PUBLIC WORKS GOVERNMENT SERVICES CANADA
(PWGSC)

ASSET AND FACILITIES MANAGEMENT SERVICES
(AFMS)

ELECTRICAL STATEMENT OF WORK SPECIFICATIONS

FOR

ST. ANDREWS BIOLOGICAL STATION
(SABS)

Description:	Standing Offer Agreement – Electrical Services
Location:	St. Andrews Biological Station 125 Marine Science Drive St. Andrews, New Brunswick E5B 0E4
Departmental Representative:	Samantha Pole Samantha.pole@pwgsc-tpsgc.gc.ca T: 506-754-6103 | F: 506-529-8387

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The following definitions apply to the work to be directed by the Departmental Representative.

942 Call Up Slip	a signed purchase order or work order provided by the Departmental Representative authorizing work to be completed
Add	to make an addition to.
Adjust	to bring components to a more effective relative position.
ARC Flash Assessment	See Form 617-E (Appendix “D”)
Assemble	to take apart and put together again.
Balance Load	to balance the three (3) phase and single phase circuits that enter (or leave) the main switchboards, transformers and distribution panel boards, by calculating new and existing loads accordingly.
Breakdown Maintenance	to perform repairs to damaged equipment due to failures.
Clean	to scrape, brush, flush and vacuum as required to remove dust, dirt and foreign matter.
Clean-Up	clean-up after work completed of dirt, oils, dust, scale, filings and replace moved items.
Check / Inspect	to view closely for dirt, foreign substances, lack of lubricant, wear, damage, tightness, tension, alignment, leaks, cracks, spalling, deformation, overloading and settings. Make a critical appraisal of equipment, component and parts' ability to fulfil their function to a high degree of efficiency.
Departmental Representative	an employee assigned to oversee the terms of this contract, and be the liaison between the Contractor and PSPC.
Energy Source	any electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other source of energy of potential harm to workers.
Facility	The complex of buildings so named the St. Andrews Biological Station.
Government Issue	All materials, parts components, equipment, specifications, articles and things which may be supplied to a contractor by the Government for purposes of Work.

Hot Work	Hot Work includes any welding, cutting of material by use of torch or other open flame devices and grinding that produces sparks.
Instruct	to inform the Departmental Representative of any new operating procedures. Demonstrate and explain purpose, benefit and method of implementing new procedures.
Isolate	to physically prevent the transmission or release of an energy source to machinery or equipment.
Lubricate	to apply oil or grease to joints between moving parts and joints between fixed and moving parts.
Measure	to determine capacity or amount in standard units using an appropriate instrument. Measure condenser and evaporator pressure drop with differential pressure meter or “U” tube manometer. Measure motor overload with instrument approved by overload manufacturer.
Paint	to clean, prepare and paint surfaces to paint manufacturer's recommendations with paint and primer recommended by paint manufacturer for applicable surface and use. Match adjacent colours. See Building paint schedule.
Predictive Maintenance	to perform required repairs that have been declared in advance, based on observation, experience and/or scientific reasons.
Preventative Maintenance	to inspect, test and re-condition a system, in order to prevent failures, at regularly scheduled intervals in accordance with specific instructions.
Project Authority or Work Authority	the person designated in the Contract, or by notice to the contractor, as the Technical Authority who will liaise with the Departmental Representative in matters concerning the technical aspects of the Work;
Prove	to operate and determine if operation produces intended response.
PSPC/PWGSC	Public Services and Procurement Canada also known as Public Works Government Services Canada
Remove	to take off or away from.

Repack	to fill with packing again.
Repair	to restore to a sound state.
Replace	to restore by removing old components and replacing with new components.
Report	to report to the Departmental Representative on-site and include in work report, results of inspection and proving, note problems encountered, services required, services performed and readings taken.
Request For Electrical Isolation and Re-Energization	is the authorization form to be completed (PWGSC-TPSGC 13 (2020-02)). Equipment is to be isolated and re-energized using the Isolation Procedures Form (PWGSC-TPSGC 12 (2014-11)), following the written process for the correct sequence. See Appendix "C".
Shut Down	to take out of service.
Start Up	to return to service.
Testing	to conduct physical checks on equipment installed or repaired under this contract to ensure proper working order.
Tighten	to securely fix in place.
Treat	to act upon with agent.

In the Contract, words importing the singular number include the plural and vice versa, and words importing the masculine gender include the feminine gender and the neuter.

1. Scope of Work

.1 The work under this Standing Offer Agreement includes but shall not be limited to the provisions of all labour, materials, tools, supervision and equipment necessary for maintenance and repair of electrical systems and provide the services listed in Items 3 and 4 of this Section.

2. Location

.1 Work site for this Standing Offer Agreement is the:
St. Andrews Biological Station
125 Marine Science Drive
St. Andrews, New Brunswick E5B 0E4

3. Emergency and Service Call ups

.1 The Contractor shall maintain and provide PWGSC with current phone, fax and pager numbers to be able to provide response to requests for service from the local Departmental Representative on a twenty-four (24) hour, seven (7) day-per-week basis. The following work priorities and response times shall apply:

.1 **Emergency**
A priority of "Emergency" is defined as a deficiency or breakdown that requires immediate attention to reduce the potential for danger to occupants, the general public, the environment or the facility. Maintenance identified with this priority must be responded to immediately and must be reported without delay to the designated manager.
Standard response time -
Urban **On site within 1 hour**

.2 **Routine**
A priority of "routine" is defined as essential maintenance requirements that should be rectified at the earliest possible opportunity. It is considered as a deficiency or breakdown that does not impair current operations or pose any danger to the occupants, the general public, the environment or the facility.
Standard response time -
Urban **On site within 24 hours**

4. Contractor's Responsibilities

.1 The Contractor will advise the Departmental Representative of the telephone number at which he/she or his/her representative can be contacted at any time.

.2 The Contractor shall not refuse any call for service requested by a Departmental Representative and the time lapse between call out and start of work shall be as per Item 3 of this section.

.3 Upon request for service the Contractor shall issue a cost estimate for repairs or replacement of specific item(s) prior to carrying out work. The following shall be included in the estimate:

1. The cost estimate must be in accordance with the Bases of payment (Appendix A). Any line items not covered by the pricing provisions of the Basis of Payments will not be approved;
2. Where replacement of components is more cost effective than repair, the Contractor shall make this option known and include this cost in the estimate
3. Costs estimates shall be emailed to the Departmental Representative. The estimate shall indicate a breakdown of materials, labour, mark-up and GST; and
4. Upon acceptance of the Contractor's cost estimate and receipt of the signed 942-Call up, Contractor carries out the work within 48 hours or a time mutually agreed by both parties.

.4 Prior to commencement of work, the Contractor shall report to the commissionaires desk to log in.

.5 The Contractor shall contact the Departmental Representative on the first working day following and "after normal working hours" for emergency or urgent calls and obtain a requisition number.

.6 The Contractor, when requested by the Departmental Representative for an emergency service, will proceed to the site, and repair or protect the system or equipment from further damage. When the system has been made safe, the Contractor shall provide, within one (1) working day, a detailed estimate to complete repairs and put the equipment in proper working order.

.7 Service and/or repair to be provided on an "as-and-when-requested" basis only.

.8 On award of the Standing Offer Agreement, the Contractor must provide the names of personnel performing work on this contract complete with proof of their qualifications.

.9 The Contractor must report to the site with a service vehicle that is well stocked with replacement parts to carry out repairs on the systems in use in these facilities.

5. Log Books

.1 The Contractor shall complete all applicable log books outlining all work performed. Payment shall not be made if log book is incomplete.

6. Invoicing

.1 Contractor shall submit 942 Call-up Slip(s) signed by an authorized Departmental Representative with an invoice. No invoice will be considered for payment unless accompanied by signed 942 Call-up Slip and a completed Job Slip similar to the one attached in Appendix 'B'.

.2 Invoice must show:

1. Call up 942 number
2. Work location
3. Date
4. Hours broken down as per Unit Price Table
5. Material net cost and % mark-up
6. Brief work description

.3 In the event of a dispute, the Contractor is to make any and all records available to the Department to substantiate time and/or materials spent on any one job.

.4 The Contractor must submit a completed "Request For Electrical Isolation and Re-Energization" form when applicable before any invoice can be processed. See Appendix "C".

.5 All invoices for the fiscal year must be submitted for payment before 31 March of each year.

7. Replacement Parts

.1 The Contractor is required to repair or replace worn or defective parts or complete components of the system(s) using only genuine manufacturer's replacement parts.

.2 Replacement parts by another manufacturer may be used with written permission of the Departmental Representative.

.3 Request direction and approval from the Departmental Representative prior to replacing any component.

.4 Maintain a sufficient supply of replacement parts to prevent extended downtime. Defective parts shall be replaced within twenty-four (24) hours.

.5 Where an equipment inventory numbering system exists, identify on the log sheet the number of the equipment on which the replacement part was used.

8. Work Schedule

.1 At each normal service call, the Contractor must have personnel on-site providing the service continuously on every working day until the work is completed.

9. Site Visits

.1 The Departmental Representative may, without prior notification, visit the site.

10. Departmental Representative(s) Authorized Personnel

.1 On award of the Standing Offer, the Contractor will be notified of the names listed in Section 2.2.2 (Contact Persons) in order to hold a pre-job meeting

11. Codes and Legislative Requirements

.1 Execute the work to meet or exceed:

- .1 Part II of the Canada Labour Code
- .2 Canada Occupational Safety and Health Section of Part II of the Canada Labour Code
- .3 *Canadian Environmental Protection Act*
- .4 Materials and workmanship must conform to or exceed applicable standards of the Canadian Government Specifications Board (CGSB), Canadian Standards Association (CSA), American Society for Testing Materials (ASTM) and referenced organizations
- .5 The Contractor can obtain addresses for codes and standards from the Departmental Representative upon Request
- .6 National Building Code of Canada
- .7 The Canadian Electrical Code Part1, CSA C22.1
- .8 Contractor's electrical safety requirements, complete lockout procedures
- .9 Workplace Electrical Safety, Z462
- .10 In the event of a conflict between any of the above codes or standards, the most stringent shall apply.
- .11 These standards shall be considered an integral part of the specifications and shall be read in conjunction with the drawings and specifications. The contractor shall be fully familiar with their contents and requirements as related to the work and materials specified.

12. Licences, Permits and Fees

.1 Provide the authorities having jurisdiction with all information requested.

		.2	Pay all fees and obtain certificates and permits required.
		.3	Provide these certificates and permits when requested.
13.	**Taxes**	.1	Pay applicable federal, provincial and municipal taxes.
14.	**Meetings**	.1	Attend meetings at site when notified by Public Works and Government Services Canada.
		.2	Pre-job meeting shall be scheduled within fourteen (14) days of contract award.
15.	**Personnel**	.1	The Contractor will provide the Departmental Representative with a list of a minimum of 3 journeymen working on PWGSC premises. On a project that will require two men or more, one electrical apprentice will be permitted to work provided they are with an electrical journeymen at all times. **(In the event this procedure is not followed, no apprentice will be allowed back to site under this contract).** Provide a copy of everyone's valid New Brunswick Provincial Electrical licences including the apprentice's proof of apprenticeship. Contractor will provide updates the list immediately when personnel change.
16.	**Security Clearance**	.1	The required security clearance level for this Contract is Reliability Status.
		.2	It is the Contractor's responsibility to initiate the security screening required for the personnel and the Contractor shall not have access to the work site until its resources (i.e. "personnel") have the necessary clearance.
		.3	The Canadian Industrial Security Directorate (CISD) of Public Services and Procurement Canada is responsible for administering the Industrial Security Program in Canada.
		.4	The Contractor shall follow the instructions at the website: https://www.tpsgc-pwgsc.gc.ca/esc-src/index-eng.html , which includes all necessary forms.
17.	**Examination**	.1	Examine the existing conditions and determine those conditions affecting the work.
18.	**Existing Services**	.1	Protect and maintain existing active services.

.2 Connect to existing services with minimum disturbance to occupants and building operation.

.3 Use existing services at no cost.

.4 Use designated sanitary facilities.

.5 Any shutdown to execute service or repair must first be approved by the Departmental Representative or designate thereof. Normal working hours shall be construed as 0800 hours to 1700 hours, Monday through Friday inclusive, excluding holidays.

.6 Ensure that capacity of services is adequate prior to imposing additional loads. Connecting and disconnecting is Contractor's responsibility at its expense.

.7 Inform the Departmental Representative immediately of any code violations or required repairs that could pose a hazard to employees or building occupants.

.8 When connecting to or disconnecting from an existing electrical system, ensure there is a balanced load upon completion of work.

19. Cleaning

.1 Maintain work area free of accumulated waste, dust, wire ends and rubbish.

.2 Remove and dispose of debris, used and obsolete material on a daily basis.

.3 Remove grease, dust, dirt, stains, fingerprints and other foreign materials from sight-exposed interior and exterior finished surfaces affected by Standing Offer Agreement work.

20. Cutting, Fitting and Patching

.1 Cut, fit and patch where required for work under this contract. Return all disturbed surfaces to original condition.

.2 All wall penetrations to be fire caulked

21. Co-ordination and Protection

.1 Execute work with minimum disturbance to occupants, public and normal use of building. Make arrangements with Departmental Representative to facilitate execution of work. Maintain access

and exits as work area could be occupied during execution of work.

.2 Movement of office furniture is the Contractor's responsibility.

.3 Furniture, including desks, file cabinets, shelving units, chairs, and cabinets that are moved because of the work requirements will be moved back at the end of each work day.

.4 Asbestos assessment drawings, where available, are to be referenced before any interior finished surfaces are disturbed and existing work must be protected from damage.

.5 Where necessary, cover all building contents, materials and fittings in work areas prior to commencing work, remove covers upon completion of work.

.6 Obtain the Departmental Representative's approval before cutting, boring or sleeving load bearing members.

.7 All possible safety precautions are to be taken to ensure the protection of employees or occupants during the course of the work.

.8 Obtain Department Representative's approval before isolating any security, monitoring or audible alerting devices.

.9 In the event the fire alarm system is deemed inoperable due to ongoing work by the Contractor, a trained sentry/rounds person will carry out the functions of fire watch.

22. Work Done by Other Means

.1 This Standing Offer Agreement does not create an exclusive right of the Contractor to perform all work that might be required. The Department reserves the right to have any work done by other means.

23. Workmanship

.1 All equipment panels and control covers must be replaced and properly fitted using all fastening screws and/or bolts according to equipment design. All workmanship is subject to inspection and approval.

.2 Redo all work unsatisfactory to the Departmental Representative at no extra cost.

.3 Workmanship must be of the highest quality, executed by workers skilled and ticketed in the respective trades for which

they are employed. It is the responsibility of the Contractor to supply fully licensed and accredited employees. All related licenses, tickets and accreditation are the responsibility of the Contractor and must be provided as proof of quality of skills required for the terms of this contract.

.4 Contractor must not employ any unfit person or anyone unskilled in their respective duties. The Work must not be performed by any person who, in the opinion of the Departmental Representative, is incompetent, unsuitable or has been conducting himself/herself improperly. Departmental Representative reserves the right to request the dismissal from the site, workers deemed incompetent, careless, insubordinate or otherwise objectionable.

.5 Decisions as to the quality or fitness of workmanship in cases of dispute rest solely with the Departmental Representative, whose decision is final.

1. Compliance Requirements

.1 Comply with the Canada Labour Code Part II and the *Canada Occupational Health and Safety Regulations*.

.2 Comply with the Provincial Occupational Health and Safety Act and supporting Occupational General Safety Regulations, as amended from time to time.

.3 Observe and enforce construction safety measures required by the following statutes and authorities:

- .1 The National Building Code of Canada, Part 8.
- .2 The National Fire Code of Canada.
- .3 Provincial Workers Compensation Board.
- .4 Municipal Statutes and Ordinances.
- .5 Workplace Electrical Safety, Z462.

.4 The Contractor and his/her personnel must adhere to the Federal Government "NO SMOKING" Policy and/or Scent Free Policy, if applicable, while in Federal facilities.

.5 All accidents are to be reported to a Departmental Representative immediately and should any unforeseen or peculiar safety-related factor, hazard, or condition be evident during the performance of work, to report it to a Departmental Representative immediately.

.6 All sub-contractors shall adhere to the above qualifications.

2. Submittals

.1 Prior to Award Contractors are to provide (within seven (7) calendar days of closing):

- .1 A letter of good standing from Worker's Compensation Board.
- .2 Signed statement by the Owner of company that the company, and any sub-contractor, will maintain Worker's Compensation Board coverage for the life of the Standing Offer Agreement (SOA) / Service Contract (SC).
- .3 Before Work Begins – Contractors shall provide:
  - .1 The Contractor has prepared, through risk assessment, a site-specific health and safety management plan.

.2 Due to Covid-19, note that there will be restrictions and guidelines in order to adhere to public health measures"

Prior to submitting their tender, it is recommended that tenderers satisfy themselves as to the form and nature of the work and

materials necessary for the completion of the work, the means of access to the site, the accommodation required, and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. No allowance shall be made subsequently in this connection on account of error or negligence to properly observe and determine the conditions that will apply.

3. Training

.1 Before Work Begins Contractors are to provide documentation:

.1 Certification of training for safety for all personnel that will be involved with the Standing Offer Agreement/Service Contract. Updated list complete with licenses shall be kept on site including personnel changes.

.2 Training for workers shall include (but not be limited to)

.1 Safe operation of tools and equipment.

.2 Proper use and maintenance of personal protective equipment (PPE).

.3 Safe work practices and procedures for their given work tasks or function.

.4 Site conditions and minimum site safety rules.

4. **Disciplinary Procedures for Safety Violations:**

.1 Disciplinary Procedures for Safety Violations are as follows:

.1 **First Violation**: Verbal warning issued to the Contractor for the first violation of a safety regulation. Violation must be documented on the Contract file, copy to Contractor and a copy sent to PWGSC.

.2 **Second Violation**: Written warning to Contractor for the second infraction of a safety regulation. Violation will be documented on the Contract file, copy to Contractor and a copy sent to PWGSC.

.3 **Third Violation**: May result in the termination of the SOA with a recommendation that the

Contractor be denied being able to tender on future PWGSC-produced tenders. Violation must be documented on the Contact file, a copy to the Contract and copy to PWGSC.

5. Asbestos

.1 It is forbidden, within the limits of the site, to supply products containing asbestos fibres

NOTE: This facility MAY contain fibrous Asbestos. All copies of the Hazard Assessments conducted by the Contractor should contain a notation to this fact, and attention paid throughout the duration of the work. The Contractor must familiarize themselves and their employees with the latest edition of the Asbestos Management Plan for the area being worked in.

.2 Demolition or disturbance of spray or trowel-applied asbestos can be hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of work, stop work and notify the Departmental Representative immediately. Do not proceed until written instructions have been received from the Departmental Representative.

6. Fastening Devices Explosive Actuated

. 1 Explosive actuated devices shall not be used, until approved by **t**he Departmental Representative.

7. Hot Work

.1 All hot work activity, as defined in "Service Definitions" of this specification, is to take place with written permission from the Departmental Representative (Hot Work Permit).

.2 The ventilation system in the area of any Hot Work activity is to be isolated to prevent migration of fumes/smoke and to reduce any possible spread of fire to other areas of the facility.

.3 Contractor is to employ an employee trained in the use of fire extinguishers as fire watch during any Hot Work for a minimum of 60 minutes after activity has ceased.

8. Confined Spaces

.1 All work in confined spaces will be carried out in compliance with the *Canada Occupational Safety and Health Regulations*, Part XI.

.2 The Contractor must provide and maintain all equipment as required by any person to enter and/or perform work in a safe manner, in compliance with the *Canada Occupational Safety and Health Regulations*, Part XI.

.3 The Contractor must provide and maintain training, as required by the *Canada Occupational Safety and Health Regulations*, Part XI.

.1 The Contractor and/or his employees shall provide proof of training and qualifications when requested by the Departmental Representative.

.4 The Contractor is to provide the Departmental Representative with a copy of an "Entry Permit" for each and every entry into the confined space to ensure compliance with the *Canada Occupational Safety and Health Regulations*, Part XI.

.5 The Contractor is to have a hazard assessment of the confined space performed.

.1 The Contractor to provide the Departmental Representative with a copy of the hazard assessment.

9. Fall Protection

.1 All work carried out above the mandatory height restrictions, from unguarded structure or vehicle and/or from ladders, staging and scaffolding, will be done in compliance with the *Canada Occupational Safety and Health Regulations*, Part XII, Section 12.10.

.2 The components of a fall protection system shall meet the standards as outlined in the *Canada Occupational Safety and Health Regulations,* Part XII, Section 12.10 (2).

.3 The Contractor is to ensure fall protection equipment is maintained, inspected and tested by a qualified person as required by the *Canada Occupational Safety and Health Regulations*, Part XII, Section 12.3.

10. Safety Plan

.1 The Contractor shall provide a copy of their company's occupational health and safety policy and program. It shall meet the requirements of the provincial occupational health and safety acts. The Departmental Representative shall advise the Contractor where the federal standards apply.

.2 The Contractor shall perform site hazard assessments to establish site specific safe work practices/procedures for the safety and wellbeing of their employees. Copies shall be made available to the Departmental Representative upon request.

.3 All copies of the formal hazard assessments conducted by the Contractor throughout the duration of the work shall be retained and made available to the Departmental Representative immediately upon request.

.4 It is the Contractor's responsibility to be familiar with all applicable Safety acts, regulations, codes and contract requirements. These must be identified and addressed in the Safety Plan, by identifying Standard Operating Procedures (SOP) and safe work practices (SWP) that incorporate clear and specific control measures, applicable rules, procedures and practices, all of which shall become mandatory.

.5 Post the Safety Plan at a common location on the site visible to all workers and persons accessing the site. Ensure that all employees, including sub-contractors' personnel, are advised of such Safety Plan and of the posted location.

.6 The Contractor shall ensure all workers and authorized persons entering the work site are notified of and abide by the posted Safety Plan, safety rules, procedures, safe work practices and applicable safety acts, regulations and codes. Any person in non-compliance shall be subject to disciplinary procedures.

.7 The Contractor shall ensure that all applicable personal protective equipment (PPE) is used.

.8 The Departmental Representative shall coordinate arrangements for the Contractor to be briefed on site safety within fourteen (14) days of award of Standing Offer Agreement / Service Contract.

11. Product Approvals

.1 The Contractor shall ensure that all controlled products used in the performance of the work are classified and labelled according to the Workplace Hazardous Materials Information System (WHMIS).

.2 The Contractor shall submit for approval the Material Safety Data Sheets (MSDS) for all controlled products that will be used in the performance of this work.

.3 No controlled products are to be brought on site without prior approved Material Safety Data Sheets (MSDS).

.4 Material Safety Data Sheets (MSDS) are to remain on-site at all times.

12. Lockouts

.1 Prepare lockout procedures as per PWGSC Form 12-2 Electrical and Mechanical Isolation and Re-Energization procedure. Describe safe work practices, work functions and sequence of activities to be followed on site to safely isolate all potential energy sources and lockout/tag out facilities and equipment.

1.	**Environmental**	.1	All work is to be performed in accordance with the Federal *Environmental Protection Act* and the provincial environmental acts and regulations.
2.	**Disposal of Waste**	.1	Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
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 or drainage systems.
		.3	Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
4.	**Work Adjacent to Waterways**	.1	Do not operate construction equipment in waterways.
		.2	Do not use waterway beds for borrow material.
		.3	Do not dump excavated fill, waste material or debris in waterways.
		.4	Design and construct temporary crossings to minimize erosion to waterways.
5.	**Pollution Control**	.1	Maintain temporary erosion and pollution control features installed under this contract.
		.2	Control emissions from equipment and plant to local authorities' emission requirements.
		.3	Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
		.4	Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1. Journeyperson Electrician

.1 The journeyperson electrician shall:

.1 Carry out and assist in various types of building electrical maintenance as requested by Public Works and Government Services Canada. Maintenance types defined in Section 1, Paragraph 9, Service Definitions.

.2 Relocate, install or repair electrical equipment, such as, but not limited to, lighting fixtures, receptacles, relays, pac poles, wiring runs, panels, breakers, portable equipment, or any other electrical requirements requested by Public Works and Government Services Canada; such as, testing, calibrating, programming or electrical measurements.

.3 Inform the Departmental Representative of any "phase imbalance" (voltage or current) produced by new or additional equipment in a new or existing system. Carry out adjustments and record results.

.4 Produce a minimum of three (3) journeymen valid Electrical New Brunswick Provincial certificates and permits upon request of the Departmental Representative.

.5 PWGSC shall, at any time during the life of the SOA, ask for personnel to show proof of valid NB electrical journeyman certificates.

.6 Instruct the Departmental Representative on site of any new operating procedures when installing or modifying new or existing equipment.

.7 Inform the Department Representative when electrical repairs, renovations, alterations and installations require updated operating procedures, schematics, electrical single-line drawings and related documents.

.8 The Contractor shall immediately inform the Departmental Representative of any unsafe situations or conditions related to the work site.

PART 1 - GENERAL

.1 Materials shall be new, CSA certified, and manufactured to standard quoted, where applicable.

PART 2 - PRODUCTS

2.1 Conduit

.1 Flexible metal conduit: to CSA C22.1-15 No.12-1000

.2 Electrical metallic tubing: to CSA C22.1-15-4000

.3 Rigid PVC: to CSA 22.1-15 No. 12-100

2.2 Conduit Fittings

.1 Fittings for raceways: to CSA C22.115 No. 12-1000

.2 Liquid tight flexible conduit where PVC is used: CSA C22.1-15 No. 12-3000

PART 3 - EXECUTION

3.1 Installation Guidelines

.1 Minimum size conductors for branch circuit wiring shall be #12 RW 90, X-link.

2 E.M.T. and/or PVC conduit in all wet or damp locations as well as RW 90 conductors to be installed for branch circuit wiring. **No BX cable allowed**.

.3 All E.M.T, PVC flexible and liquid tight conduit to have #14 insulated green ground wire minimum.

.4 All E.M.T. to have steel set screw couplings and connectors. (no cast).

.5 All PVC supports to be fastened with 316 stainless fasteners

.6 Flexible and/or liquid tight conduit and #12 RW 90 conductors to be installed as fixture drops from junction boxes. **No BX cable allowed**. Over 1.5 metres, use 1/2" flex.

.7 All new circuits to be colour-coded and numbered at breakers, junction boxes and wiring devices. Include **panel number and circuit number** on each conductor.

.8 No splices allowed inside panel boards (distribution, power and lighting).

.9 Panel Directories are to be brought up to date with each new circuit change or installation.

.10 All electrical repairs, renovations, alterations and installations are recorded, as required, and that all operating procedures, schematics, electrical single line drawings and related documents are promptly updated upon completion of the work.

.11 Receptacles to be nylon faced, specification grade:
Type: Hubbell 5252. Other manufacturer's #5262.

.12 Switches to be nylon faced, specification grade:
Type: Hubbell 1201 - 15 ampere or equal
Hubbell 1221 - 20 ampere or equal

.13 Any replacement or new installation of light fixtures are to contain LED ballasts and lamps:
Type: Electronic Ballast Type - Advance Rapid Start or EBT Instant Start, or equal.
Lamp Type – LED12T8/L48/FG/850/SUB/G6, 5000 K, Sylvania or equal.

3.2 Installation

.1 Note: Long Runs of BX are not acceptable.

.2 Flexible metal conduit or liquid tight conduit runs shall not exceed 1.5 meters.

.3 Install separate ground wire in E.M.T. and PVC.

.4 Lugs, terminals and screws used for termination of wiring to be suitable for copper conductors.

.5 Minimum acceptable size wire to be used is #12 AWG copper conductors.

St. Andrews Biological Station
PSPC - JOB Slip

DISCIPLINE	
ELECTRICAL	
GENERAL MAINTENANCE	
GROUNDS	
PLUMBING	
REFRIGERATION	
HVAC	
CIVIL WORK	
OTHER	

COMPANY:

DATE START:

DATE FINISHED:

LOCATION:

PROJECT:

DESCRIPTION OF WORK BEING COMPLETED

WORK LOG:

DATE	START TIME	FINISH TIME	# LICENCE TRADE WORKERS	# OTHER WORKERS	HOURS WORKED	CONTRACTOR SIGNATURE	PSPC SIGNATURE

Public Services and Procurement Canada | Services publics et Approvisionnement Canada

Request for Electrical Isolation and Re-Energization

A. Details of request

Project no. / P.O. no. /work order no.	Date of request (YY-MM-DD)

Start of isolation		End of isolation	
Date (YY-MM-DD)	Time (HH:MM)	Date (YY-MM-DD)	Time (HH:MM)

Building name	Building address
Location of equipement to be isolated	Scope of work
Equipment to be isolated / re-energized	Equipment voltage

When high voltage equipment is to be isolated, or when equipment to be isolated involves more than one operation, contractors must submit a written procedure for isolation and re-energization complete with an arc flash/shock hazard assessment, while PWGSC qualified persons must attach the following forms: PWGSC-TPSGC 617 and either PWGSC-TPSGC 12 and 12-1, or PWGSC-TPSGC 12-2.

Contractors

☐ Written isolation / re-energization procedures ☐ Written arc flash / shock hazard assessment

PWGSC employees

Always submit:

☐ PWGSC-TPSGC 617 (Arc Flash / Shock Hazard Assessment)

And either:

☐ PWGSC-TPSGC 12 (Isolation Procedures)

☐ PWGSC-TPSGC 12-1 (Re-Energization Procedures)

Or:

☐ PWGSC-TPSGC 12-2 (Isolation – Re-Energization Procedures)

Update of line drawings required upon completion	☐ Yes	☐ No	
Name of Departmental Representative or manager/supervisor requesting electrical isolation / re-energization	Signature	Date (YY-MM-DD)	Time (HH:MM)

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Request for Electrical Isolation and Re-Energization

B. Request approved

Name of Guarantor	Signature	Date (YY-MM-DD)	Time (HH:MM)

C. Isolation confirmed (TO BE COMPLETED PRIOR TO COMMENCEMENT OF WORK)

Isolation has been tested for potential and is determined safe for workers to perform work.

Name of Qualified Person	Signature	Date (YY-MM-DD)	Time (HH:MM)

D. Completion of work confirmed

Name of Qualified Person	Signature	Date (YY-MM-DD)	Time (HH:MM)

E. Confirmation that equipment or installation has been re-instated and is properly operating

Name of Qualified Person	Signature	Date (YY-MM-DD)	Time (HH:MM)

This record must be kept for 1 year following completion of work and 10 years if a hazardous occurrence or a non-compliance issue subsequently occurs.

INSTRUCTIONS

Section A
To be completed by the manager/supervisor or the Department Representative and submitted to the Guarantor for approval, prior to the commencement of work.

Date and Time of Request
Enter the date (year, month, day) when the manager/supervisor or the Departmental Representative makes the request to the Guarantor, using the numeric format YYYY-MM-DD. You do not need to enter the dashes.

Enter the time (hours, minutes) when the manager/supervisor or the Departmental Representative makes the request to the Guarantor, using the 24 hour system in the numeric format HH:MM. You do not need to add the colon.

Requested By
Name of manager/supervisor or the Departmental Representative

Section C - Date
Enter the date (year, month, day) when the manager/supervisor or the Contractors qualified person has ensured that the isolation has been tested and it is safe for the work to be performed, using the numeric format YYYY-MM-DD. You do not need to enter the dashes.

Section D
To be completed by the manager/supervisor or the Contractors qualified person upon completion of the work.

Section D - Date
Enter the date (year, month, day) when the manager/supervisor or the Contractors qualified person confirms that the requirement for isolation is over, the work has been completed, and the equipment or installation has been re-energized, and line-drawings have been updated as required.

Section E - Date
Enter the date (year, month, day) when the manager/supervisor of the Worksite or the Contractors qualified person who provides approval of the completion of the work and confirms that the equipment or installation has been returned to its previous state before the isolation.

Section A
Cette section doit être remplie par le gestionnaire/superviseur ou le représentant ministériel et remise au garant pour approbation avant le début des travaux

Date et heure de la demande
Inscrivez la date (année, mois et jour) à laquelle le gestionnaire, le superviseur ou le représentant ministériel présente la demande au garant, en utilisant le format numérique AAAA-MM-JJ. Vous n'avez pas à entrer les traits d'union.

Inscrivez l'heure (heures et minutes) à laquelle le gestionnaire, le superviseur ou le représentant ministériel présente la demande au garant, selon le système de 24 heures, en utilisant le format numérique HH:MM. Vous n'avez pas à entrer les deux points.

Demandé par
Nom du gestionnaire/superviseur ou du représentant ministériel.

Section C - Date
Inscrivez la date (année, mois et jour) à laquelle le gestionnaire/superviseur ou le représentant qualifié de l'entrepreneur s'est assuré qu'un essai de coupure à la source a été effectué et que les travaux peuvent être réalisés en toute sécurité, en utilisant le format numérique AAAA-MM-JJ. Vous n'avez pas à entrer les traits d'union.

Section D
Cette section doit être remplie par le gestionnaire/superviseur ou le représentant qualifié de l'entrepreneur à la fin des travaux.

Section D - Date
Inscrivez la date (année, mois et jour) à laquelle le gestionnaire/superviseur ou le représentant qualifié de l'entrepreneur confirme que la coupure à la source n'est plus nécessaire, que les travaux sont terminés et que l'appareillage ou l'installation a été remis sous tension, et que les schémas électriques ont été modifiés au besoin.

Section E - Date
Inscrivez la date (année, mois et jour) à laquelle le gestionnaire/superviseur du lieu de travail ou la personne qualifiés de l'entrepreneur donne son approbation relative à l'achèvement des travaux et confirme que l'installation ou l'appareillage a été remis dans l'état où il était avant la coupure.

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ISOLATION PROCEDURES - PROCÉDURES DE COUPURE À LA SOURCE

PROCEDURES

This form must be completed and attached to all requests for Electrical Isolation forms when more than one operation is required in the isolation process.

This form must be completed when high voltage equipment or installations are to be isolated.

This sequence must be followed without deviation.

See reverse for additional instructions.

PROCÉDURES

Vous devez remplir ce formulaire et l'annexer à toutes les «demandes de coupure à la source électricité» lorsque le procédé d'isolation comporte plus d'une opération.

Vous devez remplir ce formulaire lorsque vous avez à couper à la source un appareil ou des installations à haute tension.

Vous devez sans faute suivre cette séquence.

Voir les renseignements complémentaires au verso.

These operating procedures shall be carried out in conjunction with Request for Isolation No.
La procédure est liée à la demande de n° de coupure à la source ▶ Date (Y-A MM D-J)

Purpose of order
Objet de la commande

Sequence No. N° séquentiel	Equipment Affected Appareillage concerné	Tag No. Installed on Equipment N° d'étiquette installée	Functions to be performed and specific safety measures required Fonctions à remplir et mesures de sécurité spéciales requises	Initials Initiales

Prepared By - Préparé par

Name - Nom	Time - Heure :	Date (Y-A MM D-J)

Checked By - Vérifié par

Name - Nom	Time - Heure :	Date (Y-A MM D-J)

Issued By - Émis par

Name - Nom	Time - Heure :	Date (Y-A MM D-J)

Performed By - Effectué par

Name - Nom	Time - Heure :	Date (Y-A MM D-J)

Operating Diagram Adjusted By - Schéma fonctionnel corrigé par

Name - Nom	Time - Heure :	Date (Y-A MM D-J)

PWGSC-TPSGC 12 (2014-11)

THIS RECORD MUST BE KEPT FOR ONE YEAR FOLLOWING COMPLETION OF WORK
À CONSERVER PENDANT UN AN APRÈS LA FIN DES TRAVAUX

Copy 1 / Copie 1 ▶ **Manager in Charge of Worksite or Supervisor / Gestionnaire responsable du lieu de travail ou superviseur**

Copy 2 / Copie 2 ▶ **Originator / Demandeur**

INSTRUCTIONS

Purpose of order

- State purpose of order

Request for Isolation No.

- Indicate Request for Isolation number and date of isolation.

Sequence No.

- Sequence of order, procedure must be listed in the order in which the issuer intends to proceed.

Equipment

- Equipment affected.

Tag No.

- Tag number that will be installed on equipment.

Operation

- Operation to be performed.

Initials

- Initials to confirm that sequence is completed.

Prepared By

- Name and signature of person that prepared the isolation procedures, including time and date.

Checked By

- Name and signature of person that verified the procedures, including the time and date.

Issued By

- Name and signature of the manager/supervisor issuing the isolation procedures, including the time and date.

Performed By

- Name and signature of person performing the isolation procedures, including the time and date.

Operating Diagram Adjusted By

- Name of the manager/supervisor responsible for adjusting the status of the circuit's switching devises.

Objet de l'ordre de service

- Objet de l'ordre de service.

Demande d'isolation n°

- Inscrire le numéro de demande d'isolation, et la date d'isolation.

N° d'étapes

- Les étapes à suivre, la marche à suivre doit être énumérée dans l'ordre que les étapes doivent être exécutées.

Appareil

- Appareil affecté

N° de l'étiquette

- Numéro de l'étiquette que l'on apposera à l'appareil.

Travaux

- Manoeuvre à exécuter.

Initiales

- On doit apposer ses initiales après avoir completé chaque étape.

Préparé par

- Le nom et la signature de la personne qui à préparé la marche à suivre pour l'isolement.

Vérifié par

- Le nom et la signature de la personne qui à vérifié la marche à suivre pour l'isolement.

Émit par

- Le nom et la signature du gestionnaire/superviseur qui à émis la marche à suivre pour l'isolement.

Exécuté par

- Le nom et la signature de la personne qui à exécuté la marche à suivre pour l'isolement.

Diagramme de fonctionnement modifié par

- Nom du gestionnaire/superviseur responsable de mettre à jour les indicateurs de l'état des commutateurs de circuits.

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Arc flash \ shock hazard assessment

To be completed by the qualified person

1. Project number / job / work order number	
2. Brief description of circuit / equipment / location	
3. System voltage	
4. Start date	

Work description	YES (initial)	NO (initial)	n/a (initial)
This work is diagnostic in nature (system troubleshooting, thermography, etc.) or power is being tested after the system has been put into an electrically safe work condition (disconnected, locked-out / tagged-out, or LOTO)			
If applicable: A LOTO sheet has been prepared, reviewed and will be actioned before this job task occurs			
If applicable: An Electrical Safety Watcher will be required			
My manager/supervisor is aware and approved this job / work order			
I have reviewed the equipment's maximum available fault current and fault clearing time and they are within the perimeters of Table 6 of CSA Z462-18			
There is a likelihood that an arc flash incident for AC or DC will occur			

Note: Attach additional pages as required	Description	Initial when complete
1. Detailed job description		
2. Description of the safe work practices to be employed		

Arc flash risk assessment

Arc flash risk assessment (use either method A or B)	Method A: PPE category method (1 ☐) (2 ☐) (3 ☐) (4 ☐)
	Method B: Incident energy level
Arc flash boundary (m)	
Description of means employed to restrict access of unqualified person to the work area	

List of personal protective equipment to protect against the thermal effects of arc flash

- ☐ Arc-rated clothing
- ☐ Arc-rated face shield with balaclava
- ☐ Non-conductive safety glasses
- ☐ Arc-rated hood
- ☐ Hearing protection
- ☐ Fused meter leads
- ☐ Leather safety boots
- ☐ Leather gloves

List of personal protective equipment to protect against electrical shock hazards

- ☐ Hard hat
- ☐ Safety boots
- ☐ Insulating gloves with leather protectors
- ☐ Non-conductive safety glasses
- ☐ Long-sleeve shirt

Note: Conductive articles such as jewelry, rings, necklaces, etc., must not be worn within the restricted approach boundary

Shock protection boundaries

Voltage to which worker could be exposed	Limited approach boundary		Restricted approach **QUALIFIED PERSONNEL ONLY**	Check appropriate line
	Exposed movable conductor (overhead line)	Exposed fixed circuit part		
31 to 150 V	3.0 m	1.0 m	Avoid contact	☐
151 to 750 V	3.0 m	1.0 m	0.3 m	☐
751 to 15 kV	3.0 m	1.5 m	0.7 m	☐
15.1 to 36 kV	3.0 m	1.8 m	0.8 m	☐

Signature of qualified person

Date work completed

Note: Once the work is completed, forward this form to the manager/supervisor for review and retention.