitary facilities for Work force.
- .2 Post notices and take precautions as required by Departmental Representative. Keep area and premises in sanitary condition.

1.4 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from Work site daily.
- .2 Store materials resulting from demolition activities that are salvageable.
- .3 Stack stored new or salvaged material not in construction facilities.
- .4 At end of Work remove sanitary facilities and waste from Work area. Dispose of sanitary waste at sanitary waste disposal site; no toilet paper to remain on-site.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 QUALITY

- .1 Fist grips are to be installed only once.
- .2 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

1.2 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.3 TRANSPORTATION

- .1 The Contractor is responsible for transporting all material, products, and equipment to the Work Site.

1.4 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative, in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.5 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.6 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.7 REMEDIAL WORK

- .1 Perform remedial Work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial Work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used.

1.2 REFERENCE STANDARDS

.1 Not Used.

1.3 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 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.

.3 Clear snow and ice from access to site, bank/pile snow in designated areas only.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site dump containers for collection of waste materials and debris.

.6 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 – Waste Management and Disposal.

.7 Dispose of waste materials and debris off site.

.8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 – Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This Section includes requirements for management of construction waste and disposal, which forms the Contractor's commitment to reduce and divert waste materials from landfill and includes the following:
 - .1 Preparation of a Construction Waste Management Plan that provides guidance on a logical progression of tasks and procedures to be followed to reduce or eliminate the generation of waste, the loss of natural resources, and process emissions through source reduction, reuse, recycling, and reclamation.

1.2 RELATED REQUIREMENTS

- .1 Section 01 35 43 – Environmental Procedures.
- .2 Section 01 74 00 – Cleaning.
- .3 Section 02 41 16 – Structure Demolition.

1.3 DEFINITIONS

- .1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.
- .2 Construction Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, repair and demolition operations.
- .3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.
- .4 Non-hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.
- .5 Non-toxic: Not poisonous to humans either immediately or after a long period of exposure.
- .6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- .7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- .8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Return: To give back reusable items or unused products to vendors for credit.
- .10 Reuse: To reuse a construction waste material in some manner on the project site.
- .11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- .12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.

- .13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- .14 Toxic: Poisonous to humans either immediately or after a long period of exposure.
- .15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- .16 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing.
- .17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.
- .18 Construction Waste Management Plan: A project related plan for the collection, transportation, and disposal of the waste generated at the construction site; the purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide information in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit the following at least 15 days prior to commencement of Work:
 - .1 Construction Waste Management Plan (CWM Plan): Submit a CWM Plan that includes the following information:
 - .1 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.
 - .2 Landfill Materials: Identify materials that cannot be recycled, reused or composted and provide explanation or justification.
 - .3 Landfill: Name of the landfill where rubbish will be disposed.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 78 00 – Closeout Submittals.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative inspection.
 - .2 Departmental Representative Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted and fully operational.
 - .4 Department Representative and Contractor will demonstrate operation of systems.
 - .5 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative.
 - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 77 00 – Closeout Procedures.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Provide evidence, if requested, for type, source and quality of products supplied.

1.3 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
- .2 Keep record documents available for inspection by Departmental Representative.

1.4 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings.
- .2 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .3 Prior to final invoice, transfer field As-Built drawings to clean, new As-Built. Place on the non-field As-Built copy the contractor's name, date and signature then submit to Department Representative.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This Section includes requirements for the following demolition and removal of structural components.
 - .1 Left Bank: Remove existing single anchor
 - .2 Left Bank: Remove existing 3/8” tieback cable and cable components
 - .3 Left Bank: Remove existing footing and components
 - .4 Left Bank: Remove existing ladder and components
 - .5 Right Bank: Remove existing double anchors
 - .6 Right Bank: Remove existing 3/8” tieback cable and cable components
 - .7 Right Bank: Remove existing footing and components
 - .8 Right Bank: Remove existing ladder and components
 - .9 General: Remove existing 1” main cable and cable components
 - .10 General: Remove existing 3/8” marker cable and cable components

1.2 RELATED REQUIREMENTS

- .1 Section 01 35 43 – Environmental Procedures.
- .2 Section 31 11 00 – Clearing and Grubbing.
- .3 Section 31 23 33.01 – Excavating and Backfilling.

1.3 SITE CONDITIONS

- .1 Environmental protection:
 - .1 Ensure Work is done in accordance with Section 01 35 43 – Environmental Procedures.
 - .2 Ensure Work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
 - .3 Fires and burning of waste or materials is not permitted on site.
 - .4 Do not bury rubbish waste materials.
 - .5 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
 - .6 Ensure proper disposal procedures are maintained throughout project.
- .2 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction.
- .4 Protect trees, plants and foliage on site and adjacent properties where indicated.

Part 2 Products

2.1 EQUIPMENT

- .1 Equipment and heavy machinery:
 - .1 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

Part 3 Execution

3.1 PREPARATION

- .1 Not Used.

3.2 DEMOLITION

- .1 Blasting operations not permitted during demolition. Notify Department Representative at pre-construction meeting if blasting is desired on the project.
- .2 Do blasting operations in accordance with CSA S350, if permitted.
- .3 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.

3.3 SITE RESTORATION

- .1 Below Grade Areas: Completely fill below grade areas and voids resulting from structure demolition operations with satisfactory soil materials according to backfill requirements in Section 31 23 33.01 – Excavating and Backfilling.
- .2 Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes.
- .3 Provide a smooth transition between adjacent existing grades and new grades.

3.4 CLEANING

- .1 All metal removed from infrastructure and waste materials to be removed from site.
- .2 Trees and shrubs removed from the work area to remain within construction zone at end of project.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A1023/A1023M – Standard Specifications for Stranded Carbon Steel Wire Ropes for General Purposes.
 - .2 ASTM A700 – Standard Practices for Packaging, Marking, and Loading Methods for Steel Products for Shipment.
 - .3 ASTM A90/A90M – Standard Test Method for Weight of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
 - .4 ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer’s recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Indicated proposed method of erection, including erection sequence.

Part 2 Products

2.1 MATERIALS

- .1 Steel cables to ASTM A1023/A1023M.
- .2 Properties of cables will comply with the following requirements:

Cable Properties			
Diameter	Material	Minimum Breaking Strength	Modulus of Elasticity
25mm (1")	6x26 Extra Improved Plow Steel Galvanized Class IWRC (Right Regular Lay)	460.0 kN (103,410 lbf)	103,000 MPa (15,000 ksi)
22mm (7/8")		354.0 kN (79,580 lbf)	
19mm (3/4")		261.6 kN (58,810 lbf)	
13mm (1/2")		118.3 kN (26,600 lbf)	
9.5mm (3/8")		64.0 kN (14,387 lbf)	

- .3 Turnbuckles will conform to FF-T-79 lb Type 1, Form 1, Class 7. “Jaw & Jaw” turnbuckles will meet the following requirements:

Turnbuckle Properties		
Cable Diameter	Turnbuckle Size	Minimum Working Load
25mm (1")	24" x 1-1/2" Diameter	95.2 kN (21,400 lbf)
22mm (7/8")	24" x 1-1/4" Diameter	67.6 kN (15,200 lbf)
19mm (3/4")	24" x 1-1/4" Diameter	67.6 kN (15,200 lbf)
13mm (1/2")	18" x 3/4" Diameter	23.1 kN (5,200 lbf)
9.5mm (3/8")	18" x 3/4" Diameter	23.1 kN (5,200 lbf)

Note: Working load limit is the maximum load which ever should be applied to product

- .4 Thimbles will conform to BS EN13411 – 1:2002.
 .5 Wire rope grips will conform to FF-C-450 Type 1, Class 1.

2.2 FINISHES

- .1 Wire ropes, thimbles and turnbuckles will be hot dip galvanized.
 .2 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m² to ASTM A123/A123M.

2.3 SUPPLYING

- .1 Refer to Section 01 11 00 – Summary of Work.
 .2 The Departmental Representative will supply the Contractor with all cable, cable components, accessories, and hardware in quantities equally required for the finished product. Installation quantities may be more, and are the responsibility of the Contractor.

Part 3 Execution

3.1 PREPARATION

- .1 Verify location and elevation of structure before erection of cables; report discrepancies to Departmental Representative.

3.2 ERECTION

- .1 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.
- .2 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.
- .3 Remove temporary bracing or guys when no longer required for the stability unless otherwise approved.
- .4 Erect to the proper alignment as shown on Drawings.
- .5 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

ΔT (°C)	Temperature (°C)	Unloaded Sag m
0	-15	3.170
5	-10	3.244
10	-5	3.324
15	0	3.410
20	5	3.491
25	10	3.574
30	15	3.656
35	20	3.739
40	25	3.822
45	30	3.905
50	35	3.988

- .6 Messenger cables will be tightened until mid-span sag matches sag in the mid-span of the main cable.
- .7 Wire rope grips will be installed and torqued to manufacturer's procedures and per fist grip spacing notes and diagrams on drawings.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 23 33.01 – Excavating and Backfilling.

1.2 DEFINITIONS

- .1 Clearing consists of cutting trees and brush vegetative growth to within 300 mm of the ground and disposing of felled trees, previously uprooted trees, stumps, and surface debris as specified. Clearing may also include the removal of other surface appurtenances that impede earthworks operations.
- .2 Flush-cut clearing consists of cutting trees, stumps or other vegetative growth to within 100 mm of the ground, leaving the root structure undisturbed and disposing of felled trees, previously uprooted trees, stumps, and clearing wood debris as specified.
- .3 Close-cut clearing consists of cutting off standing trees, brush, shrubs, roots, stumps and embedded logs, removing at, or close to, existing grade and disposing of fallen timber and surface debris.
- .4 Grubbing consists of excavation and disposal of stumps, and wood debris as specified.

Part 2 Execution

2.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 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, according to the requirements of authorities having jurisdiction.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

2.2 PREPARATION

- .1 Inspect site and verify with Departmental Representative, any items designated to remain.
- .2 Locate and protect utility lines: preserve in operating condition active utilities traversing Site.
 - .1 Notify Departmental Representative immediately of damage to or when unknown existing utility lines are encountered.
 - .2 When utility lines which are to be removed are encountered within area of operations, notify Departmental Representative in ample time to minimize interruption of service.

2.3 CLEARING

- .1 Notify Department Representative immediately if tree removal will be required. Tree removal cannot be conducted without approval from the Department Representative.
- .2 All clearing shall be felled in such a manner that surrounding vegetation is preserved along the construction limits. Stumps remaining within 3.0 metres of cleared perimeter are to be cut flush with ground and vegetative mat left undisturbed.
- .3 Contractor shall be responsible for all clearing works associated with access construction as outlined on the required Access and Layout Plan submittal (Section 01 35 43 – Environmental Procedures).

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 11 00 – Clearing and Grubbing.

1.2 DEFINITIONS

- .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.
 - .1 Rock: excavation including boulder or rock fragments measuring 1.5 cubic metres or more in volume. Frozen material is not classified as rock.
 - .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Backfill: Native material.
- .3 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.
- .4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .6 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.

1.3 QUALITY CONTROL

- .1 Submit to Departmental Representative written notice when the bottom of excavation is reached prior to completing any further construction works associated with the excavation.
- .2 Regulatory Requirements set out in Section 01 35 43 – Environmental Procedures.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and/or recycling in accordance with Section 01 35 43 – Environmental Procedures.
- .2 Dispose of waste offsite at location provided by the Contractor and accepted by Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 Use in-situ material for backfill.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 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 walkways.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

3.3 PREPARATION/PROTECTION

- .1 Keep excavations clean, free of standing water, and loose soil.
- .2 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative's approval.
- .3 Protect natural and human-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .4 Protect buried services that are required to remain undisturbed. Contractor responsible for all line locates.

3.4 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as directed by Departmental Representative after area has been cleared of brush and removed from site.
- .2 Strip topsoil to full depth. Do not mix topsoil with subsoil.

3.5 STOCKPILING

- .1 Stockpile fill materials in areas of the work zone designated to allow access for reuse or disposal.
 - .1 Stockpile granular materials in manner to prevent segregation.
 - .2 Cover stockpile with polyethylene sheeting or tarps.
 - .3 Stockpile height not to exceed 2 m and should be protected from erosion.
- .2 Protect fill materials from contamination.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.6 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.

- .2 Provide for Departmental Representative approval details of proposed dewatering or heave prevention methods in accordance with Section 01 35 43 – Environmental Procedures.

3.7 EXCAVATION

- .1 Advise Departmental Representative at least 7 days in advance of excavation operations.
- .2 Excavate to lines, grades, elevations and dimensions as indicated on the Drawings.
- .3 Remove concrete and other obstructions encountered during excavation. Excavation must not interfere with bearing capacity of adjacent foundations.
- .4 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .5 Keep excavated and stockpiled materials a safe distance away from the edge of excavation.
- .6 Restrict vehicle operations directly adjacent to open trenches.
- .7 Dispose of surplus and unsuitable excavated material off site as per Section 1.4 – WASTE MANAGEMENT AND DISPOSAL.
- .8 Do not obstruct flow of surface drainage or natural watercourses.
- .9 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .10 Notify Departmental Representative when the bottom of excavation is reached and obtain approval of completed excavation.
- .11 Remove unsuitable material from the trench bottom including those that extend below required elevations to extent and depth as required.
- .12 Hand trim, make firm and remove loose material and debris from excavations:
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.
- .13 All open excavation left overnight or during non-construction periods to be obstructed to prevent pedestrian access.

3.8 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 Departmental Representative has inspected and approved installations.
 - .2 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 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 and 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.

- .4 Backfilling around installations:
 - .1 Backfill layers to be placed simultaneously on both sides of installed Work to equalize loading.

3.9 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects to the approval of Departmental Representative. Contractor is responsible for the removal and disposal of all surplus excavation material from site in accordance with Section 01 74 19 – Waste Management and Disposal.
- .2 Replace topsoil to the approval of Departmental Representative.
- .3 On slopes greater than 25 degrees use woven, biodegradable matting suitable for 30 degree or greater slope. Secure per manufacturer's guidelines.
- .4 Clean and reinstate areas affected by Work.
- .5 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION