

SPECIFICATION

Construction of Two H-Frame Structures

Catalina, NL.

F6879-167017

PREPARED FOR  
Department of Fisheries and  
Oceans Canada

DATE  
October 26, 2016  
Revision 2

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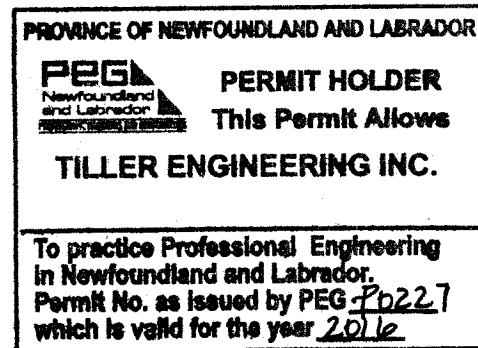
Construction of  
Two H-Frame Structures  
Fisheries and Oceans Canada  
DFO Project # F6879-167017

SEALS PAGE

SECTION 00 01 07  
PAGE 1  
2016-10-26



Civil Engineer:  
Jesse McCaw, P. Eng



Permit to Practice  
Tiller Engineering Inc.

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**END OF SECTION**

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## **1 GENERAL**

### **1.01 SCOPE**

- .1 Work under this Contract comprises the construction of two (2) wooden H-Frame electrical transmission structures, with associated conductors, hardware, and aircraft avoidance equipment located at Catalina and Green Island Newfoundland.
- .2 DFO will schedule a mandatory site visit during the tender period. Details regarding the site visit will be released by Owner at a later date.
- .3 Work will take place at two sites, one of which is located on Green Island. Access to the green island site is only possible by boat or helicopter. The second site is also relatively remote and may require the contractor to construct a temporary access road.

### **1.02 WORK COVERED BY CONTRACT DOCUMENTS**

- .1 Work of this Contract comprises the construction of two (2) H-Frame electrical transmission structures located at Catalina and Green Island Newfoundland. Work includes, but is not limited to, the following:
  - .1 Accessing the sites.
  - .2 Siting the location of the new pole structures.
  - .3 Construction of the frames, installation of electrical hardware, and stringing conductor between the frames complete with aircraft avoidance balls.
  - .4 Coordinating an electrical outage and relocating the conductors from adjacent poles onto the new structures
  - .5 Demolition and disposal of the existing pole structures.

### **1.03 CONTRACT METHOD**

- .1 Construct Work under a lump sum contract.
- .2 Contractor shall provide pricing under the assumption that all guy anchors will require the helical screw anchors specified in this package.

### **1.04 WORK SEQUENCE**

- .1 Construct Work in stages to accommodate Owner's continued use of premises during construction.
- .2 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.
- .3 Required stages:
  - .1 Mobilization and H-Frame site selection;

- .2 Construction of H-Frames and transmission lines
- .3 Outage Work
- .4 Demolition
- .5 Demobilization

- .4 Inform Owner of any required electrical outages 72 hours in advance.

#### **1.05 DATUM**

- .1 Datum used for this project shall be Lowest Normal Tides (LNT). If requested by Contractor, the Owner will establish a benchmark prior to start of work activities.
- .2 Bidders are advised to consult the tide tables issued by Fisheries and Oceans Canada, prior to submission of their bid, in order to ascertain the tidal conditions affecting work.

#### **1.05 CONTRACTOR USE OF PREMISES**

- .1 Use of site to be coordinated with Owner prior to mobilization on site. Owner to be informed of any changes to site use during construction
- .2 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .3 Locations are isolated. Contractor responsible to provide own power, shelters, and washroom facilities.
- .4 At completion of operations return site to equal or better than that which existed before new work started.

#### **1.06 OWNER OCCUPANCY**

- .1 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

#### **1.07 OWNER FURNISHED ITEMS**

- .1 Owner Responsibilities:
  - .1 Delivery of two (2) unpainted wooden poles to Green Island
  - .2 Delivery of two (2) unpainted wooden poles to a road accessible location within Catalina NL. Contractor is responsible for delivering poles to final location
- .2 Schedule of Owner furnished items:
  - .1 4x Un-Painted Treated Wooden Poles.

#### **1.08 EXISTING SERVICES**

- .1 Notify utility companies of intended interruption of services and obtain required permission.
- .2 No electrical or sanitary services are available on-site. Contractor shall



provide these services at their expense.

#### 1.09 DOCUMENTS REQUIRED

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

**END OF SECTION**

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## 1 GENERAL

### 1.01 ADMINISTRATIVE

- .1 Submit to Departmental 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 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated 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.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative.
- .10 Keep one reviewed copy of each submission on site.

### 1.02 CONSTRUCTION SCHEDULE AND COST BREAKDOWN

- .1 After award and prior to construction, Contractor shall submit to the Owner a complete construction schedule, identifying tasks and milestones, for Owner review and approval.
- .2 After award and prior to construction, contractor shall submit to Owner, a cost breakdown containing at a minimum, the following:
  - .1 Mobilization to site
  - .2 Construction of two (2) H-Frame structures
  - .3 Supply and installation of electrical hardware and conductor
  - .4 Demolition and disposal of existing H-frames
  - .5 General site clean-up and demobilization

### 1.03 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .2 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .3 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .4 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .5 Supplement standard information to provide details applicable to project.
- .6 If upon review by Departmental Representative no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

### 1.04 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status, trade certificates, and any other documents requested by Owner.

**END OF SECTION**

## **1 GENERAL**

### **1.01 REFERENCE STANDARDS**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Province of Newfoundland and Labrador
  - .1 Occupational Health and Safety Act, R.S.N. - Updated [2012].

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit 3 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly].
- .4 Submit copies of incident and accident reports.
- .5 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 3 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 2 days after receipt of comments from Departmental Representative.
- .6 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.
- .7 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

### **1.03 FILING OF NOTICE**

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

### **1.04 SAFETY ASSESSMENT**

- .1 Perform site specific safety hazard assessment related to project.

### **1.05 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

### 1.06 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.

### 1.07 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.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

### 1.08 Known Hazards

- .1 The following are jobsite hazards known to the Owner at the time of tender. This list shall not be taken as exhaustive and the contractor shall complete a job specific safety assessment as outlined in this document. Known hazards include, but are not limited to the following:
  - .1 Wet and slippery conditions.
  - .2 Remote site location
  - .3 Inclement weather conditions
  - .4 Heavy lifting
  - .5 Working at heights
  - .6 Cutting tools and sharp objects
  - .7 Overhead electrical lines
  - .8 Dangerous terrain (Steep cliffs, water bodies)
  - .9 Work on water bodies

### 1.09 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act, Occupational Health and Safety Regulations, C. Nfld. Reg., [2012].

### 1.10 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

### 1.11 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in

conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with the Departmental Representative.

#### **1.12 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.

#### **1.13 WORK STOPPAGE**

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

**END OF SECTION**

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## 1 GENERAL

### 1.01 REFERENCE STANDARDS

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-2008 Stipulated Price Contract.

### 1.02 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.

### 1.03 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, submit Environmental Protection Plan for review and approval by Departmental Representative].
- .3 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .4 Address topics at level of detail commensurate with environmental issue and required construction task[s].
- .5 Include in Environmental Protection Plan:
  - .1 Name[s] of person[s] responsible for ensuring adherence to Environmental Protection Plan.
  - .2 Name[s] and qualifications of person[s] responsible for manifesting hazardous waste to be removed from site.
  - .3 Name[s] and qualifications of person[s] responsible for training site personnel.
  - .4 Descriptions of environmental protection personnel training program.
  - .5 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.
  - .6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
  - .7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.

- .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
- .8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
  - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- .9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .11 Waste Water Management Plan identifying methods and procedures for management or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

#### 1.04 FIRES

- .1 Fires and burning of rubbish on site is not permitted.

#### 1.05 DRAINAGE

- .1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include 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.
- .2 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .3 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

#### 1.06 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Minimize stripping of topsoil and vegetation.
- .3 Separate topsoil during stripping activities for reuse as topping soil during site clean-up.

#### 1.07 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Waterways to be kept free of excavated fill, waste material and debris.

### **1.08 POLLUTION CONTROL**

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.

### **1.09 NOTIFICATION**

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for 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.

## **2 EXECUTION**

### **2.01 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .4 Waste Management: separate waste materials for recycling.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**

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## **1 GENERAL**

### **1.01 REFERENCE STANDARDS**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-[94], Stipulated Price Contract.

### **1.02 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental. Do not burn waste materials on site, unless approved by Owner.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

### **1.03 FINAL CLEANING**

- .1 Refer to CCDC 2, GC 3.14

### **1.04 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for recycling.

**END OF SECTION**

## 1 GENERAL

### 1.01 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Owner copies of operating and maintenance manuals in English.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

### 1.02 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Change Orders and other modifications to Contract.
  - .5 Reviewed shop drawings, product data, and samples.
  - .6 Field test records.
  - .7 Inspection certificates.
  - .8 Manufacturer's certificates.
- .2 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
  - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .3 Maintain record documents in clean, dry and legible condition.
  - .1 Do not use record documents for construction purposes.

**END OF SECTION**

## **1 GENERAL**

### **1.01 REFERENCE STANDARDS**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

### **1.03 DELIVERY, STORAGE AND HANDLING**

- .1 Waste Management and Disposal:
- .2 Separate waste materials for recycling

### **1.04 SITE CONDITIONS**

- .1 Notify Departmental Representative before disrupting access or services.

## **2 PRODUCTS**

### **2.01 EQUIPMENT**

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

## **3 EXECUTION**

### **3.01 PREPARATION**

- .1 Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .2 Protection:
  - .1 Prevent movement, settlement, or damage to adjacent structures, utilities, to remain in place.
- .3 Disconnect and re-route electrical service lines. Post warning signs on electrical lines and equipment which must remain energized to serve other products during period of demolition.
- .4 Locate and protect utility lines.

### **3.02 REMOVAL OF ELECTRICAL EQUIPMENT**

- .1 Contractor shall remove all electrical equipment including but not limited to, conductor wire and insulators.

**3.03 DEMOLITION OF POLE STRUCTURE**

- .1 Contractor shall dismantle the wooden structures and dispose of all wood and metal connectors.
- .2 Guywires shall be removed and anchors cut below grade as per drawings

**3.04 DEMOLITION SALVAGE AND DISPOSAL**

- .1 Dispose of removed materials, to appropriate recycling facilities except where specified otherwise, in accordance with authority having jurisdiction.

**3.05 REMOVAL FROM SITE**

- .1 Transport material designated for disposal to approved facilities receiving organizations and in accordance with applicable regulations.

**3.06 CLEANING AND RESTORATION**

- .1 Keep site clean and organized throughout demolition procedure.
- .2 Upon completion of project, reinstate areas affected by Work to match condition of adjacent, undisturbed areas.

**END OF SECTION**



## 1 GENERAL

### 1.01 RELATED REQUIREMENTS

- .1 Section 09 91 13 - Exterior Painting
- .2 Section 33 71 16.01 - Electrical Pole Lines and Hardware

### 1.02 REFERENCE STANDARDS

- .1 American Wood-Preservers' Association (AWPA)
  - .1 AWPA M2-[01], Standard for Inspection of Treated Wood Products.
  - .2 AWPA M4-[06], Standard for the Care of Preservative-Treated Wood Products.
- .2 Canadian Standards Association (CSA International)
  - .1 CSA O80 Series-[97(R2002)] - O80S2-[05], Wood Preservation.
  - .2 CSA O80.20-1.1-[M97(R2002)], This Standard applies to the fire-retardant treatment of lumber by pressure processes..
  - .3 CSA O80.27-1.1-[M97(R2002)], This Standard covers the fire-retardant treatment of Douglas Fir, hardwood, softwood, and Poplar plywood by pressure processes.
  - .4 CSA O80.201-[M89], This Standard covers hydrocarbon solvents for preparing solutions of preservatives.
  - .5 CSA O322-[02], Procedure for Certification of Pressure-Treated Wood Materials for Use in Preserved Wood Foundations.
  - .6 Flame Spread Classification (FSC), and smoke developed.
  - .7 CSA O116, Power and Communication Sawn Wood Crossarms.

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 Wood
  - .1 Wood preservation: to CAN/CSA O80 Series
  - .2 Wood cross arms: to CSA O116, pressure or vacuum treated with wood preservative3

## EXECUTION

### 3.01 APPLICATION OF PRESERVATIVE/PAINT

- .1 No preservative treatment application shall be completed at the worksite.

END OF SECTION

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## 1 GENERAL

### 1.01 RELATED REQUIREMENTS

- .1 Section 06 05 73 - Wood Treatment
- .2 Section 31 00 00.01 - Earthwork
- .3 Section 33 71 16.01 - Electrical Pole Lines and Hardware

### 1.02 REFERENCE STANDARDS

- .1 CSA 086 - Technical Committee on Engineering Design in Wood

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 All wood products shall be painted, treated and certified for outdoor use to CSA 0116, pressure or vacuum treated with wood preservative:
- .2 Wood timbers to be Eastern Spruce No. 2 Construction Grade as per the Canadian Wood Council grading system and shall be marked as such.
- .3 All steel fasteners and connectors shall be hot dipped galvanized unless noted otherwise on drawings
- .4 Steel bolts to be A325 bearing type

## 3 EXECUTION

### 3.01 Erection

- .1 After painting H-Frame shall be assembled on the ground or in place. Any lifting or climbing to be done with due regard to safety
- .2 Structure to then be erected and installed into the ground as specified in Section 31 00 00.01 - Earthwork
- .3 Guy wires are to be attached as soon as practicable and before any conductor is strung to the structure.

**END OF SECTION**

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## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 05 73 - Wood Treatment

### **1.02 REFERENCE STANDARDS**

- .1 Canadian Aviation Regulations (CARs)
  - .1 Standard 621 - Obstruction Marking and Lighting

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's instructions, printed product literature and data sheets for paint and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements
- .3 Certificates: Provide product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

### **1.04 QUALITY ASSURANCE**

- .1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

### **1.05 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Paint to meet the requirements outlined in CARs Standard 621
- .2 Structures shall be painted as per CARs Standard 621 with the following paint colours:

- .1 Orange 12197
- .2 White 17875
- .3 Paint shall not contain any toxic metal pigments, methylene chloride, or chlorinated hydrocarbons

## 2.02 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site.
- .2 On-site tinting of painting materials is allowed only with Owner's written permission.
- .3 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- .4 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

## 3 EXECUTION

### 3.01 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for painting exterior surfaces in accordance with manufacturer's written instructions.

### 3.02 PREPARATION

- .1 Number of paint coats: shall be as many as required to achieve a solid uniform final coat with vibrant colours but shall be no less than 2 coats unless otherwise directed by Owner.

### 3.03 APPLICATION

- .1 Poles shall be painted on site with sufficient coats of paint to ensure a complete surface application and vibrant colours.
- .2 Poles shall have the required number of paint bands specified in Standard 621 and shall have an orange band as the topmost and bottommost band.
- .3 Apply paint finish only in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
- .4 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.
- .5 Apply paint only when previous coat of paint is dry or adequately cured.

- .6 Apply paint finishes only when conditions forecast for entire period of application fall within manufacturer's recommendations.
- .7 Do not apply paint when:
  - .1 Temperature is expected to drop below 10°C before paint has thoroughly cured.
  - .2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
  - .3 Surface to be painted is wet, damp or frosted.
  - .4 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
  - .5 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
  - .6 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

### **3.04 FIELD QUALITY CONTROL**

- .1 Site Tests, Inspections:
  - .1 Upon completion of the painting procedures test for dry film reading and evaluate the results as per SSPC-PA 2.

### **3.05 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section [01 74 11 - Cleaning].
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 11 - Cleaning].
- .3 Waste Management: separate waste materials for reuse or disposal
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.06 PROTECTION**

- .1 Protect painted surfaces from damage during construction.
- .2 Protection of surfaces:
  - .1 Protect surfaces not to receive paint.
  - .2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats of paint. Remove contaminants from surface and apply paint immediately.
  - .3 Protect cleaned and freshly painted surfaces from dust to approval of Owner.
- .3 Repair damage to adjacent materials caused by painting exterior metal surface application installation.

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END OF SECTION



## 1 GENERAL

### 1.01 REFERENCE STANDARDS

- .1 Canadian Electrical Code Part III Electricity Distribution and Transmission
- .2 CAN/CSA-C83, Communication and Power Line Hardware
- .3 CSA O124, Specification for the Physical Properties of Power and Communication Wood Insulator Pins
- .2 Canadian Aviation Regulations
  - .1 Standard 621 - Obstruction Marking and Lighting
- .5 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)
  - .1 EEMAC1B-1, Wet Process Porcelain Insulators (Strain Type)
- .6 American National Standards Institute (ANSI)
  - .1 ANSI C29.5, Wet-Processed Porcelain Insulators, Low and Medium Voltage Pin Type

### 1.02 SYSTEM INFORMATION

- .1 The voltage through the lines is 2,400 volts
- .2 The span between the structures is approximately 325 meters. This distance will vary depending on which final location is chosen by the contractor

### 1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 All electrical components to match existing and meet the requirements of the Canadian Electrical Code AND CAN/CSA-C83.
- .2 Contractor to submit shop drawings of electrical components to Owner for review prior to purchase

### 2.02 CONDUCTORS

- .1 Conductors shall be composed of 7x10.5mm<sup>2</sup> wire with a breaking load, at 30% conductor, greater than 7650kg
- .2 Resistance of conductor shall be .080 ohms per km or less at 20°C

- .3 Jumpers to be installed as per ESA requirements

## 2.03 INSULATORS AND DEAD END CONNECTIONS

- .1 Dead end insulators shall be a fiberglass core construction with a polymeric sheath and weather shield with galvanized steel end fittings
- .2 Dead end insulators shall be rated for the following
  - .1 Minimum system voltage of 15kV
  - .2 Withstand a minimum tensile load of 7,500 lbs
  - .3 Low frequency flashover (Dry/Wet) of 110/75
  - .4 Critical impulse flashover (Positive/Negative) of 140/160
  - .5 All dead ends shall have a dead end bolted straight line strain clamp installed
    - .1 Strain clamps shall be made of galvanized iron
    - .2 Strain clamps shall have a minimum ultimate body strength of 3,600 kg
  - .6 Pin type insulators shall have a nominal rating of 15kV
  - .7 Guy Strain Insulators to be EEMAC1B-1, nominal rating 15 kV, one per guy wire.

## 2.04 VIBRATION DAMPERS

- .1 Overhead conductors to have a minimum of two (2) vibration dampers installed on each line with one at either end of the span.
- .2 Dampers shall be of the 4R Stockbridge type and sized to fit the conductor

## 2.05 AVOIDANCE MARKING

- .1 Obstruction marking balls meeting the requirements of CAR 621 are to be installed on the new lines at the spacing described in the drawings.

## 3 EXECUTION

### 3.01 PREPARATION

- .1 All pole dressings to be installed by contractor
- .2 Transmission conductors shall be strung between the 2 new H-Frames and have the electrical continuity verified prior to outage.
- .3 Obstruction marking balls are to be installed before or immediately after transmission lines are strung. Contractor shall inform Owner and Transport Canada if the lines are left unmarked for any period of time after the lines are in place.
- .4 Owner shall be made aware of the outage details no less than 48 hours in advance and approve the outage times and timeframes.
- .5 Contractor shall plan to complete any other work which can be completed before the outage begins in order to reduce the impact on owner operations.

.6 Outage and energization plan to be submitted to owner.

### **3.02 Outage**

- .1 Contractor to acquire all permits for the line outage and complete appropriate lock-out procedures with local utility.
- .2 No hot work shall be permitted for this project
- .3 Contractor shall relocate the supply lines on either side of the new transmission structures to the new transmission line.

### **3.03 ENERGIZATION**

- .1 Contractor to follow all lock-out procedures and permit requirements.
- .2 Area to be confirmed safe prior to energization.

**END OF SECTION**

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## 1 GENERAL

### 1.01 REFERENCE STANDARDS

- .1 U.S. Environmental Protection Agency (EPA)/Office of Water
  - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

### 1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Erosion and Sedimentation Control: submit erosion and sedimentation control plan in accordance with authorities having jurisdiction.

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 Compactable earth backfill containing no organics, frozen material, or other objectionable materials.
- .2 Helical earth anchors to be Hubbell square shaft as shown on the drawings or approved equal
- .3 Rock anchors to be wedge style guy anchor as shown on the drawings or approved equal.

## 3 EXECUTION

### 3.01 PREPARATION

- .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, according to [requirements of authorities having jurisdiction] [sediment and erosion control drawings] [sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent].
  - .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.
- .2 Protection of in-place conditions:
  - .1 Keep excavations clean, free of standing water, and loose soil.
  - .2 Protect natural and man-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.

- .3 Removal:
  - .1 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris as required to complete work.

### **3.02 EXCAVATION**

- .1 Excavate as required to carry out work.
  - .1 Do not disturb soil or rock below bearing surfaces.
  - .2 Notify Departmental Representative when excavations are complete.

### **3.03 INSTALLATION OF ANCHORS**

- .1 All anchors to be installed as per manufacturer's instructions
- .2 Helical screw anchors to be utilized where possible to minimize excavation requirements
- .3 For guy locations where screw anchors cannot be installed due to rock, Contractor shall use a wedge style anchors. Rock anchors are to be installed in sound rock to the minimum depths and grouted as prescribed by the manufacturer. Anchors to be load tested as prescribed by the manufacturer.

### **3.04 BACKFILLING**

- .1 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.
- .2 Placing:
  - .1 Place backfill, fill and base course material in 150 mm lifts: add water as required to achieve specified density.
  - .2 Compaction: compact each layer of material with a vibratory plat compactor. If space is limited, hand tools may be used.
  - .3 Compact backfill sufficiently to ensure the pole structure is stable and remains as close to a perfect vertical as possible.

### **3.05 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Dispose of cleared and grubbed material off site at end of work.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

**END OF SECTION**

## 1 GENERAL

### 1.01 RELATED SECTIONS

- .1 Section 06 05 73 - Wood Treatment.
- .2 Section 06 10 00 - Rough Carpentry
- .3 Section 09 91 13 - Exterior Painting
- .4 Section 26 05 00 - Common Work Results - Electrical.
- .5 Section 31 00 00.01 - Earthworks

### 1.01 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA),
  - .1 CAN/CSA-G12, Zinc-Coated Steel Wire Strand.
  - .2 CAN/CSA-C83, Communication and Power Line Hardware.
  - .3 CAN/CSA-O80 Series, Wood Preservation.
  - .4 CAN/CSA-O15, Wood Utility Poles and Reinforcing Stubs.
  - .5 CSA O116, Power and Communication Sawn Wood Crossarms.
  - .6 CSA O124, Specification for the Physical Properties of Power and Communication Wood Insulator Pins.
- .2 American National Standards Institute (ANSI)
  - .1 ANSI C29.5, Wet-Processed Porcelain Insulators, Low and Medium Voltage Pin Type.
- .3 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)  
EEMAC1B-1, Wet Process Porcelain Insulators (Strain Type).
- .4 Canadian Electrical Code Part III Electricity Distribution and Transmission
- .5 Canadian Aviation Regulations
  - .1 Standard 621 - Obstruction Marking and Lighting

### 1.02 SYSTEM INFORMATION

- .1 The voltage through the lines is 2,400 volts
- .2 The span between the structures is approximately 325 meters. This distance will vary depending on which final location is chosen by the contractor

### 1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 All electrical components to match existing and meet the requirements of the Canadian Electrical Code AND CAN/CSA-C83.
- .2 Contractor to submit shop drawings of electrical components to Owner for review prior to purchase

### 2.02 POLES

- .1 Poles to be provided by Owner and delivered as per Section 01 11 00 - Summary of Work.
- .2 Wood utility poles: to CAN/CSA-015, wood species Douglas Fir, Class 1, preservative treated.
- .3 Reinforcing stubs: to CAN/CSA-015, wood species Douglas Fir, Class 1.
  - .1 Wood preservative: in accordance with Section 06 05 73 - Wood Treatment.

### 2.03 CROSSARMS

- .1 Wood crossarms: to CSA 0116, pressure or vacuum treated with wood preservative and installed as per drawings

### 2.04 CONDUCTORS

- .1 Conductors shall be composed of 7x10.5mm<sup>2</sup> wire with a breaking load, at 30% conductor, greater than 7650kg
- .2 Resistance of conductor shall be .080 ohms per km or less at 20°C
- .3 Jumpers to be installed as per ESA requirements

### 2.05 INSULATORS AND DEAD END CONNECTIONS

- .1 Dead end insulators shall be a fiberglass core construction with a polymeric sheath and weather shield with galvanized steel end fittings
- .2 Dead end insulators shall be rated for the following
  - .1 Minimum system voltage of 15kV
  - .2 Withstand a minimum tensile load of 7,500 lbs
  - .3 Low frequency flashover (Dry/Wet) of 110/75
  - .4 Critical impulse flashover (Positive/Negative) of 140/160
  - .5 All dead ends shall have a dead end bolted straight line strain clamp installed
    - .1 Strain clamps shall be made of galvanized iron
    - .2 Strain clamps shall have a minimum ultimate body strength of 3,600 kg
  - .6 Pin type insulators shall have a nominal rating of 15kV
  - .7 Guy Strain Insulators to be EEMAC1B-1, nominal rating 15 kV, one per guy wire.



## **2.06 VIBRATION DAMPERS**

- .1 Overhead conductors to have a minimum of two (2) vibration dampers installed on each line with one at either end of the span.
- .2 Dampers shall be of the 4R Stockbridge type and sized to fit the conductor

## **2.07 AVOIDANCE MARKING**

- .1 Obstruction marking balls meeting the requirements of CAR 621 are to be installed on the new lines at the spacing described in the drawings.

## **2.08 GUYS AND ANCHORS**

- .1 Guy wire: To CSA G12. Guy wire to be stranded galvanized steel 9.5 mm grade 160. Install as per drawings
- .2 Guy clamps, preformed guying, deadend.
- .3 Anchors as per Section 31 00 00.01 - Earthworks and drawings
- .4 Guy guard, plastic, colored yellow, 2.1 m long

## **3 EXECUTION**

### **3.01 PREPARATION**

- .1 All pole dressings to be installed by contractor
- .2 Transmission conductors shall be strung between the 2 new H-Frames and have the electrical continuity verified prior to outage.
- .3 Obstruction marking balls are to be installed before or immediately after transmission lines are strung. Contractor shall inform Owner and Transport Canada if the lines are left unmarked for any period of time after the lines are in place.
- .4 Owner shall be made aware of the outage details no less than 48 hours in advance and approve the outage times and timeframes.
- .5 Contractor shall plan to complete any other work which can be completed before the outage begins in order to reduce the impact on owner operations.
- .6 Outage and energization plan to be submitted to owner.
- .7 Where poles require shortening, cut piece from top only.

### **3.02 INSTALLATION**

- .1 Locate and dig pole holes. Make holes large enough to allow space for tamping backfill.
- .2 Set poles.
- .3 Align poles with crossarms at right angles to pole line on straight runs.

- .4 At change in direction of line, set crossarms to bisect angle formed by change.
- .5 Set poles to maintain even grade. Allow for contour of terrain and do not exceed grading of 1.5 m per pole.
- .6 Replace backfill in 150 mm layers. Tamp each layer, and apply final layer to drain water away from pole.
- .7 For rock mounted poles, install cribs.
- .8 For swampy condition, install timber footings.
- .9 Locate and install guy wires and anchors at dead-ends, corner poles, and start of branch feeders.
- .10 Install insulators
- .11 Identify primary circuit on pole showing phasing of each conductor, every 1000 m and including origin of primary pole.
- .12 Install ground conductors, gradient control mat and other related pole hardware to constitute system as indicated on drawings.

**END OF SECTION**

## Appendix A: General Site Photographs

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Photo A1: H Frame Structure (Catalina Side)



Photo A2: H Frame Structure (Green Island Side)



**Photo A3: Transmission Mounting Hardware**



**Photo A4: Typical Guy Anchors**