



## Town of Faro Request for Tender #2017-06 Faro Recreation Centre Generator Installation

### Purpose of this Request for Tender (RFT):

The Town of Faro, Yukon is seeking responses from proponents to install a backup power generator at the Faro Recreation centre.

### **RFT Timeline:**

RFT Release	Monday, June 26, 2017
Site Meeting	To be individually arranged
<b>Closing Time</b>	<b>Thursday, July 20, 2017 at 12:00 pm (Noon)</b>

### **Town's Preferred Construction Timeline:**

Anticipated Construction Start Date	Monday, August 7, 2017
Completion by	Friday, September 29, 2017

The Goods and/or Services shall, in all respects, be in compliance with this RFT and the Project Specifications and drawings attached hereto unless otherwise explicitly stated.

Tender Documents are available at <http://faroyukon.ca/call-for-tenders.cfm>, or can be picked up in hardcopy at the Town of Faro Municipal Office.

## 1. INSTRUCTIONS, TERMS AND CONDITIONS

The following terms and conditions will apply to this RFT. Tender Submission indicates acceptance of all the terms that follow, and that are included in any addenda issued by the Town. Provisions in Tender Submissions that contradict any of the terms of this RFT will be as if not written and do not exist.

### 1.1. Definition

- a) For the purposes of this RFT, unless the context otherwise requires:
- b) "Owner" or "Town" means The Town of Faro
- c) "RFT" means this request for tender.
- d) "Proponent" means the individual or company that submits, or intends to submit, a tender submission for consideration of the Town.
- e) "Tender Submission" means a response submitted to this RFT
- f) "must", "mandatory", "require", or "shall" means a requirement that must be met in order for the Tender Submission to be considered.
- g) "should" or "desirable" means a requirement having a significant degree of importance to the objectives of RFT.
- h) "Contract" means the written form of agreement to be negotiated between the Owner and the successful Proponent of the RFT process.
- i) "Contractor" means the successful Proponent to this RFT process who enters into a written Contract with the Owner
- j) "Closing Time" means the day and time specified in this document by which the Tender  
(1) Submission must have been received by the Owner
- k) "Force Majeure" means, exhaustively, any:
  - i. war, hostilities (whether war is declared or not), invasion, act of foreign enemies;
  - ii. rebellion, terrorism (or threat of terrorism), revolution, insurrection, military or usurped power or civil war;
  - iii. riot, civil commotion or disorder, strike or lockout by persons other than the Contractor's personnel and other employees, subcontractors or any other person for whom the Contractor is responsible;
  - iv. natural catastrophe, such as an earthquake, forest fire, landslide or flood; or
  - v. change in Law or action by a competent authority, which makes it illegal or impossible for a party to perform its obligations under this Contract;
  - vi.

### 1.2. Tender Submission

- a) Tenders shall be submitted by interested parties ("Proponents") to the Town Office **NO LATER THAN 12:00 p.m. (NOON) Pacific Standard Time, THURSDAY, JULY 20<sup>TH</sup>, 2017 ("the Closing Time")**.
- b) Proponents shall provide one Tender Price for the specified goods and services. If the Proponent cannot meet the requested specification the Proponent may offer an alternative Tender that clearly identifies the alternative specification, methodology, substitution or other options for the Town's consideration. All Tender Prices shall be in Canadian Dollars.

- c) Tenders shall be submitted in person or by courier in a sealed envelope clearly identifying “Town of Faro RFT #2017-06” to:
  - i. Chief Administrative Officer
  - ii. Town of Faro Municipal Office
  - iii. 200 Campbell Street
  - iv. PO Box 580,
  - v. Faro, YT Y0B 1K0
- d) Tenders sent by Fax:
  - i. Tender submissions by Fax are not acceptable.
- e) Tenders sent by E-Mail:
  - i. In consideration of the semi-remote location of the town and reliability of courier delivery, for the convenience of proponents a copy of tenders may be submitted as a PDF (Adobe Portable Document Format) attachment by confidential e-mail to the Town’s Finance Clerk at [finclk@faroyukon.ca](mailto:finclk@faroyukon.ca), with “Town of Faro RFT #2017-06” in the subject line.
  - ii. The Town of Faro accepts no responsibility for lost, misdirected, incomplete or corrupted Tenders sent by email/electronic means, even if a delivery receipt is requested. Tenders sent as PDF e-mail attachments shall not be opened or printed by the Finance Clerk until after the Closing Time. The Finance Clerk is not otherwise involved in the bid or evaluation process and cannot answer questions.
  - iii. A hardcopy of the tender MUST still be received from the proponent within two business days of the closing time. If there is any discrepancy between the electronic PDF and a hardcopy received after closing, the bid shall be disqualified.
- f) Tender irrevocable:  
Tenders will be opened one hour after the Closing Time. ALL TENDERS SUBMITTED SHALL BE IRREVOCABLE AFTER OPENING AND PRICES SHALL REMAIN VALID FOR 30 DAYS.

### **1.3. Contact**

- a) The Town’s point of contact for this RFT is Ian Dunlop, Chief Administrative Officer (CAO), 867-994-2728 Ext. 4 and all communications with the Town during the procurement process shall be through the Town’s point of contact.
- b) The CAO may refer questions to the Town’s Engineer or other staff for clarification, but otherwise Proponents shall not directly contact any Town employees or Members of Council. Such unauthorized communication may disqualify the Proponent from further consideration in this Tender.
- c) All communications with the CAO should be in writing, preferably via e-mail.
- d) Verbal communications shall not be binding on the Town.

### **1.4. Addenda and Clarification**

- a) To facilitate comprehensive responses, Proponents are encouraged to email their questions or clarification requests as soon as possible and no later than three business days (72 standard hours) prior to the Closing Time to the Town’s point of contact.
- b) Nothing herein shall obligate the Town to respond to any question or clarification request.
- c) The Town may, at its sole discretion, share questions and answers or issue addenda through the Town’s website or by email to provide all potential proponents with appropriate clarification no later than two business days (48 standard hours) prior to the Closing Time.

- d) If questions or requests for clarification or addenda result in a substantial change to the project specifications, the deadline for tender may be extended at the discretion of the Town.
- e) Proponents may also request additional photographs or measurements of specific areas.
- f) Site visits may be arranged through the CAO.
- g) Proponents shall review the RFT and shall promptly report and request clarification of any discrepancy, deficiency, ambiguity, error, inconsistency or omission contained therein.

**1.5. RFT Process**

- a) This Request for Tender is an invitation for an offer to contract (i.e. "Contract A") made by the Owner, subject to:
  - i. By this RFT, the Owner reserves to itself the absolute and unfettered discretion to invite submissions, consider and analyze submissions, select short-listed Proponents or attempt to negotiate with the successful Proponent.
- b) Without limiting the generality of the foregoing, the Owner reserves the right to:
  - i. terminate this RFT process at any time;
  - ii. to waive any informality, defect, irregularity, mistake or insufficiency in a Tender Submission and proceed with that respondent;
  - iii. to accept any Tender Submission or alternative Tender Submissions, in whole or in part, if the Tender Submission is deemed to be in the best interest of the Owner;
  - iv. to select one or more preferred Proponents, to negotiate with one or more of those Proponents, and ultimately enter into a Contract upon the same or similar terms and conditions as contemplated by this RFT;
  - v. disqualify or reject any Tender Submission that does not comply with the terms or meet the requirements of the RFT;
  - vi. require clarification where a submission is unclear prior to award.
- c) Award of a Contract is subject to the approved budget, funding and schedule.

**1.6. In the event that only one Tender Submission is received, the Owner reserves the right to:**

- a) return that Tender Submission unopened;
- b) open the Tender Submission privately without reference to the Proponent. If the Tender Submission is opened and it is in excess of the Owner's budget, the Owner reserves the right to re-issue the RFT documents for new public re-bid without revisions being made to the RFT documents and without disclosing the single Tender Submission.

**1.7. Tender Submissions must be executed by an authorized signatory of the proponent utilizing the Form of Tender attached to this RFT.**

**1.8. All Tender Submissions and subsequent information or material received shall become the property of the Owner and will not be returned. The Tender Submissions will be held in confidence by the Owner subject to the provisions of the Freedom of Information and Protection of Privacy Act.**

**1.9. Tender Submissions may be withdrawn by submitting a written request to the Purchasing Manager at any time prior to the scheduled Closing Time.**

**1.10. Tender Submissions remain valid, and may not be withdrawn, for a period of sixty (60) days following the date of closing of this RFT.**

**1.11. The Proponent, including all firm, corporation or individual members of a Proponent, will promptly disclose to the Owner any potential conflict of interest and existing business**

- relationships they may have with the Owner or evaluation committee. The Owner reserves the right to disqualify any Proponent that in its opinion has a conflict of interest, whether such conflict exists now or is likely to arise in the future, where such interest may prejudice, or appear to prejudice, the fair awarding of this RFT.
- 1.12.** The Owner will not accept any responsibility for costs incurred by any Proponent in responding to this RFT, including the provision of any additional material or attendance at any meeting. Proponents will be solely responsible for any and all costs and expenses.
- 1.13.** The Owner and its representatives, agents, consultants and advisors will not be liable to any Proponent, or any firm, corporation or individual member of a proponent, for claims, whether for costs, expenses, loss or damages, or loss of anticipated profits, or any matter whatsoever, suffered or incurred by the Proponent, or any firm, corporation, or individual member of a Proponent, in preparing and submitting a Tender Submission, or participating in the RFT process or negotiations for the Contract, or any activity related to or arising out of this RFT.
- 1.14.** Any change notices, appendices and addenda issued for this RFT shall be considered part of this RFT document.
- 1.15.** It is the responsibility of each Proponent to submit all required documents as outlined in this RFT. Failure to quote on all requirements set out may disqualify your Tender Submission.
- 1.16.** This RFT and the successful Proponent's response may form part of any Contract entered into.
- 1.17.** Pricing will be firm and be:
- a) in Canadian dollars;
  - b) inclusive of duty, where applicable;
  - c) FOB destination, delivery charges included where applicable;
  - d) inclusive of all proponent labour mobilization costs, including but not limited to, travel, accommodation, and per diem expenses; and,
  - e) exclusive of Goods and Services Tax.
- 1.18.** All addenda or further information will be published on the Town's website <http://faroyukon.ca/call-for-tenders.cfm>. It is the responsibility of the Proponent to monitor the web sites to check for updates.
- 1.19.** The laws of Yukon govern this RFT and any subsequent Contract. The territorial courts have exclusive jurisdiction over any disputes under it.
- 1.20. Qualification**
- a) By submitting a Tender Submission, the Proponent is representing that it has the competence, qualifications and relevant experience to do the work and will employ competent people, properly trained and instructed to effectively, efficiently and safely perform the requirements of the work. All personnel are to be presentable and professionally competent to conduct themselves and the work.
- 1.21.** The Proponent shall possess the necessary legal patents and/or has legal permission to manufacture, sell and/or service the products(s) it will supply. Documented proof shall be provided by the Proponent, upon the Owner's request.
- 1.22. Local Preference**
- a) As provided in the Town's Purchasing Policy, the Town may give preference to Proponents who are, or who shall utilize, local suppliers of goods and services assuming their pricing, quality and experience are comparable with non-local suppliers. Local shall mean a

permanent business that operates from a property that is owned or rented by the business within 100 kilometres of the Town and holds a Town of Faro Business License.

- 1.23.** After selection of a preferred Proponent the Town may request negotiations which could include discussion of the terms and conditions in the Contract and minor modifications of scope and price, following which:
- a) a signing of Contract documents and the awarding of a Contract will be made by the CAO, or;
  - b) if the preferred Proponent and the CAO cannot agree on Contract language for a Contract document, the negotiating process will be terminated, no purchase order shall be issued to that Proponent, and the Town will begin negotiations with the next preferred Proponent.
    - i. The Town shall have no liability to the Proponent for consequential or inconsequential damages in such event.
- 1.24.** After the date for Tenders Submissions, a Proponent may make a change to the makeup of the
- a) Proponent's membership team only with express written approval of the Owner. The Owner may refuse to permit changes of members who in the judgment of the Owner have qualifications that were unique and essential to the Proponent.
- 1.25.** Changes in the Work
- a) The Town and the Contractor may, by agreement in writing, make changes by altering, adding to or deducting from the products or services to be delivered. In such event,
  - b) the Contractor's Fixed Fee and Project timeline schedule shall be adjusted accordingly, and;
  - c) Any Services rendered by the Contractor to the Town beyond those Services set out in the Contractor's Tender and the Town's RFT shall be considered to be Additional Services, with the Contractor to be compensated therefore on an hourly or per diem basis to be agreed upon by the Town and the Contractor in writing prior to the Contractor rendering any such Additional Services to the Town.
- 1.26.** Upon award the successful Proponent will be required to complete a form of agreement with the Town, have a Town of Faro business licence or Association of Yukon Communities Inter-municipal Business License, and provide proof of insurance and a Workers Compensation Board (WCB) clearance. Once the Contract is fully executed a signed copy will be returned to the Proponent and a purchase order will be issued. This P.O. number must be referenced on all invoices submitted to the Town.
- 1.27.** Invoices, with the exception of any holdbacks, are paid net 30 days.
- 1.28.** Award of a Contract shall be subject to:
- a) **Holdbacks**
    - i. **Lien Holdback**
      - (1) Ninety per cent (90%) of each invoice for completed work will be paid by the Town, ten per cent (10%) of invoiced completed work will be held back until completion of the contract. The Contractor shall submit a separate invoice to the Town for release of the holdback funds.
      - (2) The Town shall approve release of the 10% holdback to the Contractor no sooner than forty-five (45) days following satisfaction of ALL of the following conditions:
      - (3) The CAO certifies the date of Substantial Performance of the Work, if given, or Total Performance otherwise;

- (4) the Contractor provides a clearance letter from WCB indicating all current assessments due from the Contractor have been paid;
- (5) the Contractor provides proof to the Corporation attesting that all monies owing to the Contractor's workers, subcontractors, material and equipment suppliers and government agencies have been paid.

ii. **Deficiency Holdback**

- (1) Prior to Substantial Performance of the Work and in addition to the lien holdback, a deficiency holdback shall be established for Work determined by the Owner to be defective or incomplete (the "Deficiency Holdback"). The Owner shall establish the amount of the Deficiency Holdback as twice the estimated cost to rectify defective work and finish incomplete Work using the services of another contractor or the Owner's own forces. No part of the Deficiency Holdback shall become payable until all of the defective Work is corrected and all of the Work is complete. If the defective or incomplete Work is not corrected or completed within a reasonable time as determined by the Owner, then all or a portion of the Deficiency Holdback as determined by the Owner may be retained by the Owner to be applied against the loss and damage suffered by the Owner to correct or complete the Work.

b) **Force Majeure**

- i. No party shall be deemed to be in breach of Contract or otherwise liable to another party in any manner whatsoever for any failure or delay in performing its obligations under this Contract reasonably due to Force Majeure.
- ii. If either party's performance of its obligations under this Contract is affected by an event of Force Majeure, then:
  - (1) it shall give written notice to the other parties, specifying the nature and extent of the event of Force Majeure, as soon as reasonably practicable after becoming aware of the event of Force Majeure;
  - (2) performance of such obligation(s) shall be deemed suspended but only for a period equal to the delay reasonably caused by such event;
  - (3) it shall not be entitled to payment from any of the other parties in respect of extra costs and expenses incurred as a result of the event of Force Majeure; and
  - (4) it shall use all reasonable diligence to mitigate the cause and the result of the event of Force Majeure and to remedy the situation and resume its obligations under this Contract.
- iii. Notwithstanding the obligations of a party affected by an event of Force Majeure pursuant to the whole section on Force Majeure, if the event of Force Majeure renders it impossible or impractical for the Contractor to provide the supply in accordance with this Contract for a period of at least 14 days, the Owner may terminate this Contract upon notice delivered to the Contractor at any time following the expiration of such period of 14 days.

c) **Termination and Suspension**

- i. BY THE OWNER

- (1) Should the Contractor neglect to complete the Services properly or fail to perform any provisions of the Contract, the Owner may notify the Contractor in writing that it is in default of its contractual obligations and instruct it to correct the default within seven (7) working days of receiving the notice. Failure to comply with the default request extends to the Owner the option, without limiting any other right or remedy the Owner may have, of immediately terminating this Agreement. Subject to a right of set-off the Owner shall have for damages incurred due to such neglect or failure by the Contractor, the Owner shall pay the Contractor for all services performed and all disbursements incurred pursuant to this Contract and remaining unpaid as of the effective date of such termination.
- (2) In the event the Owner terminates this Contract in whole or in part as provided in the above clause, the Owner may procure, upon such terms and in such manner as the Owner's Purchasing Manager may deem appropriate, supplies or services similar to those terminated.
- (3) Other than for reasons set forth above, the Owner may terminate this Contract for any reason by giving thirty (30) days prior written notice to the Contractor. Upon receipt of such written notice, the Contractor shall perform no further services other than those reasonably necessary. In such event, the Contractor will be paid by the Owner pursuant to this Contract, for the completed tasks according to the scope of work and remaining unpaid as of the effective date of such termination.

ii. **BY THE CONTRACTOR**

- (1) Should the Owner fail to perform any provisions of this Contract, the Contractor may notify the
- (2) Owner in writing that it is in default of its contractual obligations and instruct it to correct the default within seven (7) working days of receiving the notice. Failure to comply with the default request extends to the Contractor the option, without limiting any other right or remedy the Contractor may have, of immediately terminating this Contract and requesting settlement for all Services performed and all disbursements incurred pursuant to this Contract and remaining unpaid as of the effective date of such termination.
- (3) Should the Contractor's services be suspended by the Owner at any time for more than thirty (30) calendar days in any calendar year through no fault of the Contractor, then the Contractor shall have the right until such suspension is lifted by the Owner, to terminate this Contract upon giving three (3) working days written notice thereof to the Owner. In such event, the Contractor will be paid by the Owner pursuant to this Contract, for the completed tasks as per the scope of work that remain unpaid as of the effective date of such termination.

d) **Indemnification of Town**

- i. The Contractor releases, indemnifies and saves harmless the Owner and its elected officials, officers, employees, contractors, solicitors, assigns and agents from and against all claims, demands, actions, proceedings, suits, loss, damage, costs (including legal costs), fines, penalties, charges and expenses (in this section collectively "Claims") which



the Corporation may incur, suffer or be put to arising out of or in connection with this Contract or acts or omissions of the Contractor under this Contract, including:

- (1) those arising out of or in connection with any loss or damage to persons (including bodily injury and death) or property as a result of or in connection with, directly or indirectly, this Contract,
- (2) economic loss,
- (3) those arising from a breach by the Contractor of any of its agreements, representations, warranties or covenants set forth in this Contract, provided, however, that this obligation to indemnify the Owner shall not apply to Claims to the extent, if any, to which they may arise from the wrongful or negligent act or failure to act of the Owner or from any Owner breach of this Contract. Without limitation, the Contractor shall promptly pay the Owner in respect of any Claims recoverable by a third party from the Owner or the property of the Owner.

**1.29.** All documents submitted in response to this RFT shall become the property of the Town and as such will be subject to the disclosure provisions of Freedom of Information and Protection of Privacy Act or similar legislation pertaining to this jurisdiction.

**1.30. Confidentiality, Ownership and Use Of Documents And Material**

- a) The Contractor shall keep confidential for an unlimited period of time all communications, plans, specifications, reports or other information used in connection with the Project except:
  - i. those requiring disclosure by operation of law; or
  - ii. any disclosure authorized in writing by the Town.
- b) The Contractor shall, by employing written agreements, bind all employees, subcontractors and agents to the obligations of this confidentiality requirement.
- c) The Contractor agrees that all studies, reports, software, drawings, plans, models, designs, photographs, specifications, tender documents and other materials prepared or developed by or on behalf of the Contractor which are employed in connection with the Project are, and shall remain the property of the Owner. The Owner reserves the ownership and all copyright, patent and trademark rights therein and in the work executed there from, all of which may only be used by the Contractor with the prior written Agreement of the Owner.

**2. GOVERNING REGULATIONS**

**2.1. Permits, Notices, Laws & Rules**

- i. The Contractor shall apply and pay for all necessary permits or licences, including Town of Faro Business License, required for the execution of the work. The Contractor shall give all necessary notices and pay for all fees required by law and comply with all laws, ordinances, rules and regulations relating to the work and to the preservation of the public health. The Contractor shall be responsible for the safety of all workmen and equipment on the project in accordance with all applicable safety legislation passed by Federal, Provincial and Local Authorities governing safety.

**2.2. Compliance with Workers Compensation Act**

- a) All Proponents will be required to be in good standing with the Yukon Workers' Compensation Health & Safety Board (WCB), COR or SECOR certification.

- b) The Contractor shall ensure compliance on their part with the Workers Compensation Act and any regulations thereunder, especially provisions of said Act or of regulations under said Act having to do with the prevention of accidents, the prevention of diseases and the provision of safe working conditions, including proper sanitation and ventilation.
- c) In any case where pursuant to the provisions of the Workers Compensation Act, the Workers Compensation Board orders the Contractor in respect of their operations under this Contract to cease operations because of failure to install or adopt safety devices or appliances directed by the order of the said Board, or required under said Act or regulations thereunder or because said Board is of the opinion the conditions or immediate danger exist that would be likely to result in injury to any person, or because of lack of payment of an account due to the Board, the Owner on 24 hours written notice to the Contractor may terminate the Contract.

### **3. PROPONENT ASSURANCES**

- 3.1. Proponents shall guarantee the quality of workmanship and that all parts, equipment, and systems installed by the proponent are free of defect for a period of one year from the date of final acceptance by the Town, failing which the Proponent shall address such deficiencies at no cost to the Town. The Proponent is responsible for ensuring a safe work area is maintained at all times and shall cordon-off areas actively being worked on to keep the general public at a safe distance away and at no risk from moving equipment or flying debris. Public access to the Recreation Centre must be maintained during regular hours of operation.

### **3.2. INSURANCE PROTECTION & DAMAGE**

#### **a) Protection of Work, Property and Public**

- i. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss.
- ii. The Contractor shall protect the property adjacent to the work areas from damage as the result of operations under the Contract. The Contractor shall protect the work and the Owner's property from damage and shall make good at their own expense any damage which may arise as the result of the Contractor operations under the Contract.

#### **b) Insurance**

The Contractor shall provide, at the time of request, certificates of insurance as outlined below:

- i. Forthwith, the Contractor shall obtain and maintain in force during the period of service, and for a minimum of (twelve) 12 months following completion of the works, with an insurance company a policy of insurance acceptable to and approved in writing by the Owner, the following insurance with limits on an occurrence basis not less than those shown in respective items following:
  - ii. **Provision of Goods and Services**
    - (1) Commercial general liability insurance providing coverage not less than five million (\$5,000,000.00) dollars each occurrence, all inclusive against liability for bodily injury, death or property damage on an occurrence basis.
    - (2) Installation floater with a limit no less than the full contract price.
    - (3) Automobile liability insurance for standard non-owned, hired vehicles, and leased vehicles providing coverage not less than two million (\$2,000,000.00)

- dollars each occurrence, all-inclusive against liability for bodily injury, death or property damage on an occurrence basis.
- (4) Automobile insurance for public liability and property damage providing coverage not less than two million (\$2,000,000.00) dollars each occurrence, all-inclusive on owned vehicles.
  - (5) Notwithstanding anything contained elsewhere herein, it is understood and agreed that the Owner shall not be liable for any loss or damage to Contractor's equipment including loss of use thereof.
  - (6) The deductible or reimbursement for any policy required under this section shall not exceed five thousand dollars (\$5,000.00) per claim. The Contractor and/or their subcontractors, as may be applicable, shall be responsible for any deductible amounts under the policies of coverage/insurance.
  - (7) The "Town of Faro" shall be named as the additional insured in the commercial general liability policy.
- iii. Each policy shall provide that no cancellation or material change reducing or restricting coverage in the policy shall become effective until after thirty (30) days notice of such cancellation or change shall have been given to the Town by registered mail, and the Contractor will upon demand of the Town deliver over to the Town all such policy or policies of insurance and the receipt for payment of premium thereon; and
- (1) should the Contractor neglect so to obtain and/or maintain in force any such insurance as aforesaid or delivery such policy or policies and receipts to the Corporation, then it shall be lawful for the Town to obtain and/or maintain such insurance, and the Contractor hereby appoints the Town his true and lawful attorney to do all things necessary for this purpose.
  - (2) All monies expended by the Town for insurance premiums under the provisions of this clause shall be charged to the Contractor.
- c) It is the responsibility of the Contractor to ensure that each sub-contractor complies with the same insurance conditions as the Contractor.

## **4. SCOPE OF WORK / SPECIFICATIONS**

### **4.1. Introduction**

The Town of Faro is seeking responses from Proponents to install a backup power diesel generator at the Faro Recreation Centre. The 75kVa generator was purchased in 2013 but never fully installed. The Town contracted an electrical engineer to develop the attached specifications for installing the generator to meet code requirements.

Proponents who are qualified and experienced in backup power systems, including construction, electrical, ventilation, and all code requirements are invited to provide Tender Submissions as per the requirements of this request.

Proponents are strongly encouraged to visit the Recreation Centre to view the generator room. An optional site meeting may be arranged with the CAO prior to the closing date.

### **4.2. Building Description, Scope of Work and Specifications**

Refer to the attached documents for complete specifications. The attachments form part of this Tender package. The successful proponent will be responsible for all necessary permitting for the project.

### **4.3. RFT Response Content**

All Proponents should include the following information in their Tender Submission:

- a) detailed description of the proposed equipment and products to be supplied;
- b) description of how old materials will be disposed of;
- c) anticipated work schedule indicating with an itemized timeframe for all components of the project from mobilization to final completion and cleanup;
- d) warranty information pertaining to the installation and the equipment;
- e) Contractor accessibility for repair work when required;
- f) the Contractor's Project Manager, who will be the main point of the contact for the Town and the Town's Engineer, including a description of the project manager's experience or a resume.
- g) a list of the employees and sub-contractors that will be working on the project and a description of their experience and certifications;
- h) all-inclusive contract price (before tax);
- i) two references (including contact information) for other similar and recent jobs completed by the proponent;
- j) any applicable product reference materials;
- k) overall work experience in the industry;
- l) description of safety procedures and precautions to be taken to ensure public safety in construction site area, including a fall protection plan;
- m) conformance to regulatory standards; health and safety standards; and quality control standards.
- n) By responding to this RFT, Proponents agree to work to the terms and conditions as stated in this document. Any Proponent who submits additional or conflicting terms and conditions in their tender is subject to disqualification from the RFT process. Clarification of any terms

and conditions of this contract should be requested prior to the clarification question deadline in Section 1.4.

#### **4.4. Tender Evaluation**

- i. Tenders will be evaluated based on total price subject to adherence to the requested scope of work, equipment and materials, proponent experience completing similar work, the proposed project timeline, adherence to or exceeding the requested specifications, professional/trades certifications.

During the evaluation process any or all of the Proponents may be invited to give written or oral presentations and/or participate in interviews with the committee.

#### **4.5. Award**

**The final decision on awarding this tender is anticipated to be made by the week of August 7, 2017, subject to Council approval.** The Town reserves the right to not award the project to the lowest price or to accept any Tender if none comply with budgeted cost, specifications or timeline, and the Town shall have no liability to the Proponents.

The CAO shall notify the Signee of the Successful Proponent by telephone or e-mail within 24 hours of the decision. Thereafter, the Successful Proponent and the CAO or his designate shall formalize a written contract for completion of the project that is satisfactory to both parties, including terms of performance and payment, failing which the Town may offer the project to the next Proponent.

By submitting a tender, the Proponent indicates their complete understanding of the project including all building, electrical and technical constraints regardless of whether the specifications are clearly stated in this RFT and attachments. As such, Proponents are strongly encouraged to arrange a site visit to ensure their complete understanding of all aspects of the current site and situation. Additional charges related to anything that would have been obvious through a site visit shall otherwise be denied by the Town.

#### **4.6. Form of Tender**

The attached Form of Tender must be signed and submitted by all Proponents or the tender will not be considered.

**FORM OF TENDER, RFT #2017-06**

**PROPONENT INFORMATION**

COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY, PROV/TERR, POSTAL CODE \_\_\_\_\_

TELEPHONE \_\_\_\_\_

FAX \_\_\_\_\_

EMAIL ADDRESS \_\_\_\_\_

DATE \_\_\_\_\_

NAME & POSITION OF PERSON SIGNING (the "Signee")

\_\_\_\_\_

SIGNATURE OF SIGNEE

"I have fully read & understand this Request for Tender and I have the authority to bind the Proponent"

\_\_\_\_\_

**PROJECT COMPLETION DATE**

Not later than \_\_\_\_\_ (dd/mm/yyyy)

**TOTAL BID PRICE (exclusive of GST)**    \$ \_\_\_\_\_

**Tender Checklist:**

- Tender details, showing Proponent's understanding of project, scope methodology, and how the project will be managed
- Project Team, including individual qualifications, skills, roles and responsibilities
- List of sub-contractors and their involvement
- Project Schedule
- Proponent experience
- Warranty
- Other \_\_\_\_\_

# Tender Package

## FARO RECREATION CENTRE GENERATOR UPGRADE

Spring 2017

31 May 2017

Dorward Engineering Services  
402 – 309 Strickland St  
Whitehorse, Yukon Y1A2J9

## PART 1 - GENERAL

- |   |    |  |
|---|----|--|
| <u>1.1 Reference Standards</u>            | .1 | Do work in accordance with the recommendations and requirements of:<br>.1 National Fire Code of Canada.<br>.2 NFPA 10, Standard for Portable Fire Extinguishers. |
| <u>1.2 Shop Drawings and Product Data</u> | .1 | Submit shop drawings and product data in accordance with Section 23 05 10.   |
| <u>1.3 Maintenance Data</u>               | .1 | Provide maintenance data for incorporation into Operations and Maintenance manual.   |

## PART 2 - PRODUCTS

- |   |    |   |
|---|----|---|
| <u>2.1 Multi-Purpose Dry Chemical Extinguishers</u> | .1 | Stored pressure rechargeable type with hose and shut-off nozzle, ULC labeled, sized at 10 lb 4A-20BC capacity, dry chemical rechargeable type with hose and shut-off nozzle, ULC listed for A, B, and C class protection, wall mount. |
| <u>2.2 Extinguisher Brackets</u>                    | .1 | Type recommended by extinguisher manufacturer.  |
| <u>2.3 Identification</u>                           | .1 | Identify extinguishers in accordance with recommendations of NFPA 10.   |
|   | .2 | Attach tag or label to extinguishers, indicating month and year of installation. Provide space for service dates.   |



PART 3 - EXECUTION

3.1 Installation

- .1 Install or mount extinguisher on bracket as indicated on the drawings.
- .2 Mounting height shall not exceed 1500mm above finished floor to the top of the extinguisher.
- .3 Confirm and mark on tag serviceability prior to substantial.

END OF SECTION

PART 1 - GENERAL

- 1.1 References .1 ANSI/NFPA 13, Installation of Sprinkler Systems.  
.2 NBCC 2015
- 1.2 Scope of Work .1 The sprinkler system shall conform to NFPA 13. Piping shall be restrained in accordance with the referenced standard.  
.2 The contractor shall allow for the monitoring of the building while the sprinkler system is shut down. Notify the Owner 24hrs prior to shutdown.
- 1.3 Shop Drawings and Product Data .1 Submit shop drawings and product data in accordance with Section 23 05 10 - Mechanical General.  
.2 Submit for:  
.1 Sprinkler Heads
- 1.4 Maintenance Data .1 Provide maintenance data for incorporation into manual specified in Section 23 01 00 - Mechanical General.  
.2 Submit for:  
.1 Sprinkler Heads
- 1.6 Related Work .1 Section 23 05 10 - Mechanical General

PART 2 - PRODUCTS

- 2.1 Pipe, Fittings and Valves .1 Ferrous: Schedule 40, threaded, to ANSI/NFPA 13, ULC listed and FM approved.  
.2 Fittings and joints to ANSI/NFPA 13  
.3 Pipe hangers:  
.1 ULC listed and FM approved for fire protection services.

2.2 Sprinkler Heads

- .1 General: to NFPA 13, ULC listed for fire services.
- .3 Upright: Chrome, adjustable recessed bulb type design, quick response, 155F temperature rating (unless otherwise required), 1/2 inch orifice, K factor 5.6.
  - .1 Standard of Acceptance: Victaulic Model V2704.

PART 3 - EXECUTION

3.1 Installation

- .1 Install, inspect and test to acceptance in accordance with ANSI/NFPA 13, NFPA 25, and manufacturer's written installation instructions.
  - .1 Ensure correct slope on piping.

END OF SECTION

- 
- 1 General .1 This section covers items common to all sections of Division 21, 23, and 25.
- .2 When reference is made to Codes and Standards in these specifications, the most recent edition of the Code or Standard is used.
- 2 Scope of Work .1 Requirements include the provision of all labour and materials to carry out the mechanical Work for the standby generator at Recreation Centre in Faro, Yukon, as shown on the drawings and described in the specifications. The scope of work includes, but is not limited to the following items:
- .1 Fire extinguishers.
  - .2 Repositioning of existing generator in room.
  - .3 Demolition of obsolete mechanical equipment.
  - .4 Provision of engine exhaust system, including muffler.
  - .5 Ventilation system, including ducting, wall caps, and operating dampers, and controls.
  - .6 Vibration isolation and seismic restraint.
  - .7 Operation and Maintenance Manuals
  - .8 Record Drawings
- 3 Materials .1 Standard of Acceptance means that item named and specified by manufacturer and/or catalogue number forms part of specification and sets standard regarding performance, quality of material and workmanship and when used in conjunction with a referenced standard, shall be deemed to supplement the standard.
- .2 Install and test all equipment and material in accordance with the detailed recommendations of the manufacturer. Where there is a discrepancy between the drawings and/or the specifications and the manufacturer's written installation instructions, follow the most stringent.
- 4 Intent .1 Work shall be in accordance with the Drawings and Specifications and their intent, complete with all necessary components, including those not normally shown or called for, and ready for operation before acceptance.
- 5 Responsibility .1 Promptly advise the Engineer of any specified equipment, material, or installation of same which appears inadequate or unsuitable; in violation of laws, ordinances, rules, or regulation of authorities having jurisdiction; of any necessary items of work omitted from the Contract Documents; or of any discrepancies in the Specification.
- .2 Check drawings of all trades to verify space and headroom limitations for work to be installed. Co-ordinate work with all trades and make changes to facilitate a satisfactory installation. Make no deviations to the design intent involving extra costs to the Owner without the Engineer's written approval.

- .3 Place no unusual erection loads on the building structure without the Engineer's approval.
- .4 Ensure that equipment does not transmit noise and/or vibration to other parts of the building as a result of poor installation practice.
- .5 Pay for permits required by the Authority Having Jurisdiction. Arrange for applicable inspections.
- .6 Prior to tendering, a site visit is recommended for the Contractor to familiarize himself with local and existing conditions on which the work is dependent. No additional charges will be considered for items which are not concealed.

## 6 Workmanship

- .1 Workmanship will be in accordance with well established practice and standards accepted and recognized by Engineer and the Trade.
- .2 The Engineer shall have the right to recommend to the Owner to reject any item of work that does not conform to the Contract Documents and accepted standards of performance, quietness of operation, finish, and appearance.
- .3 Employ only tradesmen holding valid Trade Qualification Certificates. Tradesmen shall perform only work that their certificate permits. Certificates shall be available for inspection by the Engineer.
- .4 On request by the Engineer, Contractor shall demonstrate thorough knowledge of system and equipment being installed.

## 7 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 Consult the architectural drawings and details for exact locations of fixtures and equipment. Obtain this information from the Engineer where definite locations are not indicated.
- .3 Take field measurements where equipment and material dimensions are dependent upon building dimensions.

## 8 Equipment Installation

- .1 Provide unions and flanges to permit equipment maintenance and disassembly and to minimize disturbance to piping and duct systems and without interfering with building structure or other equipment.
- .2 Provide means of access for servicing, disassembly, and removal of equipment and components including permanently lubricated bearings.

- .3 Pipe equipment drains to floor drains.
- .4 Line up equipment, rectangular cleanouts and similar items parallel to or perpendicular to building walls.
- 9 Protection of Openings
  - .1 Protect equipment and systems openings from dirt, dust, and other foreign material with materials appropriate to system.
- 10 Electrical
  - .1 Electrical work is to conform to Division 26 specifications. The following electrical work is included in Division 22, 23 and 25.
    - .1 All conduit, wiring, and connections 50V and under relating to mechanical systems including installation of transformers. Refer to Division 25 for further clarification.
- 11 Pipe Hangers and Supports
  - .1 Fabricate hangers, supports and sway braces in accordance with the most recent edition of ANSI B31.1 and MSS-SP58. Support from structural members with three piece clevis hangers. Use copper plated hangers for copper piping.
    - .1 Standard of Acceptance: Myatt.
  - .2 Space hangers as per manufacturer's recommendations, and as follows:
    - .1 Plumbing piping: to most stringent requirements of Canadian Plumbing Code, Territorial Code, or authority having jurisdiction.
    - .2 Within 12" of each horizontal elbow.
    - .3 Within 12" of each expansion joint.
    - .4 Not less than one hanger at joints of flexible joint roll groove pipe.
    - .5 Copper: rod diameter 10mm, spacing as follows:
      - .1 Up to and including NPS 1-1/4: 6 ft.
      - .2 NPS 1-1/2: 8 ft.
      - .3 NPS 2: 9 ft.
      - .4 NPS 2-1/2 and NPS 3: 10 ft.
    - .6 Steel: rod diameter 12mm up to NPS 4, 16mm NPS 4 and above, spacing as follows:
      - .1 Up to and including NPS 1-1/4: 7 ft.
      - .2 NPS 1-1/2: 9 ft.
      - .3 NPS 2: 10 ft..
      - .4 NPS 2-1/2 and NPS 3: 12 ft.
      - .5 NPS 4: 13 ft.
  - .3 Offset hangers so that rod is vertical in operating position. Adjust hangers to equalize load.
- 12 Drain Valves
  - .1 Minimum NPS 3/4 unless otherwise specified: straight pattern bronze with

hose end male thread.

- .2 Locate at all low points and section isolating valves unless otherwise specified.

13 Shop Drawings  
and Product Data

- .1 Submit pdf version or four hard copies of shop drawings as required in individual sections of Division 23. Do not proceed with work until relevant submissions are reviewed by Engineer.
- .2 Shop drawings and product data shall show:
  - .1 Mounting arrangements.
  - .2 Operating and maintenance clearances. eg. access door swing spaces.
- .3 Shop drawings and product data shall be accompanied by:
  - .1 Detailed drawings of bases, supports, and anchor bolts.
  - .2 Acoustical sound power data, where applicable.
  - .3 Points of operation on performance curves.
  - .4 Certification of compliance to applicable codes.

14 Operation and  
Maintenance Manuals

- .1 Provide an organized compilation of operating and maintenance data including detailed technical information, documents, and records describing products as specified below, and in individual sections of this division.
- .2 Operation and maintenance manual to be approved by, and final four copies deposited with Engineer before final inspection.
- .3 Include:
  - .1 Title page listing submittal date, project title, name, address, phone and fax numbers of Contractor and all Sub-contractors.
  - .2 Table of contents.
  - .3 Warranties and guarantees.
  - .4 Copies of approvals and certificates.
  - .5 List of equipment including major and specialized suppliers complete with address, phone and fax numbers.
- .4 Operation data to include:
  - .1 Control schematics for each new and revised system where required.
  - .2 Description of each new and revised system and its controls.
  - .3 Operation instruction for each new system and each component.
- .5 Maintenance data shall include:
  - .1 Servicing, maintenance, operation, and trouble-shooting instructions for each new item of equipment.
  - .2 Schedules of tasks broken down into daily, bi-monthly, monthly, bi-annual, and annual tasks as required.

- .6 Performance data to include:
  - .1 Equipment manufacturer's performance data sheets for each new and revised equipment with point of operation as left after commissioning is complete.
  - .2 Testing, adjusting, and balancing reports as specified in Section 23 33 10 - Ventilation.
- .7 Approvals:
  - .1 Submit 1 copy of draft Operation and Maintenance Manual to Engineer for approval two weeks prior to Substantial Completion.
  - .2 Make changes as required and re-submit four final copies as directed by Engineer.
- .8 Additional data:
  - .1 Prepare and insert into Operation and Maintenance Manual information when need for same becomes apparent during demonstrations and instructions specified below.
- .9 Binders:
  - .1 O&M manuals to be assembled in 8-1/2"x11" capacity, vinyl three-ring binders. Provide sufficient volume to allow each binder to hold system data plus 100%.
  - .2 Binder cover identification will include:
    - .1 MECHANICAL OPERATION and MAINTENANCE MANUAL
    - .2 RECREATION CENTRE
    - .3 FARO, YUKON
    - .4 DATE:
    - .5 OWNER:
    - .6 MECHANICAL ENGINEER, NORTHERN CLIMATE ENGINEERING LTD.
    - .7 MECHANICAL CONTRACTOR:

15 Demonstration and Operating and Maintenance Instructions

- .1 Supply tools, equipment, and personnel to demonstrate and instruct owners and maintenance personnel in operating, controlling, adjusting, trouble-shooting, and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .2 Use Operation and Maintenance Manuals and 'Record' drawings as part of instruction materials.

16 Record Drawings

- .1 Maintain and submit record drawings as outlined below.
- .2 Site records:
  - .1 Engineer will provide 1 set of mechanical drawings. Mark thereon



- all changes as work progresses and as changes occur.
- .2 Make available for reference purposes and inspection at all times.
- .3 Record drawings:
  - .1 Prior to start of Testing, Adjusting, and Balancing (TAB), finalize production of record drawings.
  - .2 Identify each drawing in lower right hand corner in letters at least 1/2" high as follows: "RECORD DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (date).
  - .3 Submit to Engineer for approval and make corrections as directed.
  - .4 TAB to be performed using record drawings.
  - .5 Submit completed record drawings to the Engineer for transcribing changes into electronic ACAD format. Four 11"x17" reduced drawing sets shall be provided to the Contractor for inclusion in the Operating and Maintenance Manuals.

## 20 Substitution

- .1 No substitutions will be permitted without prior written approval of Engineer.
- .2 Proposals for substitution may only be submitted after award of contract. Such request must include statements of respective costs of items originally specified and the proposed substitution.
- .3 Proposals will be considered by Engineer if:
  - .1 Materials selected by tenderer from those specified are not available;
  - .2 Delivery date of materials selected from those specified would unduly delay completion of contract; or
  - .3 Alternative material to those specified, which are brought to the attention of and considered by Engineer as equivalent to the material specified and will result in a equitable credit to the Contract amount.
- .4 Should proposed substitution be accepted, either in part or in whole, assume full responsibility and costs when substitution affects other work on project. Pay for design or drawing changes required as result of substitution.
- .5 Amounts of all credits arising from approval of substitutions will be determined by Engineer and Contract Price will be reduced accordingly.

## 21 Cleaning

- .1 In preparation for final acceptance, clean and refurbish all equipment, and leave in operating condition including replacement of all filters and strainers in all air and piping systems.
- .2 Dispose of waste materials and debris off site.

- .3 Remove debris and surplus materials from accessible concealed spaces.
- 22 Access Doors .1 Provide and install access doors at all mechanical devices requiring operation, inspection, adjusting, or maintenance which are concealed behind drywall surfaces, including fire dampers, and all devices and equipment as required. Ensure access door is adequate in size for removal of equipment if necessary.
- 23 Firestopping .1 Firestopping material and installation within annular space between pipes, ducts, insulation, and adjacent fire separation and/or sleeves: ULC tested in accordance with CAN4-S115, installed as per manufacturer's written installation instructions.  
.1 Standard of Acceptance: A/D Fire barrier silicon sealant, mineral wool, and RTV foam.
- 24 Painting .1 Apply minimum two coats of corrosion resistant primer paint to underground ferrous piping, brackets, supports and site fabricated work.  
.2 Apply minimum of one coat corrosion resistant primer paint and two coats of finish paint to exterior above ground and interior supports and site fabricated work.  
.3 Prime and touch up marred finished paintwork to match original.  
.4 Restore to new condition finishes which have been damaged too extensively to be merely primed and touched up.
- 25 Dielectric Couplings .1 General: .1 To be compatible with and to suit pressure rating of piping system.  
.2 Where pipes of dissimilar metals are joined in all open, non-treated fluid systems.
- 26 Equipment Supports .1 Equipment supports not supplied by equipment manufacturer: fabricate from structural grade steel.
- 27 Portable Fire Extinguishers .1 As per Section 21 12 10.
- 28 Commissioning .1 The Mechanical Contractor shall ensure the equipment and systems are prepared, cleaned, adjusted, with start-up completed, and verified. in accordance with the TAB specification section and  
.4 Commissioning required prior to issue of certificate of Substantial Performance.

29 Seismic Restraint

- .1 All equipment and materials supplied and installed under this contract shall be seismically restrained in accordance with NBC. Contractor to retain the services of a seismic engineer registered in the Yukon to verify restraint systems.

END OF SECTION

PART 1 - GENERAL

1.1 Scope of Work .1 Supply and install equipment and materials identified in this section.

1.2 Reference Standards .1 CEC, Canadian Electric Code.

.2 NBC, National Building Code of Canada.

.3 All other applicable Territorial and municipal codes.

1.3 Related Work .1 Section 23 05 10 - Mechanical General

.2 Section 23 33 10 - Ventilation

.3 Section 25 05 10 - Controls

1.4 Shop Drawings .1 Submit shop drawings as per Section 23 05 10

.2 Shop drawings are required for:

.1 Unit Heater

1.5 Operating and Maintenance Data .1 Provide maintenance and operating data in maintenance manual as per Section 23 05 10.

.2 Operating and Maintenance Data is required for:

.1 Unit Heater

PART 2 - PRODUCTS

2.1 Unit Heater .1 UH-1: Steel construction, horizontal projection, 18.1 MBH capacity, 1.9gpm.  
.1 Standard of Construction: Rosemex H-18

2.2 Heating Specialties .1 Air vents: thermoplastic body and float assembly, removable float/valve assembly, automatic or manual operation, built-in brass shutoff valve, maintainable without system shut down, rated at 240°F and 125 psi, for all high points of the system, NPS 1/8 connection, NPS 1/4 for mechanical room.  
.1 Standard of Acceptance: Honeywell EA122A1002.

- .2 Circuit balancing valves: a metal construction, nylon handwheel, PTFE seat sealing ring, non-asbestos stuffing box and gaskets, one pipe size smaller and sized for balanced flow rate to be midpoint of range unless noted otherwise, threaded ends, nominal working pressure 304.5 psi, nominal working temperature 250°F.
  - .1 Standard of Acceptance: Tour and Andersson STAD.

### 2.3 Fuel Transfer Pump

- .1 Pump with 18 ft. hose and manual diesel nozzle, 12V DC, 27 amps, 40A circuit breaker, 20 gpm nominal flow rate, 1" NPT inlet,
  - .1 Standard of Acceptance: Pro20-012 MD

## PART 3 - EXECUTION

### 3.1 General

- .1 Install equipment and materials in accordance with the manufacturer's written installation instructions. Heating pipes to be hung per 23 05 10.

### 3.2 Fuel Transfer Pump

- .1 The intent is to pipe the pump inlet from the existing fuel oil supply pipe riser located near the bottom of the steps to the Generator Room to the new pump location on the Generator Room side of the partition wall. The connection to the riser shall be upstream of the two boiler connections, and shall include an isolation valve and a check valve. The piping to each of two boiler connections shall be modified with an isolation valve, a fusible valve, and a new check valve upstream of each filter. The pump shall be supported by the 1" riser to the inlet of the pump. The hose shall be supported using a wall bracket above the pump, on the partition wall. Provide 30 ft of twinned 12AWG cables with spring loaded battery clamps.

END OF SECTION

## PART 1 - GENERAL

- 1.1 Shop Drawings and Product Data
- .1 Submit shop drawings and product data as per Section 23 05 10.
  - .2 Shop drawings are required for:
    - .1 Operating Dampers
- 1.2 Reference Standards
- .1 National Building Code of Canada, 2005
  - .2 ASHRAE Ventilation Guidelines; Fundamentals, Systems, and Applications Volumes.
  - .3 SMACNA Construction and Installation Standards.
  - .4 ANSI/NFPA 90A, Installation of Air Conditioning and Ventilating Systems.
  - .5 ANSI/NFPA 90B, Installation of Warm Air Heating and Air Conditioning Systems.
- 1.4 Related Work
- .1 Section 23 05 10 - Mechanical - General
  - .2 Section 25 05 10 - Controls

## PART 2 - PRODUCTS

- 2.1 Ductwork
- .1 HRV: Class IV ductwork, maximum pressure 125 Pa, maximum velocity 32.8 ft/s, transverse joints and connections made airtight with sealing compound, longitudinal seams unsealed. Ductwork lock formed, zinc coated galvanized steel, thickness to SMACNA recommendations. Use strap hangers, same material as duct but one thickness heavier, for all ductwork.
- 2.2 Flexible Connections
- .1 Heavy glass fabric, double coated with neoprene, non-combustible fabric, self-extinguishing coating, air tight, temperature range -40F to 200F.
    - .1 Standard of Acceptance: Duro Dyne Neoprene.
- 2.3 Duct Access Doors
- .1 Frame-less access doors, "pressure cooker" style sealing system, insulated where located in insulated ducts, size 6" x 8" or larger if

required to access devices.

.1 Standard of Acceptance: Controlled Air AD-FL(-I).

### 2.4 Operating Dampers

- .1 Outdoor air and relief air dampers: parallel blade for outdoor air and opposed blade for relief, insulated, low leakage, 2mm extruded aluminum frames and blades, 100mm deep channel frame, blades internally insulated with polyurethane insulation to R6.6 and be thermally broken, extruded synthetic rubber blade and frame seals, frame insulated with polystyrene, leakage not to exceed 0.6% at 0.36 psi differential static pressure across damper, 'flanged to duct' model.  
.1 Standard of Acceptance: TAMCO series 9000, extreme cold option.
- .2 Return air dampers: parallel blade, low leakage.  
.1 Standard of Acceptance: Tamco series 1000.

### 2.5 Duct Insulation

- .1 Thermal insulation: for all ductwork in warm spaces, including outdoor air and exhaust air, flame spread/smoke developed rating maximum 25/50, thickness 2.5 in.  
.1 Standard of Acceptance: Manson Alley Wrap FSK.

### 2.6 Generator Silencer

- .1 Steel construction, Industrial grade silencing (12-18dB), side in-end out flow, 4 inch connections, accessories as required.  
.1 Standard of Acceptance: Nelson Silencer 43140

## PART 3 - EXECUTION

### 3.1 Ductwork

- .1 Install ducts in accordance with ASHRAE and SMACNA or as indicated. Do not break continuity of insulation vapour barrier with hangers or rods. Seal all transverse duct joints with duct sealer. Given that the ductwork upstream of HRV will be susceptible to infiltration due to the negative pressure, seal all joints.

### 3.2 Operating Dampers

- .1 Coordinate with Controls. Ensure airflow path from outdoor air damper and return air damper impinge.

### 3.3 Flexible Connections

- .1 Install as per manufacturer's written installation instructions at the ducting connections to radiator mount. Minimum length of 3".

### 3.4 Duct Insulation

- .1 Thermal insulation: install in accordance with ANSI/NFPA 90A and 90B. Adhere and seal vapour barrier using vapour seal adhesive. Adhere to duct surface with adhesive applied in strips 6" wide on 12" centres. Include mechanical fastenings on rectangular ducts over 18" wide, use 50% coverage on insulating cement and weld pins at no more than 8" centres, but not less than 2 rows per side and bottom.

- |   |    |   |
|---|----|---|
| <u>3.6 Duct Access<br/>Doors</u>          | .1 | Install access doors at all fire dampers, control dampers, duct mounted smoke detector locations, all devices requiring maintenance, and locations required by code. Locate so that items are accessible and hand entry with clear site is achieved. Provide fitting in duct to accommodate access door where required. |
| <u>3.8 Exterior Duct<br/>Terminations</u> | .1 | Coordinate sidewall penetrations with Owners Representative.  |
| <u>3.9 Generator Silencer</u>             | .1 | Suspend from ceiling structure above, terminate as indicated in drawings.   |

END OF SECTION



## PART 1 - GENERAL

- 1.1 Shop Drawings .1 Provide shop drawings for review as outlined in Section 23 05 10. Shop drawings to include wiring diagram and control schematics.
- .2 Shop drawings are required for:  
.1 Control schematics and sequence of operation
- 1.2 Operating and Maintenance Data .1 Provide maintenance and operating data in maintenance manual as per Section 23 05 10.
- 1.3 Scope of Work .1 Space temperature control of operating dampers.
- 1.4 Responsibility .1 Controls contractor shall be available to assist TAB contractor. Coordinate on-site time.
- 1.5 Related Work .1 Section 23 01 00 - Mechanical General  
.2 Section 23 31 00 - Ventilation

## PART 2 - PRODUCTS

- 2.1 Damper Operators .1 Low voltage damper operators for all dampers, spring return to fail-safe position, visual position indicator, manual override crank, sized to provide adequate shut off and full open under operating conditions, CSA approved, complete with end switch where required, modulating for relief damper, two position for Stage supply air duct.  
.1 Standard of Acceptance: Honeywell.
- 2.2 Controller .1 Electronic, programmable, LCD display with English language, 24 volt, 0-10 Vdc analog output for damper operators, 0-10 Vdc input for remote space temperature sensor (required).  
.1 Standard of Acceptance: Honeywell T775 with space temperature sensor.

PART 3 - EXECUTION

3.1 Installation

- .1 Install, test, adjust, and set up controls in strict accordance with manufacturer's written installation and operating instructions. Setpoint for space temperature shall be 16C (adjustable).
- .2 On generator start-up, the outdoor air damper will move to 10% open.
- .3 To maintain space temperature setpoint, the outdoor air damper and the relief dampers will modulate open as the return damper modulates towards a closed position.

END OF SECTION

1. GENERAL PROJECT  
REQUIREMENTS

- .1 This specification and any addenda here to form part of the contract documents and shall be read in conjunction with them. Work shall include the furnishing of all labour and materials unless specifically noted otherwise to complete and put into operating condition all electrical systems as indicated on the drawings and specified herein.
- .2 Responsibility as to which trade provides required articles or materials rests solely with the general contract trade. Extras will not be considered based on grounds of difference in interpretation of specifications as to which trade involved shall provide certain specialties or materials.
- .3 Provide temporary construction lighting and power throughout the project and include all utility costs in scope of work. Remove all temporary lighting and power after project is complete.

2. SUMMARY OF WORK

- .1 The Work of this contract is to supply and install electrical connections for stand-by generator at the Recreation Centre, Faro, Yukon.
- .2 Disconnect existing unit heater and reinstall new, supplied by Owner.
- .3 Supply and install lighting, relocate existing lighting as detailed in electrical drawings.
- .4 Include as a separate price item in the bid:
  - .1 Supply and install new single by-pass transfer switch, rated 3-phase 400Amps 208V.
  - .2 Supply and install new CDP, rated 3-phase 400Amp 208V, with capacity for all existing circuits plus capacity for two future 3-phase 100Amp breakers.
- .5 Provide generator set-up and testing, including 4-hour 100% load test for completed generator assembly as detailed herein. Contractor to provide suitable resistive load bank to the approval of the Engineer. Provide 72-hours' notice of testing to the Engineer. Contractor to provide fuel for testing.

3. STANDARDS OF  
MATERIAL AND  
WORKMANSHIP

- .1 All materials shall be new, of the quality specified and shall conform to the latest standards of the Canadian Standards Association. Where equipment or materials are specified by technical description only, they shall be of the best commercial quality obtainable for the purpose.
- .2 All work shall be executed in a neat and workmanlike manner by qualified tradespersons. Electrical Contractor shall keep a competent foreman and necessary assistants, all satisfactory to the Engineer, on the job during the progress of the work.

- 
- .3 Work done in renovations and additions shall, at a minimum, meet the standard of work and material of the existing portions of the building.
4. CODES, PERMITS AND INSPECTIONS
- .1 Comply with all laws, ordinances, rules, regulations and codes of all authorities having jurisdiction relative to this project.
- .2 Complete installation is to comply with the Canadian Electrical Code (2015) and the National Building Code (2010) including the latest amendments and local municipal codes and related CSA electrical bulletins.
- .3 Submit to the electrical inspection authority having jurisdiction the necessary number of drawings and specifications for review and approval prior to commencement of the project.
- .4 Pay all associated fees and obtain all permits, licenses etc. to complete the project.
- .5 Obtain a certificate of acceptance from the inspection authority having jurisdiction upon completion of the project and submit to the Engineer for review.
5. DRAWINGS AND SPECIFICATIONS
- .1 The drawings and specifications are complementary each to the other and what is called for by one shall be binding as if called for by both.
- .2 Should any discrepancy appear between the drawings and specifications which leave the Electrical Contractor in doubt as to the true intent and meaning of the plans and specifications, it will be assumed that the more expensive alternate will be required.
6. EXAMINATION OF THE SITE
- .1 The Electrical Contractor is encouraged to carefully examine the site and ascertain all conditions that shall affect his contract. No extras will be allowed for work resulting from conditions that would have been evident upon a thorough examination of site.
- .2 In cases where clarification is not submitted to the Engineer the more expensive solution shall be considered correct. Any questions on the tender documents must be submitted minimum 5 working days before the tender closing date. No questions will be answered after the question answer period closes.
7. COORDINATION WITH TRADES
- .1 Project drawings are to be available on-site for use by; the General Contractor and all trades, and shall be available for Engineer's review during all site inspections.

- .2 Maintain electrical coordination drawings throughout the construction period. Record changes due to modifications and adjustments.
- .3 Coordination plans shall be made available to the Engineer at the Engineer's request; copy of drawings to be delivered to the Engineer's office within 3 working days of the Engineer's written request to the Contractor.
- .4 Engineer's review of coordination drawings is for general implementation design only and does not relieve the Contractor from complying with all requirements of drawings and specifications including coordination with the General Contractor and with all trades.
- .5 The Engineer is not responsible, or accountable for extra costs incurred as a result of failure by the Contractor to coordinate work by other trades.

## 8. SHOP DRAWINGS

- .1 Electrical Contractor shall submit shop drawings to the Engineer for review of electrical components for all systems.
- .2 All drawings shall be submitted in PDF version via the Engineer.
- .3 The Engineer's review of shop drawings shall be for general design only and shall not relieve the Electrical Contractor or Suppliers from their responsibility for errors, proper fitting, and construction of the work and furnishing of materials. The review shall not be construed as approving departures from the contract document requirements if such departures are not specifically noted in a covering letter accompanying such drawings. Electrical Contractor shall be responsible for verifying all dimensions.
- .4 Shop drawings to indicate all information required to discern whether the equipment meets the requirements of this specification and the drawings. Wiring diagrams, schematics, risers and relevant details, where required, shall be unique to the project and not generic in form. Manufacturer's sales literature will not be accepted.

## 9. UNIFORMITY OF EQUIPMENT

- .1 Unless otherwise specifically called for in the specifications, uniformity of manufacture shall be maintained for any particular item throughout the building.
- .2 Where the project encompasses renovations or additions to an existing building the Manufacturer shall match the existing unless noted otherwise. All new Manufacturers' equipment that varies from the existing must be fully compatible with the existing.

10. EQUIVALENT  
PRODUCTS

- .1 All equivalent products must have written approval from the Engineer. The Engineer's decision as to the equivalency of products shall be final.
- .2 Electrical Contractor and/or Suppliers wishing to submit equivalent products shall do so in PDF format via an email to the Engineer. If the product is approved as an equivalent, an email of confirmation shall be sent from the Engineer. It shall be the Electrical Contractor's responsibility to ensure that any Suppliers quoting to the Electrical Contractor have obtained the written approval of the Engineer.
- .3 All requests for equivalent material approval must be emailed not less than five (5) days prior to closing of tender. No equivalent requests will be considered after this time.
- .4 The approval of equivalent products will be granted on the basis of general design only. Such approvals will not relieve the Electrical Contractor from providing all necessary components and functions required in the specifications or on the drawings.
- .5 Alternate services rated equipment shall meet the utilities' requirements.
- .6 Any change in the footprint size due to alternate equipment shall not result in a redesign. Any cost to revise the design due to an alternate Manufacturers' requirement shall be borne by the Electrical Contractor.

11. SETTING OUT OF THE  
WORK

- .1 The Electrical Contractor shall be responsible for correcting all work completed contrary to the intent of drawings and specifications and shall bear all cost for same. Where intent of drawings and specifications is not clear, he shall obtain clarification of the Architect before proceeding with work.
- .2 The Electrical Contractor shall give the work personal supervision lay out their own work, do all necessary leveling and measuring or employ a competent engineer to-do so. Figures, full size, and detail drawings shall take precedence over scale measurements.
- .3 Where equipment supplied by the Electrical Contractor must be built in with the work of other trades, the Electrical Contractor shall be responsible for the supplying of the equipment to be built in or measurements to allow necessary openings to be left so as not to hold up the work.
- .4 Electrical Contractor shall be responsible for any damage caused the Owner or any of the other trades by improper location or carrying out of his work.

- .5 The Electrical Contractor, in setting out of his work, shall make reference to architectural, structural and mechanical drawings. The Electrical Contractor shall consult with the respective trades in setting out locations for conduit runs, luminaries, panel assemblies, etc., so that conflicts are avoided and symmetrical even spacing is maintained.
- .6 Switch mounting heights shall be coordinated with architectural and mechanical details and shall be adjusted, if required, to coordinate with millwork, millwork paneling, masonry course lines, etc.
- .7 Where outlets occur in exterior walls, the Electrical Contractor shall ensure that there is insulation behind the outlet boxes to prevent condensation through the boxes.

## 12. CUTTING AND PATCHING

- .1 The Electrical Contractor will be responsible for all cutting and patching required for the electrical installation. Structural members shall not be cut without the consent of the Architect or Structural Engineer.
- .2 Where work by the Electrical Contractor damages work of other trades, the Electrical Contractor shall repair and make good such damage to the satisfaction of the trade concerned and the Architect/Engineer.

## 13. PAINTING AND FINISHES

- .1 All electrical fittings, supports, hanger rods, pull boxes, channel frames, conduit racks, outlet boxes, brackets, clamps, etc., shall have galvanized finish or paint finish over corrosion-resistant primer.
- .2 Pull boxes, junction boxes, terminal panels, etc. shall be finished in red for the fire alarm system.

## 14. PROJECT CLEAN-UP

- .1 The Electrical Contractor and his sub-trades shall at all times during construction, keep the site free of all debris, boxes, packing, etc., resulting from work of this trade.
- .2 At the completion of the work, the electrical installation shall be left in a clean finished condition to the satisfaction of the Engineer.

## 15. SITE REVIEWS AND CONSTRUCTION DOCUMENTS

- .1 The Contractor shall contact the Engineer for a minimum of rough-in and final reviews. Additional reviews will be completed as required; Contractor is to make the Engineer aware regarding any conditions that warrant special reviews. Contractor shall ensure that all required work is completed prior to calling for review.
- .2 Progress claims submitted shall be broken down for each system and include a materials and labor portion for review.

Progress claims submitted without proper breakdown will not be reviewed.

.3 All revisions resulting in costs to the owner shall be submitted with a full breakdown of materials and labor for each portion of the work.

.4 Requests for information (RFI) shall be submitted for onsite questions only after the issue has been reviewed and discussed without resolution on site with the appropriate trades. Minor issues should be dealt with through phone or email.

#### 16. ELECTRICAL SYSTEMS TESTS

.1 All portions of the electrical work shall be tested and checked for satisfactory operation.

.2 Before energizing any portion of the electrical system, perform megohmmeter tests on all feeders and branch circuits. Results of such tests shall conform to the requirements of the Canadian Electrical Code and shall be to the satisfaction of the authorized inspection agency and the Engineer.

#### 17. RECORD DRAWINGS

.1 The Electrical Contractor shall furnish one full sized set of drawings to be used for recording work as actually installed. The Electrical Contractor shall accurately record on this set of drawings, day by day, all outlets, conduit, fixtures and equipment as actually installed on the job. Any discrepancies noted by the Electrical Contractor between the design drawings and the existing installation shall be noted on the record drawings.

.2 Upon completion of the project and before final payment the Electrical Contractor shall obtain the services of an engineering firm to update all information from the record prints to AutoCAD format files, including all changes to the original tender drawings covered by addenda, change orders, field changes, job conditions, etc. The record drawings shall be turned over to the Engineer for approval and updating in AutoCAD. The Electrical Contractor shall include all costs for record drawings in the bid.

.3 All revisions are to be done in the same AutoCAD version as the originals and drafting is to match existing drawing quality and style. The drawings shall clearly indicate on every page that they are record documents as supplied by the Electrical Contractor. The Electrical Contractor's company name, address and contact individuals are to be included on every drawing. The drawings will clearly be identified as "record documents." The completed electronic AutoCAD drawings on a CD and one full sized copy of the drawings shall be turned over to the owner upon completion.



18. GUARANTEE/  
WARRANTIES

- .1 Furnish a written guarantee/warranty signed and guaranteed by the Electrical Contract trade stating:
  - .1 That all work executed under this contract will be free from defects of material and workmanship for a period of one (1) year from the date of final acceptance of this work.
  - .2 The above parties further agree to, at their own expense, repair and replace all such defective work and other work damaged thereby which fails or is otherwise defective during the term of the guarantee/warranty provided that such failure is not due to improper usage.
  - .3 The period of the guarantee specified shall in no way supplant any other guarantee of a longer period but shall be binding on work not otherwise covered.
- .2 Provide additional warranties for Manufacturer's systems as required by other sections of this specification.

19. OPERATION AND  
MAINTENANCE MANUAL

- .1 Provide four (4) copies of the maintenance manuals to the Engineer for review. Returned copies shall have their revisions made and sent to the owner at the end of the project.
- .2 Each manual shall have a list of sections, contact information for the Electrical Contractor and all sub-contractors, electrical engineering firm and all systems manufacturers, all warranties, guarantees and certificates, copies of approved shop drawings, single line diagrams, as-built drawings and schematics for all systems, test and verification results, and cleaning and maintenance procedures.

20. SUBSTANTIAL  
COMPLETION

- .1 Before calling for substantial completion review, the Contractor shall provide the following relevant documents to the Engineer:
  - .1 Letter of inspection from the authority having jurisdiction.
  - .2 Operation and maintenance manuals have been submitted for review.
  - .3 Sealed seismic drawings and letter of assurance from the seismic engineer have been submitted to Engineer and included in maintenance manual.
  - .4 All junction outlet boxes covered.
  - .5 Testing completed and test reports approved by the engineer.

- .6 Record drawings submitted for updating.
- .7 Other documentation as requested by the Engineer.

- .2 Should a substantial completion review be called for and the Engineer finds the project is not compliant with the requirements, as listed above, an additional review may be required. Such additional reviews may be charged to the Electrical Contractor.

## 21. SEISMIC RESTRAINTS

- .1 Retain the services of a qualified seismic Engineer to provide seismic restraint requirements, genseit anchorage, installation details, site reviews and letter of assurance for the project. Exact scope of seismic work shall be determined by the seismic engineer. All seismic details shall be submitted as shop drawings to the Engineer and included in the maintenance manual.
- .2 Provide letters of assurance from the seismic engineer to the Engineer after field reviews by the Seismic Engineer at substantial completion.

## 22. FIRE STOPPING

- .1 Use pre-manufactured poly pans or approved alternate for any outlet or box located in or through vapour barrier.
- .2 All penetrations through vapour barrier required for any component installed by Division 26 to be performed in accordance with specification section 07 27 10.
- .3 Contractor to provide fire stopping for all cables, boxes, conduits and cable trays penetrating through a rated wall or floor assembly. All boxes in fire separations to be provided with fire-stopping putty packs.
- .4 Use only fire-stopping products that have been ULC or cUL tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.
- .5 Where cables or conduits pass through floors and fire rated walls, pack space between wiring and sleeve full and seal with caulking compound conforming to ULC-S115, latest revision.
- .6 Use HILTI, FS-ONE Intumescent Firestop Sealant, Cp 617 Firestop Putty Pads, Firestop Box Inserts, Cp 620 Firestop Foam or approved equals, All fire stop products must be installed according to the manufacturers most current application notes and instructions. Provide shop drawings for all products together with manufacturers application note and instructions for intended use.

### 23. RACEWAYS AND FITTING

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- .7 Contractor is to provide fire stopping at all fire separations identified on the drawings and for any fire separations discovered on site. Contractor to notify Engineer of any fire separations discovered which are not shown on the drawings.
- .8 Generally cables and conduit passing through fire separations are to be fire rated and separated, have limited risk from structural failure and from mechanical services according to NBC requirements and fire stopping product manufacturers recommendations..
- .1 Electrical Metallic Conduit (EMT) shall be installed for all building wiring unless noted otherwise. Conduits to be installed in conformance with the Canadian Electrical Code. Color code conduit connectors and junction box covers as noted in other sections of this specification. Size conduits to the Canadian Electrical Code requirements.
- .2 In-ground conduit shall be PVC conduit. Label both ends of stub-up locations with felt marker indicating use of conduit. Ensure conduit is sealed during construction and free of debris prior to installing wire in conduit.
- .3 All conduits to have a green bonding conductor; do not use the conduit as a bond to electrical boxes and equipment.
- .4 Conduits to be free from burrs and kinks; bends shall be kept to a maximum 45 degree angle for offsets and saddles wherever possible. Provide a pull box or junction box for each 360 degree bend in the conduit run. In exposed areas the install of conduits shall be uniform in appearance and installed in parallel or right angles with the building structure.
- .5 When possible, large groups of conduits shall be installed together on conduit racks utilizing redi-rod and uni-struts.
- .6 Provide bushing on all connectors on conduits 27mm in size and larger. All connectors and couplings shall be steel; aluminum or die-cast zinc is not acceptable.
- .7 Where a run of conduit is not continuous and is greater than 3m in length, a bonding bushing shall be used to bond the conduit to the cable tray or bonded conduit system.
- .8 Conduits may not be supported from t-bar or t-bar hanger system.
- .9 Flexible conduit (flex) may be used for connections to devices such as speakers, fire alarm devices, and motors etc. Include a green bonding conductor from the device outlet box to the

EMT or cable tray for bonding continuity. Utilize liquid tight flexible conduit where required.

- .10 Conduits and cables terminating in the top of equipment in sprinklered areas shall terminate with water-tight connectors.

## 24. PULLBOXES AND OUTLET BOXES

- .1 Supply and install pull boxes and junction boxes as shown on the drawings and as required to suit job conditions. Pull boxes shall conform to Canadian Electrical Code requirements and shall be finished in enamel over corrosion resistant primer with screw-on or hinged cover. Utilize table 23 of the CEC for determining sizes of boxes.
- .2 In removable ceiling areas, pull boxes are to be installed above the ceiling. Pull boxes in finished walls and plaster or non-removable ceilings shall have overlapping type trims with covers prime coated and painted on job to match wall or ceiling. Color pull box covers as noted in other sections of this specification.
- .3 Device outlet boxes shall be 4x4" with single or double gang plaster ring, depth to be as required, coordinate for depth of wall finishing. Outlet boxes shall be supported on two sides. Handy boxes shall not be used.
- .4 When installed in concrete utilize appropriate masonry boxes intended for such applications.
- .5 When installed in wood walls, plastic outlet boxes shall only be used with permission of the Engineer.
- .6 Where indicated, utilize multi-service boxes for office outlets, equal to spider technology multi-gang boxes.
- .7 Mounting heights for device outlets shall be as follows:  
.1 Emergency battery packs - 2440mm or 300mm down from ceiling  
.2 Exit lights - ceiling mounted, 300mm down from the ceiling or 450mm above the door.  
.3 Pull stations - 1050mm,  
.4 Horn-strobe/bells - 2440mm or 300mm down from ceiling,
- .8 Where devices are installed in an accessible location, heights of devices shall meet the requirements of the NBC building code.

## 25. TESTING

- .1 Notify Engineer and the Project Manager in writing 10 working days in advance of test date.
- .2 Division 26 to provide fuel for testing.

- .3 Submit completed test results to the Engineer .

## 26. OPERATIONAL TEST

- .1 With the engine in a 'cold start" condition and the emergency load at its normal operating level, a power failure shall be simulated by opening all switches or breakers that supply the normal power to the building or facility. The test load shall be that load which is normally served by the facility.
- .2 The operational test shall continue for one hour, after which normal power shall be restored to the building or facility and satisfactory transfer of the load and shutdown of the emergency generating set shall be demonstrated.
- .3 The following shall be observed and recorded:
  - .1 The time delay on start;
  - .2 The cranking time until the engine starts and runs;
  - .3 The time required to come up to operating speed;
  - .4 The time required to achieve a steady-state condition with all switches transferred to the emergency position;
  - .5 The voltage, frequency, and amperes at start-up and at any observed change in load;
  - .6 The engine oil pressure, water temperature where applicable, and battery charge rate at 5 min intervals for the first 15 min, and at 15 min intervals thereafter;
  - .7 The time delay on retransfer for each transfer switch; and
  - .8 The time delay on engine cool down and shutdown.

## 27. FULL LOAD TEST

- .1 Following the test prescribed in Clause 26, the emergency generator set shall be subjected to a 4-hour 100% load test, followed by a 1 hour test at 110% of full load.
- .2 The contractor shall supply the required supplemental load bank that will be required. Rating to be 110% of rated nameplate as required. Cable leads to be of sufficient length to locate load bank outside and away from the building.
- .3 Full load shall equal the nameplate kW rating of the emergency generator set less the applicable derating factors for site conditions. A unity power factor is acceptable for onsite testing, provided that rated load tests at the rated power factor have been performed by the manufacturer of the emergency generator set prior to shipment.
- .4 The full load test may be initiated by any method that will start the engine and, immediately upon reaching its rated

speed, pick up the full load in one step.

- .5 The data listed in Clause 26 shall be recorded at first load acceptance and every 15 min thereafter until the completion of the test period.

## 28. CYCLE CRANK TEST

- .1 The engine shall be prevented from running by utilizing any method recommended by the manufacturer. The control switch shall then be placed in the 'run' position to cause the engine to crank.
- .2 The crank cycle shall be observed and recorded.
- .3 The crank cycle shall be repeated a second time to demonstrate that the batteries have sufficient capacity for a total cranking time of 60s.
- .4 The time required to recharge the batteries or the compressed air shall be demonstrated to meet the requirements as appropriate.

## 29. SAFETY SHUTDOWN AND ALARM TEST

- .1 The emergency supply shall be tested as recommended by the manufacturer to ensure that all safety shutdowns and alarms respond.
- .2 Demonstrate low oil pressure and high engine temperature shutdown device operations without subjecting engine to these excesses.

## 30. VENTILATION TEST

- .1 During the generator tests described in the forgoing clauses it shall be demonstrated that the ventilation system will maintain the room temperature with-in the following limits:
  - .1 The safe operating temperature of the engine is not to be exceeded.
  - .2 The service room temperature will not exceed 40 degree C.
  - .3 The service room temperature shall be above 10 degree C at all times.
- .2 During the generator tests described in the forgoing clauses it shall be demonstrated that the ventilation system will supply adequate combustion air to the engine.

## 31. BUILDING WIRING

- .1 All wiring shall be copper with RW75 x-link or R75 nylon 600V insulation installed in EMT conduit. No wire smaller than no.12 AWG shall be used for branch circuit wiring. Wiring shall be color coded to the Canadian Electrical Code requirements. Rigid threaded galvanized steel conduit shall be used where

required by code. 90 degree wiring maybe used but shall be de-rated to 75 degree wiring where connected to 75 degree rated equipment.

- .2 Wiring larger than 2/0 may be paralleled as permitted by code.
- .3 Cabling may be aluminum when sized 1/0 or larger.
- .4 Cabling shall be fire rated where applicable by code.
- .5 Armoured cabling may be used where permissible by the Engineer; riser Teck 90 cable or equal shall be used for vertical runs.
- .6 Corline flexible conduits may be used in slabs where permissible by the structural engineer.
- .7 AC90 (BX) cable shall be complete with anti-short bushings. Length of AC90 cable shall not to exceed 3 meters. AC90 cable may be used for fixture drops and in walls only. Install EMT conduit in ceiling space to within 1 meter of wall for connection to AC90 cable. AC90 cable may not be used in electrical rooms.
- .8 Non-metallic sheathed cable (lumex) shall be used where applicable by the Canadian electrical code and only with approval from the Engineer.
- .9 Provide dedicated neutral conductors for all circuits feeding electronic equipment. Sharing of neutrals is not permitted.
- .10 Conductors to be sized so as to limit voltage drop to the limits outlined in the Canadian electrical code.
- .11 Aluminum wiring shall not be used for connections to vibrating equipment such as motors, roof top units etc.

### 32. GROUNDING AND BONDING

---

- .1 Supply and install complete grounding and bonding system as indicated and as required by Canadian Electrical Code, the local electrical inspection department and as defined in other sections of this specification.
- .2 All components shall be securely and adequately bonded to ground and where required to accomplish this, bonding jumpers, bonding studs and bushings shall be used. Ensure that all raceways, distribution equipment, terminal panels and equipment for low voltage systems, fire alarm, sound, etc.. Are securely and adequately bonded.

### 33. SURFACE MOUNTED

- .1 Surface " where shown on the drawings" non-metallic raceway system shall be equal to remold 800 series, complete with

RACEWAY SYSTEMS

necessary corners, boxes, adaptors, coupling fittings, etc. as required to provide a complete continuous installation.

- .2 Install surface raceway system in service rooms and as noted on the drawings only. Provide all mounting hardware and miscellaneous accessories necessary for a complete installation. Surface raceway systems to be supported every minimum 900mm on center and at each corner, bend and outlet box.

34. IDENTIFICATION AND LABELING

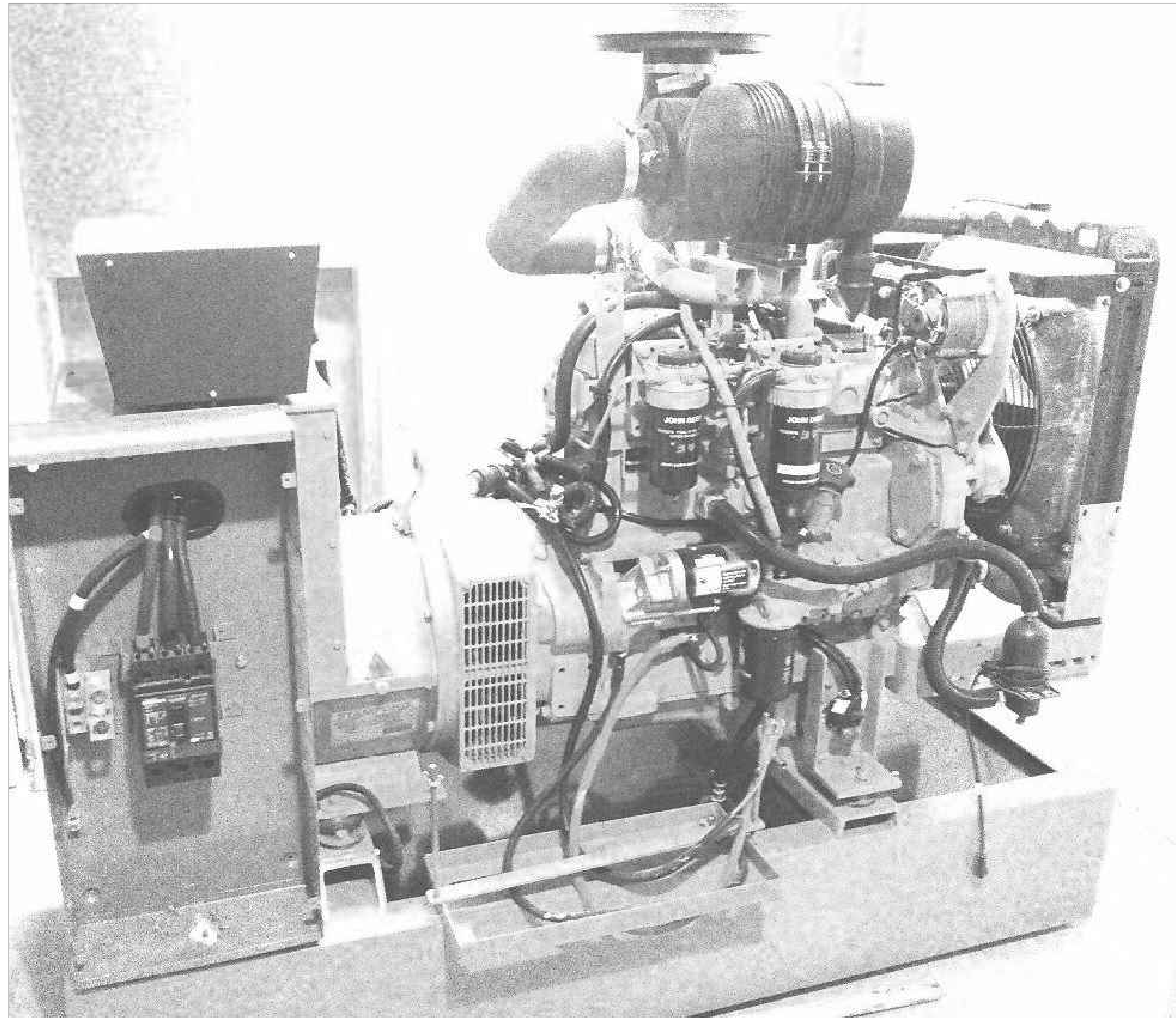
- .1 Electrical Contractor shall provide and install identifying labels for all electrical equipment and devices.
- .2 All devices shall have adhesive labels from a brother P-touch device or equivalent.
- .3 Electrical contractor shall provide new type written panel directories, for all panel added or modified.

35. CLARIFICATIONS

- .1 Electrical Contractor shall provide and install all material and labor to complete the work as shown in the drawings and described herein. Electrical Contractor to provide all precautions for his forces and shall remove all electrical equipment and re-install as per the drawings for complete operational system. Electrical Contractor must do all necessary work to allow other trades to complete their work and re-store safely all disconnected electrical systems.

\_\_\_\_\_  
END OF SECTION \_\_\_\_\_





## FARO RECREATION CENTRE GENERATOR UPGRADE

CLIENT: TOWN OF FARO  
ELECTRICAL ENGINEER: DORWARD ENGINEERING LTD  
MECHANICAL ENGINEER: NORTHERN CLIMATE ENGINEERING

### DRAWING INDEX

DIVISION 23 - MECHANICAL  
M1 - MECHANICAL

DIVISION 26 - ELECTRICAL  
E1 - POWER LAYOUT AND SINGLE LINE DIAGRAM

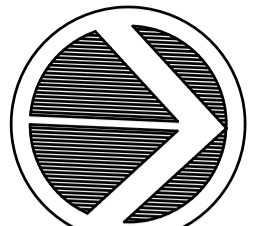
ISSUED FOR TENDER  
DATE: 31-05-2017  
PROJECT#: 15066

 DORWARD  
ENGINEERING  
SERVICES LTD.

CONSULTING ELECTRICAL ENGINEERS

UNIT 402 - 309 STRICKLAND ST. Phone: (867) 668-6888  
WHITEHORSE, YUKON Email: dorward@ieec.org  
CANADA Y1A 2J9

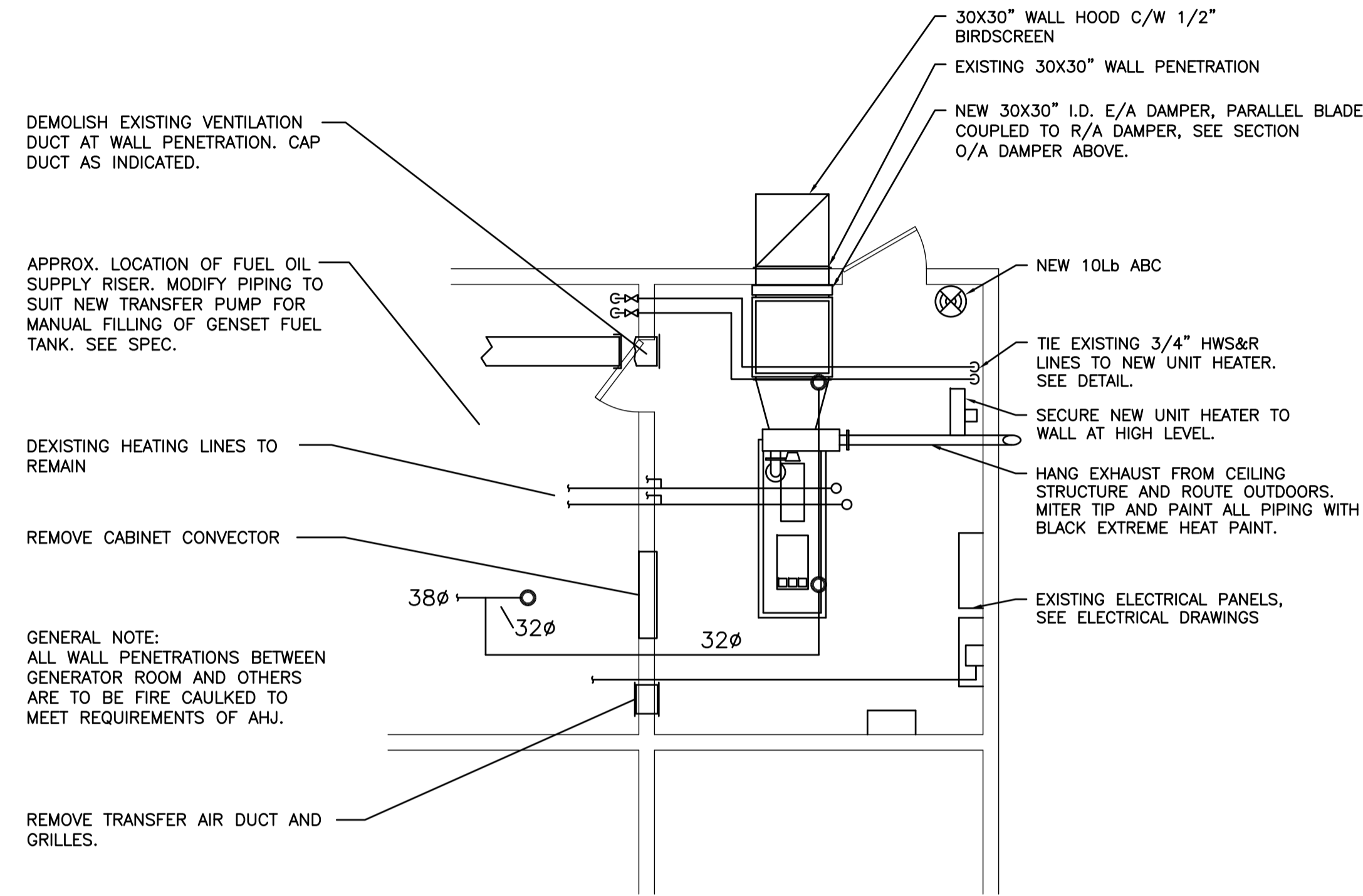
BUILDING



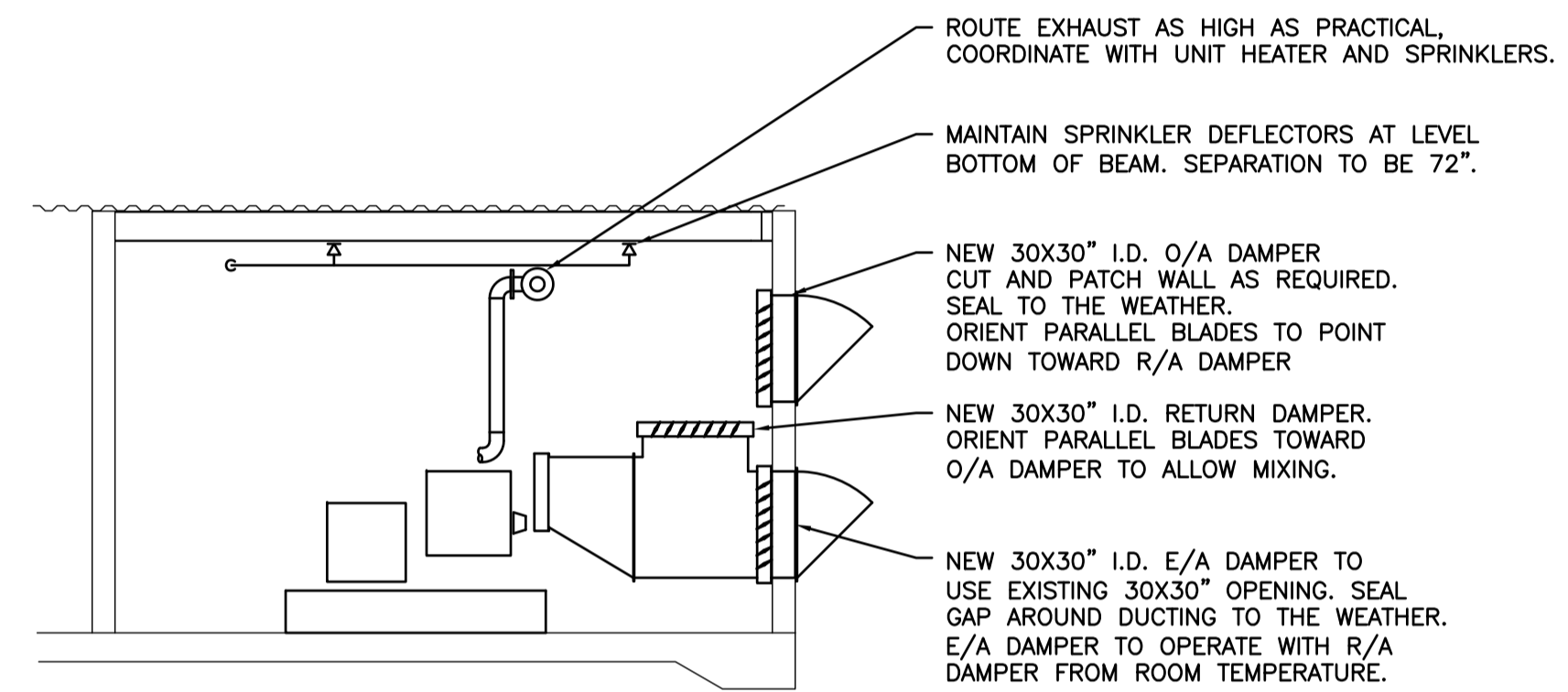
NORTH

NOTES:

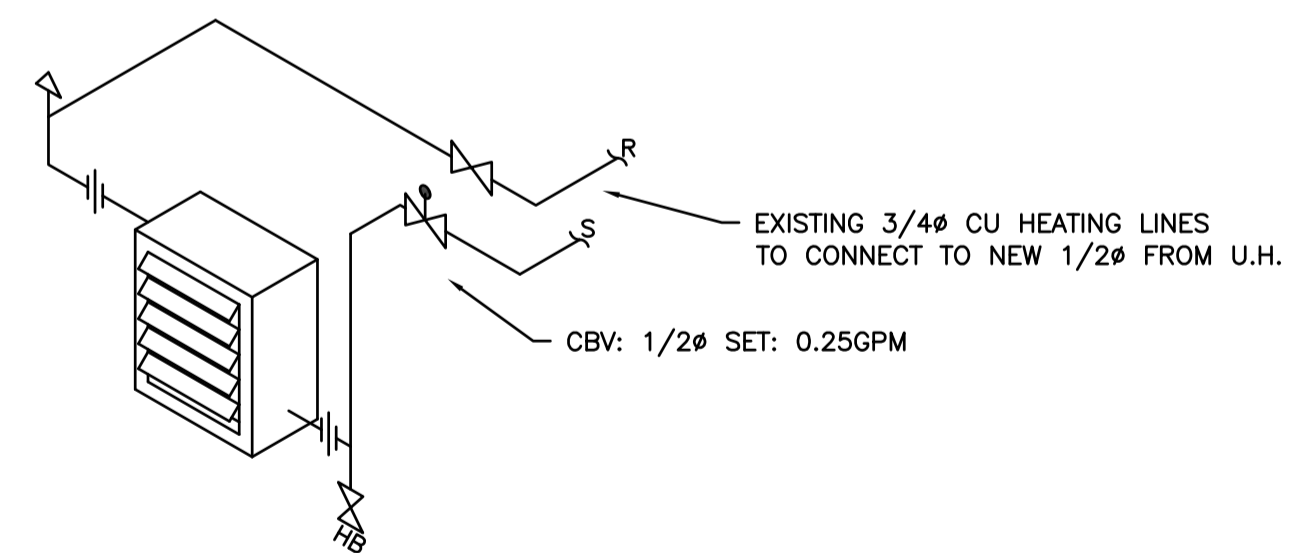
DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE THE GENERAL SCOPE AND ARRANGEMENT OF WORK. DO NOT SCALE THE DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR COORDINATING THEIR WORK WITH ALL TRADES. INFORMATION ON DRAWINGS OF EXISTING SYSTEMS AND STRUCTURE ARE NOT AS-BUILT, SITE VERIFICATION BY CONTRACTOR IS REQUIRED.



PLAN  
SCALE: 1:50



SECTION  
SCALE: 1:50



UNIT HEATER PIPING  
N.T.S.

REVISIONS:

NO.	DATE	BY	DESCRIPTION
01	12/01/17	DH	ISSUED FOR 95% REVIEW
02	31/05/17	DH	ISSUED FOR TENDER

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NORTHERN CLIMATE ENGINEERING LTD.

6A-151 INDUSTRIAL RD.  
WHITEHORSE, YT, Y1A 2V3  
PHONE: 867-667-6900  
NCE@NORTHERNCLIMATE.COM

PROJECT:

FARO, Y.T.  
RECREATION CENTER  
GENERATOR UPGRADES

DRAWING TITLE:

MECHANICAL

SCALE: 1:50

DATE: MAY, 2017

DESIGN: D.H.

DRAWN: D.H.

CHECKED: D.H.

APPROVED FOR CONSTRUCTION:

N.C.E. PROJECT NUMBER: 1675

SHEET:

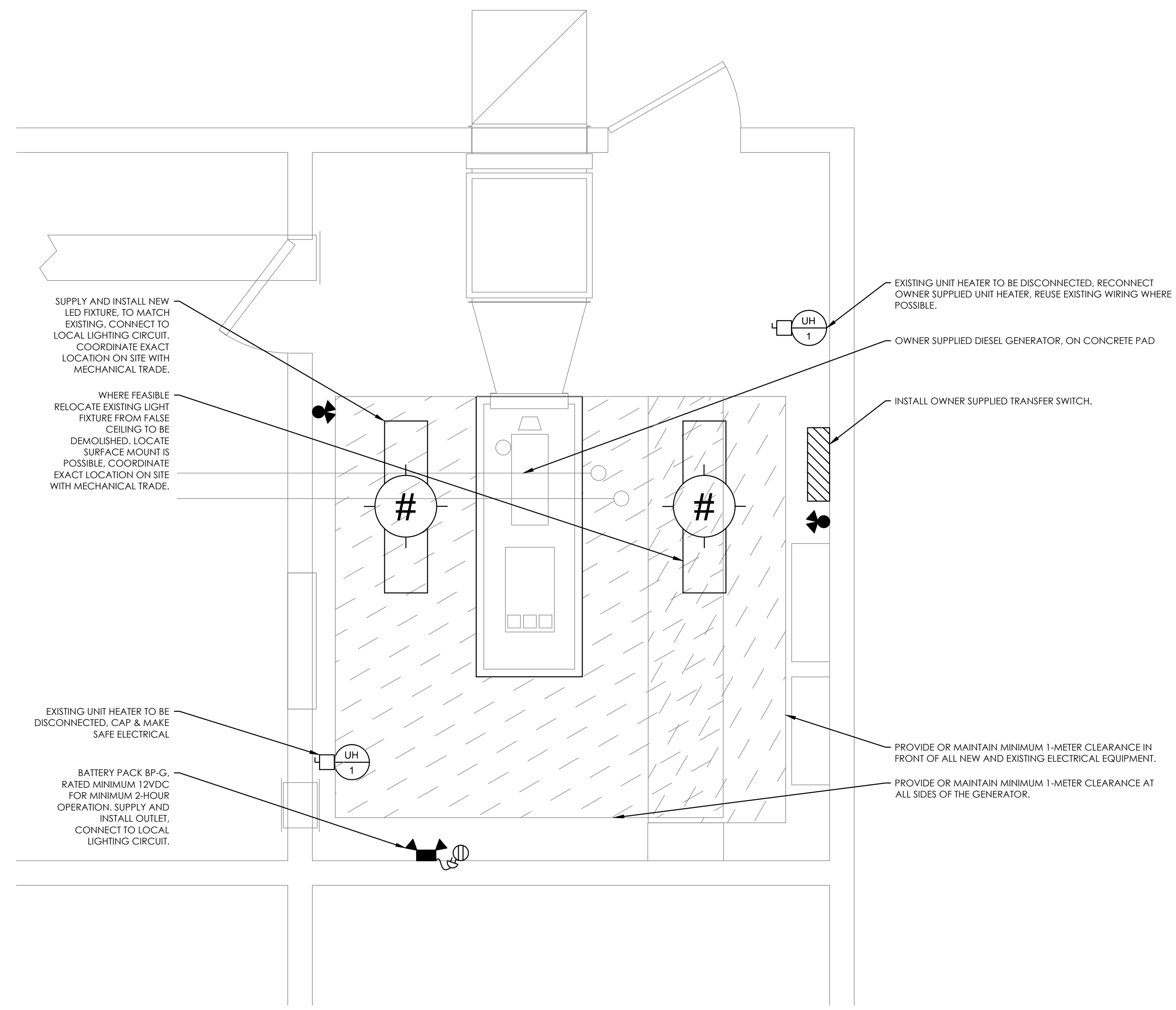
M1 OF 1

**ELECTRICAL SYMBOLS**

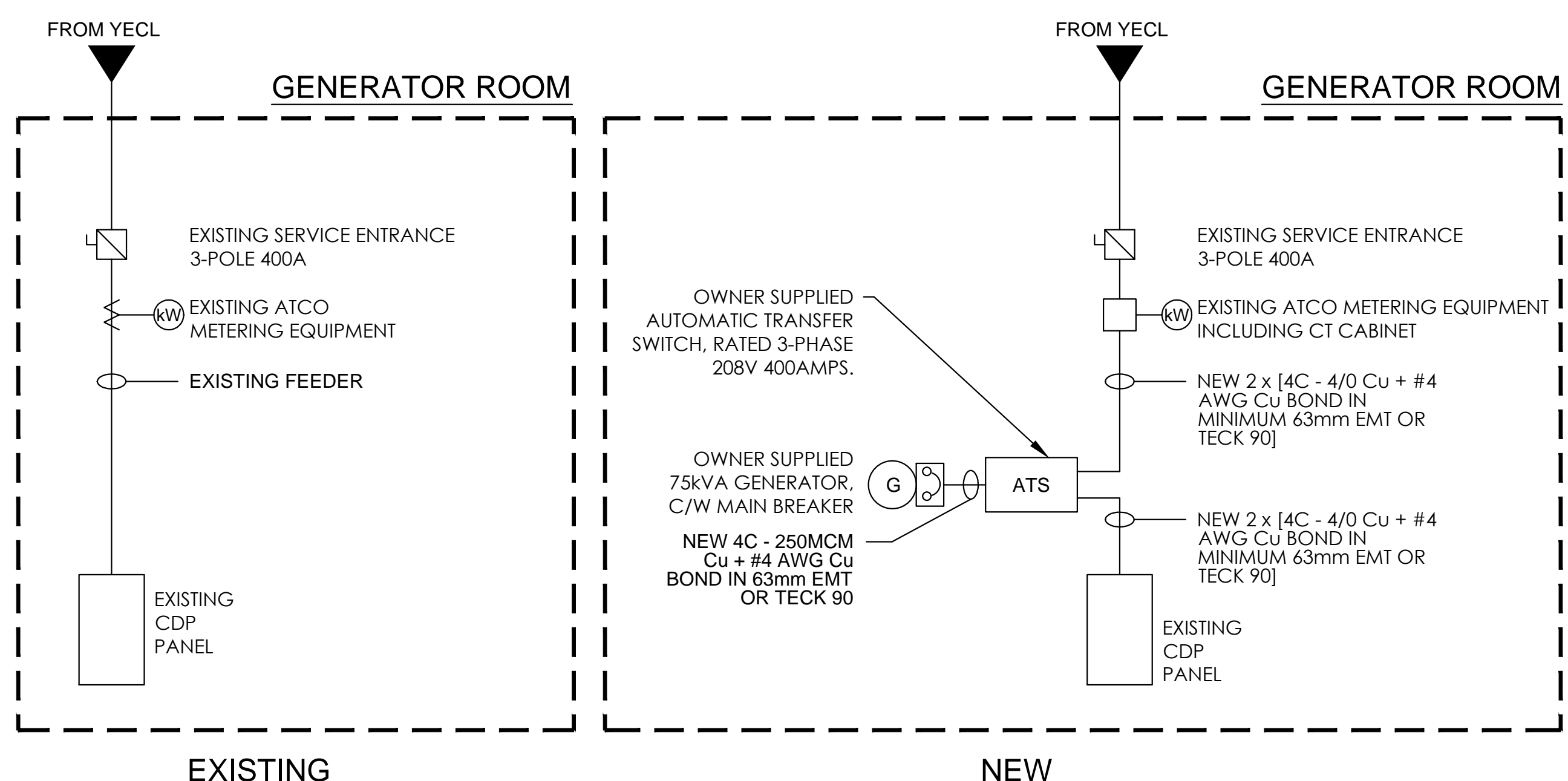
	CEILING MOUNTED FIXTURE		FIRE ALARM MINI SOUNDER/STROBE
	"A12" PANEL & CIRCUIT NUMBER		C/W SILENCER
	"0" SWITCH NUMBER		FIRE ALARM HORN
	WALL MOUNTED FIXTURE		FIRE ALARM STROBE
	RECESSED FIXTURE		FIRE ALARM BELL
	LINEAR FIXTURE		FIRE ALARM PULL STATION & ZONE
	CEILING OR SUSPENDED MOUNT LINEAR FIXTURE		HEAT DETECTOR & ZONE
	1-BAR CEILING PHOTO ELECTRIC CELL		SMOKE DETECTOR AND ZONE
	RECESSED SPEAKER - GENERAL		SMOKE ALARM - 110V INDEPENDENT UNIT
	RECESSED SPEAKER - WALL CLASSROOM		END OF LINE DEVICE
	SURFACE SPEAKER - GENERAL		MAGNETIC DOOR HOLDER
	SOUND SYSTEM, SPEAKER GYM		ISOLATION MODULE
	ROUGH IN ONLY - SEE DETAILS		360 DEGREE MOTION DETECTOR
	TALK BACK HANDSET		120 DEGREE MOTION DETECTOR
	NURSE CALL LAMP		DOOR SWITCH
	DOUBLE JACK PATIENT STATION		CARD ACCESS DEVICE
	SINGLE JACK PATIENT STATION		BUZZER
	EMERGENCY PULL CORD STATION		SHATTER GLASS DETECTOR
	EMERGENCY CALL PUSH BUTTON		INTERIOR CAMERA
	2x4 SURFACE MOUNTED		CONTACTS
	2x4 T-BAR FIXTURE		LOW TEMPERATURE
	4 FOOT LINEAR WALL FIXTURE		EXTERIOR CAMERA
	STRIP LIGHTING		JUNCTION BOX
	2x2 SURFACE MOUNTED		SINGLE OUTLET RECEPTACLE
	1x2 T-BAR FIXTURE		DUPLEX RECEPTACLE
	2x2 T-BAR FIXTURE		SPLIT DUPLEX RECEPTACLE
	2 FOOT LINEAR WALL FIXTURE		COMPUTER DUPLEX RECEPTACLE
	TRACK LIGHT HEAD		ISOLATED GROUND
	SURFACE SPEAKER		SPECIAL PURPOSE RECEPTACLE
	DAYLIGHT SENSOR		CLOCK OUTLET ONLY
	SINGLE GANG SWITCH		PACK POLE
	"3" THREE WAY		BASEBOARD HEATER
	LOW VOLTAGE SWITCH		FUSED SWITCH
	DIMMER SWITCH		MAGNETIC MOTOR STARTER
	MOTION SENSOR		POWER THERMOSTAT
	HEAT TRACE		OTHER RECESSED PANEL
	EMERGENCY LIGHTING WALL MOUNT		OTHER SURFACE PANEL
	EMERGENCY LIGHTING CEILING MOUNT		RECESSED POWER PANEL
	BATTERY BACK		SURFACE POWER PANEL
	DOUBLE REMOTE HEAD		3 WIRE SERVICE HEAD
	EMERGENCY LIGHTING REMOTE HEAD		4 WIRE SERVICE HEAD
	EMERGENCY SHUT DOWN		UTILITY METER
	DATA JACK		RECEPTACLE SLOT
	TV OUTLET		CIRCUIT BREAKER
	TV SERVICE HEAD		EQUIPMENT WITH DISCONNECT
	DETAIL		
	EQUIPMENT		

**ALTERNATE PRICES ITEMS, INCLUDE AS A SEPARATE ITEM IN THE BID.**

- SUPPLY AND INSTALL NEW SINGLE BY-PASS TRANSFER SWITCH; RATED 3-PHASE 400AMPS, 208V.
- SUPPLY AND INSTALL NEW CDP PANEL, RATED 3-PHASE 400AMP, 208V WITH CAPACITY FOR ALL EXISTING CIRCUITS, PLUS CAPACITY FOR TWO FUTURE 3-POLE 100AMP BREAKERS.



**1**  
**E1** POWER & LIGHTING LAYOUTS  
SCALE: 1/4" = 1' - 0" FOR ARCH D PAPER  
NOTES:  
1.



**2**  
**E1** SINGLE LINE DIAGRAM  
SCALE: NTS  
NOTES:  
1. AC CABLE IS APPROVED FOR SURFACE WIRING IN THE GENERATOR ROOM FOR FEEDERS.



NORTH

- NOTES:
- PROVIDE SEISMIC SIGN-OFF FOR GENERATOR ANCHORAGE.
  - COORDINATE FOR UPGRADE OF WALL FINISHES AS REQUIRED.

REVISIONS:

NO.	DATE	BY	DESCRIPTION
01	09/01/17	MS	ISSUED FOR 100% REVIEW
02	31/05/17	MS	ISSUED FOR TENDER

PERMIT TO PRACTICE:



**DORWARD ENGINEERING SERVICES LTD.**  
CONSULTING ELECTRICAL ENGINEERS  
UNIT 402 - 309 STRICKLAND ST. Phone: (867) 668-8888  
WHITEHORSE, YUKON Email: dorward@seee.org  
CANADA Y1A 2J9

PROJECT:  
**FARO RECREATION CENTRE GENERATOR UPGRADE**

DRAWING TITLE:  
**POWER LAYOUT AND SINGLE LINE DIAGRAM**

SCALE:	AS SHOWN
DATE:	SEPTEMBER 2016
DESIGN:	MS
DRAWN:	MS
CHECKED:	RD
NOT APPROVED FOR CONSTRUCTION	

D.E.S. PROJECT NUMBER: SHEET:  
**15066 E1 OF 1**