Public Works and Government Services Canada

Requisition No. EZ899-180314

MERX I.D. No. _____

SPECIFICATIONS
for
ODAL 29 Feeder Replacement at
Port Hardy Airport
Port Hardy, BC

Project No. R.083360.001 **April 2017**

APPROVED BY:

Regional Manager of AES — May 9/2017
Date

Regional Construction Safety Coordinator — 2017.05.03
Date

TENDER:

Project Manager — 04 MAY 17
Date

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Discipline	Seal / Signature / Date
Electrical (Prime)	 2017-04-25

END OF SECTION

1 GENERAL

1.1 REFERENCES

.1 National Building Code of Canada (NBC)-2015 and CEC Canadian Electrical Code 2015, including all amendments up to tender closing date.

.2 Transport Canada Aerodrome Standards and Recommended Practices No. TP-312E, 4th Edition. Copy of TP-312E available at internet address: http://www.tc.gc.ca/publications/EN/TP312/PDF/HR/TP312E.pdf

1.2 RELATED SECTIONS

.1 Section 01 35 27 - Airports in Use

.2 Section 01 51 00 - Temporary Facilities

1.3 DESCRIPTION OF WORK

.1 Work under this Contract covers the replacement of ODAL 29 Airside electrical feeder at Port Hardy Airport, Port Hardy, British Columbia.

.2 The word ***provide*** shall be taken to mean ***supply, install, connect, test and commission***.

.3 Work includes, but is not limited to
- .1 GPR (Ground Penetrating Radar) survey of the proposed feeder route to identify existing underground obstacles prior to trench excavation.
- .2 Installation of underground ducts and junction boxes including tie-in to existing junction boxes.
- .3 Road restoration of trenching across gravel access roads.
- .4 Installation and connection of series lighting cable.
- .5 Removal and disposal off-site of all existing cables currently installed in conduit made redundant by their replacement.
- .6 Replacement of isolating transformers.

.4 The Airport must remain **OPERATIONAL** throughout the construction. Refer to PCO – Plan of Construction Operations.

.5 “Green” requirements
- .1 Use only environmentally responsible green materials/products with no VOC emissions or minimum VOC emissions of indoor off-gassing contaminants for improved indoor air quality – subject of Departmental Representative’s approval of submitted MSDS Product Data.
- .2 Use materials/products containing highest percentage of recycled and recovered materials practicable – consistent with maintaining cost effective satisfactory levels of competition.

.3 Adhere to waste reduction requirements for reuse or recycling of waste materials, thus diverting materials from landfill.

1.4 CODES

.1 Perform Work in accordance with National Building Code of Canada (NBC), 2015 edition, and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

.2 Transport Canada Aerodrome Standards and Recommended Practices No. TP-312E, 4th Edition.

.3 Canadian Electrical Code CC22.1-15.

.4 Meet or exceed requirements of
- .1 Contract documents
- .2 Specified standards, codes, and referenced documents

1.5 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy each of following
- .1 Contract drawings
- .2 Specifications
- .3 Addenda
- .4 Reviewed shop drawings
- .5 Change orders
- .6 Other modifications to Contract
- .7 Field test reports
- .8 Copy of approved work schedule
- .9 Manufacturers' installation and application instructions
- .10 Referenced codes with all supplements
- .11 Listed referenced standards of workmanship
- .12 Display Building and electrical permits for viewing by authorities
- .13 Site Safety Plan

1.6 REGULATORY REQUIREMENTS

.1 Pay all fees and obtain all permits required by regulatory authorities to complete the work.

.2 Provide inspection authorities with plans and information required for issue of acceptance certificates.

.3 Furnish inspection certificates in evidence that the work installed conforms with the requirements of the authority having jurisdiction.

1.7 TIME OF COMPLETION

.1 Complete the project ready for use within twelve (12) weeks after Contract Award.

1.8 HOURS OF WORK

.1 Schedule construction work during normal working hours of the airport. The Port Hardy Airport's Maintenance Department hours of work are weekdays from 0600 to 1500. The Port Hardy Airport's Manager's Office hours of work are weekdays 0800 to 1600. Contractor to allow for pulling back equipment and personnel out of area of work with 75m of the runway centreline when flights are arriving and departing as directed by the FSS (Flight Service Station).

1.9 WORK SCHEDULE

.1 Within five (5) working days after Contract award, provide critical path schedule showing anticipated progress stages and final completion of Work within 2 weeks of the formal notification of offer acceptance.

.2 Within the five (5) working days after Contract award, provide bar chart/schedule, in form acceptable to Departmental Representative, showing dates for

- .1 Commencement and completion of Work of each Section of Specifications.
- .2 Final completion date within time period required by Contract documents.
- .3 Detailed sequence of work for complete project, which will specify the sequence of work necessary to avoid interruptions to Airport operations, including details of temporary equipment and generators necessary to maintain operation.

.3 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.

.4 The Contractor will be required to provide the Airport Manager with a detailed construction work plan.

.5 The agreed-to planned work schedule for construction, which is scheduled during the Airport's regular operating hours, will require the Airport to close certain areas affected by the construction, and will require the Airport Manager to assess the impact.

.6 Under no circumstances will the Contractor be allowed to deviate from the agreed to schedules without advance written approval from the Airport Manager.

.7 The Contractor may be held liable for all the costs resulting from an airport closure as a result of Contractor performance that would force flights to be either delayed or cancelled.

1.10 COST BREAKDOWN

.1 Before submitting the first progress claim, submit a breakdown of the Contract lump sum prices in detail as directed by the Departmental Representative and aggregating Contract price.

1.11 CONTRACTOR'S USE OF SITE

.1 Use of site: limited to areas for work and storage as allocated by Departmental Representative and/or Airport Manager.

.2 Do not unreasonably encumber site with materials or equipment.

.3 Move stored products or equipment which interferes with Airport operations, Departmental Representative, or other contractors.

.4 Refer to Sections 01 35 27 and 01 51 00.

.5 Clean up immediately any spillover of dust, dirt, debris, etc. Failure to comply will result in cleaning by Airport staff, and cost will be charged to the Contractor.

1.12 PROJECT MEETINGS

.1 Departmental Representative will arrange project meetings and assume responsibility for setting time, recording, and distributing minutes.

.2 The Contractor shall attend weekly meetings to review planned work and resolve any operational concerns.

1.13 SETTING OUT OF WORK

.1 Assume full responsibility for and execute complete layout of work to locations, lines, and elevations indicated.

.2 Provide devices needed to lay out and construct work.

.3 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.

.4 Supply stakes and other survey markers required for laying out work.

1.14 CUTTING AND PATCHING

.1 Cut and patch as required to make work fit.

.2 Make cuts with clean, true, smooth edges.

.3 Where new work connects with existing and where existing work is altered, cut, patch, and make good to match existing work.

1.15 EXISTING SERVICES

.1 Retain the services of a testing agency to perform a GPR (Ground Penetrating Radar) survey of the proposed ODAL 29 feeder route in order to establish existing underground obstacles such as existing drainage culverts, feeders and ducts. The survey report must be submitted to and approved by the Departmental Representative prior to the commencement of excavation. Survey results to be submitted in addition to the “As Built” drawing at project closeout.

.2 Where Work involves breaking into or connecting to existing services, carry out work at times directed by Departmental Representative, Nav Can, and Transport Canada.

.3 Before commencing work, establish location and extent of service lines and cables in area of Work and notify Departmental Representative of findings.

.4 Submit schedule to and obtain approval from Departmental Representative for any shutdown or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.

.5 Where unknown services are encountered, immediately advise Departmental Representative, and confirm findings in writing.

1.16 ADDITIONAL DRAWINGS

.1 Departmental Representative may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract documents.

.2 Upon request, Departmental Representative may furnish up to a maximum of three (3) sets of Contract Documents for use by the Contractor at no extra cost. Should more than ten (10) sets of documents be required, the Departmental Representative will provide them at additional cost.

1.17 RELICS AND ANTIQUITIES

.1 Protect relics, antiquities, or items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found during course of work.

.2 Give immediate notice to Departmental Representative and await Departmental Representative's written instructions before proceeding with work in this area.

.3 Relics, antiquities, and items of historical or scientific interest remain her Majesty's property.

1.18 SYSTEM OF MEASUREMENT

.1 The metric system of measurement (SI) will be employed on the Contract.

1.19 FAMILIARIZATION WITH SITE

.1 A site visit prior to submitting tender is strongly recommended to become familiar with existing conditions. Examine all details which may affect the cost of Work.

1.20 ELECTRICAL REQUIREMENTS

.1 It is mandatory that a guarantee of isolation be obtained before starting work on any electric circuit or facility. Each area has a selected authority available for this purpose.

1.21 SIGNS

.1 No signs will be permitted on site unless approved by the Departmental Representative.

.2 All signs regarding safety or site instructions shall be in English and French or readily recognizable international symbols.

1.22 GENERAL CONDITIONS OF CONSTRUCTION

.1 All construction crews given access to construction work conducted airside must be accompanied at all times while airside by an approved qualified Airport escort with current Port Hardy Airport AVOP training and a valid Radio Operator’s Certificate - Aeronautical.

.2 The escort is to remain and accompany the construction crews at all times while airside to provide escort services and radio communication with the Airport. Under NO circumstances will construction personnel, equipment or construction work be permitted airside without an escort.

1.23 CONSTRUCTION WORK RESTRICTIONS

.1 In addition to the escort requirement, all construction work to be done within 75m of Runway centre line will be required to be scheduled during daytime operating hours or as permitted by the airport manager. If during this time Nav Canada advises the construction crew's escort that the runway is required for an emergency situation the Contractor, at the direction of the escort, will withdraw from the worksite to allow the runway to be reopened and operational. The construction crew will be permitted to return to the worksite when the runway has been re-opened

.2 Construction work airside that will take place beyond 75m of Runway centre line should be able to be accommodated during regular working hours. However, the Contractor will be required to provide suitable worksite perimeter security, hazard markings and any other operational or safety requirements acceptable to the Airport Manager to enable construction to occur while the Airport is operational. The Contractor should be prepared for a restriction on access to/from the airside worksite during the operational hours of the Airport depending on the construction work area and flights arriving and departing.

1.24 APPROVAL OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

.1 In accordance with Section 013300, submit the requested shop drawings, product data, MSDS sheets and samples indicated in each of the technical Sections.

.2 Allow sufficient time for the following:
- .1 Review of product data.
- .2 Approval of shop drawings.
- .3 Review of re-submission.
- **.4** Ordering of approved material and/or products - refer to individual technical sections.

1.25 MAINTENANCE MATERIALS, SPECIAL TOOLS AND SPARE PARTS

.1 Specific requirements for maintenance materials, tools and spare parts are specified in individual technical sections.

1.26 SECURITY CLEARANCES

.1 Specific requirements for security is specified Section 01 32 19 Security.

END OF SECTION

1 GENERAL

1.1 SUMMARY

.1 The following represents one possible sequence of construction steps necessary to execute this project. Provide a Sequence of Construction for this contract using the maximum restriction time periods noted.

.2 All work is to be performed in accordance with the construction schedule.

.3 Existing ODAL 29 system must remain operational during installation. Outage during the disconnection of the existing isolating transformers and connection to the new isolating transformers to be kept at a minimum as stipulated by the Airport Manager.

1.2 SEQUENCE OF CONSTRUCTION

.1 General

.1 Retain the services of a testing agency to confirm the underground route of the proposed ODAL 29 feeder using Ground Penetrating Radar technology. Submit site plan indicating the route of the proposed feeder and identification of existing underground obstacles such as ducts and feeders for Departmental Representative approval before commencing work. Contractor to allow for hand digging of trenching where underground obstacles have been identified either by the results of the underground survey and areas mentioned within these specifications. The areas within the construction area previously identified as containing existing underground ducts and cables are as follows:

.1 Runway 11-29 East End

.2 All areas within 3m of the edge of the runways and taxiways

.3 North of Runway 11-29, west of the Glidepath building to the Runway 11-29 west end (NavCAN antenna cabling, power conduits and cables).

.2 Replacement of ODAL 29 Feeder

.1 Install new underground ducts and pullpits. Allow for 2 gravel roadway crossings.

.2 Tie in the ducts to the existing junction boxes as indicated.

.3 Request Departmental Representative to issue NOTAM for period defined by Airport Manager.

.4 Install ASLC cables as indicated.

.5 Install isolating transformers.

.6 Test installed cable.

.7 Test ODAL as complete system.

.3 Dispose redundant equipment off-site.

END OF SECTION

1 GENERAL

1.1 RESTRICTED OR SECURE AREA

.1 Any area on airport property to which access is restricted by sign and/or monitored is a secure or restricted area.

1.2 CONTRACTOR'S RESPONSIBILITY

.1 Be responsible for construction, personnel, and vehicles employed on project and requiring access to restricted areas.

1.3 KEYS

.1 Keys necessary for access to restricted areas to be responsibility of Contractor when issued and controlled by the Airport Manager. All keys will be returned as laid down by the Airport Manager. Keys not returned or lost shall be subject to a charge of $200.00.

.2 Contractor is responsible for ensuring that the gate is closed and locked after each truck goes through it. This will require that a Contractor's employee be present to open and close the gate when trucks are hauling to the site.

1.4 AIRSIDE ESCORT

.1 General
- .1 Contractor shall require a qualified, airport approved escort during airside work.

.2 Qualifications
- .1 Restricted Radio Operator’s Certificate – Aeronautical. The airside escort must hold a valid certificate.
- .2 AVOP Training – the airport will provide AVOP training prior to work startup.

1.5 RESPONSIBLE PERSONNEL

.1 Provide Airport Manager with a list of responsible personnel, and those of sub-contractors, who may be contacted after working hours in case of emergency.

.2 The Contractor will be responsible for all personnel and vehicles employed by the Contractor as well as personnel and vehicles of a sub-contractor and suppliers of materials or services requiring access to restricted areas.

.3 All security staff employed by the Contractor including the escort must attend a briefing with the security services division prior to the project.

1.6 DAILY SECURITY

.1 Ensure that access to restricted area is secured at end of each work day.

.2 When work is to be done within restricted area after normal working hours, notify Airport Manager of area and times.

1.7 EVACUATION

.1 The Contractor shall be required to abandon and evacuate the work sites, as directed, should an emergency situation be declared by Airport Authorities.

1.8 RADIO ESCORT

.1 Any Contractor's employee found outside of the work site limit without an escort will no longer be allowed inside the secure area.

1.9 VEHICLES

.1 Vehicles required to be in a restricted area by the Contractor shall operate in accordance with Transport Directive for the Operation of Vehicles on Airport Movement Areas.

.2 Vehicles required to be in a restricted area must be equipped with a 360 degree rotating amber beacon.

.3 Company vehicles shall be removed from the construction site when not actually in use. If company vehicles are left at the Airport, they are to be stored in a location determined by the Airport Manager.

END OF SECTION

1 GENERAL

1.1 GENERAL

.1 Use new material and equipment unless otherwise specified.

.2 Within seven (7) days of written request by Departmental Representative, submit following information for any and all materials and products proposed for supply
- .1 Name and address of manufacturer
- .2 Trade name, model, and catalogue number
- .3 Performance, descriptive, and test data
- .4 Manufacturer's installation or application instructions
- .5 Evidence of arrangements to procure

.3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.

.4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

1.2 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

.2 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions. Departmental Representative will designate which document is to be followed.

1.3 DELIVERY AND STORAGE

.1 Deliver, store, and maintain packaged material and equipment with manufacturer's seals and labels intact.

.2 Prevent damage, water damage, adulteration, and soiling of material and equipment during delivery, handling, and storage. Immediately remove rejected material and equipment from site.

.3 Store material and equipment in accordance with supplier's instructions.

.4 Touch up damaged factory-finished surfaces to Departmental Representative's satisfaction. Use primer or enamel to match original. Do not paint over name plates.

1.4 SUBSTITUTION AFTER CONTRACT AWARD

.1 No substitutions are permitted without prior written approval of the Departmental Representative.

.2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and the proposed substitution.

.3 Proposals will be considered by the Departmental Representative if
- .1 Products selected by Tenderer from those specified are not available
- .2 Delivery date of products selected from those specified would unduly delay completion of Contract, or
- .3 Alternative product to that specified, which is brought to the attention of and considered by Departmental Representative as equivalent to the product specified, will result in a credit to the Contract amount

.4 **Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.**

.5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative, and the Contract Price will be reduced accordingly.

END OF SECTION

1 GENERAL

1.1 GENERAL

.1 This Section specifies general requirements and procedures for Contractors' submissions of shop drawings, product data, and samples to Departmental Representative for review. Additional specific requirements for submissions are specified in other Sections of these Specifications.

.2 Do not proceed with work until relevant submissions are reviewed by Departmental Representative.

.3 Present shop drawings, product data, and product samples in SI Metric units.

.4 Present shop drawings and product data in electronic PDF format.

.5 Where items or information are not produced in SI Metric units, converted values are acceptable.

.6 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submissions.

.7 Notify Departmental Representative in writing, at the time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review of submission, unless Departmental Representative gives written acceptance of specific deviations.

.9 Make any changes in submissions which Departmental Representative may require consistent with Contract Documents, and resubmit as directed by Departmental Representative.

.10 When resubmitting, notify Departmental Representative in writing of any revisions other than those requested by Departmental Representative.

1.2 SUBMISSION REQUIREMENTS

.1 Coordinate each submission with requirements of work and Contract Documents. Individual submissions will not be reviewed until all related information is available.

.2 Allow fourteen (14) days for Departmental Representative's review of each submission.

.3 Accompany submissions with transmittal letter, in duplicate, containing
- .1 Date
- .2 Project title and number
- .3 Contractor's name and address
- .4 Identification and quantity of each shop drawing, product data, and sample
- .5 Other pertinent data

.4 Submissions shall include
- .1 Date and revision dates
- .2 Project title and number
- .3 Name and address of
  - .1 Subcontractor
  - .2 Supplier
  - .3 Manufacturer
- .4 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements, and compliance with Contract Documents.
- .5 Details of appropriate portions of work as applicable
  - .1 Fabrication
  - .2 Layout, showing dimensions, including identified field dimensions and clearances
  - .3 Setting or erection details
  - .4 Capacities
  - .5 Performance characteristics
  - .6 Standards
  - .7 Operating weight
  - .8 Wiring diagrams
  - .9 Single-line and schematic diagrams
  - .10 Relationship or adjacent work
- .6 After Departmental Representative's review, distribute copies.

1.3 SHOP DRAWINGS

.1 Original drawings or modified standard drawings provided by Contractor to illustrate details of portions of work which are specific to project requirements.

.2 Maximum sheet size: 850mm x 1050mm.

.3 Shop drawings shall be submitted in electronic form using PDF file format.

.4 Cross-reference shop drawing information to applicable portions of Contract Documents.

1.4 REVIEW

.1 The review of shop drawings by Public Works & Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.

.2 This review shall not mean that the Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.3 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of work of subtrades.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 32 19 - Security

.2 Section 01 51 00 - Temporary Facilities

.3 Section 01 56 00 - Temporary Airside Traffic Markers, Barriers, and Delineators

.4 Section 01 11 51 – Sequence of Construction

1.2 GENERAL PROTECTION

.1 Do not disrupt airport business except as permitted by Departmental Representative.

.2 Coordinate work so as not to interfere with on-going and regular maintenance activities.

.3 Provide temporary protection for safe handling of public, personnel, pedestrians, and vehicular traffic. (Refer to Sections 01 32 19, 01 51 00, and 01 56 00.)

.4 Provide barricades, markers, delineators where directed by the drawings, specifications, and Departmental Representative.

.5 Provide radio operator, radio, and vehicle as defined in this Section.

1.3 WORK PLAN

.1 Work of this Contract shall be conducted in phases to ensure no interruption to the Airport operations.

.2 Work will be performed during the hours as defined within this specification and shall be confined to the area indicated on the drawings. All work schedules are to be approved by Airport Manager.

.3 Airport and all airfield lighting shall be fully operational every morning at 5:00 a.m.

.4 Contractor vehicles shall not be run on runway pavement.

.5 Contractor shall submit a work plan and obtain Departmental Representative's approval before commencing work. Work plan shall detail sequencing, scheduling, and work method for all of the Work of this Contract.

1.4 OPERATIONAL REQUIREMENTS

.1 Port Hardy Airport must remain operational throughout the duration of this Contract with exception to the transfer of the feeders.

END OF SECTION

1 GENERAL

1.1 REFERENCES

.1 Government of Canada
- .1 Canada Labour Code - Part II
- .2 Canada Occupational Health and Safety Regulations

.2 National Building Code of Canada (NBC)
- .1 Part 8, Safety Measures at Construction and Demolition Sites

.3 The Canadian Electric Code (as amended)

.4 Canadian Standards Association (CSA) as amended:
- .1 CSA Z797-2009 Code of Practice for Access Scaffold
- .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes
- .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures
- .4 CSA Z1006-10 Management of Work in Confined Spaces.
- .5 CSA Z462- Workplace Electrical Safety Standard

.5 National Fire Code of Canada 2010 (as amended)
- .1 Part 5 – Hazardous Processes and Operations and Division B as applicable and required.

.6 American National Standards Institute (ANSI):
- .1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.

.7 Province of British Columbia:
- .1 Workers Compensation Act Part 3-Occupational Health and Safety.
- .2 Occupational Health and Safety Regulations

1.2 WORKERS' COMPENSATION BOARD COVERAGE

.1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.

.2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.3 COMPLIANCE WITH REGULATIONS

.1 PSPC may terminate the Contract without liability to PSPC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.

.2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.4 SUBMITTALS

.1 Submit to Departmental Representative submittals listed for review in accordance with Section 013300.

.2 Work effected by submittal shall not proceed until review is complete.

.3 Submit the following:
- .1 Site Specific Health and Safety Plan.
- .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .3 Copies of incident and accident reports.
- .4 Complete set of current Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
- .5 Emergency Procedures.

.4 The Departmental Representative will review the Contractor's Site Specific Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.

.5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.

.6 Submission of the Site Specific Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:
- .1 Be construed to imply approval by the Departmental Representative.
- .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
- .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.5 RESPONSIBILITY

.1 Assume responsibility as the Prime Contractor for work under this contract.

.2 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.

.3 Comply with and enforce compliance by employees with safety requirements of Contract documents, applicable Federal, Provincial, Territorial and local statutes, and regulations.

1.6 HEALTH AND SAFETY COORDINATOR

.1 The Health and Safety Coordinator:
- .1 Be responsible for completing all health and safety training and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to perform work.
- .2 Be responsible for implementing, revising, daily enforcing, and monitoring the Site Specific Health and Safety Plan.
- .3 Be on site during execution of work.

1.7 GENERAL CONDITIONS

.1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
- .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
- .2 Secure site at night time or provide security guard as deemed necessary to protect site against entry.

1.8 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:
- .1 Multi-employer work site.
- .2 Federal employees and general public.

1.9 UTILITY CLEARANCES

.1 The Contractor is solely responsible for all utility detection and clearances prior to starting the work

.2 The Contractor will not rely solely upon the Reference Drawings or other information provided for utility locations.

1.10 REGULATORY REQUIREMENTS

.1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.

.2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.11 WORK PERMITS

.1 Obtain speciality permit[s] related to project before start of work.

1.12 FILING OF NOTICE

.1 The General Contractor is to complete and submit a Notice of Project as required by Provincial authorities.

.2 Provide copies of all notices to the Departmental Representative.

1.13 HEALTH AND SAFETY PLAN

.1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.

.2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:

- .1 Primary requirements:
  - .1 Contractor's safety policy.
  - .2 Identification of applicable compliance obligations.
  - .3 Definition of responsibilities for project safety/organization chart for project.
  - .4 General safety rules for project.
  - .5 Job-specific safe work procedures.
  - .6 Inspection policy and procedures.
  - .7 Incident reporting and investigation policy and procedures.
  - .8 Occupational Health and Safety Committee/Representative procedures.
  - .9 Occupational Health and Safety meetings.
  - .10 Occupational Health and Safety communications and record keeping procedures.
- .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.
- .3 List hazardous materials to be brought on site as required by work.
- .4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
- .5 Identify personal protective equipment (PPE) to be used by workers.
- .6 Identify personnel and alternates responsible for site safety and health.
- .7 Identify personnel training requirements and training plan, including site orientation for new workers.

.3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.

.4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.

.5 Departmental Representative's review: the review of Site Specific Health and Safety Plan by Public Service and Procurement Canada (PSPC) shall not relieve the Contractor of responsibility for errors or omissions in final Site Specific Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.14 EMERGENCY PROCEDURES

.1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
- .1 Designated personnel from own company.
- .2 Regulatory agencies applicable to work and as per legislated regulations.
- .3 Local emergency resources.
- .4 Departmental Representative.

.2 Include the following provisions in the emergency procedures:
- .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
- .2 Evacuate all workers safely.
- .3 Check and confirm the safe evacuation of all workers.
- .4 Notify the fire department or other emergency responders.
- .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
- .6 Notify Departmental Representative.

.3 Provide written rescue/evacuation procedures as required for, but not limited to:
- .1 Work at high angles.
- .2 Work in confined spaces or where there is a risk of entrapment.
- .3 Work with hazardous substances.
- .4 Underground work.
- .5 Work on, over, under and adjacent to water.
- .6 Workplaces where there are persons who require physical assistance to be moved.

.4 Design and mark emergency exit routes to provide quick and unimpeded exit.

1.15 HAZARDOUS PRODUCTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

.2 Where use of hazardous and toxic products cannot be avoided:
- .1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 013300.
- .2 In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left the building.
- .3 Provide adequate means of ventilation in accordance with Section 015100.
- .4 The contractor shall ensure that the product is applied as per manufacturers recommendations.
- .5 The contractor shall ensure that only pre-approved products are brought onto the work site in an adequate quantity to complete the work.

1.16 ASBESTOS HAZARD

.1 Carry out any activities involving asbestos in accordance with applicable Provincial / Territorial Regulations.

.2 Removal and handling of asbestos will be performed as indicated.

1.17 PCB REMOVALS

.1 Mercury-containing fluorescent tubes and ballasts which contain polychorinated biphenyls (PCBs) are classified as hazardous waste.

.2 Remove, handle, transport and dispose of as indicated in Section 028400.

1.18 REMOVAL OF LEAD-CONTAINING PAINTS

.1 All paints containing TCLP lead concentrations above 5 ppm are classified as hazardous.

.2 Carry out demolition and/or remediation activities involving lead-containing paints in accordance with applicable Provincial / Territorial Regulations.

1.19 ELECTRICAL SAFETY REQUIREMENTS

.1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.
- .1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.
- .2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.20 ELECTRICAL LOCKOUT

.1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.

.2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.

.3 Keep the documents and lockout tags at the site and list in a log book for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

1.21 OVERLOADING

.1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.22 FALSEWORK

.1 Design and construct falsework in accordance with CSA S269.1-1975 (R2003).

1.23 SCAFFOLDING

.1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 and B.C. Occupational Health and Safety Regulations.

1.24 CONFINED SPACES

.1 Carry out work in confined spaces in compliance with Provincial / Territorial Regulations.

1.25 POWDER-ACTUATED DEVICES

.1 Use powder-actuated devices in accordance with ANSI A10.3 only after receipt of written permission from the Departmental Representative.

1.26 FIRE SAFETY AND HOT WORK

.1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.

.2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

1.27 FIRE SAFETY REQUIREMENTS

.1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

.3 Portable gas and diesel fuel tanks are not permitted on most federal work sites. Approval from the DR is required prior to any gas or diesel tank being brought onto the work site.

1.28 FIRE PROTECTION AND ALARM SYSTEM

.1 Fire protection and alarm systems shall not be:
- .1 Obstructed.
- .2 Shut off.
- .3 Left inactive at the end of a working day or shift.

.2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

.3 Be responsible/liable for costs incurred from the fire department, the building owner and the tenants, resulting from false alarms.

1.29 UNFORESEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.30 POSTED DOCUMENTS

.1 Post legible versions of the following documents on site:
- .1 Site Specific Health and Safety Plan.
- .2 Sequence of work.
- .3 Emergency procedures.
- .4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
- .5 Notice of Project.
- .6 Floor plans or site plans.
- .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
- .8 Workplace Hazardous Materials Information System (WHMIS) documents.
- .9 Material Safety Data Sheets (MSDS).

.10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

.1 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.

.2 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

1.31 MEETINGS

.1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

1.32 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

.3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

END OF SECTION

1 GENERAL

1.1 FIRES

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

1.2 DISPOSAL OF WASTE

.1 Do not bury or otherwise dispose of solid or liquid rubbish and waste materials on site unless approved by Departmental Representative.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil, or paint thinner into waterways, storm sewers or sanitary sewers.

1.3 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sewer systems or drainage systems.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.4 ENVIRONMENTAL CONTAMINANTS

.1 Do not permit contaminants to escape into the environment.

1.5 SITE CLEARING AND PROTECTION

.1 Avoid damage to lawns and landscaped areas. If driving a vehicle over these areas is planned, the Contractor shall guard not only the plants but also the underground sprinkler piping and other systems from all vehicular damage.

.2 Notify the Departmental Representative in writing prior to proceeding with any activities involving vehicles on lawns or landscaped areas.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 This Section includes specific environmental and sustainable development requirements for building materials, products and systems needed to ensure that this project complies with green design processes and clients' sustainable development plan.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 74 19 - Waste Management and Disposal

.3 Section 02 61 33 - Hazardous Materials

1.3 REFERENCES

.1 National Building Code of Canada (NBC)-2010, including all amendments up to tender closing date

.2 American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- .1 ASHRAE 62-2001, Ventilation for Acceptable Indoor Air Quality
- .2 ASHRAE 52.2-1999, Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size
- .3 ASHRAE 129-1997, Measuring Air-Change Effectiveness

.3 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-92.1-1989, Sound Absorptive Prefabricated Acoustical Units

.4 Canadian Standards Association (CSA International)
- .1 CSA-A440.1-2000, Windows - User Selection Guide

.5 Environmental Choice Program
- .1 CCD-016-97, Thermal Insulation
- .2 CCD-017-98, Acoustical Products
- .3 CCD-025-01, Commercial Modular Carpet
- .4 CCD-026-01, Commercial Non-modular Carpet
- .5 CCD-029-95, Water Conserving Products
- .6 CCD-045-95, Sealant and Caulking Compounds
- .7 CCD-046-95, Adhesives
- .8 CCD-047-98, Surface Coatings
- .9 CCD-048-95, Surface Coatings - Recycled Water-Borne

.6 National Air Duct Cleaners Association (NADCA)
- .1 NADCA ACR-2002, Assessment Cleaning and Restoration
- .2 NADCA 05-1997, Requirements for the Installation of Service Openings in HVAC Systems

.7 Sheet Metal and Air Conditioning National Contractors Association (SMACNA)
- .1 SMACNA IAQ Guideline for Occupied Buildings Under Construction, 1995

1.4 SUBMITTALS

.1 Provide submittals for work in accordance with Section 01 33 00.

.2 Submittals required
- .1 Submit name and experience of Green design facilitator to Departmental Representative for approval.
- .2 Compliance Report indicating requirement to purchase energy efficient and environmentally benign products.
- .3 Use Report indicating understanding of requirement to use materials and methods of construction, which improve energy and water efficiency, reduce hazardous by-products, and use recycled materials, or materials, which can be reused.
- .4 Building systems and material evaluation report.
- .5 Ventilation performance rating report for designate interior smoking areas.
- .6 Submit CFC inventory report.
- .7 Submit CFC phase-out plan.

.3 Material Safety Data Sheets (MSDS)
- .1 Submit Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 for the following products. Indicate VOC emissions, prior to installation or use
  - .1 Adhesives
  - .2 Caulking compounds
  - .3 Sealants
  - .4 Insulating materials
  - .5 Fireproofing or fire stopping materials
  - .6 Paints
  - .7 Carpets
  - .8 Floor and wall patching or levelling materials
  - .9 Lubricants
  - .10 Clear finishes for wood surfaces
- .2 MSDS sheets to comply with Occupational Health and Safety requirements.

.4 Construction Schedule

.1 Submit schedule of construction in accordance with Section 01 33 00, prior to start of work, in coordination with scheduling requirements, including

.1 Sequence of finish applications and allowances for curing times.

.2 Identification of finish types. See Table A.

.3 Schedule and duration of proposed temporary ventilation.

.4 Delivery schedules of manufactured materials which are anticipated to off-gas in timely manner, which will allow for airing of those materials prior to their scheduled installation.

.5 Indicate and schedule commissioning procedures and temporary usages of building mechanical systems, identifying types of filtration and schedule for filter replacement.

.5 IAQ Management Plan

.1 Submit Indoor Air Quality (IAQ) Management Plan in accordance with Section 01 33 00, for construction and preoccupancy phases of building.

.6 EcoLogo Labelled Products

.1 Submit of list of EcoLogo products and services proposed for this project in accordance with Section 01 33 00.

.2 Submit list of proposed non-endorsed products and services to Departmental Representative for review.

1.5 HAZARDOUS MATERIALS

.1 Follow methods and procedures specified in Section 02 61 33.

.2 Take measures to ensure chemical spills do not enter drains.

.3 Provide proper storage and containment of herbicides and indoor pesticides.

.1 Design and construction of storage spaces for hazardous materials in accordance with NBC-2010 and local building and fire codes.

.2 Provide ventilation of areas, which contain potential sources of air contamination. Comply with standards for storage of flammable, combustible, and hazardous materials, explosives, compressed gas cylinders, and reactive, corrosive, and oxidizing materials.

.3 Storage conditions, ventilation requirements, construction materials storage areas, containers, drums and tanks, compatibility issues, and labelling: in accordance with federal and municipal guidelines supplemented as follows

.1 Confine storage of chemicals and hazardous wastes to designated areas with security of access.

.2 Provide access to hose bib and water for mixing concentrated chemicals.

.3 Provide containment to prevent spills from entering drains.

.4 Provide venting to exterior.

.5 Keep storage areas under negative pressure, where possible.

1.6 REDUCING SITE DISTURBANCES

.1 When building is to be on previously undeveloped site comply with following requirements
- .1 Avoid major alterations to sensitive topography, vegetation and wildlife habitat in areas indicated.
- .2 Create traffic patterns that cause minimum site disruptions, as per Departmental Representative's approval.

1.7 BUILDING ENVELOPE

.1 Provide insulation to optimize reduction of heat losses or heat gains through building envelope.

.2 Provide insulation to optimize reduction of heat losses or heat gains through building envelope.
- .1 Insulation to levels specified in Model National Energy Code (MNEC).

.3 Maintain integrity of building envelope using air barriers and vapour retarders and avoid thermal bridging to provide thermal comfort and prevent condensation.
- .1 Air barrier: to NBC 2010, Article 5.3.
- .2 Air leakage through air barrier system within roof area: not to exceed 0.15 l/s*m^2 @ 75Pa.
- .3 Air leakage through air barrier system within roof area: not to exceed 0.15 l/s*m^2 @ 75Pa.
- .4 Air leakage through air barrier system within area of exterior walls (excluding window): not to exceed 0.30 l/s*m^2 @ 75Pa.
- .5 Air leakage through floor: not to exceed 0.10 l/s*m^2 @ 75Pa.
- .6 Air leakage through windows: not to exceed limits specified in CSA-A440.1.

1.8 INDOOR AIR QUALITY

.1 Provide moisture control methods within building to prevent mould growth.

.2 IAQ Performance
- .1 Comply with following minimum indoor air performance requirements. Total volatile organic compounds level requirements include formaldehyde.
  - .1 Total Volatile Organic Compounds Emissions Rate Standard
    - .1 Product emission rate measured in mg/m2/hr.
  - .2 Indoor air concentration levels greater than 0.5 mg/m3 of total volatile organic compounds at anticipated loading 30 days after installation
  - .3 4-Phenyl Cyclohexene (4-PC) Emission Rate Standard
    - .1 Product emission rate measured in mg/m^2/hr.

.2 Indoor air concentration levels greater than 1 ppb at anticipated loading 30 days after installation

.2 Provide ventilation rates in accordance with ASHRAE 62.

.3 Indoor Environmental Quality

.1 Reduce quantity of indoor air contaminants that are odorous or potentially irritating to provide installer and occupant health and comfort as indicated.

.2 Avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality.

.3 Construction IAQ Management Plan

.1 Develop and implement Indoor Air Quality (IAQ) Management Plan for construction and preoccupancy phases of building as follows:

.1 Adopt IAQ management plan during construction procedures, including

.1 Protection of HVAC system during construction to control pollutant sources, and interrupt pathways for contamination.

.2 Sequencing of materials installation to ensure dissipation of high emissions from finishes that off-gas unacceptably high quantities of potentially harmful materials during curing to avoid contamination of absorptive materials.

.3 Apply Type 1 interior finishes and allow these finishes to completely cure according to intervals and times stated in respective finish manufactures printed instructions before commencing installation of any Type 2 materials in same area.

.4 Do not store any Type 2 materials in areas where installation or curing of Type 1 materials is in progress.

.5 Table A.

Type 1 - Materials and Finishes Materials and finishes which have potential for short term levels of off-gassing from chemicals inherent in their manufacturing process, or which are applied in a form requiring vehicles or carriers for spreading which release a high level of particulate matter in the process of installation and/or curing	Type 1 materials and finishes include, but are not limited to the following: • Composite wood products, including particleboard and plywood from which millwork, wood paneling, doors or furniture may be fabricated. • Adhesives, sealants, and glazing compounds. • Wood preservatives, wood finishes, primers and paints and paint like wall finishes. • Control and/or expansion joint fillers, firestopping materials, and caulking. • Hard finishes requiring adhesives installation including, but not limited to plastic laminate, linoleum and rubber tile. • Gypsum board and associated finish processes and products.

Type 2 - Materials and Finishes Soft materials and finishes which are woven, fibrous, or porous in nature and may absorb chemicals off-gassed by Type 1 materials and finishes, or may be adversely affected by airborne particulate. These materials have the potential to become sinks for deleterious substances which may be released much later, or act as collectors of contaminates that may promote subsequent bacterial growth.	Type 2 materials and finishes include, but are not limited to the following: • Carpet and underpadding, and other woven or fibrous floor finishes. • Fabric wall coverings. • Insulation materials exposed to the airstream. • Acoustic ceiling materials. • Furnishings with fabric coverings.

1.9 GENERAL CONSTRUCTION MATERIALS/PRACTICES

.1 Materials and Resources
- .1 Use uncontaminated demolition materials for fill and hardcore and/or granular base.
- .2 Incorporate reused building materials as indicated.
- .3 Use products and services that meet criteria of EcoLogo guidelines.
- .4 Provide list of non-endorsed products and services, provided the green labelled product or services are capable of meeting specified performance requirements.

.2 Storage and Collection of Recyclables
- .1 Provide separate storage/handling facilities for consumer recyclables including used paper, newspaper, newsprint, cardboard, glass, metal and plastic.
- .2 Provide on-site centralized area for composting organic waste as indicated.
- .3 Provide area for waste compactor, size and location as indicated.

.3 Construction Waste Management
- .1 Follow recommendations and requirements of this projects construction, renovation, and demolition (CRD) waste management plan in accordance with Section 01 74 19.
- .2 Resource Reuse
  - .1 Use materials that have been remanufactured for this project's building systems and materials.
- .3 Recycled Content
  - .1 Use systems and materials with post-consumer and post-industrial recycled content.

.4 Local/Regional Materials
  .1 Use systems and materials having 25% of total percentage of products or materials manufactured within 1600 kilometres of project site.
.5 Rapidly Renewable Materials
  .1 Use systems and materials that originate from renewable sources.
.6 Wood
  .1 Use lumber sourced from independently certified well-managed forests in accordance with CSA or Forestry Stewardship Council.
  .2 Materials made from composite wood materials or agricultural products: not contain urea-formaldehyde resins.
.7 Durability
  .1 Use durable building systems and materials
    .1 Requiring low maintenance (painting, retreatment, and waterproofing)
    .2 Having minimal environmental impact

1.10 INSULATION

.1 Utilize insulation materials meeting following requirements
  .1 Board-type thermal insulation materials must contain, when calculated on 12-month rolling basis
  .2 Over 35% recycled material by weight of finished product if made from glass fibre
  .3 Over 45% recycled material by weight of finished product if made from mineral composition

.2 Loose-fill and spray-on thermal insulation materials must contain, when calculated on 12-month rolling basis
  .1 Over 75% recycled material by weight of finished product, if made from cellulose fibre
  .2 Over 35% recycled material by weight of finished product if made from glass fibre
  .2 Over 50% recycled material by weight of finished product, if made from mineral wool

.3 Use insulation materials manufactured or installed that do not include CFCs.

1.11 PAINTS, STAINS AND VARNISHES

.1 Use paints and coatings that meet or exceed VOC limits established by Environmental Choice Programs guideline for water borne surface coatings CCD-047 and CCD-048.

1.12 SEALANTS, ADHESIVES AND COMPOUNDS

.1 Use adhesives that meet or exceed VOC limits established by Environmental Choice Programs guideline for adhesives CCD-046.

.2 Use sealant products that meet or exceed VOC limits established by Environmental Choice Programs guideline for sealants, CCD-045.

1.13 FLOORING

.1 Resilient flooring: manufactured with recycled content.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 74 11 - Cleaning.

1.2 ACCESS

.1 Provide and maintain adequate access to project site.

.2 Clean runways and taxi areas where used by Contractor's equipment.

.3 Maintain existing site, building, and equipment access for duration of Contract, and make good all damage resulting from Contractor's use.

1.3 STORAGE

.1 Provide adequate weathertight sheds, with raised floors, for storage of materials, tools, and equipment which are subject to damage by weather.

.2 Dry storage area, i.e. cable reels (no liquids or containment) as directed by Departmental Representative.

1.4 SANITARY FACILITIES AND WATER SUPPLY

.1 Contractor shall provide portable sanitary facilities.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.5 TEMPORARY DUST SCREENS

.1 Provide temporary dust screens, barriers, warning signs as required for demolition and construction work in accordance with scheduled construction sequence.

1.6 SITE SIGNS AND NOTICES

.1 Only Project Identification signboards and notices for safety or instruction are permitted on site.

.2 Format, location, and quantity of site signs and notices shall be approved by Departmental Representative.

.3 Signs and notices for safety or instructions shall be in English language or commonly understood graphic symbols.

.4 Maintain signs and notices for duration of Project. Remove and dispose of signs off site on completion of Project.

.5 No other signs will be permitted on site unless approved by the Departmental Representative.

1.7 PARKING

.1 Contractor, subcontractors, project suppliers, and consultants will utilize the Airport's existing public and assigned staff parking at the Airport's current published rates and charges.

1.8 COORDINATION

.1 Coordinate temporary facilities details and services with Departmental Representative prior to delivery to site.

1.9 REMOVAL OF TEMPORARY FACILITIES

.1 Remove temporary facilities when directed by Departmental Representative or within one (1) week after completion of site works and prior to final acceptance.

1.10 MAKE GOOD

.1 All site areas utilized by the Contractor for temporary facilities shall be returned to original as-found condition prior to final acceptance. This shall specifically include pavement, concrete, and tiled floors. Any damage shall be repaired to pre-Contract conditions at Contractor's expense.

END OF SECTION

1 GENERAL

1.1 GENERAL

.1 Provide and maintain temporary markers, barriers, lighted barricades, markings, and delineators to separate construction work from aircraft operations and to ensure that construction workers, plant, and equipment do not encroach on areas that are open to aircraft traffic and on areas outside the boundaries of the contract work.

.2 Provide adequate delineation of boundary of contract work and areas of aircraft operations to permit safe operations and permit fair and firm enforcement of regulations.

.3 Provide visual references to limits of operational areas to prevent men or equipment from inadvertently encroaching on areas open to aircraft.

1.2 BARRICADES

.1 Supply, install, maintain, and, when work is complete, remove barricades on roads and access routes on airside of airport security fence.

.2 The barriers across the travelled way will consist of traffic barriers.

.3 Install the barriers at all intersections along the access routes to prevent the workforce from inadvertently trespassing outside the boundaries of the contract area or into areas of airport operations.

.4 The barricades are to be removed when the access routes are no longer required for the work.

END OF SECTION

1 GENERAL

1.1 GENERAL

.1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

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

1.2 MATERIALS

.1 Use only cleaning materials recommended by manufacturer of surface to be cleaned and as recommended by cleaning material manufacturer.

1.3 CLEANING DURING CONSTRUCTION

.1 Provide onsite containers for collection of waste materials and debris.

.2 Dispose of waste materials and debris off site on a daily basis.

.3 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces.

.4 Clean areas of construction daily.

1.4 FINAL CLEANING

.1 Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from finished surfaces.

.2 Broom clean paved surfaces, and rake clean other surfaces of grounds.

.3 Remove debris and surplus materials from site.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Text, schedules, and procedures for systematic Waste Management Program for construction
  .1 Diversion of Materials

1.2 DEFINITIONS

.1 Waste Audit (WA): relates to projected waste generation. Involves controlled separation of waste.

.2 Waste Reduction Workplan (WRW): a written report which addresses opportunities for reduction, reuse or recycling of materials.

.3 Materials Source Separation Program (MSSP): consists of a series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

1.3 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

1.4 DOCUMENTS

.1 Maintain at job site, one (1) copy of following documents
  .1 Recycling List

1.5 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

.1 Before project start-up, prepare Materials Source Separation Program and provide separate containers to deposit reusable and/or recyclable materials of the following
  .1 Gypsum board
  .2 Metals
  .3 Wood
  .4 Plastics

.2 Other materials as indicated in technical sections.

.3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.

.4 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

1.6 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of waste volatile materials, mineral spirits, paint thinner into waterways, storm sewers, or sanitary sewers.

.3 Keep records of construction waste including
- .1 Number and size of bins
- .2 Waste type of each bin
- .3 Total tonnage generated
- .4 Tonnage reused or recycled
- .5 Reused or recycled waste destination

1.7 SCHEDULING

.1 Coordinate Work with other activities at site to ensure timely and orderly progress of Work.

2 PRODUCTS

.1 Not applicable.

3 EXECUTION

3.1 APPLICATION

.1 Materials in separate condition: collect, handle, store on site, and transport off site to an approved and authorized recycling facility. Provide documentation to Departmental Representative.

3.2 CLEANING

.1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 As-builts, samples and specifications.

.2 Equipment and systems.

.3 Product data, materials and finishes, and related information.

.4 Operation and maintenance data.

.5 Spare parts, special tools and maintenance materials.

.6 Warranties and bonds.

.7 Final site survey.

1.2 SUBMISSION

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.2 Copy will be returned with Departmental Representative's comments.

.3 Revise content of documents as required prior to final submittal.

.4 Two (2) weeks prior to Substantial Performance of the Work, submit to the Departmental Representative four final copies of operating and maintenance manuals in English.

.5 Ensure spare parts, maintenance materials, and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

.6 If requested, furnish evidence as to type, source, and quality of products provided.

.7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.8 Pay costs of transportation.

1.3 FORMAT

.1 Organize data in the form of an instructional manual and provide in electronic PDF format.

.2 Binders: vinyl, hard covered, 3 D-ring, loose leaf, 219mm x 279mm, with spine and face pockets.

.3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: Identify each binder with typed or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems under section numbers and sequence of Table of Contents.

.6 Arrange content by systems under section numbers and sequence of Table of Contents.

.7 Text: Manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.4 CONTENTS - EACH VOLUME

.1 Provide Table of Contents including
- .1 Title of project
- .2 Date of submission
- .3 Names, addresses, and telephone numbers of Departmental Representative and Contractor with name of responsible parties
- .4 Schedule of products and systems, indexed to content of volume

.2 For each product or system, list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

1.5 AS-BUILTS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of
- .1 Contract Drawings
- .2 Specifications
- .3 Addenda

.4 Change Orders and other modifications to the Contract
.5 Reviewed shop drawings, product data, and samples
.6 Field test records
.7 Inspection certificates
.8 Manufacturer's certificates

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry, and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative.

1.6 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of opaque drawings provided by Departmental Representative.

.2 Provide felt tip marking pens for recording information, maintaining separate colours for each major system.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including
.1 Measured depths of elements of foundation in relation to finish first floor datum.
.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
.4 Field changes of dimension and detail.
.5 Changes made by change orders.
.6 Details not on original Contract Drawings.
.7 References to related shop drawings and modifications.

.5 Specifications: legibly mark each item to record actual construction, including
.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.7 FINAL SURVEY

.1 Submit final site survey certificate certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.8 EQUIPMENT AND SYSTEMS

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panelboard circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour-coded wiring diagrams.

.4 Operating Procedures: include startup, breakin, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for troubleshooting; disassembly, repair and re-assembly instructions; and alignment, adjusting, balancing and checking instructions.

.6 Provide servicing and lubrication schedule and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.

.10 Provide original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.

.11 Provide installed control diagrams by controls manufacturer.

.12 Provide list of original manufacturer's spare parts, current prices and recommended quantities to be maintained in storage.

.13 Include test and balancing reports.

.14 Additional requirements: As specified in individual specification sections.

1.9 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional requirements: as specified in individual sections of these Specifications.

1.10 SPARE PARTS

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.11 MAINTENANCE MATERIALS

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.12 SPECIAL TOOLS

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to site location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

1.13 STORAGE, HANDLING AND PROTECTION

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.14 WARRANTIES AND BONDS

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item of work.

.4 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittal.

1.15 COMPLETION

.1 Submit a written certificate that the following have been performed
- .1 Work has been completed and inspected for compliance with the Contract Documents.
- .2 Defects have been corrected and deficiencies have been completed.
- .3 Equipment and systems have been tested, adjusted, and balanced and are fully operational.
- .4 Certificates required by the Fire Protection Engineering Services - HRSDC and utility companies have been submitted.
- .5 Operation of systems has been demonstrated to the personnel indicated by the Departmental Representative.
- .6 Work is complete and ready for final inspection.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Methods and procedures for demolishing, salvaging, recycling, and removing sitework items designated to be removed in whole or in part, and for backfilling resulting trenches and excavations.

1.2 RELATED SECTIONS

.1 Section 01 35 33 - Health and Safety

.2 Section 01 35 43 - Environmental Protection

.3 Section 01 74 19 - Waste Management and Disposal

.4 Section 02 61 33 - Hazardous Materials

1.3 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  .1 Material Safety Data Sheets (MSDS)

1.4 DEFINITIONS

.1 "Demolition": rapid destruction of building following removal of hazardous materials.

.2 "Hazardous Materials": dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: asbestos PCBs, CFCs, HCFCs poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well-being or environment if handled improperly.

.3 "Waste Management Coordinator (WMC)": contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

1.5 QUALITY ASSURANCE

.1 Regulatory Requirements: ensure Work is performed in compliance with applicable Provincial regulations.

.2 Health and Safety
  .1 Do construction occupational health and safety in accordance with Section 01 35 33.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Perform Work in accordance with Section 01 35 43.

.2 Waste Management and Disposal
- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19.
- .2 Place materials defined as hazardous or toxic in designated containers.
- .3 Handle and dispose of hazardous materials in accordance with Regional and Municipal regulations.
- .4 Label location of salvaged material's storage areas and provide barriers and security devices.
- .5 Ensure emptied containers are sealed and stored safely.
- .6 Source separate for recycling materials that cannot be salvaged for reuse including wood, metal, concrete and asphalt, and gypsum.
- .7 Remove materials that cannot be salvaged for reuse or recycling and dispose of in accordance with applicable codes at licensed facilities.

1.7 SITE CONDITIONS

.1 Site Environmental Requirements
- .1 Perform work in accordance with Section 01 35 43.
- .2 Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .3 Do not dispose of waste of volatile materials including, but not limited to, mineral spirits, oil, petroleum-based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
- .4 Ensure proper disposal procedures are maintained throughout the project.
- .5 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.
- .6 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.
- .7 Protect trees, plants and foliage on site and adjacent properties where indicated.

2 PRODUCTS

2.1 EQUIPMENT

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

3 EXECUTION

3.1 PREPARATION

.1 Inspect site with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.3 Notify and obtain approval of utility companies before starting demolition.

.4 Disconnect and cap mechanical services.

3.2 REMOVAL OF HAZARDOUS WASTES

.1 Remove contaminated or dangerous materials 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 REMOVAL OPERATIONS

.1 Do not disturb items designated to remain in place.

.2 Removal of pavements, curbs and gutters
- .1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Departmental Representative
- .2 Protect adjacent joints and load transfer devices

.3 Stockpile topsoil for final grading and landscaping.
- .1 Provide erosion control and seeding if not immediately used.

.4 Disposal of material.
- .1 Dispose of materials not designated for salvage or reuse off site as instructed by Departmental Representative.

3.4 RESTORATION

.1 Restore areas and existing works around underground duct installation to conditions that existed prior to beginning of Work.

.2 Use soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

3.5 CLEANING

.1 Remove debris, trim surfaces and leave work site clean, upon completion of Work.

.2 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

END OF SECTION

1 GENERAL

1.1 RELATED SECTION

.1 Section 01 33 00 - Submittal Procedures

1.2 REFERENCES

.1 Export and Import of Hazardous Waste Regulations (SOR/2002-300)

.2 National Fire Code of Canada, latest edition

.3 Transportation of Dangerous Goods Act (TDG Act), latest edition, (T-19.01)

.4 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2003-400)

1.3 DEFINITIONS

.1 Dangerous Goods: Product, substance, or organism that is specifically listed or meets the hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.

.3 Hazardous Waste: Any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment, or disposal.

.4 Workplace Hazardous Materials Information System (WHMIS): A Canada-wide system designed to give employers and workers information about hazardous materials used in the workplace. Under WHMIS, information on hazardous materials is to be provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by a combination of federal and provincial laws.

1.4 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00.

.2 Submit to Departmental Representative current Material Safety Data Sheet (MSDS) for each hazardous material required prior to bringing hazardous material on site.

.3 Submit hazardous materials management plan to Departmental Representative that identifies all hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements.

1.5 STORAGE AND HANDLING

.1 Coordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labeling and storage of materials and wastes.

.2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.3 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.

.4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use. Store all flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Departmental Representative.

.5 Transfer of flammable and combustible liquids is prohibited within buildings.

.6 Transfer of flammable and combustible liquids will not be carried out in the vicinity of open flames or any type of heat-producing devices.

.7 Flammable liquids having a flash point below 38°C, such as naphtha or gasoline, will not be used as solvents or cleaning agents.

.8 Store flammable and combustible waste liquids for disposal in approved containers located in a safe, ventilated area. Keep quantities to a minimum.

.9 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.

.10 Abide by the following storage requirements for quantities of hazardous materials and wastes in excess of 5kg for solids, and 5 litres for liquids

- .1 Store hazardous materials and wastes in closed and sealed containers which are in good condition.
- .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
- .3 Store hazardous materials and wastes in containers compatible with that material or waste.
- .4 Segregate incompatible materials and wastes.
- .5 Ensure that different hazardous materials or hazardous wastes are not mixed.

.6 Store hazardous materials and wastes in a secure storage area with controlled access.
.7 Maintain a clear egress from storage area.
.8 Store hazardous materials and wastes in a manner and location which will prevent them from spilling into the environment.
.9 Have appropriate emergency spill response equipment available near the storage area, including personal protective equipment.
.10 Maintain an inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.11 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

.12 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

1.6 TRANSPORTATION

.1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

.2 If exporting hazardous waste to another country, ensure compliance with federal Export and Import of Hazardous Waste Regulations.

.3 If hazardous waste is generated on site
.1 Coordinate transportation and disposal with Departmental Representative.
.2 Ensure compliance with applicable provincial laws and regulations for generators of hazardous waste.
.3 Use only a licensed carrier authorized by provincial authorities to accept subject material.
.4 Prior to shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.
.5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.
.6 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.
.7 Provide a photocopy of all shipping documents and waste manifests to Departmental Representative.
.8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Departmental Representative.
.9 Report any discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

2 PRODUCTS

2.1 MATERIALS

.1 Only bring on site the quantity of hazardous materials required to perform work.

.2 Maintain MSDSs in proximity to where the materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

3 EXECUTION

3.1 DISPOSAL

.1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

.2 Recycle hazardous wastes for which there is an approved, cost effective recycling process available.

.3 Send hazardous wastes only to authorized hazardous waste disposal or treatment facilities.

.4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.

.5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or municipal solid waste landfills is prohibited.

.6 Dispose of hazardous wastes in a timely fashion in accordance with applicable provincial regulations.

END OF SECTION

1 GENERAL

1.1 SUMMARY

.1 Documents

.1 These Division 26 Specifications, together with all the individual sections, form part of the Contract Documents and are to be read, interpreted, and coordinated with all other parts and Divisions.

.2 Division 01 General Requirements are applicable to all aspects of Division 26 Electrical Work unless specifically stated otherwise in these Specifications.

.3 The word provide shall be taken to mean supply, install, connect, test, and commission.

.4 Examine Division 01 of these Specifications for direction regarding HST.

1.2 CODES, STANDARDS AND REGULATORY REQUIREMENTS

.1 Any reference to Codes, Standards, and Regulations in these Specifications shall be taken as the latest or the most current in effect at time of tender.

.2 Comply with all requirements of the National Building Code 2015, British Columbia Building Code, Workers' Compensation Board requirements, and the Canadian Electrical Code 2015 - Part I, including all provincial and other amendments, Electrical Bulletins, and any local by-laws or rules regulating the installation of electrical equipment and their seismic restraint. In no instance, however, shall the standards established by the Contract Documents be reduced by any of these Codes or Regulations.

.3 All materials shall bear the approval of the Canadian Standards Association and where applicable, the Underwriters' Laboratories of Canada or alternately shall bear local approval from the Electrical Inspection Department having jurisdiction. Include in the Tender all costs associated with obtaining local approvals.

.4 Operating voltages to CAN3-C235.

1.3 PERMITS, FEES AND INSPECTION

.1 Before starting work submit the appropriate quantity of Drawings and Specifications to the BC Safety Authority (Electrical Inspection Department), the Supply Authority, and to other authorities and obtain all necessary approvals and permits. Include all costs of approvals and all permit fees in the tender.

.2 The BC Safety Authority is the Electrical Inspection Department and the authority having jurisdiction.

.3 Departmental Representative will provide Drawings and Specifications required by the Contractor for submission to the Electrical Inspection Department, the Supply Authority, and other authorities having jurisdiction, at no cost.

.4 Arrange for inspection of the work as the installation progresses and as further required (as well as attendance during verification) by all applicable authorities having jurisdiction.

.5 Notify Departmental Representative of changes required by Electrical Inspection Department prior to making changes.

.6 Upon completion, and before final payment will be made, present to the Departmental Representative a certificate of unconditional approval for all electrical work from the Electrical Inspection Department and other authorities having jurisdiction.

.7 Departmental Representative will carry out site visits from time to time and prepare deficiency list for corrective action by Contractor, during construction, upon completion, and during the Warranty period.

.8 Obtain and pay for an electrical permit.

1.4 QUALITY OF WORK

.1 Unless otherwise indicated, all materials supplied shall be new and of the quality indicated in these Specifications. Otherwise, they shall be of the best commercial quality obtainable for the purpose.

.2 Manufacturers' directions shall be followed in all cases where the manufacturers of equipment or materials used in this work furnish directions covering points not shown on the Drawings or Specifications.

.3 Unless otherwise directed, all installed materials or equipment exposed to view shall be plumb, true, square, and/or level as the case directs and, where applicable, located symmetrically to the features of the building.

1.5 MATERIALS AND EQUIPMENT

.1 Refer to Section 01 32 20.

.2 Equipment and material shall be CSA-certified. Where there is no alternative to supplying equipment which is not CSA-certified, submit such equipment to authorities having jurisdiction for special inspection and obtain approval before

delivery of equipment to the site. Pay all associated costs of inspections and approvals.

.3 Equipment and material shall be manufactured to standard quoted, but incorporating additionally specified requirements.

.4 Factory assemble control panels and component assemblies.

1.6 QUALIFICATION OF TRADESMEN

.1 The work shall be performed by qualified and certified tradesmen as set out in the Electrical Safety Regulation within the Electrical Safety Act.

.2 Contractor must be qualified to undertake repairs of 5kV airport cables if unforeseen disruptions occur during the course of construction.

.3 Submit list showing names and qualifications of key supervisory personnel.

1.7 RESPONSIBILITY AND COORDINATION

.1 The Drawings and Specifications complement each other and what is called for by one is binding as if called for by both. If there is any doubt as to the meaning or true intent due to a discrepancy between the Drawings and Specifications, obtain a ruling from the Departmental Representative prior to tender closing. Failing this, the most expensive alternative is to be allowed for.

.2 Advise the Departmental Representative of any specified equipment, material, or installation of same which appears inadequate or unsuitable or which is in violation of laws, ordinances, rules, or regulations of authorities having jurisdiction. Provide all labour and materials which are obviously necessary or reasonably implied to be necessary to complete the work as if the work was shown on the Drawings and/or described in the Specifications.

.3 Check Drawings of all trades and coordinate the installation of all material and equipment to ensure adequate space and free access and to maintain headroom limitations for all new and indicated future work. Work out solutions to interference problems jointly with all Subcontractors on the site. Coordinate all work before fabricating or installing any material or equipment. It is incumbent on all Subcontractors on the site to ensure that all materials and equipment fit into the allocated spaces and that all equipment can be properly inspected, serviced, and replaced if and when required. Advise the Departmental Representative of space problems before fabricating or installing any material or equipment. Demonstrate to the Departmental Representative on completion of his work that all equipment and material installed by him can be properly and safely serviced and replaced. Make no deviations from the intent of the design without the Departmental Representative’s written direction.

.4 Where electrical work and materials are noted as being provided by the Departmental Representative or under other Divisions of these Specifications, the responsibility for integrating, to the extent required, such work and materials into the complete installation, shall remain within Division 26.

1.8 PROTECTION

.1 Protect exposed live equipment during construction for personnel safety.

.2 Shield and mark live parts "LIVE 120 VOLTS" or with appropriate voltage.

.3 Arrange for installation of temporary doors for rooms containing electrical distribution equipment. Keep these doors locked except when under direct supervision of electrician.

1.9 DRAWINGS AND MEASUREMENTS

.1 Drawings are generally diagrammatic and are intended to indicate the scope and general arrangement of work. Do not scale the Drawings.

.2 Take field measurements where equipment and material dimensions are dependent upon site dimensions.

.3 All conductors at motor control centres, motor starters, and other devices shall be identified at the terminal blocks and terminations with Beta interlocking ferrules.

1.10 DELIVERY AND STORAGE

.1 Store all electrical equipment and devices other than conduits, fittings, boxes, and ducts in a heated and ventilated space, and protect from construction damage. Include in the tender price all costs related to such storage.

.2 Conduits, fittings, boxes, and ducts may be stored outside if properly protected against the weather.

.3 Remove from the site, and replace with new, all materials showing evidence of damage or rust.

1.11 EQUIPMENT LOCKS

.1 Provide for padlock mounting fittings on all switchgear panel circuit breakers and equipment locations requiring lock-out locks and tags, for servicing in compliance with BC Safety Authority.

1.12 TRIAL USAGE

.1 The Departmental Representative's operating personnel reserve the right to trial usage of electrical systems or parts thereof for the purpose of testing and learning the operational procedures.

.2 Trial usage will take place after Substantial Completion when the Departmental Representative has taken over occupancy of the area where trial usage takes place.

.3 Cooperate with the Departmental Representative during the trial usage and provide the services of qualified and knowledgeable personnel (electricians, electrical foremen, etc.) for assistance and guidance as necessary to avoid jeopardizing the safety of equipment and construction personnel.

1.13 TESTING AND ADJUSTING

.1 General

.1 Coordinate and pay for all tests specified herein including further tests as required by authorities having jurisdiction.

.2 All testing shall be performed after each system installation has been completed and prior to the system being put into continuous operation unless otherwise noted.

.3 Perform the testing, adjusting, and balancing only when conditions are commensurate with actual operating conditions for the given system.

.4 Advise the Departmental Representative 72 hours in advance of each test. Carry out tests in the presence of Departmental Representative.

.5 Submit detailed typewritten test reports in duplicate to the Departmental Representative within 7 days after the completion of each test. Include all test reports in the Maintenance Manuals. Each test shall clearly indicated, in a line-by-line format, that the components (not as a group) have been tested, test results, and whether test results are within acceptable limits. Each test report shall be accompanied by a front cover sheet briefly outlining what the test report is for and clearly summarizing all items that have failed the tests. The cover sheet shall indicate names of individuals who conducted the tests and their signatures.

.6 Perform tests indicated in the technical sections of this specification.

1.14 GUARANTEE

.1 Use of installed equipment during construction, when permitted by the Departmental Representative, shall not shorten or alter the guarantee.

.2 Unless otherwise noted, the warranty period for all equipment shall commence on the date of Substantial Performance for the entire Construction Contract.

.3 Refer to other sections of these Specifications for extended warranty requirements (fire alarm, communication systems, generator, etc.).

.4 Within a period of one year from the date of final acceptance of work, replace or repair at own expense any defect in workmanship or material.

1.15 PROJECT DOCUMENTATION

.1 Shop Drawings

.1 Submit shop drawings to the Departmental Representative in electronic form, using PDF file format, sufficiently in advance of requirements to allow time for review and comment. The PDF file will be marked and returned to the Contractor for correction if necessary, further reproduction, and distribution as required.

.2 Shop drawings shall be neatly drafted and shall be complete and detailed and shall be provided as stipulated elsewhere in these Specifications. This requirement is mandatory for such items as transformers.

.3 Shop drawings shall bear specific names for each and every unit assembly defined thereon, the name of the project where installation is to take place, the name of the manufacturer, and the date of the drawing including notation of latest revision, if any.

.4 Except as may be necessary to indicate operation of switchgear and similar apparatus and to show field interconnections, detailed wiring diagrams of component assemblies need not be included with shop drawings unless requested by the Departmental Representative. However, such wiring diagrams shall be included as part of the Maintenance Manual as required by these Specifications.

.5 Indicate details of construction, dimensions, locations of cable pits and trenches, capacities, weights and electrical performance characteristics of equipment and materials.

.6 Shop drawings may be prepared by the Contractor, or manufacturer's drawings will be accepted. All drawings required for one and the same

system shall be submitted as a complete package. Incomplete system packages will not be reviewed and will be returned unmarked.

.7 Shop drawings shall be reviewed by the Contractor prior to submission to the Departmental Representative. Shop drawings not bearing Contractor's approval stamp, approval date, signature, and project name will be returned without comment.

.8 Manufacturers' brochures (product data) submitted as shop drawings shall clearly indicate type (i.e., lighting fixture Type AD, intercom station Type B, etc.) and all features as specified as part of the unit(s).

.9 Review of shop drawings by the Departmental Representative is for the sole purpose of ascertaining conformance with the general design intent. The review shall not mean approval of the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of the work of all subtrades.

.10 Ensure that copies of all shop drawings are available at the job site.

.2 Maintenance Manuals

.1 Furnish to the Departmental Representative four (4) complete 3-ring binder sets of typewritten or blueprinted instructions and one (1) set of CDs for operating and maintaining all systems and equipment included in this Division.

.2 Submit all instructions first in draft for approval prior to final issue.

.3 Manufacturers' advertising literature or catalogues will not be accepted for operating and maintenance instructions.

.4 Manufacturers' parts list shall be included in each Maintenance Manual.

.5 Each set shall consist of a 3-ring binder and a bristol flyleaf with the name of the General Contractor, Electrical Subcontractor, and major equipment suppliers, or their local representatives if they are not local manufacturers, together with addresses and telephone numbers of all parties.

.6 Each system or piece of equipment shall have its own section separated from the next by a labelled bristol divider. Shop drawings shall be included

in the appropriate section. They shall be fastened into the book by means of a tab which will allow the drawings to be unfolded without being removed from the book.

.7 Each system or piece of equipment shall have its own section separated from the next by a labelled bristol divider. Shop drawings shall be included in the appropriate section. They shall be fastened into the book by means of a tab which will allow the drawings to be unfolded without being removed from the book.

.8 Include copies of all applicable guarantees, warranties, inspection approval certificates, and test certificates. Include copies of all applicable Test Reports (refer to Item 18 Testing and Adjusting) and manufacturers' letters verifying test completion. Include a copy of Final Certificates from Electrical Inspection Department, and other authorities having jurisdiction over the work.

.3 "As-Built" Drawings

.1 Maintain in the job site office in up-to-date condition, one (1) complete set of whiteprints of each of the Electrical Contract Drawings and one (1) set of Specifications, including Revision Drawings, marked clearly and indelibly in red, indicating "As-Built" conditions where such conditions deviate from the original directions of the Contract Documents, and indicating final installation of feeders and branch circuits.

.2 "As-Built" drawing markings shall include but shall not be limited to the following

- .1 All changes in circuiting
- .2 Size and routing of all conduits for all branch circuits including power, lighting, and systems. Note that branch circuit wiring is generally not shown on Drawings. Accurately record on "As-Built" drawings the size and routing of all installed raceways and cables.
- .3 Number and size of conductors (#10 AWG and larger) in raceways and cables
- .4 Location of all junction and pull boxes
- .5 Location of all conduit or duct stubs, installed equipment, devices, and fixtures
- .6 All changes to electrical installation resulting from Addenda, Change Orders and Field Instructions (Architectural Instructions)
- .7 Exact location of all services left for future work

.3 Where extensive changes have been made to an area to the point where it is not practical to update the original tender drawing, the area in question shall be enclosed with a heavy dotted line and reference made to the applicable Change Order, and/or associated Revision Drawing.

.4 Each "As-Built" drawing as defined above shall bear the Contractor's identification and signature, the date of record, and the notation: "*We hereby certify that these Drawings represent the building as built*."

.5 All Addenda and Revision Drawings not having their details transferred onto the submitted "as-built" drawings shall be included in the submission using the same drawing format as previously described.

.6 Deliver "As-Built" prints and updated Specification Schedules to the Departmental Representative at 'Substantial Completion' of the Contract for review and comment and, if necessary, revision, before ultimate transmittal to the Departmental Representative. A holdback will be effected by the Departmental Representative until "As-Built" drawings are delivered in good order as required herein.

1.16 SUBSTANTIAL PERFORMANCE INSPECTION

.1 Before the Departmental Representative is requested to make a Substantial Performance inspection, submit written confirmation that

.1 All distribution equipment (switchgear, distribution transformers, etc.) has been cleaned and vacuumed.

.2 All Test Reports have been submitted.

.3 All certificates of final acceptance from the authorities having jurisdiction have been received and submitted to the Departmental Representative.

.4 Factory finished equipment has been cleaned, touched up, or refinished as necessary to present a new appearance.

.5 All sealing of conduits, cables, cable trays, wireways, etc. at all wall, ceiling, and floor penetrations have been completed.

.6 The Maintenance Manual has been submitted.

.7 The "As-Built" Drawings have been submitted to the Departmental Representative.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 74 19 - Construction/Demolition Waste Management and Disposal

.3 Section 26 05 00 - Common Work Results - Electrical

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data for pull boxes in accordance with Section 01 33 00 - Submittal Procedures.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

.2 Collect and separate plastic, paper packaging, and corrugated cardboard in accordance with Waste Management Plan.

.3 Fold up metal banding, flatten, and place in designated area for recycling.

2 PRODUCTS

2.1 PULL PITS

.1 Rigid polyethylene 2 section c/w galvanized steel lid, drain plate, 533mm-740mm diameter sections by 760mm depth (combined depth with 2 sections) as indicated.

.2 Pull pits shall be equipped with steel locking cover, hot dipped galvanized to CSA G164, latest edition, complete with Burndy Type KC Servit post grounding lug.

.3 Pull pit and cover shall be fabricated to withstand 7350kg vertical loading.

.4 Provide grounding in accordance with drawings.

.5 Standard of acceptance: Valmont 25010 series.

3 EXECUTION

3.1 PULL BOXES

.1 Installation of pull pits.
  .1 Install at locations indicated.

.2 Excavate the size and depth indicated.
.3 Place so that cover is level with ground.
.4 Make holes in pull pit and vault walls suitable for the ducting used.
.5 Cover bottom of pull pit with bedding material.
.6 Backfill with common backfill material around pull pit and concrete vault and compact to same density as adjacent ground.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 74 19 - Waste Management and Disposal

.2 Section 33 65 76 - Direct-Buried Underground Ducts

1.2 REFERENCES

.1 ASTM C117, Test Method for Material Finer than 0.075mm Sieve in Mineral Aggregates by Washing

.2 ASTM C136, Methods for Sieve Analysis of Fine and Coarse Aggregates

.3 CAN/CGSB-8.2M, Sieves, Testing, Woven Wire, Metric

.4 ASTM D698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort

.5 ASTM D4318, Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

.6 ASTM D422, Standard Test Method for Particle-Size Analysis of Soils

.7 ASTM D698-78, Test Method for Moisture Density Relations of Soils and Soil Aggregate Mixtures Using 2.49kg Rammer and 304.8mm Drop

1.3 DEFINITIONS

.1 Waste Material: excavated material unsuitable for use in work or surplus to requirements.

.2 Unsuitable Materials

- .1 Very weak and compressible materials under excavated areas to depths as indicated.
- .2 Frost-susceptible materials under excavated areas to depths as indicated.
- .3 Materials with the following characteristics will be considered as frost-susceptible
  - .1 Fine-grained soils with plasticity index less than 10 when tested to ASTM D4318-95, and gradation within limits specified when tested to ASTM D422-63 (1990) and ASTM C136-92. Sieve sizes to CAN/CGSB-8.2-M88.

Sieve Designation	% Passing
2.00mm	100
0.10mm	45-100
0.02mm	10-80
0.0005mm	0-45

.2 Coarse-grained soils containing more than 20% by mass passing CGSB 80μm sieve.

.3 Granular backfill: excavated material which is not unsuitable as defined above, with rocks removed.

.4 Granular bedding: for Sandspit Airport this shall be the same as granular backfill.

1.4 PROTECTION OF EXISTING FEATURES

.1 Prior to commencing excavation work, verify existing drawings and contract drawings. Obtain approval from Airport Manager and Departmental Representative. Notify Manager of Airside Operations or Departmental Representative to establish location and state of use of buried utilities. Contractor to investigate and clearly mark such locations to prevent disturbance during work.

.2 Review all existing record drawings available on site for the existence of underground services in the area of proposed excavations. The record drawings will be deemed as "supplementary" drawings.

.3 Confirm locations of buried utilities by using readily available detection devices.

.4 Maintain and protect from damage, water, sewer, gas, electric, telephone, and other utilities and structures encountered.

.5 Any existing cables or utilities damaged by the Contractor during the execution of his work shall be repaired to the satisfaction of the Departmental Representative at the Contractor's expense.

.6 Record location of maintained, re-routed, and abandoned underground lines.

.7 Protect open excavation against flooding and damage from surface water run-off.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19.

2 PRODUCTS

2.1 MATERIALS

.1 Type 1 Fill: Properties to the following requirements
- .1 Crushed, pit run, or screened stone, gravel, or sand.
- .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1 and CAN/CGSB-8.2.
- .3 Table

Sieve Designation	% Passing Type 1
19 mm	100
12.5 mm	75-100
9.5 mm	50-100
4.75 mm	30-70
2.00 mm	20-45
0.425 mm	10-25
0.180 mm	-
0.075 mm	3-8

.2 Type 2 Fill: Granular backfill.

.3 Sand as indicated on the drawings.

3 EXECUTION

3.1 SITE PREPARATION

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

3.2 STOCKPILING

.1 Stockpile granular materials in areas designated by Departmental Representative. Stockpile granular materials in a manner to prevent segregation. Stockpiled materials must be contained to prevent foreign objects or debris on the airside. Contractor must clean up any contamination of the operating surfaces as soon as possible and in no case less than 1/2 hour prior to surface being used by aircraft. Unless otherwise directed, Contractor will be billed for all clean-up carried out by the Departmental Representative as a direct result of the Contractor's activities.

.2 Protect granular materials from contamination.

3.3 DEWATERING AND HEAVE PREVENTION

.1 Keep excavations free of water while work is in progress.

.2 Protect open excavations against flooding and damage due to surface run-off.

.3 Dispose of water in a manner not detrimental to public and private property, or any portion of work completed or under construction.

3.4 EXCAVATION

.1 Excavate to lines, grades, elevations, and dimensions indicated in Contract Documents or as directed by the Departmental Representative.

.2 Dispose of surplus and unsuitable excavated material off site or as directed by the Departmental Representative.

.3 Do not obstruct flow of surface drainage or natural watercourses.

.4 Earth bottom of excavations to be undisturbed soil, level, free from loose soil or organic matter.

.5 Where required due to removal of unsuitable material or unauthorized excavation, bring the bottom of excavation to design grade with granular backfill.

.6 Hand trim, make firm, and remove loose material and debris from excavations. Compact bottom of excavation to density at least equal to undisturbed soil.

.7 Hand-excavate adjacent existing cables and ducts, especially at runway and taxiway crossings.

.8 Cover excavations left more than one night with plywood held down with sandbags.

3.5 BACKFILLING

.1 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.

.2 Place and compact granular bedding to dimensions shown in Contract Documents.

.3 Areas to be backfilled to be free from debris, snow, ice, water, and frozen ground.

.4 Place granular backfill in uniform layers to grades indicated.

.5 Compact, using approved mechanical tamping devices or by hand-tamping, to achieve compaction.

3.6 COMPACTION

.1 Compact each layer of backfill material to 100% maximum density to ASTM D689.

.2 Use compaction equipment suitable for conditions encountered.

.3 Contractor to provide documentation and pay for independent testing of compaction of backfill to indicated maximum density.

3.7 RESTORATION

.1 Replace topsoil as directed by Departmental Representative.

.2 Reinstate ground to condition and elevation which existed before excavation.

.3 Clean and reinstate areas affected by work as directed by Departmental Representative.

.4 Seed.

END OF SECTION

1 GENERAL

1.1 RELATED SECTION

.1 Section 01 74 19 - Waste Management and Disposal

.2 Section 31 23 10 - Excavating, Trenching and Backfilling

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19.

1.3 REFERENCES

.1 CSA C22.2 No. 211.2, latest edition, Thickwall PVC Conduit

1.4 SUBMITTALS

.1 Submit WHMIS Material Safety Data Sheets (MSDS), acceptable to Human Resources Development Canada and Health Canada, for solvent cement. Indicate VOC content.

1.5 WORKMANSHIP

.1 The electrical underground ducts shall be installed by the Electrical Contractor's qualified electrical personnel.

.2 Care shall be maintained that the joints are kept clean and free of soil prior to connections.

2 PRODUCTS

2.1 PVC DUCTS AND FITTINGS

.1 Rigid thickwall PVC ducts: in accordance with CSA Standard C-22.2 #211.2. Size as indicated.

.2 Rigid PVC couplings, bell-end fittings, plugs, caps, and adapters as required to make complete installation.

.3 Rigid PVC 90°, 45°, and 22½° bends as required.

.4 Rigid PVC 5° angle couplings as required.

2.2 CABLE-PULLING EQUIPMENT

.1 6mm stranded nylon pull rope tensile strength 5kN.

2.3 WARNING TAPE

.1 Heavy gauge polyethylene warning tape with wording, "CAUTION - ELECTRIC LINE BURIED BELOW."

3 EXECUTION

3.1 INSTALLATION OF DUCTS

.1 Install RPVC ducts as indicated on drawings and in accordance with manufacturer's instructions.

.2 Clean inside of ducts before laying.

.3 Ensure full, even support every 1.5m throughout duct length.

.4 During construction, cap ends of ducts to prevent entrance of foreign materials.

.5 Pull through each duct a steel or wooden mandrel not less than 300mm long and of a diameter 6mm less than internal diameter of duct, followed by stiff bristle brush to remove sand, earth, and other foreign matter. Pull stiff bristle brush through each duct immediately after backfilling. Maintain a current written record of mandrelling of ducts.

.6 In each duct, install pull rope continuous throughout each duct run with 3 m spare rope at each end.

.7 Install warning tape as indicated.

.8 Pre-drill pull pits to accept installation of primary cable piping and secondary cable duct.

3.2 DUCT DRAINAGE

.1 Where possible, drain ducts into pull boxes. Otherwise make five 3/8" drill holes in a row at the bottom of each duct whenever duct turns upwards to enter a pull box. Cover holes with a plastic or galvanized steel mesh to prevent soil entering ducts.

3.3 INSPECTIONS

.1 Advise Departmental Representative so that he may inspect the duct installation prior to backfilling.

END OF SECTION

1 GENERAL

1.1 PRODUCT REQUIREMENTS

.1 Products to conform to Transport Canada Aerodrome Standards and Recommended Practices-TP312E Current Edition.

.2 If there is question as to whether any product is in conformance with the above specification, provide confirmation of compliance with CSA standards or Certificate of Attestation from independent certifying agency for products used in the work.

1.2 PRE-CONSTRUCTION SITE INVESTIGATION

.1 Prior to the start of any excavation, perform a complete site investigation to accurately determine the exact locations of all existing buried cables, wiring and ducts which could be affected or disturbed during the work.

.2 Mark locations of existing buried cables, wiring and ducts on site and transfer locations to record drawings.

2 PRODUCTS

2.1 AIRFIELD SERIES LIGHTING CABLE (ASLC)

.1 Manufactured to CSA C22.2 No.179 and bearing the CSA (or equivalent) marking.

.2 Single conductor stranded soft drawn copper, #8 AWG, 5000 volt, cross linked polyethylene insulation and jacket.

.3 Approved manufacturers: Nexans, Pirelli, AIW or approved alternative.

2.2 SPLICES

.1 To permanently splice an existing series cable to a new cable, use a 50 mm long, barrel type compression splicing sleeve for #8 stranded copper covered with 5KV rubber tape for 5KV cables or a 5KV rated inner heat shrink sleeve with an overall 600V rated outer heat shrink sleeve for abrasion protection. Use manufacturer's approved crimping tool and install per manufacturer's instructions.

2.3 GROUND COUNTERPOISE WIRE

.1 Single conductor #8 AWG, soft drawn bare copper wire for direct burial as counterpoise for airfield lighting circuits.

.2 Stranded with green insulation for placing with airfield lighting circuits in duct or conduit buried beneath hard surfaces, for insulated ground conductors and for connection to isolating transformers located in bases and pullpits.

2.4 PRIMARY CABLE KIT

.1 Use heat shrink splice kits, comprised of compression splice plus two sleeves: one 5 kV rated inner heat shrink sleeve and a 600V rated outer sleeve for abrasion protection, and install per manufacturer's instructions.

.2 Acceptable product: Amerace #54 Super Splice Kit.

2.5 SECONDARY PLUG AND RECEPTACLE CONNECTORS

.1 Secondary connector, one male plug, for use with isolating transformer; or use for separable straight splice of 2/c #10 AWG or #12 AWG, Type SOW, secondary cable, by mating with female plug of receptacle.

.2 Secondary connector, one female receptacle, to connect isolating transformer system to light fixture lead; or use for separate straight splice of 2/c #10 AWG or #12 AWG, Type SOW, secondary cable, by mating with male plug.

.3 Acceptable material:
- .1 Male plug – Amerace Model 91P.
- .2 Female receptacle – Amerace Model 91R.

2.6 ISOLATING TRANSFORMER

.1 DOT Specification K288 and CSA C22.2 No. 180, rated as required to match existing ODAL transformer. Use for 5000 V, 6.6 A series circuits.

2.7 OTHER MATERIAL

.1 Tape: PVC type:
- .1 Acceptable material (No substitution)
  - .1 PVC type: 3M Scotch Super 88
  - .2 Rubber type: 3M Scotch 130C

.2 Anti-seize compound:
- .1 Acceptable material: Bostik Never-Seize No. NSBT-16 or Locktite No. 767.

3 EXECUTION

3.1 INSTALLATION OF PRIMARY CABLES

.1 Install the primary cables in accordance with applicable sections of this specification and along the routes shown on the layouts. Refer to the drawings for trench configuration details.

.2 Install all primary cable in RPVC conduit or in existing raceways as indicated. Ensure that ample amounts of cable lubrication are used and that cable maximum pulling tension is not exceeded. Ensure that cable insulation is not damaged during installation.

.3 Make all connections using approved connectors as indicated in specifications.

.4 Leave a 600 mm loop of loose cable at each connection so as to avoid mechanical tension on the connector.

.5 Carefully install connector according to manufacturer's instructions. Ensure that the mating surfaces between plugs and receptacles are kept dry and clean. Take specific care to ensure that the connector elements are completely mated and inserted until all air has escaped.

.6 Apply electrical tape over each completed primary connector kit as detailed on the drawings.

.7 Install a cable circuit marker on each cable end and on all cables running through pullpits or manholes. All cables to be labeled wherever they are visible.

.8 Install a ground counterpoise wire with all runs of airport lighting series circuits.

.9 Backfill as indicated and compact soil to same level and density as adjacent ground.

.10 All trenches are to be backfilled, compacted and raked level at the completion of the project.

3.2 INSTALLATION OF GROUND COUNTERPOISE

.1 Install the 1/C #8 ground counterpoise wire with all runs of series lighting cables, in trench, in duct or above tubing at locations indicated on the drawings.

.2 Run counterpoise wire in a zig-zag pattern crossing cables at 300mm intervals when outer cables in trench are more than 150mm apart.

.3 Use 1/C #8 solid SDBC wire above series cables in polytubing.

.4 Use 1/C #8 RW90 green with series cable pulled in duct banks.

.5 Use appropriate ground connector and connect the counterpoise wire to:
- .1 the power supply system common ground
- .2 each light unit anchor and isolating transformer
- .3 each ground rod
- .4 all other ground wires in the same trench.
- .5 each pullpit lid

3.3 TESTING

.1 Testing requirements:
- .1 Use qualified personnel only.
- .2 Provide necessary instruments and equipment to demonstrate that:
  - .1 Circuits are continuous, free of short circuits and unspecified grounds.
  - .2 Circuits are connected according to applicable wiring diagrams.
  - .3 Circuits perform designated functions in sequence and manner intended.
  - .4 Resistance to ground of circuits, measured with 5 kV Megger is not less than 500 megohms for sections of new cable and not less than 50 megohms for existing cable circuits.

.2 Pre-acceptance test:
- .1 Perform insulation resistance test on each existing cable that is to be reused prior to any new cable connections.
- .2 Immediately advise Engineer if tests on existing cables indicate value below that indicated above.
- .3 After installing new cable but before splicing to existing cables or connecting to regulators, perform insulation resistance test on each new cable.
- .4 If splicing to existing, check insulation resistance after splicing to ensure that the cable system is ready for final acceptance testing.

.3 Final acceptance test:
- .1 Perform insulation resistance test on new sections of series circuit.
- .2 Perform insulation resistance test on entire series circuit.
- .3 Confirm circuits are operable by:
  - .1 Energizing and operating each circuit at each brightness not less than 10 times.
  - .2 Energizing and operating each circuit at full load for continuous period of not less than eight hours.

.4 Provide Engineer with list of test results indicating:
- .1 Date, soil moisture content and ambient temperature when test was made.
- .2 Circuit number or designator of circuit tested.

.3 Measured resistance-to-ground values.

3.4 REMOVALS

.1 Cables made obsolete as a result of this project are to be removed from all ductbanks and manholes. Obsolete cables in polytubing or direct buried may be abandoned in place.

END OF SECTION

APPENDIX ‘A”
PLAN OF CONSTRUCTION OPERATIONS

PLAN OF CONSTRUCTION OPERATIONS

ODAL 29 FEEDER REPLACEMENT
PORT HARDY AIRPORT, PORT HARDY, BC

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Figure 1 Project Communication Chart

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Appendix A Technical Drawings

E00 - Title Sheet
E01 - Electrical Key Plan and Details
E02 – Partial Site Plan, Powerhouse Floor Plan, and electrical details

1.0 INTRODUCTION

1.1 BACKGROUND

1. Transport Canada has received a contribution to undertake the replacement of the ODAL 29 feeder scheduled for the summer/fall of 2017.

2. In general, the work proposed includes:

    1. Survey of proposed route using GPR process to identify underground conflicts.

    2. Installation of underground conduits along the north side of Runway 11-29,

    3. Installation of new pull boxes on the north of Runway 11-29

    4. Installation of electrical feeders in underground conduits,

1.2 THE AIRPORT ENVIRONMENT

1. The airport operational environment is dynamic and involves various stakeholders including Transport Canada, the users, airlines, Nav Canada, the operator (ie. Port Hardy Airport/Transport Canada), airport staff, security etc. In addition, the airport environment is highly regulated in the interest of public safety. As such, any deviations from standard operating procedures are carefully considered and subject to detailed review and input from the stakeholders and regulators.

2. This proposed construction project is considered very important to the Port Hardy Airport to ensure the continued viability of the safe operation of the facility. It is recognized that construction may temporarily impact the “normal” operation of the facility and may require special temporary operational changes. The cooperation of all parties including the constructor will be paramount in successfully carrying out this project.

1.3 PURPOSE OF THE PLAN OF CONSTRUCTION

1. The primary purpose of the Plan of Construction Operations (PCO) is to provide a notification of deviation from the certification standards and the Aerodrome Operations Manual (AOM) published for the Port Hardy Airport. The PCO is a statement of the approved operational procedures to be employed to maintain the certification criteria of the airport during the implementation of the construction project planned for the summer of 2017.

2. The secondary purpose of the Plan of Construction Operations (PCO) is to formulate, in advance, the coordination required to implement this construction project with a minimum of interruptions and conflict with airport operations and ensure that airport security and flight safety are not compromised by the construction operations.

3. The third purpose of the plan is to inform all airport users, tenants, Transport Canada, Nav Canada and air carriers of the project, so that they may anticipate and plan for the project's potential implications to their operations. Further, the PCO is important to summarize the information gathered through consultations with the stakeholders.

2.0 Construction Operations Plan and Schedule

2.1 GENERAL

1. This section is intended to outline the proposed construction operations and planned schedule for the work. Appendix A contains drawings providing a graphical description of the work. The drawings contained with Appendix A are as follows:

   E00 - Title Sheet
   E01 - Electrical Key Plan and Details
   E02 – Partial Site Plan, Powerhouse Floor Plan, and Electrical Details

2. The project phasing has been developed to minimize the overall time required to complete the project while also attempting to minimize the interruption to airport facilities.

3. The work is to commence on or around May 2017 (weather dependent). Construction is to be completed by the end August 2017. The work will be performed in two stages:

   - Stage 1 – GPR survey of proposed route.
   - Stage 2 - Installation of new junction boxes on the north side of Runway 11-29, installation of electrical feeders in new underground conduits.

4. During Stage I inclement weather may delay construction depending upon the type of work taking place at the time. Work will continue as weather permits. The contractor may be required to add additional forces to the job or modify the work schedule to meet the completion dates of the contract.

2.2 SCOPE OF WORK AND SCHEDULING

The work planned for the summer of 2017 has been staged to minimize the operational impacts on the airport throughout construction.

2.2.1 Stage 1

Stage 1 will consist of construction activities at the north edge, 75 metres from the edge of RUNWAY11-29:

- Survey the proposed route with GPR (Ground Penetrating Radar) to determine underground obstacles that may interfere with the proposed installation of junction boxes and conduits.

Access to the construction areas shall be via the access routes as directed by airport staff.

2.2.2 Stage 2

Stage 2 will consist of construction activities at the north edge of RUNWAY 11-29:

- Excavation, installation of junction boxes, conduit, and backfill on the north side of the Runway 11-29 at approximately 75 metres from the centre of Runway 11-29.

- Installation of electrical wiring in existing conduit from Powerhouse to the junction box west of Glidepath Building.

- Installation of electrical wiring in new conduit from existing junction box located west of Glidepath Building to east end of runway.

During the course of this work, the following will be in effect:

1. All construction equipment will be maintained under the transitional surface for Runway 11-29. The contractor will be required to supply a list of all equipment including working heights, prior to commencing work onsite.

2. The contractor will be granted access near Runway 11-29 during the daytime under the supervision of the escort. This work will be closely monitored by the Engineer's Site Representative and Airport Management.

3. Access to the construction areas shall be via the access routes as directed by airport staff.

2.3 CONSTRUCTION ACCESS ROADS

1. For construction access to the project site, the contractor will be required to use the access gate adjacent to the Maintenance Building.

2. The contractor will be required to ensure any pavement or grassed areas damaged due to construction traffic in and out of the site, be restored prior to completion of the project work.

3. The contractor will be required to routinely apply water to minimize dust along the access road to the construction site if conditions warrant.

2.4 CONSTRUCTION EQUIPMENT STORAGE AND STOCKPILING AREA

1. The project has identified a specific area for the Contractor's Construction Yard Adjacent to the Maintenance Building.

2. Onsite stockpiling areas will be available to the contractor as required. Final locations of the stockpiling areas would be confirmed during the pre-construction meeting.

2.5 SECURITY AND ESCORTING REQUIREMENTS

1. All personnel and vehicle operators operating within airside facilities and outside of defined project areas will require an airside escort. All escorts must be approved by Airport Management.

2.6 UNDERGROUND UTILITY LOCATIONS

1. There may be high voltage and communications cables located throughout the work area. These cables can pose a serious safety hazard and cause major disruption to airport operations if damaged.

2. Prior to commencement of work, the Contractor is required to obtain a Guarantee of Isolation for underground high voltage cables (as required basis).

3. The Contractor will also be required to protect any communications cables in the intended work area. Under no circumstances should work begin unless cable identification markers are in place.

4. The contractor shall not commence work in any area until all existing utilities and underground structures (including, but not limited to, water, sanitary sewers, telecommunications, gas, electricity, airfield lighting) have been identified, located and their potential impact on the work confirmed.

5. The Contractor will also be required to protect underground electrical and communications facilities on the access routes and other locations as deemed necessary by Airport Management and the Engineer's Site Representative.

6. The Contractor must have an electrician, qualified in airport airside electrical systems, on-site during construction activity.

2.7 F.O.D. CONTROL

1. The Port Hardy Airport will not tolerate Foreign Object Debris (F.O.D.). Under no circumstances will the Contractor be permitted to dispose of any F.O.D. while on site. F.O.D. will be monitored by Airport Management, and the Engineer's Site Representative. Any F.O.D. observed must be removed immediately.

3.0 Airport Operations and Procedures

3.1 COMMUNICATION PROTOCOLS AND RESPONSIBILITIES

1. During construction, communication protocols and responsibilities must be clearly understood, practiced and enforced. Figure 1 shows the general communication flow during the project. The following provides additional details as to the responsibilities of the major project participants.

3.1.1 Airport Operator/Airport Manager

1. The Port Hardy/Transport Canada ("Airport Operator") operates the Port Hardy Airport.

2. The Airport Operator through Airport Management is responsible for coordination with Transport Canada Aerodrome Safety and Nav Canada Flight Service Station (FSS).

3. Airport Management will liaise with NAV CANADA during construction.

3.1.2 Project Manager (Engineer)/Site Representative

1. PWGSC/Transport Canada has retained the services of WSP, a professional engineering firm specializing in Airport Engineering and Construction. This firm is providing engineering, project management and site supervision services for the project and is referred to herein as the Project Manager.

2. The Project Manager will monitor the progress of the work. The site representative will communicate with the Contractor and/or their site personnel and provide updates/queries to the Project Manager.

3. The site representative will interact with the airport escort as required to ensure the safe and efficient execution of the work.

4. The Project Manager will also coordinate all technical issues during construction with Airport Management and the Contractor.

3.1.3 Contractor

1. The Contractor will be responsible for the actual construction of the proposed works. The Contractor will also designate a site representative who will be

responsible for the overall coordination of their site activities and to act as a Safety Superintendent and Site Foreman during construction.

2. The Contractor's site representative will communicate through the Project Manager's site representative. The Contractor's administrative office staff will communicate through the Project Manager.

3.1.4 Transport Canada Aerodrome Safety

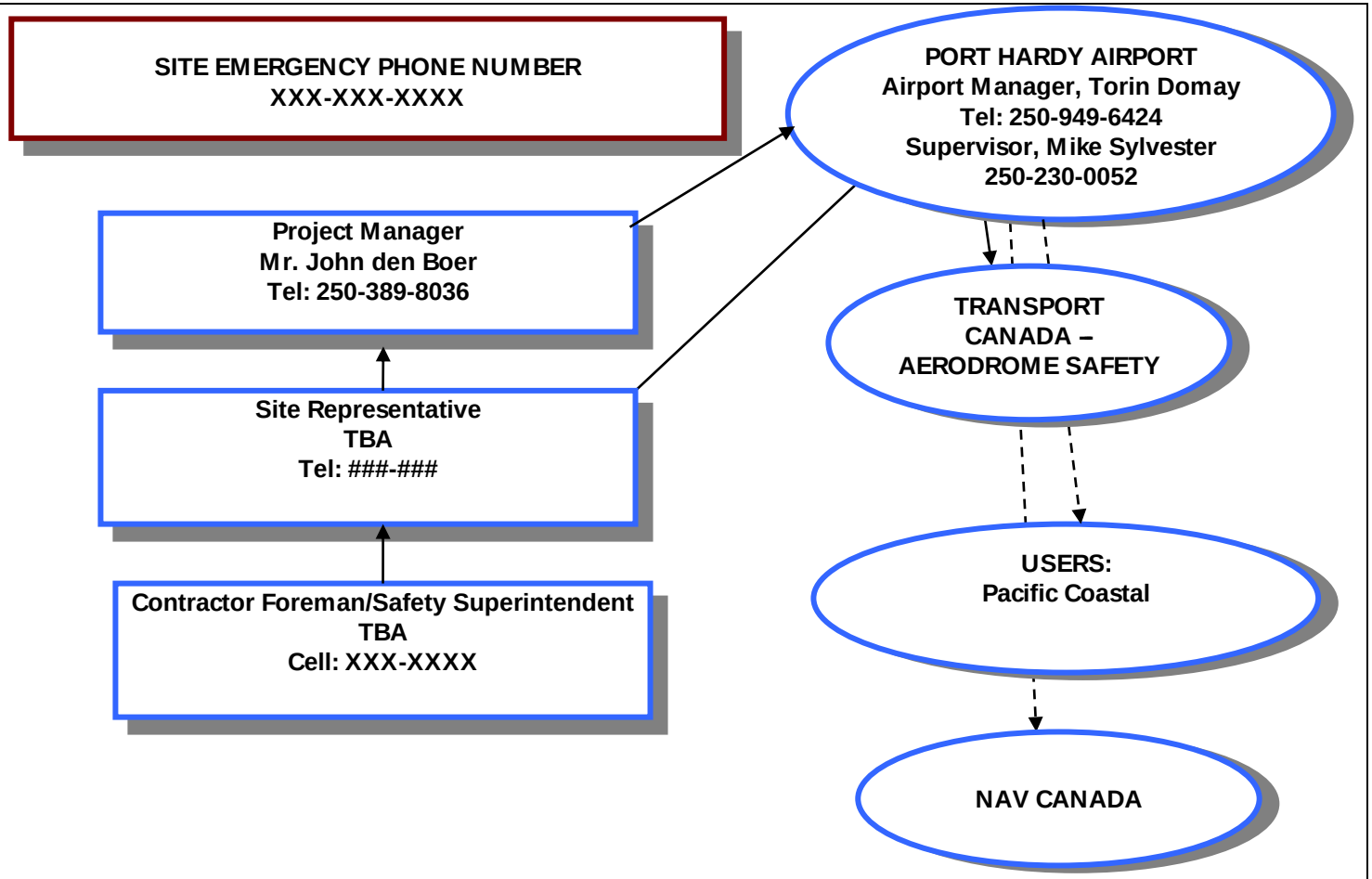
1. Transport Canada Aerodrome Safety is interested in ensuring the continued safe operation of the airport and that all applicable regulations, standards and recommended practices are complied with. Periodic inspections may be conducted during the construction period to ensure the intent of this Plan of Construction is followed.

2. Only Airport Management shall communicate with Transport Canada Aerodrome Safety.

3.1.5 Nav Canada FSS

1. Nav Canada provides air traffic advisory services in Port Hardy from their FSS. Nav Canada personnel require a clear understanding of the status of the project at all times.

2. Only Airport Management shall communicate with Nav Canada on matters related to this project.



WSP

Client/Project:
PORT HARDY AIRPORT
ODAL 29 FEEDER REPLACEMENT

Figure:
1

Title:
PROJECT COMMUNICATION CHART

3.2 AERODROME STANDARDS AND RECOMMENDED PRACTICE

1. The Port Hardy Airport is a certified airport and must comply with Aerodrome Standards and Recommended Practices TP312 and a number of other regulations and standards. This PCO has been prepared based on recommended practices to accommodate temporary deviations to these standards to permit the proposed construction activity.

2. The following outlines the aeronautical safety measures implemented:

    1. All construction equipment and storage areas have been located to remain clear of any airport obstacle limitation surfaces. All equipment used by the Contractor to be submitted with operational heights indicated to confirm this requirement.

    2. Temporary barricades and steady burning red unserviceability lighting will be positioned around areas not available to air traffic.

3.3 INSTRUMENT APPROACH PROCEDURES AND NAV AID ELECTRONIC INTERFERENCE

1. All construction equipment and material storage areas will remain clear of any on-site navigational aid protection areas.

3.4 VEHICLE SAFETY REQUIREMENTS

1. Vehicles and equipment operating on airside at the airport will be working in areas closed to aircraft traffic. No vehicle will be permitted to operate on an **active** aircraft maneuvering area unless the operator is under escort from a qualified Airport Escort having appropriate AVOP clearance and Restricted Radio License.

2. All vehicles that will be operated or driven on the aircraft maneuvering areas of the aerodrome (open or closed) will be equipped with a yellow warning beacon that will be turned on while the vehicle is on these areas. If equipped with headlights, these will also be turned on.

3. A yellow warning beacon will be mounted on each vehicle in a location that will permit the beam to be seen by aircraft or surface traffic from any position within 360^{o}. If a rotating beacon is used, the light beam shall be set at an angle of 6^{o} above the horizontal and it shall rotate at a constant speed of 35 r.p.m. The enclosing globe of the warning light shall be yellow or amber for all vehicles. The flash frequency for mobile objects will be 60 to 90/min.

3.5 GENERAL SITE PROCEDURES

3.5.1 General

1. The Contractor's Safety Superintendent/Construction Foreman shall be responsible for ensuring that all construction personnel at the aerodrome operate construction equipment and service vehicles in a safe manner in accordance with the procedures outlined in this document and the Contract Plans and Specifications.

2. Prior to the start of construction, the Construction Foreman in conjunction with Airport Management, Airport Escort and the Engineer's Site Representative shall brief all key project/construction personnel on:

    a. Site Access

    b. Construction limits,

    c. Security regulations, and

    d. Other applicable aerodrome directives.

3. The Construction Foreman shall ensure that all new personnel to the project are briefed.

4. When required, the Airport Management shall advise FSS of any deviations to construction activities at the airport relative to this approved Plan of Construction Operations. No deviations to the PCO are allowed unless approved by the Airport Manager.

5. FSS is responsible for providing cautionary advisories to aircraft and the Airport Escort.

6. A NOTAM will be issued for the duration of the construction project indicating construction activities and closures for all stages of the project. NOTAM coordination shall be the responsibility of the Airport Management.

7. Notwithstanding any of the above, all equipment shall depart all, or portions of, the construction areas for operational reasons if requested to do so by the Airport Manager, the Engineer, or their designates. This requirement will normally only apply during inclement weather when limited visibility on the ground could create hazardous conditions for aircraft and construction equipment. During these situations the contractor may be required to move equipment and personnel to a designated position within 30 minutes notice.

8. Storage of equipment and materials shall only be in the designated areas as directed by airport staff

3.5.2 Scheduled Flights

1. Scheduled air service to the Port Hardy Airport is presently provided by Pacific Coastal. Construction will not affect scheduled flights

3.5.3 Unscheduled Flights

1. Construction will not affect unscheduled flights.

3.5.4 Weekly Construction Progress Meetings

1. Daily briefings are held throughout the construction period. The purpose of the meetings will be to review past and future progress and construction issues.

2. Participants generally include Engineer's Site Representative, Contactor Representatives, and Airport Management (as required).

3.6 NOTAMS AND RESPONSIBILITIES

1. Airport Management will be responsible for the origination, revision and cancellation of NOTAMs. The NOTAM will advise the aviation community of the establishment, condition or change in any aeronautical facility, service, procedure or hazard as well as the approximate time period involved.

3.7 INCIDENT REPORTING PROCEDURES

1. If an "Aviation Occurrence" accident or incident occurs onsite during the construction project, the incident will be reported as per onsite procedures, as outlined in the Airport Operations Manual (AOM). Airport Management will be responsible for initiating and carrying out this work.

3.8 STAKEHOLDER CONSULTATION

1. The Project Manager will send a copy of the Plan of Construction Operations (PCO) to Airport Management.

2. Transport Canada, Aerodrome Safety may circulate the PCO to other branches of Transport Canada as deemed necessary.

3. During the construction period, communications with the airlines and tenants will be the responsibility of Airport Management. The Project Manager will be responsible for the coordination of information between Airport Management and

the Contractor. Any changes to the plan as outlined within this document will be communicated as required by Airport Management.

4.0 ENDORSEMENTS

PROJECT:

ODAL 29 Feeder Replacement

AIRPORT NAME:

Port Hardy Airport

AIRPORT OPERATOR and CERTIFICATE HOLDER:

Transport Canada

AIRPORT MANAGER

Torin Domay

CERTIFICATE NUMBER:

DATE OF ISSUE

I undertake to meet the obligations set out in this plan of construction; and I hereby certify that the information in this plan is complete and accurate and no relevant information has been omitted.

_____ _____

Date (Y-M-D) *Signature of Airport Operator/Certificate Holder*

This Plan of Construction Operations Manual/Amendments is approved

_____ _____

Date (Y-M-D) *for Minister of Transport*

APPENDIX A

Technical Drawings

E00 - Title Sheet
E01 - Electrical Key Plan and Details
E02 – Partial Site Plan, Powerhouse Floor Plan, and Electrical Details

Public Works and Government Services Canada

Travaux publics et Services Gouvernementaux Canada

Pacific Region

TRANSPORT CANADA
VANCOUVER, BC

PORT HARDY AIRPORT
ODAL 29 FEEDER REPLACEMENT
PWGSC #R.083360.001

CONSULTANT

ELECTRICAL ENGINEER:
WSP CANADA INC.

Drawing No.	Drawing Title
E00	***TITLE SHEET***
E01	***ELECTRICAL KEY PLAN AND DETAILS***
E02	***PARTIAL SITE PLAN AND POWER HOUSE FLOOR PLAN***

ABBREVIATIONS:

IPU - INTERRUPTIBLE POWER UNIT (GENERATOR)
ATS - AUTOMATIC TRANSFER SWITCH
AFLC - AIRFIELD LIGHTING CONTROL
ASLC - AIRFIELD SERIES LIGHTING CABLE
RPVC - RIGID POLY VINYL CHLORIDE
ODAL - OMNI DIRECTIONAL APPROACH LIGHTING
FRE - FIBREGLASS REINFORCED CONDUIT
PWR - POWER
COMM - COMMUNICATIONS
ATB - AIR TERMINAL BUILDING
FSS - FIELD SERVICE CENTRE
FEC - FIELD ELECTRICAL CENTRE
ASLC - AIRFIELD SERIES LIGHTING CABLE

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

Revision/ Revision	Description/Description	Date/Date
4		
3		
2		
1		
0	ISSUED FOR TENDER	17/04/19

Client/client

TRANSPORT CANADA
VANCOUVER, BC
800 BURRARD ST.

Project title/Titre du projet
PORT HARDY, BRITISH COLUMBIA
3675 BYNG ROAD

PORT HARDY AIRPORT
ODAL 29
FEEDER REPLACEMENT

Consultant Signature Only

Designed by/Concept par
John den Boer

Drawn by/Dessine par
Paolo Paranpan

PWGSC Project Manager/Administrateur de Projets TPSGC
Jimmy Wong

Regional Manager, Architectural and Engineering Services
Gestionnaire régionale, Services d'architecturat et de génie, TPSGC

Drawing title/Titre du dessin

TITLE SHEET

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.083360.001	E00 OF 03	0

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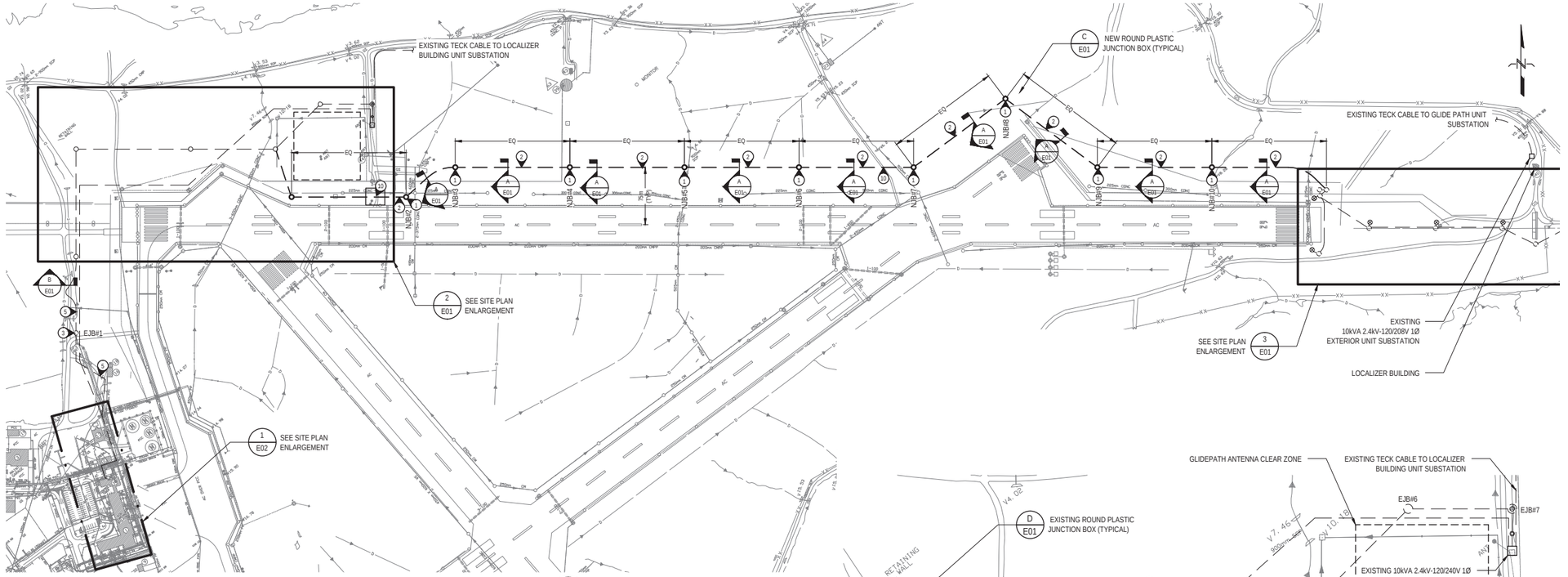

1 / E01 ELECTRICAL SITE PLAN
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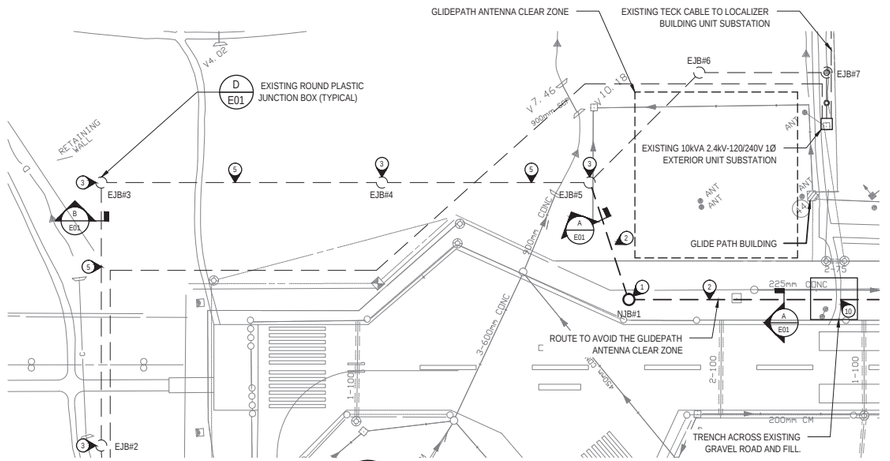
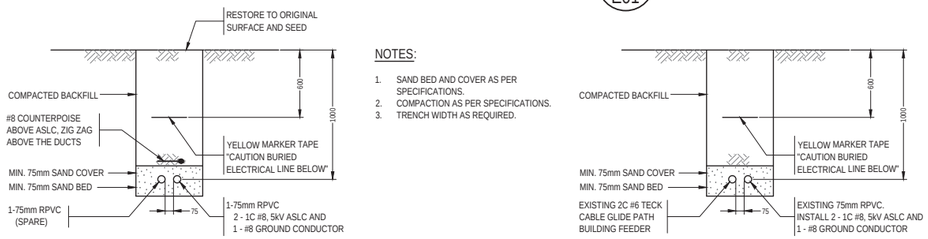


2 / E01 ENLARGED SITE PLAN
SCALE 1:1500

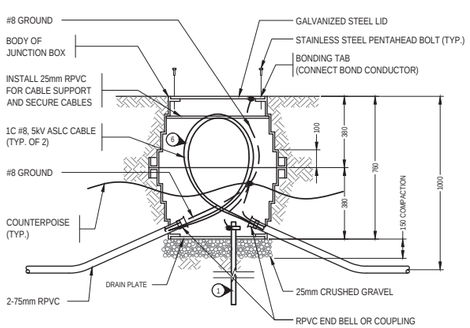


A / E01 NEW TRENCH DETAIL
N.T.S.

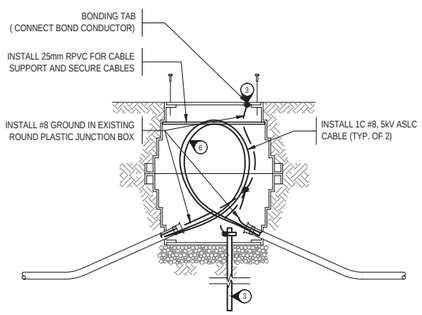
NOTES:

1. SAND BED AND COVER AS PER SPECIFICATIONS.
2. COMPACTION AS PER SPECIFICATIONS.
3. TRENCH WIDTH AS REQUIRED.

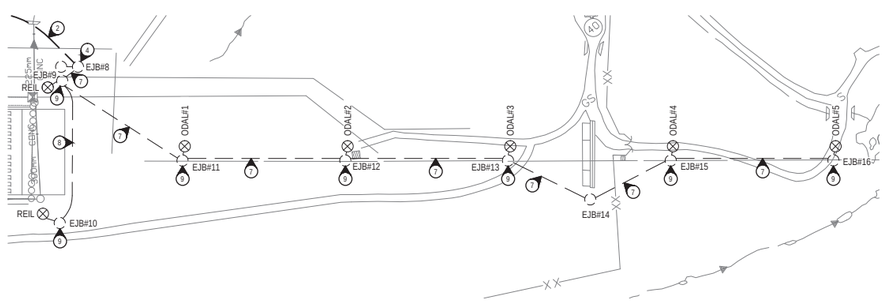
B / E01 EXISTING TRENCH DETAIL
N.T.S.



C / E01 NEW ROUND PLASTIC JUNCTION BOX - SIDE VIEW
N.T.S.



D / E01 EXISTING ROUND PLASTIC JUNCTION BOX - SIDE VIEW
N.T.S.



3 / E01 ENLARGED SITE PLAN
SCALE 1:1500

0 30 60 90 120m 1:1500
0 60 120 180 240m 1:3000

0 10 20 30 40 50 60 70 80 90 100mm

LEGEND:

- NEW JUNCTION BOX #1 (NJB#1)
- EXISTING JUNCTION BOX #1 (EJB#1)

KEYNOTES:

1. NEW ROUND PLASTIC JUNCTION BOX. INSTALL NEW 19mmØ X 3m COPPER CLAD GROUND ROD AND CONNECT TO GROUND CONDUCTOR
2. 1-75mm RPVC
   2 - 1C #8, 5kV ASLC AND
   1 - #8 GROUND CONDUCTOR
   1-75mm RPVC
   (SPARE) - INSTALL PULL CORD
3. EXISTING JUNCTION BOX. BOND EXISTING JUNCTION BOX COVERPLATE. INSTALL NEW 19mmØ x 3m COPPER CLAD GROUND ROD AND CONNECT TO GROUND CONDUCTOR
4. CONNECT NEW CONDUIT TO EXISTING JUNCTION BOX.
5. EXISTING 1-75mm RPVC (EMPTY)
   INSTALL:
   2 - 1C #8, 5kV ASLC AND
   1 - #8 GROUND CONDUCTOR
   EXISTING 1-75mm RPVC
   1 - 5kV TECK CABLE (GLIDEPATH FEEDER).
6. INSTALL PLASTIC LABEL (BLACK LETTERING WITH WHITE BACKGROUND) WRAPPED TO ALL CONDUCTORS WITHIN JBs WITH WORDING "ODAL 29."
7. REPLACE EXISTING
   2 - 1C #8 ASLC WITH NEW
   2 - 1C #8 ASLC CABLE
8. REPLACE EXISTING
   4 - 1C #8 ASLC WITH NEW
   4 - 1C #8 ASLC CABLE
9. REPLACE EXISTING ISOLATING TRANSFORMER WITH NEW. THE EXISTING PULLPITS ARE FILLED WITH SOLIDIFIED PROTEXULATE POWDER. TAKE EXTREME CARE WHEN REMOVING TO ACCESS EXISTING ISOLATING TRANSFORMERS.
10. TRENCH ACROSS EXISTING MILLED ASPHALT ROAD. RESURFACE WITH WELL COMPACTED GRAVEL.

Revision/ Revision	Description/Description	Date/Date
4		
3		
2		
1		
0	ISSUED FOR TENDER	17/04/19

Client/client

TRANSPORT CANADA
VANCOUVER, BC
800 BURRARD ST.

Project title/Titre du projet

PORT HARDY, BRITISH COLUMBIA
3675 BYNG ROAD

PORT HARDY AIRPORT
ODAL 29
FEEDER REPLACEMENT

Consultant Signature Only

Designed by/Concept par
John den Boer

Drawn by/Dessine par
Paolo Paranpan

PWGSC Project Manager/Administrateur de Projets TPSGC
Jimmy Wong

Regional Manager, Architectural and Engineering Services
Gestionnaire régionale, Services d'architectural et de génie, TPSGC

Drawing title/Titre du dessin

ELECTRICAL KEY PLAN AND DETAILS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.083360.001	E01 OF 03	0

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

WSP

DMSXXXXXX

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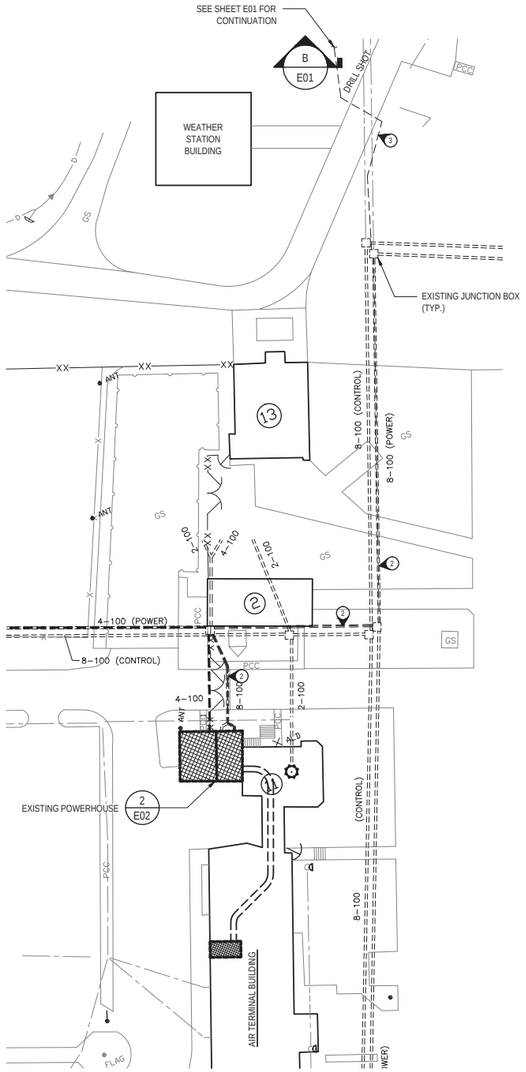
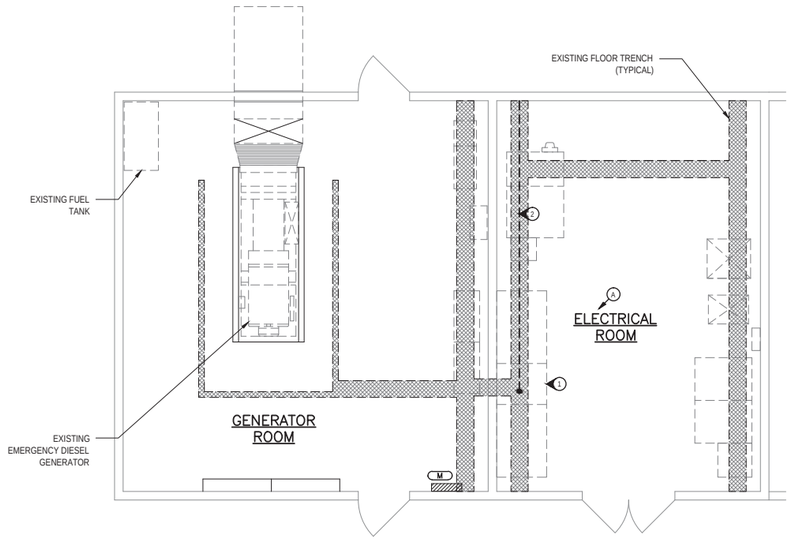


1 E02 PARTIAL SITE PLAN
SCALE 1:500



2 E02 POWER HOUSE FLOOR PLAN
SCALE 1:50

A E02 PHOTO A
N.T.S.

KEYNOTES:

1. EXISTING ODAL 29 CONSTANT CURRENT REGULATOR.
2. REPLACE EXISTING 2 - 1C #8, 5kV ASLC AND 1 - #8 GROUND CONDUCTOR WITH NEW. REMOVE REDUNDANT CONDUCTORS.
3. INSTALL NEW 2 - 1C #8, 5kV ASLC AND 1 - #8 GROUND CONDUCTOR IN EXISTING SPARE 75mm RPVC.
4. DISCONNECT EXISTING 2-1C#8, 5kV ASLC CABLES AND 1-8# GROUND CONDUCTOR. CONNECT NEW 2-1C#8, 5kV ASLC CABLES AND 1-#8 GROUND CONDUCTOR.

NOTE:
NOTIFY AND RECEIVE APPROVAL FROM TRANSPORT CANADA 5 DAYS IN ADVANCE OF FEEDER TRANSFER.

GENERAL NOTES:

1. PUMP OUT EXISTING JUNCTION BOXES AND MANHOLES OF WATER PRIOR TO ACCESS.
2. COORDINATE ALL WORK WITHIN THE POWERHOUSE WITH OTHER TRADES WHICH MAY BE PERFORMING A SEISMIC UPGRADE AT THE TIME OF EXECUTING THIS CONTRACT.

0 10 20 30 40 50 60 70 80 100mm

0 1 2 3 4m 1:50

0 10 20 30 40m 1:500

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LEGEND:
A PHOTOGRAPH
1 KEYNOTE

Revision/ Revision	Description/Description	Date/Date
4		
3		
2		
1		
0	ISSUED FOR TENDER	17/04/19

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TRANSPORT CANADA
VANCOUVER, BC
800 BURRARD ST.

Project title/Titre du projet
PORT HARDY, BRITISH COLUMBIA
3675 BYNG ROAD

PORT HARDY AIRPORT
ODAL 29
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PWGSC Project Manager/Administrateur de Projets TPSGC
Jimmy Wong

Regional Manager, Architectural and Engineering Services
Gestionnaire régionale, Services d'architectural et de génie, TPSGC

Drawing title/Titre du dessin

PARTIAL SITE PLAN, POWER HOUSE FLOOR PLAN AND ELECTRICAL DETAILS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.083360.001	E02 OF 03	0

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