



**REQUEST FOR QUOTATION 4228Q  
BACK-UP POWER FOR RICHMOND ICE CENTRE**

Quotations will be received at the Information Counter, Main Floor, Richmond City Hall, addressed to the Purchasing Section, 6911 No. 3 Road, Richmond, BC, V6Y 2C1, until 12:00pm local time on Thursday, June 2, 2011.

**NOTES:**

1. Three (3) copies of quotations shall be in a sealed envelope or package marked with the bidder's Name, the RFQ Title and Number.
2. The Closing time will be conclusively deemed to be the time shown on the clock used by the City for this purpose.
3. Faxed quotations will not be received or considered.

All queries related to the RFQ shall be submitted  
in writing to the attention of:

Sumita Dosanjh - Buyer II - Contracting Specialist

email: [purchasing@richmond.ca](mailto:purchasing@richmond.ca)

The deadline for all enquiries is 3:00pm Wednesday, May 25, 2011

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REQUEST FOR QUOTATION 4228Q  
BACK-UP POWER FOR RICHMOND ICE CENTRE

Name of Bidder: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

Province: \_\_\_\_\_

Postal Code \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Title: \_\_\_\_\_

Email Address: \_\_\_\_\_

Fax Number: \_\_\_\_\_

## PART A – INSTRUCTIONS TO BIDDERS

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### PART A – INSTRUCTIONS TO BIDDERS

#### **1.0 Description of Requirement**

- 1.1 Quotations are invited for back-up power supply for Richmond Ice Centre as set out herein, for the City of Richmond.
- 1.2 Bidders are required to submit a quotation for the full requirement only. Partial responses will be put aside and given no further consideration.

#### **2.0 Contract Term- Intentionally Omitted**

#### **3.0 Pricing**

- 3.1 Prices quoted will be in Canadian currency and exclusive of all taxes, F.O.B. destination to the sites named herein, with all freight, unloading at destination, import duties, brokerage, royalties, handling, overhead, profit and all other costs included.

#### **4.0 Inquiries and Clarifications**

- 4.1 It is the sole responsibility of the Bidder to thoroughly examine these documents, and amendments and addenda and satisfy itself as to the full requirements of this RFQ. Inquiries are to be in written form only, faxed or e-mailed to the contact person shown on the cover page. If required, an amendment or addendum will be published on the following websites:
  - a) BC Bid: <http://www.bcbid.gov.bc.ca/open.dll/welcome?language=En>
  - b) City's website: <http://www.richmond.ca/busdev/tenders.htm>
- 4.2 The City, its agents and employer shall not be responsible for any information given by way of oral or verbal communication.

#### **5.0 Inspection of Site**

- 5.1 Where applicable, Bidders shall inspect the Work Site(s) and make allowances in its Quotation for such conditions as in the sole opinion of the Bidder are warranted. The City makes no representation or warranties as to the condition of the sites. No consideration will be given for extras resulting from conditions that would have been evident during a routine site visit.

## PART A – INSTRUCTIONS TO BIDDERS

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### **6.0 Pre-Bid Meeting**

- 6.1 Note: There will be a pre-bid meeting conducted on Thursday, May 19, 2011 9:00am until 11:00am, with sign-in attendance forms. Potential Bidders are asked to meet at the Work Site. The City strongly encourages all potential Bidders to attend this session. No other sessions will be organised or arranged for this project.

### **7.0 Submission of Quotation**

- 7.1 The response to this Request for Quotations (RFQ) with all accompanying schedules, appendices or addenda submitted by the Bidder will be received up to the closing time on the date and in the place shown on the title page of this RFQ (the “Closing Time”). The Quotation shall be submitted on the forms provided in a sealed envelope or package, marked with the Bidder’s name and the RFQ title and number.
- 7.2 Quotations received after the Closing Time or in locations other than the address indicated, will not be accepted and will be returned unopened.
- 7.3 The Bidder shall submit three (3) copies of its Quotation in accordance with the instructions stated herein.
- 7.4 The Bidder must enter its corporate or legal business name on the final page of the Quotation Form. The Quotation Form must be signed in the place provided by an officer or employee having authority to bind the Bidder to the terms and conditions of this RFQ. All other pages of the Quotation Form must be initialled by the authorized signatory in the spaces provided.
- 7.5 Amendments to a Quotation may be submitted if delivered in writing prior to the Closing Time in a sealed envelope or package, marked with the Bidder’s name and the RFQ title and number.
- 7.6 Quotations may be withdrawn by written notice only, provided such notice is received at the Purchasing Services office prior to Closing Time.
- 7.7 All costs associated with the preparation and submission of the Quotation, including any costs incurred by the Bidder after the Closing Time, will be borne solely by the Bidder.
- 7.8 By submitting a Quotation, the Bidder acknowledges and agrees that the City will not be responsible for any costs, expenses, losses, damages (including damages for loss of anticipated profit) or liabilities incurred by the Bidder as a result of or arising out of submitting a Quotation for the proposed Contract, or due to the

## PART A – INSTRUCTIONS TO BIDDERS

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City's acceptance or non-acceptance of their Quotation or any breach by the City of the bid contract between the City and each of the Bidders or arising out of any contract award not made in accordance with the express or implied terms of the Quotation documents.

### **8.0 Conflict of Interest**

8.1 By submitting a Quotation, the Bidder warrants that neither it nor any of its officers or directors, or any employee with authority to bind the Bidder, has any financial or personal relationship or affiliation with any elected official or employee of the City or their immediate families which might in any way be seen by the City to create a conflict.

### **9.0 Evaluation of Quotations**

9.1 Quotations will be evaluated on the basis of the overall best value to City based on quality, service, price and any other criteria set out herein including, but not limited to:

- a) the Bidder's ability to meet the Requirements, qualifications and competencies set out herein;
- b) financial offer including but not limited to prices, operating and maintenance costs, warranty, and any life cycle considerations;
- c) the Bidder's business and technical reputation and capabilities; experience and where applicable, the experience of its personnel; financial stability; track record; and references of current and former customers;
- d) equipment quality, configuration, age and condition; and
- e) any other criteria set out in the RFQ.

9.2 Prior to Contract award, the Bidder may be required to demonstrate financial stability. Should the City so request, the Bidder will be required to provide annual financial reports or a set of financial statements prepared by an accountant and covering the last two (2) fiscal years.

9.3 The City may, prior to Contract award, negotiate changes to the scope of the Work, the materials, the Specifications or any conditions with any one or more of the Bidders without having any duty or obligation to advise any other Bidders or to allow them to vary its prices as a result of changes to the scope of Work, the materials, the Specifications, or any conditions, and the City shall have no liability to any other Bidder as a result of such negotiations or modifications.

## PART A – INSTRUCTIONS TO BIDDERS

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- 9.4 All sub-contractors of the Bidder will be subject to the same evaluation process. It is the responsibility of the Bidder to guarantee that all its sub-contractors will comply with all the Requirements and terms and conditions set out herein.
- 9.5 Preference may be given to Quotations offering environmentally beneficial products or services.

### **10.0 Acceptance and Rejection of Quotations**

- 10.1 Notwithstanding any other provision in the Quotation documents, the City has in its sole discretion, the unfettered right to:
- a) accept any Quotation;
  - b) reject any Quotation;
  - c) reject all Quotations;
  - d) accept a Quotation which is not the lowest Quotation;
  - e) accept a Quotation that deviates from the Requirements, Specifications or the conditions specified in this Quotation;
  - f) reject a Quotation even if it is the only Quotation received by the City;
  - g) accept all or any part of a Quotation; and
  - h) split the Requirements between one or more Bidders.
- 10.2 All Quotations shall be irrevocable and remain open for a minimum of sixty (60) days after the Closing Time, whether or not another Quotation has been accepted.
- 10.3 The City may waive any non-compliance with the RFQ, the Requirements, the Specifications, or any conditions, including the timing of delivery of anything required by this RFQ and may elect to retain for consideration Quotations which are non-conforming, which do not contain the content or form required by the RFQ or which have not complied with the process for submission set out herein.

### **11.0 Award of Contract**

- 11.1 Award of a Contract is contingent on funds being approved and the contract award being made by the appropriate City authority.
- 11.2 The purchase order, the Quotation, the RFQ and such other documents including all amendments or addenda, shall form the basis for the Contract between the Contractor and the City. In the event of a conflict between any of the Contract Documents, the following documents will take precedence and govern over each other in the following order of priority from highest to lowest:

## PART A – INSTRUCTIONS TO BIDDERS

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- a) The City's purchase order including the standard purchase order terms and conditions;
  - b) Or any mutually agreed to amendments between the Bidder and the City;
  - c) The Quotation; and
  - d) The RFQ and any subsequent amendments or addenda.
- 11.3 Where the head office of the successful Bidder is located within the City of Richmond and/or where the successful Bidder is required to perform the Service at a site located within the City of Richmond, the successful Bidder is required to have a valid City of Richmond business license prior to Contract execution.
- 11.4 The City is not under any obligation to award a Contract and may elect to terminate this RFQ at anytime.

### **12.0 Publication of the Results of the Request for Quotation**

- 12.1 The City will publish the name of the successful Bidder on the websites listed in section 4.1. No other notices will be issued by the City. Bidders shall visit these websites to obtain the results of this Request for Quotation.

### **13.0 Quantities**

- 13.1 The quantities stated herein are the City's best estimates of its requirements and should not be relied on. Actual quantities may vary.

### **14.0 Brand Names – Intentionally Omitted**

### **15.0 Alternates and/or Variations to Specifications**

- 15.1 Except where stated otherwise herein, the Specifications describe what is considered necessary to meet the performance requirements of the City and Bidders should bid in accordance with such Specifications, or if the Bidder cannot meet the Specifications, the Bidder may offer an alternative which it believes to be the equivalent.
- 15.2 If in addition to bidding on goods, materials, equipment and/or services that meet the Specifications, the Bidder wishes to offer an alternative, the alternative Quotation shall be submitted separately in the same format as the initial Quotation.
- 15.3 The City is not obligated to accept any alternatives.
- 15.4 The City will determine what constitutes allowable alternatives and/or variations.

## PART A – INSTRUCTIONS TO BIDDERS

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### **16.0 Freedom of Information and Protection of Privacy Act (BC)**

16.1 Bidders should note that the City of Richmond is subject to the Freedom of Information and Protection of Privacy Act (British Columbia), which imposes significant obligations on the City's contractors to protect all personal information acquired from the City in the course of providing any service to the City.

### **17.0 Confidentiality**

17.1 Information about the City obtained by Bidders must not be disclosed unless prior written authorization is obtained from the City.

17.2 The Contractor agrees that this obligation of confidentiality will survive the termination of the Contract between the Contractor and the City.

### **18.0 Insurance**

18.1 The contractor will be required to Indemnify and Insure the City as shown in the General Conditions of the Contract.

18.2 Bidders shall have the Undertaking of Liability Insurance Form Letter L1-1 within the document completed and submitted with their Quotation.

18.3 All policies and certificates shall be submitted to the Purchasing Section before a contract is issued to carry out the work.

18.4 All bids shall be accompanied by an Undertaking of Surety, an Undertaking of Liability Insurance,

### **19.0 Bid Bond – Intentionally Omitted**

## PART C – REQUIREMENTS

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### PART B – GENERAL CONDITIONS

#### 1.0 Definitions

The following words and terms, unless the context otherwise requires, shall have the meanings set out below. Words including the singular number include the plural and vice versa.

“Act of God” means a cataclysmic phenomenon of nature, including earthquake, flood or cyclone. Rain, snow, wind, high water or any other natural phenomenon, which might reasonably have been anticipated from historical records of the general locality of the City, shall be deemed not to be acts of God;

“Bidder” means the individual, partnership, corporation or combination thereof, including joint venture, who or which sign the Quotation form set out in Part D of this RFQ;

“City” means the municipal corporation, generally known as the City of Richmond.

“City’s Designated Representatives” means the City’s employees or representatives who are authorized in writing to deal with the Contractor on behalf of the City in connection with the goods, materials, equipment and services or to make decisions in connection with the Contract;

“Closing Time” means the closing date, time, and place as set out on the title page of this RFQ;

“Contract” means the agreement formed between the City and the Contractor as evidenced by the purchase order issued to the Contractor by the City;

“Contract Documents” means the purchase order, the Contractor’s Quotation, the RFQ and such other documents as listed in the purchase order, including all amendments or addenda agreed between the parties;

“Contractor” means the successful Bidder individual, partnership, corporation or combination thereof, including joint venture, who or which is awarded the Contract;

“Delivery Date” means the date the City requires the Contractor to deliver the goods to the City’s Delivery Site;

“F.O.B.” means all costs of freight, insurance, brokerage, customs duties and all other costs of delivery to the site named as F.O.B. will be borne by the Contractor and that ownership and title to all goods, materials, and equipment are transferred to the City when same are delivered by the Contractor to the City and the risk of loss or damage to the goods, materials and equipment transfers to the City only at such time as same are received and accepted by the City at the site named as “F.O.B.”;

## PART C – REQUIREMENTS

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“HST” means the harmonized sales tax administered under the Excise Tax Act (Canada) and any successor tax or levy therefore in force from time-to-time;

“OHS Regulation” means the *Workers Compensation Act* (British Columbia), including without limitation, the Occupational Health & Safety Regulation (BC Regulation 296/97, as amended by BC Regulation 185/99) enacted pursuant to such Act, all as such Act or Regulations are amended or re-enacted from time to time.

“Quotation” means the Bidder’s response made on the Quotation form set out on Part E of this RFQ with all appendices or addenda submitted by the Bidder in response to the RFQ;

“RFQ” means this Invitation to Quotation including, but not limited to: Part A - Instructions to Bidders; Part B - General Conditions; Part C- Requirements; Part D – Quotation Form;

“Requirements” means all of the Specifications, requirements and services set out in the RFQ that describes the general requirements that the goods, materials, equipment and services must meet and the Contractor must provide;

“Work” means all the labour, materials, equipment, supplies, services and other items necessary for the execution, completion and fulfilment of the Requirements;

“Work Site” means the site where the Work is being performed, 14140 Triangle Rd. Richmond, B.C., unless otherwise stated in this RFQ.

### 2.0 Personnel

#### 2.1 Qualified Personnel

The Contractor will provide only professional personnel who have the qualifications, experience and capabilities to perform the Work.

#### 2.2 Replacement of Personnel or Sub-Contractors

If the City reasonably objects to the performance, experience, qualifications or suitability of any of the Contractor’s personnel or subcontractors then the Contractor will, on written request from the City, replace such personnel or subcontractors.

#### 2.3 City’s Own Forces and Other Contractors

The City may have its own work forces and other contractors on the site while the Work is under way. The City will coordinate the work of all contractors on the site and require their coordination with each other. the Contractor will report to

## PART C – REQUIREMENTS

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the City and apparent deficiencies in other contractors' work which would affect the Work, immediately after the deficiencies come to the Contractor's attention.

### **3.0 Sub-contractors**

- 3.1 The Contractor will perform the Work using its own personnel and those subcontractors as may be listed in *Part D - Quotation Form* and approved by the City, and will bind all approved subcontractors to the terms of the Contract Documents, as applicable to the subcontractors' work. The Contractor will be as fully responsible to the City for acts and omissions of subcontractors and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the Contractor.
- 3.2 All sub-contractors are the responsibility of the Contractor.
- 3.3 The Contractor shall be held as fully responsible to the City for the acts and omissions of its sub-contractors and of persons directly or indirectly employed by the Contractor, as for the acts and omissions of persons directly employed by it.
- 3.4 The Contractor agrees to ensure performance by every sub-contractor with the terms and requirements of the Contract Documents.
- 3.5 No sub-contractors will be permitted except those expressly named by the Contractor in Part D – quotation form or subsequently permitted in writing by the City pursuant to Section 4.1 of these General Conditions.
- 3.6 The Contractor will list below all subcontractors it intends to use in its performance of the Work, and what parts of the Work each subcontractor will be undertaking (the "Subcontractors").
- 3.7 The Contractor, if awarded the Contract, will engage the listed Subcontractors only, and no others in their stead, without prior written authorization of the City.
- 3.8 The Contractor, if awarded the Contract, will ensure that every Subcontractor is bound by a legal agreement with the same terms and conditions of the Contract.

### **4.0 Independent Contractor**

- 4.1 The Contractor, its sub-contractors, the officers, directors, shareholders, partners, personnel, affiliates and agents of the Contractor and its sub-contractors are not, nor are they to be deemed to be, partners, appointees, employees or agents of the City.

## PART C – REQUIREMENTS

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### **5.0 Assignment**

- 5.1 Subject to Sections 2.4 and 4.2, the Contractor will not assign, sublet, subcontract, or let out as task work any part of the Work or any of the Contractor's obligations of the Contract Documents to any third party, and will not assign or otherwise transfer any of the rights of payment under the Contract Documents to any third party, without in each case the prior written consent of the City which consent the City may arbitrarily withhold.
- 5.2 Despite Section 4.1, the Contractor may utilize those sub-contractors expressly named in the "List of Subcontractors" of Part D– Quotation Form but only for the Area of Responsibility set out beside their name, provided always that the Contractor may not substitute or replace those sub-contractors, or permit those sub-contractors to further assign, sub-let, sub-contract, or let out as task work their obligations under the Contract documents, except in accordance with Section 4.1 above.
- 5.3 If the City should consent to any such assignment, subletting or letting out as task work of all or any part of the Work, the Contractor shall in no way be relieved from its responsibility for the fulfilment of the Work, but shall continue to be responsible for the same in the same manner as if all the Work had been performed by the Contractor.

### **6.0 Time of the Essence**

- 6.1 For all requests made by the City pursuant to the Contract, time is of the essence. The acceptance of a late performance, with or without objections or reservations by the City, shall not waive the right to claim damages for such breach nor constitute a waiver of the requirement of timely performance of any obligation remaining to be performed.

### **7.0 Laws, Permits and Regulations**

- 7.1 The laws of British Columbia shall govern the Contract.
- 7.2 In carrying out its obligations hereunder, the Contractor shall familiarize itself and comply with all applicable laws, bylaws, regulations, ordinances, codes, specifications and requirements of all regulatory authorities, and shall obtain all necessary licenses, permits and registrations as may be required by law.

### **8.0 Inspection**

- 8.1 The services are subject to inspection and in case any of the services are not in conformity with the Requirements of the Contract or the Contractors' warranty

## PART C – REQUIREMENTS

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(expressed or implied), the City shall have the right either to reject them or to require correction.

8.2 The City shall be the final judge of the services and materials in respect of both quality and quantity and its decisions of all questions in dispute with regard thereto will be final.

8.3 The City will not be deemed to have accepted the services by virtue of a partial or full payment for it.

### **9.0 Use of Premises**

9.1 The Contractor shall confine the use of the premises for his work as directed by the City and shall comply with regulations which govern the building or institution where the work is located.

9.2 At the conclusion of the work, the Contractor shall clean up and remove all debris and rubbish to the satisfaction of the City.

### **10.0 Light, Power, and Heat**

10.1 The City's supply of electrical energy will be available to the Contractor without charge.

10.2 The City's supply of water will be available to the Contractor without charge.

10.3 The Contractor, upon completion of the work, shall remove temporary connections and extension of services, leaving the existing structures and services undamaged.

### **11.0 Quality of Workmanship and Materials**

11.1 The Contractor shall perform the services with the degree of care, skill and diligence normally applied in the performance of services of a similar nature and in accordance with sound current professional practices and conforming to the requirements set out in the RFQ.

11.2 The whole of the works and the manner of performing this Contract shall be done to the entire satisfaction and approval of the City, and it shall be the sole judge of the work and materials in respect of both quality and quantity, and its decision with regard to work or materials, or as to the meaning and intention of this Contract, or any part or parts thereof, shall be binding and final upon the Contractor.

## PART C – REQUIREMENTS

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- 11.3 All work shall be done in strict conformity with the Contract Documents and drawings which form a part of the Contract. The intent of the contract documents is to include all labour, materials, equipment, services, supplies and all the things necessary for the proper and complete execution of the work.
- 11.4 Materials, goods and equipment shall be the products of suppliers or manufacturers of established reputation engaged in the supply or manufacture of such materials of equipment.
- 11.5 Materials are to be applied in accordance with the manufacturer's directions and shall use the techniques and applications best suited for the type of material being used.

### **12.0 Warranty**

- 12.1 The Contractor warrants that the goods, materials, equipment and/or services supplied by the Contractor to the City will be in full conformity with the Specifications as well as samples, if any, then this is a sale by sample as well as by description within the meaning of the Sale of Goods Act (BC).
- 12.2 The Contractor further warrants that the goods, materials and/or equipment are of merchantable quality, and fit for the intended use and will perform according to the requirements set out in the RFQ.
- 12.3 Equipment and materials shall be new, free and clear of all liens, charges and encumbrances, the latest model, and shall be complete with all necessary accessories for operation. All equipment and materials shall be at the risk of the Contractor until delivered to and accepted by the City.
- 12.4 At a minimum, a one (1) year parts and labour warranty shall be provided on all goods, materials, equipment and/or services provided under the Contract.
- 12.5 The Contractor warrants that its employees have the qualifications, experience, knowledge, skills and abilities necessary for the fulfilment of the Contract.

### **13.0 Indemnification and Insurance**

- 13.1 The Contractor shall indemnify, hold and save harmless the City from and against all claims, losses, damages, costs, actions and other proceedings made, sustained, brought or prosecuted in a manner based upon, occasioned by or attributable to any injury, including death, property damage, infringement or damage arising from any act or omission of the Contractor, its employees, officers, volunteers, servants, sub-contractors, or agents or persons from whom the Contractor has

## PART C – REQUIREMENTS

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assumed responsibility in the performance or purported performance of the Requirements.

- 13.2 The Contractor shall indemnify the City from and against any and all liability or expenses by way of legal costs or otherwise in respect of any claim which may be made for a lien or charge at law or in equity or to any claim or liability under the Builders Lien Act, or to any attachment for debt, garnishee process or otherwise.
- 13.3 The Contractor shall assume the defence of, and indemnify and hold harmless the City and its officers, employees and agents, from and against all claims relating to materials, goods or equipment furnished and to inventions, copyrights, trade marks, or patents and rights thereto used by the Contractor in the execution of the Contract and in subsequent use and/or operation by the City.
- 13.4 The Contractor will indemnify, hold, and save harmless the City from and against all claims, losses, damages, costs, actions, and other proceedings, made, sustained, brought or prosecuted in manner, based upon, occasioned by, attributable to any injury, including death, property damage, infringement, or damage arising from any act or omission of the Contractor, his employees, officers, volunteers, servants, or agents or persons from whom the Contractor has assumed responsibility in the performance or purported performance of this agreement
- 13.5 The Contractor shall, at his own expense, through the terms of the contract secure, maintain, and pay for the following coverage:
- a) Comprehensive General Liability Insurance with a limit of not less than \$5,000,000 inclusive per occurrence for bodily injury and property damage and \$5,000,000 for personal injury. The policy or policies shall cover all premises and operations necessary or incidental to the performance of this agreement and include but not necessarily be limited to the following coverage:
    1. Contractual liability assumed under this agreement.
    2. Contingent employer's liability with respect to operations of sub-contractors.
    3. Owner's protective liability.
    4. Cross liability.
    5. Automobile liability (non-owned, hired).
    6. Completed operations liability 24 months after completed operations.
    7. Voluntary medical payments.

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- b) "Course of Construction" Property Damage Insurance covering all risks of physical loss or damage on an occurrence basis, including loss of use of property, and including losses or damage from flood or earthquake. The coverage provided shall amount to no less than eighty (80%) percent of the total value of the work done and material delivered to the site, or under the control of the Contractor, payable to the City and Contractor as their interests may appear, and protecting each in such terms as will preclude subrogation claims by the insurer against anyone insured there-under.
- 13.6 The City, its officers, officials, and employees shall be added as an additional insured on all such policies. All such insurance provided by these policies shall be primary regardless of any insurance or self insurance that may be enforced at the time of any loss or claim that insures the City, its officers, officials, and employees.
- 13.7 The policy or policies shall be underwritten by an insurance company or companies licensed to do business in the Province of British Columbia and who meet with the reasonable approval of the City. Prior to the commencement of the work defined by this agreement, the Contractor shall furnish the City through the Office of the Manager Purchasing and Risk a certified original copy of all such policies as evidence that such insurance is in force. The Contractor agrees that such insurance policies cannot be cancelled, lapsed, or materially changed without at least thirty (30) days' written notice to the City.
- 13.8 Maintenance of such insurance and the performance of the Contractor of his obligations under this clause shall not relieve the Contractor of liability under the indemnification provisions here and above set forth. The foregoing insurance provisions shall not limit the insurance required by Municipal, Provincial, or Federal law
- 13.9 It shall be the full responsibility of the Contractor to determine whether any additional insurance coverage is necessary and advisable for its own protection and/or to fulfil its obligations under this Contract. Any such additional insurance shall be provided and maintained by the Contractor its own expense.
- 13.10 It is understood that this agreement is strictly between the Contractor and the City and the Contractor is an independent contractor for the City and no employment relationship, partnership, agency, or joint venture exists between the City, the employees of the Contractor and/or its agents and/or their employees, and/or its Contractors and/or their employees. Any disputes between the Contractor and any of its employees and/or its agents and/or their employees and/or their Contractors and/or their employees shall be resolved by the Contractor with no involvement by the City.

## PART C – REQUIREMENTS

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### **14.0 Workers' Compensation Board Coverage/Prime Contractor**

- 14.1 The Contractor agrees that it shall at its own expense procure and carry or cause to be procured and carried and paid for, full Workers' Compensation Board coverage for itself and all workers, employees, servants and others engaged in or upon any work or service which is the subject of this contract. The Contractor agrees that the City has the unfettered right to set off the amount of the unpaid premiums and assessments for such Workers' Compensation Board coverage against any monies owing by the City to the Contractor. The City shall have the right to withhold payment under this contract until the Workers' Compensation Board premiums, assessments or penalties in respect of work done or service performed in fulfilling this contract had been paid in full.
- 14.2 The Contractor agrees that it is the Prime Contractor for the purposes of the Workers' Compensation Board Occupational Health and Safety Regulations for the Province of British Columbia. The Contractor shall have a safety program acceptable to the Workers' Compensation Board and shall ensure that all Workers' Compensation Board safety rules and regulations are observed during performance of this contract, not only by the Contractor but by all subcontractors, workers, material men and others engaged in the performance of this contract. Prior to commencement of construction, the Contractor shall complete and file a "Construction Notice of Project" with the Workers' Compensation Board and shall provide a copy of the same to the City confirming that the Contractor shall be the Prime Contractor responsible for coordination of safety and health under Part 3 of the Workers Compensation Act and Part 20 of the WCB Occupational Health and Safety Regulations.
- 14.3 The Contractor shall provide the City with the Contractor's Workers' Compensation Board registration number and a letter from the Workers' Compensation Board confirming that the Contractor is registered in good standing with the Workers' Compensation Board and that all assessments have been paid to the date thereof prior to the City having any obligation to pay monies under this contract. The Contractor shall also provide a signed copy of the Prime Contractor Designation Document.
- 14.4 The Contractor shall indemnify the City and hold harmless the City from all manner of claims, demands, costs, losses, penalties and proceedings arising out of or in any way related to unpaid Workers' Compensation Board assessments owing from any person or corporation engaged in the performance of this contract or arising out of or in any way related to the failure to observe safety rules, regulations and practices of the Workers' Compensation Board, including penalties levied by the Workers' Compensation Board.

## PART C – REQUIREMENTS

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### **15.0 Termination**

15.1 The City will advise the Contractor by written notice of its intent to terminate the whole or any part of the Contract in any one of the following circumstances:

- a) if the Contractor fails to make delivery of the goods, materials, equipment and/or services within the time specified, or fails to perform any other provisions, terms or conditions of the Contract within the time specified, or within a reasonable time if no time is specified;
- b) in the event that the Contractor performs any act or does anything by which the City shall incur any liability whatsoever;
- c) any failure of the Contractor to meet the safety requirements of the Contract;
- d) in the event that any creditor of the Contractor causes a writ of execution or similar writ or court order to be served upon the City requiring the City to pay any portion due to the Contractor under the Contracts; or
- e) in the event that the Contractor is adjudged bankrupt or if it makes a general assignment for the benefit of creditors or if it becomes insolvent or if it should take the benefit of any Act that may be in force for bankrupt or insolvent debtors.

15.2 Upon termination of the Contract, the City shall have no obligation to the Contractor except for such services and/or goods as have been supplied up to the date of the termination of the Contract(s).

15.3 Upon termination of the Contract(s) in whole or in part, the City may procure similar goods, materials, equipment and/or services and the Contractor shall be liable to the City for any excess costs for such similar goods, materials, equipment and/or services. The Contractor shall not be liable for any excess costs if failure to perform arises by reason of strikes, lockouts, Acts of God or acts of the City. The City will not be liable where Delivery Sites are not available due to strikes, lockouts or Acts of God.

### **16.0 Payments**

16.1 The Contractor shall be paid net thirty (30) days from receipt of invoice and acceptance of the goods, materials, equipment and/or services, whichever is the later.

16.2 The City shall make progress payments once a month for work completed and materials on the site upon receipt of the Contractor's invoice.

## PART C – REQUIREMENTS

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16.3 Except for the final payment, the City shall holdback ten (10%) percent of the amount of progress claims. The City shall pay the holdback 55 days after completion of the work upon receipt of the contractor's written claim for final payment accompanied by a Statutory Declaration stating that the Contractor has discharged every obligation and paid or satisfied every just claim incurred by him in connection to the Contract, including claims by his subcontractors, and upon receipt of clearance from the Workers' Compensation Board.

### **17.0 Taxes**

17.1 Unless otherwise provided herein, the Contractor shall pay all sales or excise taxes in force during the term of the Contract, provided that any increase or decrease in such taxes shall increase or decrease the amount due under the Contract(s).

17.2 Invoices shall show the appropriate amounts for HST.

### **18.0 Non-resident Withholding Tax**

18.1 Regulation 105(1) of the Canadian Income Tax Act requires that payments to non-residents for any work performed in Canada are subject to a Non-resident Withholding Tax of fifteen (15%) percent. Exemption from this withholding tax is available in some circumstances, but the Contractor must apply directly to the Canada Revenue Agency (CRA) at least thirty (30) days before commencing the Work.

### **19.0 Liens**

19.1 The Contractor shall fully indemnify the City from and against any and all liability or expenses by way of legal costs or otherwise in respect of any claim which may be made for a lien or charge at law or inequity or to any claim or liability under the Builders Lien Act, or to any attachment for debt, garnishee process, or otherwise.

### **20.0 Patent Fees**

20.1 The Contractor shall pay all royalties and licence fees and shall save the City harmless from loss on account of suits or claims of infringement of patents in the doing of the work.

## PART C – REQUIREMENTS

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### **21.0 Performance Bond – Intentionally Omitted**

### **22.0 Protection of Person and Property**

- 22.1 The Contractor shall use due care that no persons are injured, no property damaged or lost, and no rights are infringed in the performance of the services, and the Contractor shall be solely responsible for all loss, damages, costs and expenses in respect of any injury to persons, damage of property, or infringement of the rights of others incurred in the performance of the services or caused in any other manner whatsoever by the Contractor, or its employees.
- 22.2 The Contractor shall effectively warn and protect the public and other personnel from any danger as a result of the services being done.
- 22.3 The Contractor shall maintain protection of all his work and materials from damage and shall protect the City's and any adjoining property from injury due to the Contractor's work.

### **23.0 Clean Up**

- 23.1 The Contractor shall at all times perform the services in an orderly and reasonably tidy manner, and shall at suitable intervals remove any accumulation of rubbish or refuse materials. At no time shall any person employed by the Contractor or by any of its sub-contractors discard any litter or garbage on or adjacent to the delivery site, except into a suitable container.

### **24.0 Character of Workers**

- 24.1 On the written request of the City, the Contractor will remove any employee, Sub-Contractor or agent for any reason including but not limited to the following:
- a) Lack of or failure to obtain any required Security Clearance;
  - b) Intoxication;
  - c) Use of foul, profane, vulgar or obscene language or gestures;
  - d) Solicitation of gratuities or tips from any person for services performed under this Agreement;
  - e) Wilful, negligent or reckless action in disregard of safety or sanitary requirements or regulations; or
  - f) Any action which may constitute a public nuisance or disorderly conduct.
- 24.2 The Contractor will immediately comply with each such request and will then provide the City with all requested documentation verifying that the employee,

## PART C – REQUIREMENTS

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Sub-Contractor or agent has been removed from further involvement with this Agreement.

### **25.0 Conduct of the Contract**

25.1 The City of Richmond's Manager, Purchasing shall have the conduct of the RFQ and the Contract.

### **26.0 Rectification of Damage and Defects**

26.1 The Contractor shall rectify any loss or damage for which, in the opinion of the City the Contractor is responsible, at no charge to the City and to the satisfaction of the City. Alternatively, the City may repair the loss or damage and the Contractor shall pay to the City the costs of repairing the loss or damage forthwith upon demand from the City. Where, in the opinion of the City, it is not practical or desirable to repair the loss or damage, the City may estimate the cost of the loss or damage and deduct such estimated amount from the amount owing to the Contractor hereunder.

### **27.0 Failure to Perform**

27.1 If, in the opinion of the Manager Purchasing, the work is improperly, defectively, or insufficiently performed, or being performed, the Manager Purchasing may, in writing, order the Contractor to re-execute or correct the work in accordance with such order; and if the Contractor fails to comply with such order within ten (10) working days, the Manager Purchasing may, at any time thereafter, execute or cause to be executed the order so given, and the Contractor shall, on demand, pay to the City of Richmond, all costs, damages, and expenses incurred in respect thereof or occasioned by reason of the non-compliance by the Contractor with any such orders; and if the Contractor fails to pay such costs, damages, and expenses, the City of Richmond may retain and deduct such costs, damages, and expenses from any amount then or thereafter payable to the Contractor under this Contract.

27.2 Should the Contractor neglect to execute the Requirement properly or fail to perform any provision of the Contract, the City may, without prejudice to any other right or remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment due to the Contractor.

27.3 If the Contractor fails to perform any provision of the Contract due to reasons of strike, lockout or other work stoppages, the City may upon ten (10) days written notice to the Contractor terminate the Contract without prejudice to any other right or remedy the City may have.

## PART C – REQUIREMENTS

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### **28.0 Dispute Resolution**

- 28.1 All claims, disputes or issues in dispute between the City and the Contractor shall be decided by mediation or arbitration, if the parties agree, or failing agreement, in a Court of competent jurisdiction with the Province of British Columbia and be governed by the laws of British Columbia.
- 28.2 In the event that the parties agree to arbitration pursuant to the above, the arbitration shall be governed by the rules of the British Columbia International Commercial Arbitration Centre, except that the arbitrator or arbitrators shall be agreed upon by the parties, and failing agreement by the parties, shall be appointed by a court of competent jurisdiction with the Province of British Columbia.
- 28.3 In the event that the parties agree to arbitration, the arbitration shall take place in the Lower Mainland, British Columbia and be governed by the laws of British Columbia.
- 28.4 The procedure set out in this section is not meant to preclude or discourage informal resolution of disagreements between the City and the Contractor.

### **29.0 Delivery**

- 29.1 Deliveries shall be made to the Work Site between the hours of 9:00am and 3:00pm on any normal working day.

### **30.0 Changes in Requirements**

- 30.1 The City, without invalidating the Contract, may make changes to the Contract by altering, adding or deducting from the Requirements. Subject to mutual agreement, the Contractor shall proceed with the amended Requirements and the amended Requirements shall be executed under the provisions of the Contract.
- 30.2 The Contractor must not make any changes to from the terms of the Contract unless it shall first have received the written consent of the City and no claims for additional compensation shall be valid unless the change is so ordered.

### **31.0 Notices**

- 31.1 Any notice required to be given in this Contract shall be deemed to be duly given to the City if sent by registered mail addressed to the City's Purchasing Manager at Richmond "City Hall, 6911 No. 3 Road, Richmond, BC V6Y 2C1" and to the Contractor if sent by registered mail addressed to the Contractor at the address set forth in the Quotation.

## PART C – REQUIREMENTS

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### PART C - REQUIREMENTS

See Attachments

1. Electrical Specification for the Richmond Ice Centre – Back Up Power prepared by Nemetz (S/A) & Associates Ltd.

2. Drawing E- 1/1 Existing Electrical Room

PART E – DISTRIBUTION LIST

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PART D – QUOTATION FORM

**Quotation Form**

Purchasing  
City of Richmond  
6911 No. 3 Road  
Richmond, BC V6Y 2C1

The undersigned Bidder, having carefully read and examined the Instructions to Bidders, Undertaking of Liability Insurance, Quotation Form, Quotation Annexures, General Conditions of Contract, Specifications and Drawings, and having full knowledge of the work required, does hereby offer to provide all necessary materials in strict accordance with the Specifications and to do all therein called for on the terms and conditions and under the provisions therein set forth at the:

**LUMP SUM TOTAL QUOTED PRICE OF \$ \_\_\_\_\_**

**PAYMENT TERMS \_\_\_\_\_ EARLY PAYMENT TERMS \_\_\_\_\_**

The above price includes and covers duties, handling and transportation charges, and all other charges incidental to and forming part of this Quotation, except for H.S.T.

The undersigned Bidder agrees to complete the whole of the works within \_\_\_\_\_ working days of acceptance.

Name of Bidder: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Telephone No: \_\_\_\_\_

Name, Signature, and  
Title of Signing Officer: \_\_\_\_\_  
\_\_\_\_\_

Date: \_\_\_\_\_

E-mail: \_\_\_\_\_

PART E – DISTRIBUTION LIST

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**Undertaking of Liability Insurance**

City of Richmond  
6911 No. 3 Road  
Richmond, BC V6Y 2C1

Dear Sirs:

We, the undersigned (insert insurance company's name) \_\_\_\_\_ do hereby undertake and agree to insure the Contractor in the amount of \$5,000,000.00 as outlined in the attached "General Conditions of the Contract" and agree to:

- a. Name the City of Richmond, its officers, officials, agents, and employees as additional insured in connection with the work being proposed by the Contractor.
- b. State that such policy applies to each insured in the same manner and to the same extent as if separate policy had been issued to each insured named in the policy.
- c. State that the policy cannot be cancelled, lapsed, or materially changed without at least 30 days written notice of cancellation delivered to the City Clerk of the City of Richmond at 6911 No. 3 Road, Richmond, BC V6Y 2C1.
- d. State that coverage provided by such insurance shall protect the Contractor and the City of Richmond during the performance of the works and services specified in the attached Form of Quotation and specifically that the insurance required by such Quotation shall be consistent with the requirements therein.

if the Contract is awarded to (insert bidder's name) \_\_\_\_\_

EXCEPTIONS:

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Dated at \_\_\_\_\_, British Columbia, this \_\_\_\_ day of \_\_\_\_\_, 2011.

BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

This form must be signed by the Insurance Company or an authorized Broker on behalf of the Insurance Company.

A SEPARATE FORM MUST BE SIGNED FOR EACH POLICY IF MORE THAN ONE POLICY IS APPLICABLE.





PART E – DISTRIBUTION LIST

**List of Previous Contracts**

The Bidder has recently undertaken and completed the Contracts described following and authorizes the City of Richmond to inquire as to the nature of the Bidders performance on these contracts.

	DESCRIPTION OF CONTRACT	TOTAL PRICE OF CONTRACT	DATE COMMENCED	DATE COMPLETED
Company:  Contact Name:  Phone:  E-mail:				
Company:  Contact Name:  Phone:  E-mail:				
Company:  Contact Name:  Phone:  E-mail:				
Company:  Contact Name:  Phone:  E-mail:				

(If additional space is required, attach additional

**ELECTRICAL SPECIFICATION  
FOR  
RICHMOND ICE CENTRE – BACK-UP POWER  
14140 TRIANGLE ROAD  
RICHMOND, B.C.**

**PREPARED FOR:**

**CITY OF RICHMOND  
#110 – 5440 HOLLYBIRDGE WAY  
RICHMOND, B.C.  
V7C 4N2**

**PREPARED BY:**

**NEMETZ (S/A) & ASSOCIATES LTD.  
2009 WEST FOURTH AVENUE  
VANCOUVER, B.C.  
V6J 1N3**

**PROJECT NO. 11776**

**MAY 2011**

## INDEX

### **RICHMOND ICE CENTRE – BACK-UP POWER 14140 TRIANGLE ROAD RICHMOND, B.C.**

SECTION 16005	BID PROPOSAL PROVISIONS
SECTION 16010	GENERAL REQUIREMENTS
SECTION 16050	BASIC MATERIAL AND METHODS
SECTION 16111	CONDUITS
SECTION 16120	WIRE AND CABLE
SECTION 16450	GROUNDING
SECTION 16610	EMERGENCY LIGHT AND POWER SYSTEM
SECTION 3550	CHAIN LINK FENCING

11776

MAY 2011

**NEMETZ (S/A) & ASSOCIATES LTD.**

### 1.1 General Requirement

- .1 The Instructions of Bidders, as per the City of Richmond must be read by the Contractor, as they are a part of the agreement to be entered into between the Contractor and the Owner.

- 1.2 .1 Contractor shall, within 21 days of award of the general conditions before any work is started submit four (4) sets of Bidder Adjusted drawings to the Engineer for compliance and evaluation. Distributions and feeder sizes not to be less than those shown on electrical drawings. Drawings shall be detailed enough to submit for electrical permit. Schedules and diagrams shall indicate circuit, feeder and service loads. Indicate feeder and service wire sized on riser diagram and overcurrent protection in a panel schedule. Show available fault current at main distribution panel and branch panels.

- 1.3 .1 The catalogue data shall be submitted in an orderly bound form in one submittal within 21 days after award of contract. Specific items shall be clearly marked and general catalogues will not be accepted. Partial lists will not be accepted. Submit shop and detail drawings for approval at least three weeks prior to actual need in shop or on project site, and earlier if required.

After checking, no variations from the submittal will be permitted, except by written consent of the Engineer, and then only for unusual circumstances.

- .2 Contractor shall provide a gant chart schedule of work at the start of the project.

- .3 Previous Work Experience

- Electrical contractor shall provide a list of previous generator installations utilizing one or more of the specified generator manufactures.

### 1.4 Permits

- .1 Perform all work in accordance with the rules and regulations of the current Local Codes, Canadian Electrical Code, Energy Code and local Fire and Building Codes. Do all calculations and studies and submittals for electrical system required by authority having jurisdiction. Contractor shall obtain and pay for all electrical permits, prepare all drawings and calculations required for permit, and shall pay all inspection fees required. Furnish final certificate to Owner showing compliance with code requirements.

### 1.5 Guarantee

- .1 The Contractor shall guarantee all of this work for a period of two years from date of City and Owner's final acceptance, and he shall replace any defective work, or material, during this period which, in the opinion of the Engineer, is not due to ordinary wear and tear.

### 1.6 Warrantee

- .1 Responsibility for the design and its application to the buildings remains with the Contractor. In submitting a bid, Contractor warrants that the design, as proposed, will meet the design requirements herein.

1.7 Final Submittals

- .1 After completion of electrical work and prior to acceptance, submit the following:
  - .1 A letter stating the work is complete and is ready for final evaluation.
  - .2 A parts list showing material listed in paragraph 1.3. This list shall include any operation and maintenance instructions for electrical equipment.
  - .3 Record drawings showing any deviation or additions from drawings originally submitted.
  - .4 Submit final approval "sign off" by City and electrical inspectors.

END OF SECTION 16005

PART 1 - GENERAL1.1 Conform to the General Requirements

- .1 The General Requirements of the Main Contract are incorporated in the following specification and be made part thereof.

1.2 Scope of Work

- .1 The contract shall include the supply and installation of all the necessary materials and apparatus for complete operating systems as indicated on the drawings or mentioned in the specifications, with the exception to be omitted or to be supplied under another Contract.
- .2 All materials, tools, appliances, scaffolding, apparatus and labour necessary for the execution, erection, and completion of specified systems shall be furnished.
- .3 Test and check all portions of the electrical systems for satisfactory operation. All tests to be done in the presence of the Consultant and/or their representative, suitably logged, tabulated, signed and incorporated into the Operating and Maintenance Brochures. Testing and commissioning to be carried out under the contract at no extra cost to the Owner. Procedures and tests outlined below are electrical tests required in addition to normal visual and mechanical inspections which must be carried out prior to placing equipment in service.
- .4 Provide records of all production tests required by CEMA or CSA for all power distribution equipment to be provided.

1.3 Electrical Drawings

- .1 The electrical drawings are diagrammatic and do not necessarily show all raceway, wiring, number or types of fittings required by the electrical system.

1.4 Codes and Ordinances

- .1 All work shall comply with the most current Electrical Code, the National Building Code, Local City Building By-Laws, as may be applicable.
- .2 The Electrical Contractor shall be considered the prime contractor as per Work Safe BC.

1.5 Inspections

- .1 The Electrical Contractor shall comply with all Electrical Contractor Licence Law requirements for inspection and approval of all electrical work prior to concealing and connecting to the serving utility.

1.6 Permits

- .1 The Electrical Contractor shall obtain and pay for all permits relating to work in this contract. The Electrical Contractor shall be responsible for contacting the various agencies involved relating to the electrical work and shall include all inspection and electrical fees in the contract.

1.7 Provide

- .1 The word "provide" as used in these specifications shall mean "furnish and install".

1.8 Electrical Contractor

- .1 The word "Electrical Contractor" as used in these specifications shall mean "Electrical Contractor".

1.9 Site Visit

- .1 Before submitting bid, the Electrical Contractor shall be responsible to visit the site, verify dimensions, and familiarize themselves with existing conditions relating to their work.

1.10 Work Quality

- .1 Only good quality work will be accepted. The best approved methods of the trade shall be employed.

PART 2 - PRODUCTS

2.1 Material and Equipment

- .1 All material and equipment shall be new and of the best quality used for the purpose in good commercial practice.

2.2 CSA & ULC Listing

- .1 All material and equipment shall be approved and labelled by CSA and/or ULC and be used for the approved purpose.

2.3 Storage

- .1 All material and equipment shall be stored in a manner to prevent damage and corrosion.

PART 3 - EXECUTION

3.1 Corrections and Changes

- .1 Corrections and changes made during the progress of the work shall be neatly recorded as actually installed. One set of prints showing this information shall be given to the Consultant at substantial performance of the work. Corrections and changes shall be kept up-to-date at all times. Marked prints shall be kept at the project site for review by the Consultant or their representatives.

### 3.2 Clean-up

- .1 The Electrical Contractor shall leave all fixtures and equipment clean and shall remove to refuse bin supplied by others on the project site on a day-to-day basis, all rubbish resulting from the work.

### 3.3 Guarantee

- .1 The Electrical Contractor shall guarantee all work covered in this Contract for a period of two (2) years from substantial performance of the project; acceptance of the Contract shall be considered as acceptance of the guarantee.

### 3.4 Substitutions

- .1 Equipment specified herein and shown on the drawings indicates type, appearance, rating and basic quality desired. Any and all alternates or equivalents must comply to design criteria and be submitted for approval prior to tender closing.

### 3.5 Submittals, Approvals and Reviews

- .1 Within 15 days after award of the contract, and prior to the installation, the Electrical Contractor shall submit to the Consultant a minimum of five sets of brochures enclosing catalog information and 8 1/2" x 14" shop drawings on material to be furnished. Each brochure shall be installed on a post type binder, with index referred to the specification section and page, each section tabbed and shall be reviewed by the Electrical Contractor and stamped approved before forwarding to the Consultant. The Electrical Contractor shall establish quantities, verify space requirements, dimensions, and possible interferences with other trades. Brochures shall include, but not be limited to, information on the following equipment:

- E.M. Generator - including:

- \* Tanks
- \* Controls
- \* Transfer switch
- \* By-pass switch

- .2 The intent of this procedure is to have the Consultant review, for the Owner and/or their Consultant, actual material and equipment proposed to be furnished by the Electrical Contractor and to make comments where applicable. This review may serve as a checking process but in no case shall it relieve the Electrical Contractor from their responsibility of full compliance with the Contract Documents including Drawings and Specifications.

**3.6 As Installed Drawings & Maintenance Manuals**

- .1 "As-built" drawings and Electrical Maintenance manuals shall be provided as indicated in BASIC MATERIAL AND METHODS SECTION 16050.
- .2 All documents shall be delivered to the Consultant prior to substantial performance and final acceptance of the project system.
- .3 Computer generated "As-built" drawings and Electrical Maintenance manuals shall be provided as indicated in BASIC MATERIAL AND METHODS SECTION 16050.

**3.7 Manufacturing of Generator**

- .1 Immediately after the Contract has been awarded the Electrical Contractor shall order the generator. They shall notify the Consultant of the date that the order for this equipment has been placed.

**3.8 Building Distribution System**

- .1 Before energizing any portion of the electrical systems, perform megger tests on all feeders. Results to conform to the Canadian Electrical Code, to the satisfaction of the authorized inspection authority.

**3.10 Start-up**

- .1 Where specified herein, arrange and pay for the services of manufacturer's factory service consultant to supervise the start-up of installation, check adjustment and balance of components. Provide these services as often as necessary to put installation into working order to ensure that operating personnel are conversant with all aspects of operation, care and maintenance.

**3.11 Project Closeout**

- .1 Submit written notification that all work has been completed and attach copy of Final Electrical Inspection Certificate. Include record drawings and Operating and Maintenance Manuals with the letter of completion. This submittal must be received before final certificate of payment will be processed.
- .2 At substantial performance, check through all electrical systems with Owner. This check to include instructing the Owner in operating and maintenance procedures. Allow for 2 hour sessions of on-site instructions after building occupancy at times selected by the owner. Instructions to be carried out by the Electrical Contractor's Project Superintendent or other Electrical Contractor Senior Officials as approved by the Consultant.

END OF SECTION 16010

PART 1 - GENERAL1.1 Scope of Work

- .1 The General Conditions of the Main Contract are incorporated in the following specification and made part thereof.
- .2 The Contract shall include the supply and installation of all the necessary materials and apparatus for complete operating systems as indicated on the drawings or mentioned in the specifications, with the exception to be omitted or to be supplied under another Contract.
- .3 All materials, tools, appliances, scaffolding, apparatus and labour necessary for the execution, erection, and completion of specified systems shall be furnished.

1.2 Drawings

- .1 The Electrical Contractor shall familiarize themselves with the drawings which show the approximate location of outlets and apparatus but the right is reserved to make such changes in location as may be necessary to meet the contingencies of construction in any way. No extras will be allowed for such changes to any piece of electrical equipment unless the distance exceeds 15 feet.
- .2 Should any discrepancies appear between drawings, specifications, or the actual conditions encountered on the site, which leaves the Electrical Contractor in doubt as to the true intention and meaning of the drawings and specifications, a ruling shall be obtained from the Consultant which shall be final; otherwise it will be assumed that the most expensive method has been allowed for.

1.3 Confliction of Trade

- .1 The Electrical Contractor shall consult with all other subtrades involved to confirm the locations of the various outlets and equipment and shall co-operate fully to ensure that no conflict arises during the installation. In case of any difference of opinion, the matter shall be referred to the Owner for final decision.

1.4 Safety Precautions

- .1 The Electrical Contractor shall strictly adhere to all safety rules and regulations pertaining to other personnel being served electrically during construction. All safety precautions as outlined in the General Conditions shall be observed.

1.5 Canadian Electric Code

- .1 All electrical work shall be carried out in accordance with the "Rules and Regulations for the Installation and Maintenance of Electrical Equipment of the Province of British Columbia" and to the satisfaction of the Inspector of Electrical Energy, reference is made to the "Canadian Electrical Code", it shall refer to the "Rules and Regulations" as amended and adapted by the Province of British Columbia.

### 1.6 Quality of Work

- .1 The complete installation shall be carried out in a neat and organized manner to the satisfaction of the Consultant and Owner.
- .2 Only qualified workers shall be employed on this Contract.

### 1.7 Installation Responsibility

- .1 The Electrical Contractor shall complete all electrical connections to equipment and accessories pertaining to this Contract and leave all in satisfactory condition.
- .2 Obtain and ascertain information from all other subtrades as to the extent and details of any additional electrical work to complete all systems served with electric power or controlled electrically and shall, where necessary, allow in their tender for such work. No extra claim will be accepted by the Consultant for work on such other systems.
- .3 Certain extra low voltage controls systems may be carried out by special Controls Electrical Contractors, but all line voltage controls wiring shall be the Electrical Contractor's responsibility. They shall, therefore, work in close co-operation with the Control's Electrical Contractor and shall confirm all necessary connections, co-ordinate their work with that of the other Electrical Contractor, and, where necessary, allow for their part of that work in their tender.
- .4 Any electrical and communication work carried out on behalf of or by other Electrical Contractors shall be in accordance with the regulations of the Canadian Electrical Code and the applicable clauses of this specification.
- .5 It shall be the General Contractor's responsibility to ensure that all of their Electrical Contractors and all suppliers of electrical equipment observe the applicable clauses of the electrical specifications.
- .6 In case of differences between Contractors regarding extent of work responsibilities, such matters shall be referred to the Consultant.
- .7 Before tendering, the Electrical Contractor shall visit the site and report to the Consultant any condition which might prevent them from performing their Contract as specified. No extra will be allowed for if this procedure is not followed.
- .8 The Electrical Contractor shall make an allowance in their tender for rerouting, making good any conduit or equipment exposed or rendered useless during the course of demolition or construction.

### 1.8 Permits

- .1 Prior to commencement of work, this Electrical Contractor shall obtain all electrical permits required for this Contract, and shall pay all fees required for such permits.

### 1.9 Approval & Certification

- .1 Any electrical material and/or equipment supplied by any Electrical Contractor for installation on this project must bear evidence of C.S.A. and/or ULC approval or special C.S.A. certification acceptable to the Chief Inspector of Electrical Energy for the Province of British Columbia.

- .2 Any material and/or equipment not complying with this requirement and found on the Project site shall be subject to rejection and replacement with approved equipment.
- .3 The Electrical Contractor upon receipt of equipment purchased by the Owner for installation on this project shall examine it for compliance with the above requirements. They shall report any missing C.S.A. approval to the Consultant for action. Such equipment shall be returned to its packing crate until further advice from the Consultant.

#### 1.10 Equipment Manufacture

- .1 All equipment of any one type used in this installation shall be new and of one manufacture.
- .2 Suppliers who do not quote separately on individual systems as itemized throughout the drawings and specifications will not have any of their equipment accepted.

#### 1.11 Shop Drawings

- .1 Prior to manufacture of any item made especially for this Project, the Electrical Contractor shall submit detailed drawings of the item.
- .2 Shop drawings must be received by the Consultant at a date early enough to permit reasonable study prior to approval and manufacture, or to permit alterations where necessary. Late submissions of shop drawings will be sufficient reason for a stoppage of construction pending approval or removal and replacement of any unsatisfactory item at the Electrical Contractor's expense.
- .3 Approval drawings shall be submitted as one (1) reproducible sepia plus three (3) prints, (1) CD and fixture cuts or brochures, bearing the Electrical Contractor's signature. These are to be signed and sealed by a Professional Engineer registered in the Province of British Columbia. The sepia will be returned with appropriate comments.
- .4 Drawings will be examined by the Consultant for compliance with the drawings and specification requirements only. This Electrical Contractor shall be responsible for C.S.A. approval and suitability of the installation.

#### 1.12 Equipment Supplied by Owner

- .1 On date of delivery, the Electrical Contractor shall sign for all items which are being supplied by the Owner and shall be responsible for any loss and/or damage thereafter until the work is finally completed and accepted by the Owner.
- .2 Items supplied and delivered to the site by the Owner shall be examined by the Electrical Contractor, and any damage shall be reported immediately to the Consultant who will enter a claim directly to the supplier and transportation company. Belated damage claims on any equipment shall not be regarded as transport damage and shall become the responsibility of the Electrical Contractor for repair or replacement.
- .3 All repairs or replacements shall be carried out to the satisfaction of the Owner.

**1.13 Substitution**

- .1 Unless otherwise noted on the drawings or specifications substitutions may be approved by the Consultant, if requested by the Electrical Contractor or by equipment suppliers, for items specified by manufacture and catalogue number.
- .2 Requests for approval of such substitutions shall be submitted at least eight (8) working days prior to the tender closing date.
- .3 Complete description of proposed substitution shall accompany the application and the supplier must be prepared to submit samples for approval on short notice.
- .4 Descriptive catalogue sheets accompanying the approval application which may show several items of varying specifications, shall be conspicuously marked in such a manner that the offered substitute items may easily be recognized for comparison.
- .5 Proposed substitutions must be at least of equal quality to that of the specified item. The manufacturer's specification of the specified item shall apply for comparison if no other clause of this specification applies. The decision of the Consultant to accept or reject shall be final. Approval of alternatives only by written Addenda.
- .6 Off-the-shelf items that are specified by description only, without any manufacturer, model, type or catalogue number, do not require approval prior to the tender closing date. However, the Electrical Contractor shall submit to the Consultant a request for approval of such items prior to their use, in sufficient time to permit rejection if unsatisfactory.
- .7 All additional expenses incurred as a result of substitution shall be the direct responsibility of the Electrical Contractor.

**1.14 Extra Work**

- .1 Any extra work ordered to be done shall be governed by the specification of this Contract unless specific instructions or clauses shall supersede those of the specification for this particular application only.

**1.15 Damage**

- .1 Where existing structure, grade or pavement has to be removed, altered or otherwise defaced to facilitate electrical installation, the Electrical Contractor shall arrange for breaking of openings or grooves in any building structure or breaking of pavement and/or digging of trenches.
- .2 Any equipment, structure, pavement or grade damaged by the execution of the Electrical Contractor shall be repaired to its original condition. Any costs incurred for such work shall be allowed for in the tender sum.
- .3 Irreparably damaged equipment shall be replaced at no cost to the Owner.
- .4 If the finish of new or re-used existing equipment is damaged on this installation, the Electrical Contractor shall have such equipment completely resprayed and restored to its original condition at no cost to the Owner.
- .5 Openings and cutouts shall not be burned into panels. Oversized openings shall not be patched up with loose plates or oversized washers. Oversized openings shall be considered

damage to the equipment and shall be treated as specified above.

1.16 Payment for Services by Others

- .1 Where, in the specifications, the Electrical Contractor is required to arrange with others to have certain installations carried out, or to have certain services performed, they shall allow in their tender and pay for any costs involved.

1.17 As Installed Drawings and/or CADD Files

- .1 The Electrical Contractor shall obtain and pay for one set of white prints of the electrical drawings for the sole purpose of recording any changes made to these original drawings. The set shall be kept in the Electrical Contractor's site office, and shall be updated as required.
- .2 These prints shall be kept current, with the alterations being marked in "Red" as they occur. The set of amended drawings shall be submitted to the Consultant upon substantial performance.
- .3 The Electrical Contractor shall include \$350.00 per sheet Cash Allowance to the Consultant for CADD files and issuing an "As-Built" set of CADD plots, as well as two sets of drawings to the owner.
- .4 "As-built" drawing markings shall include but shall not be limited to the following:
  - .1 All changes in circuiting.
  - .2 Number and size of conductors (#10 AWG and larger) in raceways and cables.
  - .3 Location of all junction and pull boxes.
  - .4 Location of all access panels.
  - .5 Location of all conduit or duct stubs, installed equipment, devices, and fixtures.
  - .6 All changes to electrical installation resulting from Addenda, Change Orders, and Field Instructions (Architectural Instructions).
  - .7 Exact location of all services left for future work.
  - .8 Fire alarm raceway, power junction box and conductors.
- .5 All of the above documentation to be submitted to the Consultant 2 weeks after final inspection for approval prior to being turned over to the Owner.

1.18 Maintenance Manuals

- .1 The Electrical Contractor shall provide three (3) complete sets of typewritten instructions for operating and maintaining all systems and equipment included in this section of the specification. All instructions shall be submitted first in draft form for review prior to the final issue to be included in the manuals.
- .2 Each set of manuals shall be as follows:

- .1 One corrected copy of all shop drawings.
  - .2 Schematics and maintenance data of all systems.
  - .3 Enclosed in a blue colored three ring binder labeled with Project address and titled "Electrical Manual".
  - .4 Provide index at the front for the following as required:
    - Inspection and Verification Certificates and Reports
    - Operating and Maintenance Instructions
- .3 Each section shall include a titled separator tab and include the following information for each system and major piece of equipment:
- Descriptive and technical data
  - Maintenance and operating procedures
  - Wiring diagrams
  - Spare parts list
  - Service representatives
  - Suppliers for replacement parts
  - Test results
  - Certification and guarantee
  - Troubleshooting data
  - Preventive maintenance program complete with suggested check list sheets.
- .1 This Contract will not be considered complete until all required manuals are received and instructions given to the Owner.
  - .4 All documents shall be bound together in a suitable hard backed cover and delivered to the Consultant prior to substantial performance and final acceptance of the project system.
- 1.19 Warranty of Contract
- .1 The Electrical Contractor shall guarantee all work covered in this Contract for a period of two (2) years; from the date of substantial performance of the work, acceptance of the Contract shall be considered as acceptance of the guarantee.
  - .2 The Electrical Contractor shall supply a final certificate of inspection from the Electrical Department.
- 1.20 Separate Price
- .1 The Electrical Contractor shall quote an all-inclusive base price; but shall indicate the value of specific amounts of work.
- 1.21 Cost Assessment
- .1 Provide a contract cost breakdown as required to suit the project, and submit monthly with the progress claim.
  - .2 The Electrical Contractor shall provide detailed cost breakdowns for cost changes as requested by the Consultant.

PART 2 - PRODUCTS

Not applicable

PART 3 - EXECUTION3.1 Working Drawings

- .1 The Electrical working drawings supplied are diagrammatic and unless specifically noted by figured dimensions, indicate the general arrangement of receptacles, light fixtures, switches, risers, panels, etc. Any information involving accurate dimensions of the building shall be taken from the figured dimensions of the Engineering Drawings or by actual measurements at the building. The location of switches, receptacles, outlets, etc. shall be coordinated with built-in units, Owner appliances and equipment, mechanical equipment, exterior design drawings, etc. as shown on the architectural and mechanical drawings. Where space is indicated for future equipment, leave such space clear and install feeders and equipment pertaining to the contract in such a way that the future equipment can be easily installed.

3.2 Labeling & Identification

- .1 All electrical feeders, distribution and control equipment pertaining to this Contract shall, unless otherwise specified, be labeled in accordance with the drawings in the following manner:
- .2 The panel circuit directories shall be typewritten and cut per Panel Schedule Detail in this section of the specification and set in a metal holder complete with a plastic cover on the inside of the panel door; and a 19 mm x 32 mm (3/4" x 1-1/4") adhesive lamicoïd plate with the panel letter engraved, set on the front of the door.
- .3 Refer to Panel Schedule Detail for panel details.
- .4 Other equipment and apparatus: where used, all switchgear, transformers, disconnects, contactors, fire alarm components, communication equipment, motors, instruments, incoming service, and communication cable shall be labeled, using plastic pressure sensitive adhesive nameplates.
- .5 All control devices shall be identified with "lamicoïd" nameplates as specified.
- .6 All ground cables at the main ground terminal pad shall be identified with green lamicoïd labels.

3.3 Identification of Distribution Equipment

- .1 Three phase connections shall be arranged so that the phase terminals may read:
  - .1 A, B, C from left to right or from the upper terminal down, facing the terminal connections.
  - .2 The letter on nameplates shall be not less than 25 mm (1") height. When required, nameplate lettering shall be confirmed with the Consultant.

### 3.4 Fire & Sound Barriers

- .1 All work performed by this trade shall be performed in a way which is in accordance with provincial and local fire regulations. Conduits and ducts passing through fire walls shall be fire stopped and smoke sealed in accordance with:
  - .1 CAN4-S115-M85, "Standard Method of Fire Tests of Firestop Systems".
  - .2 Conform to CAN 4-S101.
  - .3 Comply with manufacturer's recommendations for handling, storage and protection during installation.
- .2 Openings around electrical wireways passing through soundproof and/or fire rated walls shall be filled with soundproofing materials. Where outlet boxes are shown on the drawings as being back to back, or nearly so, on opposite sides of a wall, they shall be offset a minimum of one stud to reduce sound transmission and meet the applicable Codes and By-Laws. Where outlets must remain back to back in the same stud space, "Hilti" firestop putty pads must be applied.
- .3 Fire Sealant: Intersections of fire-resistance rated masonry and gypsum board partitions; Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls: Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
  - .1 "Fire Stop Sealant: Catalog #2000" by Dow Corning Canada Inc.
  - .2 "Fire Barrier Caulk CP 25" by Electrical Products Division/3M.
  - .3 Hilti (Canada Ltd) Firestop System.
  - .4 Or approved alternative.
  - .5 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other electrical items: elastomeric seal; do not use a cementitious or rigid seal at such locations.
  - .6 "Hilti" putty pad CP617 and CP617L.
- .4 Installation
  - .1 Install fire stopping and smoke seal material and components in accordance with ULC Certification and Manufacturer's instructions.
  - .2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
  - .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
  - .4 Tool or trowel exposed surfaces to a neat finish.
  - .5 Remove excess compound promptly as work progresses and upon completion.

- .5 Notify Consultant when ready for review and prior to concealing or enclosing firestopping material and service penetration assemblies.

### 3.5 Inserts

- .1 Inserts for attaching equipment shall consist of the preset expansion shield or lead anchored. No wood, plastic or fibre type plugs shall be used.

### 3.6 Cutting Structural Members

- .1 No structural members shall be cut, notched or drilled without first obtaining written permission from the Consultant on behalf of the owner.

### 3.7 Cutting & Patching

- .1 All cutting and patching required shall be done by trades people qualified for such work.

### 3.8 Excavation & Fill

- .1 Where required, all excavation and backfill pertaining to this portion of the Contract shall be performed by the General Electrical Contractor. Fill material shall be equivalent to that excavated. Compaction shall be equivalent to the surrounding material.

### 3.10 Hangers & Fastenings

- .1 Electrical equipment shall be adequately supported with hangers and fastenings to the structural building members only.
- .2 Where possible, concrete inserts shall be cast into the slab, etc. during the pouring of concrete, otherwise drilled metal inserts may be used.
- .3 Fastenings shall be all metal type, fibre and perforated metal strap shall not be used.
- .4 Explosive set inserts may be used only with the specific approval and permission from the Consultant.
- .5 Feeders and branch circuit conduits, etc. running vertically in a building up columns and pipe chases, etc. shall be supported and clamped at each floor with suitable iron pipe straps.

### 3.11 Painting

- .1 All equipment enclosures such as panels, disconnects, transformers and baseboards, etc. shall be factory finished in baked-on grey enamel paint. Equipment finishes which are marked during installation shall be touched up with enamel paint or completely refinished if required by the owner or consultant on behalf of the owner.

### 3.12 Trial Usage

- .1 The Consultant on behalf of the owner reserves the right to test any piece of equipment prior to acceptance.

### 3.13 Tests

- .1 Provide all equipment, material and personnel required to perform the following tests:
  - .1 All tests required by codes - see Grounding Section.
  - .2 Insulation resistance of all systems in accordance with codes or as specified for a particular system.
  - .3 Voltage readings (each phase) at each piece of equipment (motors, transformers, etc.) when it is operating at full load.
  - .4 Current readings (each phase for each piece of equipment (motors, transformers, etc.) when it is operating at full load.
  - .5 Current readings for each feeder under normal load to determine system balance.
  - .6 Operational tests to prove the proper operation of controls and interlocks..2Tests to be certified complete prior to substantial performance.
- .3 The Electrical Contractor shall arrange and pay for the services of manufacturer's personnel to supervise the testing, adjusting, calibration and initial start-up of specialized installation.

### 3.14 Shop Drawings

- .1 The Electrical Contractor shall submit to the Consultant detailed working drawings of all items fabricated for this installation prior to manufacture. These drawings shall meet National and Local Building Code requirements and be signed by a Professional Electrical Engineer Registered in the Province of British Columbia.

### 3.15 Seismic Restraints

- .1 The Electrical Contractor shall employ a Seismic Consultant at the beginning of the project. The said Consultant shall:
  - .1 Submit Assurance Letter for "Assurance of Professional Design and Commitment for Field Review" as designated by the local permit authority, at the beginning of the project.
  - .2 Provide drawings sealed by a Professional Engineer.
  - .3 Include written verification of site inspection of the field installation and a signed and sealed Letter of Assurance of "Assurance of Professional Field Review and Compliance", at substantial performance.
- .2 All electrical equipment shall be braced or anchored to resist a horizontal force acting in any direction using the following criteria:

- .1 Fixed equipment on grade - use 33% of operating weight at the centre of gravity.
  - .2 Fixed equipment on structure - use 50% of operating weight at the center of gravity.
  - .3 Emergency power and communication equipment on structure - use 75% of operating weight at the centre of gravity.
  - .4 Flexibly Mounted Equipment - use 2 times the above values.
  - .5 Simultaneous Vertical Force - use 1.3 times the horizontal force.
- .3 Horizontal seismic forces shall be determined from the applicable equations of the governing code.
  - .4 Where drilling of the structure is required for anchorage details, the drilling shall be subject to the approval of the Structural Consultant.
  - .5 Provide all required seismic bracing, supports, bolts, washers, nuts, etc. for conduits and conduit supports.

END OF SECTION 16050

PART 1 - GENERAL1.1 Scope of Work

- .1 All systems in the building shall be wired in conduits as indicated on drawings.

PART 2 - PRODUCTS2.1 Material

- .1 Rigid type mild steel standard weight pipe galvanized outside and coated with Glyptal enamel or approved equal on the inside.
- .2 Electric Metallic Tubing (emt) - thin wall mild steel galvanized outside and coated with Glyptal enamel or approved equal on the inside.
- .3 Flexible Conduit - shall be used for line and low voltage circuit connections to all motors or equipment subject to vibration and shall be watertight, except for lighting fixture drops. Connectors shall be approved for flexible liquid tight conduits.
- .4 Exposed conduit in shop areas or in locations exposed to mechanical injury shall be rigid galvanized steel to a height of 1524 mm (5 feet) unless otherwise specified.
- .5 Conduit for telephone shall be 25 mm (1") unless otherwise noted larger, and shall have water resistant pull line.
- .6 Conduit ends emerging from concrete slab, which are to remain as exposed conduit, shall be rigid galvanized steel or rigid P.V.C.
- .7 All conduit exposed to weather shall be rigid ester epoxy enamel coated and all fittings shall be repainted after completion.
- .8 All conduit installed in slab on grade shall be rigid galvanized steel or rigid P.V.C., and include an equipment ground wire not shown on the drawings.
- .9 P.V.C. conduit shall be used for all outside conduit runs and be complete with ground wire.
- .10 All conduit system rough-ins for use by others or labeled as C.O. shall be blown and pulled with water resistant pull lines.

PART 3 - EXECUTION3.1 Installation

- .1 An allowance should be made for routing conduits so that they do not appear on the side of beams where they go from the ceiling to the walls.
- .2 Watertight fittings shall be installed in areas exposed to moisture and rain-tight fittings in concrete slab.

3.2 Sleeves & Chases

- .1 Sleeves shall be provided and set for conduit passing through foundations, concrete walls and floors. Sleeves shall have sufficient diameter to allow free conduit movement resulting from thermal expansion and contraction. Sleeves installed through foundation walls, beams and footings shall be made of standard weight iron pipe. Sleeves shall be installed flush with walls, partitions, floors and ceilings. Sleeves in foundation walls and floors and space between item passing through sleeve, and sleeve must be made watertight, tight enough to withstand hydrostatic water pressure. Sleeves passing through firewalls and floors shall be caulked with 3M Brand Fire Barrier CP 25 caulk compound, or approved equal.

END OF SECTION 16111

PART 1 - GENERAL1.1 Scope of Work

- .1 All wire and cables to be installed in conduit unless noted otherwise.

PART 2 - PRODUCTS2.1 Material

- .1 Generally, unless otherwise shown or specified, branch circuit and feeder conductors of low tension circuits shall be Type "R90" insulated. Type T90 (THHN) cable shall not be allowed without written permission from the Consultant.
- .2 All conductors shall be copper only and comply with BCBC clause 3.1.5.17. for flame rating codes.
- .3 Conductors terminating in or passing through ceiling outlets shall be Type "R90" insulated.
- .4 Conductor up to #10 AWG may be solid. #8 AWG conductors shall be stranded, unless specially mentioned to be solid.
- .5 Where lubricant is required for wire pulling, a CSA approved type only shall be used. Compounds using petroleum based material shall not be used. Nylon or similar pulling rope only shall be used to pull conductors into aluminum and/or non-metallic conduit.
- .6 All wiring is sized for copper conductors.

PART 3 - EXECUTION3.1 Installation

- .1 Installation shall be concealed where possible.
- .2 Installation should be neat; parallel or at right angles to the building lines.
- .3 Allowance shall be made for routing conductors so that they do not appear on the side of beams, where they go from the ceiling to the walls.

### 3.2 Identification of Conductors

- .1 Line voltage conductors in conduit shall be colour coded as follows:
- |                 |                        |
|-----------------|------------------------|
| Phase "A"       | RED                    |
| Phase "B"       | BLACK                  |
| Phase "C"       | BLUE                   |
| Neutral         | WHITE                  |
| Ground          | GREEN or BARE          |
| Ground (for IG) | GREEN c/w YELLOW strip |
- .2 Loop conductor in three-way and four-way switching circuits shall be:  
BROWN
- .3 Switch leg conductors of line voltage switches on lighting and any manually controlled plug receptacles circuits shall also be colour coded as follows:
- |   |        |
|---|--------|
| A | YELLOW |
| B | ORANGE |
| C | PINK   |
- for three switch legs extending from a ganged switch outlet box. The sequence of colours shall be repeated if more than three switch legs leave a switch box.

### 3.3 Insulation Test

- .1 The insulation resistance between wires and between any wire and ground shall not be less than the "Canadian Electrical Code" requirements with all circuits complete and connected.

END OF SECTION 16120

PART 1 - GENERAL

1.1 Reference Standard

- .1 All grounding and bonding shall be in accordance with applicable rules of the "Canadian Electrical Code".

PART 2 - PRODUCTS

2.1 Material

- .1 All conductors shall be copper.

PART 3 - EXECUTION

3.1 Installation

- .1 All locknuts, connectors and couplings shall be tightly fitting and properly cinched, throughout the entire electrical distribution system, for grounding and bonding purposes as required by C.S.A. Code.
- .2 The cables at the ground terminal bus shall be identified with green lamicaid labels.

3.2 Test

- .1 The Electrical Contractor to provide all equipment, material and personnel to perform all tests as required by code.

END OF SECTION 16450

PART 1 - GENERAL1.1 Scope of Work

- .1 A stand-by electric power plant shall be provided and installed as indicated on the drawings.
- .2 The stand-by electric power plant shall comply with provisions of 3.2.2.13 and 3.2.3 ULC-S524 - Requirements for Engine Driven Generator Sets.
- .3 The generator shall meet the current ISO standards; 9001, 14001.
- .4 This specification is designed on the installation of a double walled fuel tank.

PART 2 PRODUCTS2.1 Material

- .1 The emergency generator shall be built, protected and shipped by the manufacturer of the alternator so there is one source of supply and responsibility. The performance of this generator set series shall be certified by the manufacturer, as to the set's full power rating, stability, voltage, and frequency regulations.
- .2 Engine:
  - .1 Air cleaner.
  - .2 High temperature, low oil pressure and overspeed safety cutouts.
  - .3 High coolant temperature alarm contacts closing 4 degrees before high temperature safety cutout operates. The contacts shall be rated for 10A, 120-volt A.C.
  - .4 A flexible exhaust line connection and residential muffler.
  - .5 12-volt fully automatic starting.
  - .6 12-volt, 145 Amp-hour lead-acid storage battery complete with off the floor fabricated steel stand.
  - .7 12-volt solenoid operated valve, filter and flexible fuel line.
  - .8 Integral vibration dampers between engine and skids.  
The engine must be adequately sized for continuous operation of the generator operating at full load.
  - .9 A diesel generator unit shall be supplied with, in base, day tank.
  - .10 The engine shall be fitted with a heater to ensure quick start.

.3 Generator:

The generator shall be either rotating armature or revolving field type, 3-phase, 4-wire, 347/600-volt, as shown on drawings at 0.8 power factor, 60 Hz. It shall have permanent magnetic exciter, to ensure 300% short circuit sustaining for 8-10 seconds, and be directly coupled to the engine crankshaft and conforms to standards of NEMA, IEEE and CSA. The voltage regulation shall not exceed plus or minus 5%. The frequency variation shall not exceed three cycles from no load to full load.

The generator rating shall be the actual output of the unit using fuel supply as shown on drawings.

.4 Generator Control Panel:

The Generator Control Panel shall be dead front complete with key lock CSA approved containing:

- .1 AC voltmeter c/w selector switch.
- .2 AC ammeter c/w selector switch.
- .3 Frequency meter and running time meter.
- .4 Manual start button and stop buttons for test.
- .5 Overload circuit breaker.
- .6 All items on face of panel shall have lamicoïd labels.
- .7 Provide controls and individual audible and visual trouble annunciation for:
  - .1 High temperature cutout.
  - .2 Over crank protection.
  - .3 Low voltage protection.
  - .4 Low oil pressure.
  - .5 Overspeed protection.
  - .6 Low fuel set at four hours fuel remaining.
  - .7 Generator by-pass in the open position.
  - .8 "By-pass" switch open.
  - .9 Loss of control circuit power.
  - .10 Generator control Off, to indicate generator control panel is not set at Auto.
  - .11 Main generator breaker/s in open position.

- .12 All of the above to annunciate a single trouble signal as well as a "Generator running" signal to the fire alarm control centre.
- \* It should be noted that the elevators shall not recall unless they are transferred to generator power.
- .5 A metal tool cabinet shall be provided with key lock to match control panel and shall contain:
  - .1 Any special tools that may be required for normal maintenance or adjustment to this unit.
  - .2 Maintenance instruction and parts book.
- .6 A separate fused trickle charger with battery charging ammeter and mounted adjacent to battery to provide charge rates up to 2A and down to 80 ma automatic regulation.
- .7 The day tank and all related controls or subbase tank and all related controls shall be supplied and wired by this.
- .8 The power unit shall have an engine warmer block heater to ensure quick start.
- .9 The Fuel Tank  
Shall be a Diesel Fuel Sub-base Storage Tank of dual wall construction as rated and approved for installation without additional containment.
  - .1 Fuel tank capacity shall be sized for 24 hours of operation.
  - .2 The alarm float switch shall be provided and installed to monitor low fuel level, set at four hours fuel remaining and register trouble at generator control.
  - .3 Provide whistle type device for vent line.
  - .4 Dual wall fuel tank to be complete with two floats one for main tank and the second for containment tank in case of rupture.
  - .5 The fuel system shall comply with NFPA 30 and NFPA 37.
- .10 Spill Response Kit  
Provide (1) one First Response Spill Kit equal to West Coast Spill Supplies model #KI-FRSK.

## 2.2 Approved Manufacturer

- .1 The following manufacturers of stand-by electric power plants are acceptable:
  - .1 Simpson Maxwell
  - .2 Cummins/Onan
  - .3 Finning

PART 3 - EXECUTION3.1 Installation

- .1 The Electrical Contractor shall be responsible to oversee the complete installation of the emergency generator including wiring, interlock wiring, concrete pad surrounding fence and the coordination of work by others.
- .2 The Electrical Trade Contractor shall review the drawings and physical requirement of the complete installation to ensure the equipment is compatible with the space limitations, prior to placing the order.
- .3 Locate and set the generator c/w seismic restraints.
- .4 The emergency generator unit supplier shall be responsible for checking unit connections prior to initial start-up and test run the unit at the site. This supplier shall submit a written report indicating his acceptance and/or comments on the installation to the Consultant. The supplier's acceptance shall mean that the installation complies with the approved method of installation and meets all warranty requirements.
- .5 The contractor shall supply all fuel and after all tests are completed, the fuel tanks shall be topped up to full capacity.
- .6 The Electrical Contractor shall follow all of the recommendations provided in the manufactures installation guide.

3.2 Acceptance Tests

- .1 The Electrical Trade Contractor shall comply with provisions of CSA. 282 and all appropriate bulletins.
- .2 The Electrical Trade Contractor shall, upon completion of installation and manufacturer's initial start-up of the emergency generator system, arrange for complete testing of the system, under load. The test load shall be a portable resistor bank sized to 80% of the rated KW capacity of the generator. The building load shall not be used or connected for this test. The test period shall be four full uninterrupted hours.
- .3 The Electrical Trade Contractor, together with the Consultant and Owner or their agent and a representative of the manufacturer of the emergency generator, shall be present during the testing of the emergency power system. All functions of the system shall be tested including operation of remote monitoring devices.

PART 4 – GENERATOR4.1 Site Specific Requirements

- a) A weatherproof enclosure with foam insulation shall be provided. Sound alteration shall be a maximum 88 dba at 7 meters.
- b) A sub base diesel fuel tank shall provide a minimum 24 hours of run time at full load.
- c) The generator enclosure shall be supplied with a yellow flashing light that will activate upon generator trouble. Any required field wiring will be the responsibility of the Electrical Contractor. A yellow flashing trouble light with tamper proof enclosure shall also be located on the north interior wall of the coliseum rink.
- d) The generator is to be provided with a remote annunciator to be field wired by the Electrical Contractor. The annunciator shall have a local audible alarm and display all of the trouble signals that may occur on the main panel at the generator as well as a display of the generator % capacity of load while running.
- e) The generator shall be provided with a remote stop/start station that is to be field wired by the Electrical Contractor.
- f) Written Operation Procedures  
The Electrical Contractor and generator manufacture representatives shall work together with the owner and electrical consultant to create a written operation procedure. Final draft and posted material will be handled by City staff.
- g) Maintenance  
The generator manufacture shall provide a quotation to provide the yearly maintenance and load test for the generator as a separate price.

END OF SECTION 16610

3550 – CHAIN LINE FENCING

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## 3550 – CHAIN LINK FENCING

### 1. GENERAL CONDITIONS

The General Conditions and Standard Provisions attached hereto shall apply to and be a part of this Specification.

### 3. DESCRIPTION

This Specification shall cover the supply and installation of chain link fencing.

The work to be completed by the Contractor under this Specification shall include the supply of all materials, and the furnishing of all superintendence, overhead, labour, equipment, tools and all other things necessary for and incidental to the satisfactory completion of all of the work as hereinafter specified.

### 5. MATERIALS

#### 5.1 General

All materials shall conform to this Specification and the Canadian General Standards Board (CGSB) Specifications CAN/CGSB-138.1, CAN/CGSB-138.2 and CAN/CGSB-138.4. Where any contradictions occur, Specification CW 3550-R2 shall take precedence over CGSB Specifications.

#### 5.2 Terminal Posts

Terminal posts, comprising of end, gate, corner and straining posts shall be standard seamless, continuous weld, schedule 40 hot dip galvanized steel pipe weighing 11.28 kg per lineal metre. Posts shall be supplied with weatherproof caps. Tubing, conduit or open seam material will not be accepted.

**5.3 Line Posts**

Line posts shall be standard seamless, continuous weld, schedule 40 hot dip galvanized steel pipe weighing 5.43 kg per lineal metre. Line posts for fence fabric that is to be 3660 mm and higher shall weigh 8.63 kg per lineal metre. Tubing, conduit or open seam pipe will not be accepted.

Line posts shall be supplied with weatherproof eye top caps to accommodate continuous horizontal top.

**5.4 Top and Bottom Rails**

Top rails, or bottom rails where specified, shall be standard, continuous weld, schedule 40 hot dip galvanized steel pipe weighing 3.38 kg per lineal metre. Top rails shall be 6700 mm in length and have an outside diameter of not less than 43 mm.

**5.5 Top and Bottom Rail Sleeve Couplings**

Top and bottom rail sleeve couplings shall be schedule 40, hot dip galvanized steel pipe, 171 mm long and 45 mm inside diameter to accommodate a 43 mm outside diameter top rail and manufactured specifically as a top/bottom rail sleeve coupling for chain link fencing.

**5.6 Fabric**

Fabric shall be No. 9 gauge steel wire woven into a uniform 50 mm (2") diamond pattern mesh or as specified. Size of mesh shall be determined by measuring the minimum clear distance between the wires forming the parallel sides of the mesh. Permissible variation in size of mesh shall be 3 mm (1/8"). Diameter of wire shall be no less than 3.68 mm (0.145"). The top and bottom selvage shall be knuckled.

Fabric shall be zinc coated before weaving by the hot dip process to an average mass per unit area of not less than 490 g/m<sup>2</sup>.

Mesh fabric shall not be excessively rough, or have blisters, sal ammoniac spots, bruises or flaking.

Chain link fabric shall have a minimum tensile strength of 415 MPa.

Provide slats within chain link to provide a screen. Slats shall be blue in colour.

### 5.7 Bottom Tension Wire

Bottom tension wire shall be No. 6 gauge single strand galvanized steel wire.

### 5.8 Turnbuckles

Where turnbuckles are specified, they shall be drop forged steel and be hot dip galvanized. The average overall length shall be approximately 300 mm, with ends in the closed position. Bolt diameter shall be 10 mm and shall be capable of taking up a minimum of 150 mm slack.

### 5.9 Braces

Braces, shall be schedule 40 hot dip galvanized steel pipe, not less than 43 mm outside diameter and weigh 3.38 kg per lineal metre.

### 5.10 Fittings and Accessories

Tension bars shall be 5 x 19 mm galvanized flat steel and not less than 50 mm shorter than the height of the fabric with which they are to be used.

Tension bands shall be 3 x 19 mm galvanized flat steel c/w 8 x 32 mm galvanized carriage bolts and nuts.

Brace bands shall be 3 x 19 mm galvanized flat steel c/w 8 x 32 mm galvanized carriage bolts and nuts to fasten top rail receptacles to terminal posts.

Cut ends of tension bars shall be ground smooth to remove all sharp edges and burrs.

Fabric clips shall be No. 9 gauge aluminum alloy wire.

Weatherproof post tops/caps, receptacles, and fittings shall be of adequate strength and may be of aluminum alloy, malleable steel or pressed steel. All ferrous metals shall be hot dip galvanized.

## 9. CONSTRUCTION METHODS

### 9.1 General Requirements

The Contractor shall install chain link fence in accordance with Clauses 9.2 to 9.9 herein and the Canadian General Standards Board Specification CAN/CGSB-138.3. Where any contradictions occur, Specification CW 3550-R2 shall take precedence over CGSB Specifications.

Survey bars and control monuments must be protected during construction in accordance with Clause 4 of CW 1100, Standard Provisions.

### 9.2 Post Installation

Terminal and line posts, except where otherwise specified, shall be installed directly to concrete slabs.

Posts shall be plumbed and set to give correct alignment. Bending of posts to give correct alignment is not acceptable.

Weatherproof post tops/caps shall be securely attached to eliminate removal by hand. Eye top caps shall allow for the insertion of a top rail in a horizontal position.

Maximum spacing between centerline of posts shall not exceed 3050 mm.

Straining posts shall be installed at all sharp changes in grade and where directed by the Contract Administrator.

### 9.3 Fabric Installation

Fabric shall be stretched taut to the correct tension as specified by the manufacturer and to the Contract Administrator's satisfaction. Where posts have been installed in concrete piles, fence fabric shall not be installed until piles have cured for a period of not less than five (5) days. Fabric shall be installed on the outside of the fence unless requirement for installation on the inside of the fence is specified.

Clearance between bottom of fabric mesh and ground surface shall be no less than 40 mm or more than 50 mm unless otherwise indicated on the drawing or approved by the Contract Administrator.

Fabric clips shall be used to fasten the fabric to the top rail at 450 mm spacing and to line posts at 380 mm maximum spacing. Wires ties on the top rail and bottom rail or tension wire shall have a minimum of two twists around mesh.

Tension bars, bands and bolts shall be used to fasten the fabric to terminal posts. Maximum spacing for tension bands and bolts shall be 380 mm. Top of tension bars shall not protrude above the bottom of the top rail.

The bottom tension wire shall be stretched taut along the bottom of the fabric and securely attached to all terminal and line posts and attached to the bottom edge of the fabric at 450 mm maximum spacing using hog rings.

### 9.4 Turnbuckles

Where turnbuckles are specified for installation, they shall be used to stretch the bottom tension wire taut and be able to take up a minimum of 150 mm slack.

### 9.5 Braces

Braces, where specified only, shall be placed either horizontally or diagonally from the terminal post to the first adjacent line post. Braces shall be secured to posts in accordance with construction drawing details and/or to the satisfaction of the Contract Administrator.

Corner and straining posts shall have braces on both sides.

#### 9.6 Gates

Gate frames shall be made from schedule 40 hot dip galvanized steel pipe; not less than 43 mm outside diameter, electrically welded at all joints with ample bracing to provide a rigid frame free from sag or twist.

Gate height shall match the height of the fence unless otherwise specified.

No. 9 gauge chain link fabric as specified in Clause 5.6 herein shall be attached to gate panels in accordance with Clause 9.3 herein. Top and bottom fabric selvage shall be knuckled.

Gates shall be supplied and installed complete with hot dip galvanized malleable iron hinges, latches, chain holdbacks, and a gate latch suitable for padlock, which is accessible from either side. Gates 3000 mm or more in width shall have three hinges per section.

Hinges shall permit the gate to swing back 180° degrees in line with the fence and shall be installed so as not to permit easy removal of the gate.

If requested by the Contract Administrator, the Contractor shall supply shop drawings of all gates to be supplied prior to manufacture for the Contract Administrator's approval.

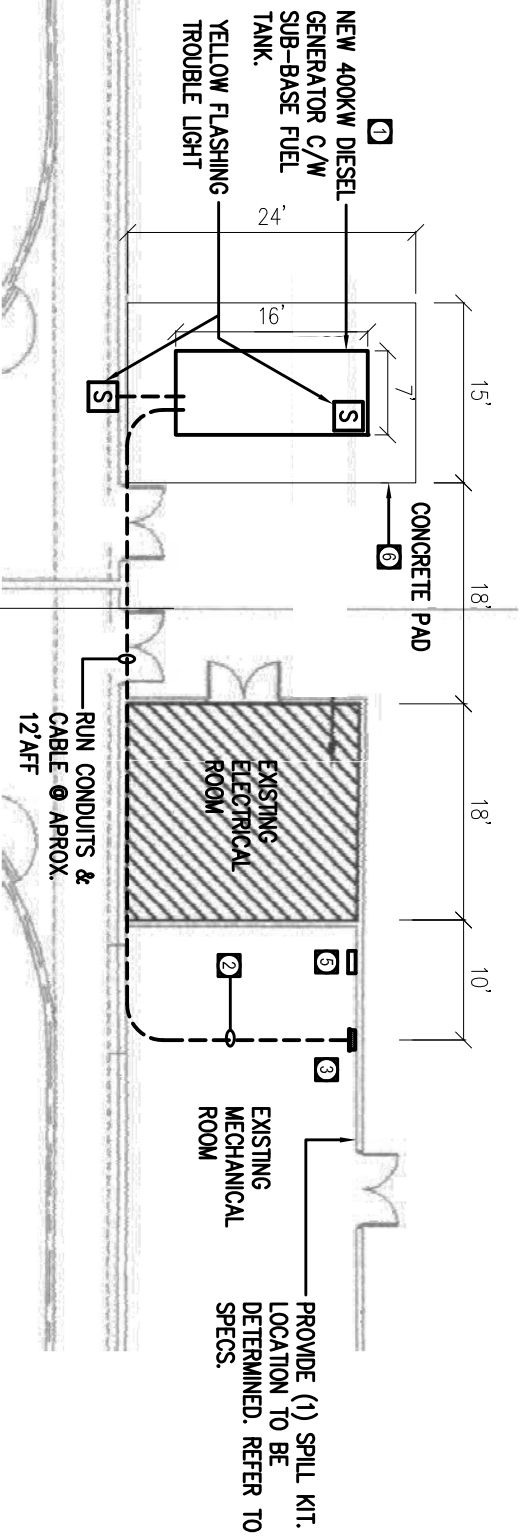
#### 9.7 Zinc Coating Repairs

All abraded and damaged galvanized surfaces shall be cleaned and painted. Damaged surface areas shall be thoroughly grinded or wire brushed and all loose and cracked zinc coating removed, after which the cleaned area shall be painted with two coats of a zinc pigmented paint approved by the Contract Administrator for these purpose.

#### 9.8 Site Clean-Up

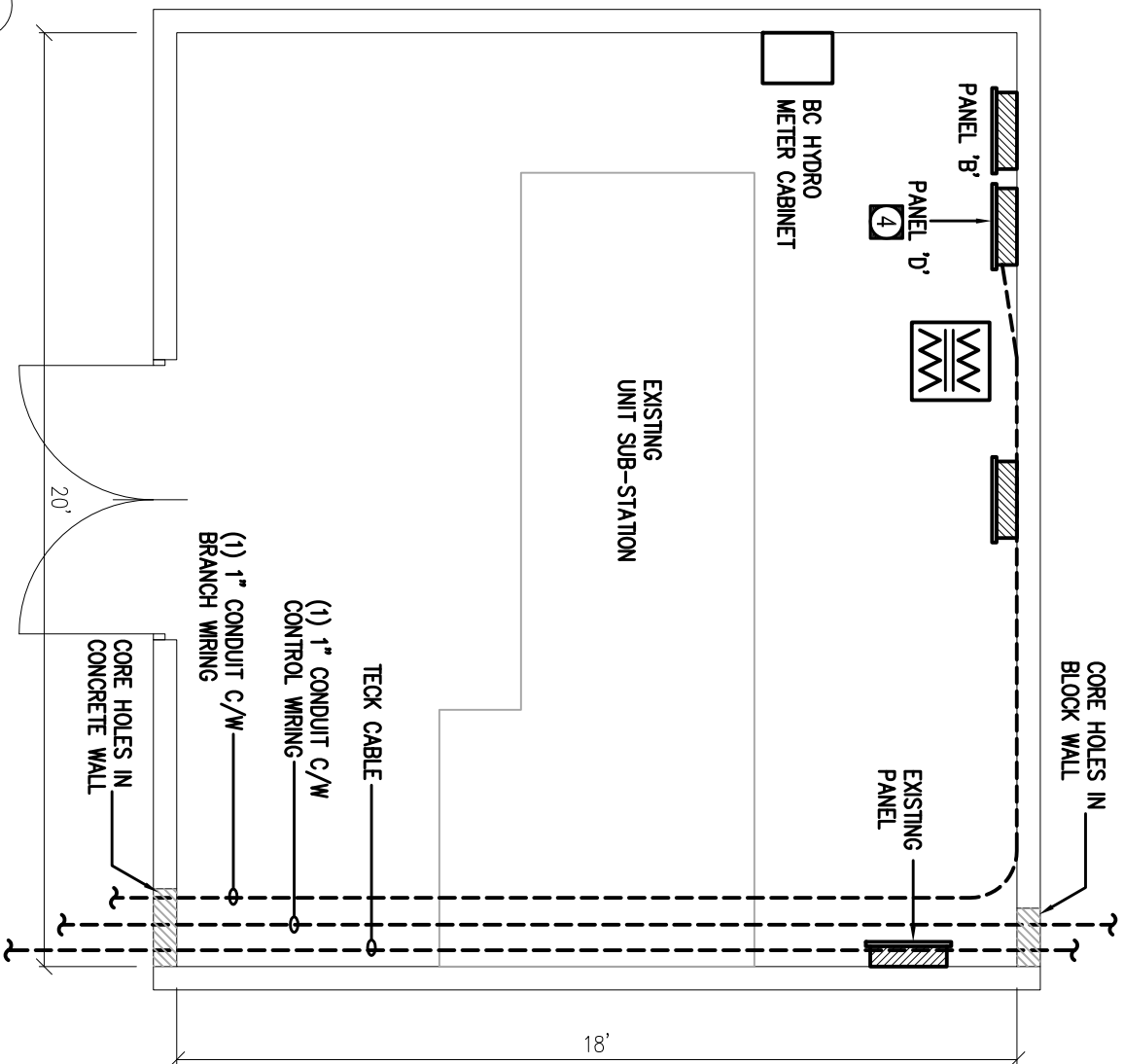
All areas of the Work Site shall be kept clean at all times by the Contractor.

Upon completion of the project, the Contractor shall immediately remove all excess material and debris from the Work Site to the satisfaction of the Contract Administrator.



**PARTIAL FLOOR PLAN**

SCALE : 1/16"=1'-0"



**EXISTING ELECTRICAL ROOM**

SCALE : 1/4"=1'-0"

**SEPARATE PRICE NOTES:**

- a) PROVIDE A SEPARATE ADDITIONAL PRICE TO INCREASE THE GENERATOR TO 450KW WITH WIRING TO SUIT.
- b) PROVIDE A SEPARATE ADDITIONAL PRICE TO UPGRADE THE GENERATOR ENCLOSURE TO 790BA OR BETTER, MEASURED AT 7 METERS.

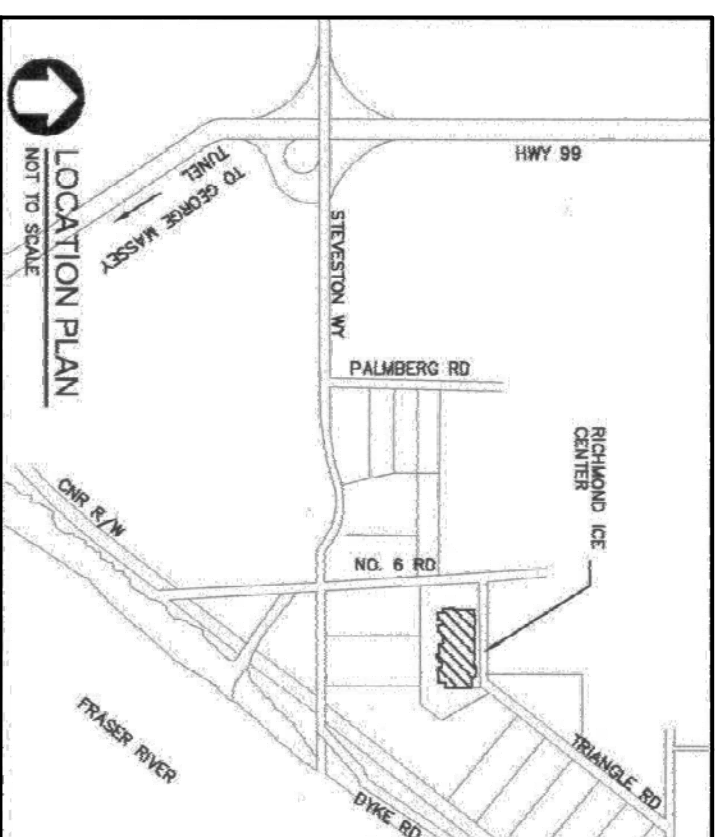
PROVIDE (1) SPILL KIT. LOCATION TO BE DETERMINED. REFER TO SPECS.

**GENERAL NOTE:**

THE ELECTRICAL CONTRACTOR WILL ACT AS THE GENERAL CONTRACTOR AND SHALL COORDINATE ALL ASPECTS OF THE REQUIRED WORK FOR A COMPLETE INSTALLATION.

**DRAWING NOTES:**

- 1) PROVIDE A NEW 400KW-600/347V-DIESEL GENERATOR C/W SUB-BASE FUEL TANK AND WEATHERPROOF ENCLOSURE. REFER TO SPECIFICATIONS FOR DETAILED REQUIREMENTS.
- 2) a) RUN PARALLEL 500CM-4C TECK CABLE FROM GENERATOR TO DISTRIBUTION SPLITTER IN MECHANICAL ROOM.  
b) RUN (1) " CONDUIT C/W BRANCH WIRE FROM GENERATOR TO PANEL 'd' FOR BLOCK HEATER AND BATTERY CHARGER.  
c) RUN (1) 1" CONDUIT C/W CONTROL WIRING FROM GENERATOR TO MECHANICAL ROOM FROM REMOVE ANNUNCIATOR AND START/STOP STATION.
- 3) -TECK CABLE CONDUIT SHALL BE RUN TOGETHER AND CONNECTED TO STRUCTURE UTILIZING GALVANIZED STRUT AND CLAMPS. ALL FITTINGS SHALL BE WEATHER TIGHT.  
EXISTING STAND BY POWER DISTRIBUTION AND MANUAL TRANSFER SWITCHES. TERMINATE NEW CABLE FEED FROM GENERATOR TO SPLITTER SPACE.
- 4) EXISTING PANEL 'd' UTILIZE EXISTING SPACE TO INSTALL NEW BREAKERS FOR:  
-BATTERY - 15A-120VOLT-1POLE  
-BLOCK HEATER - 30A-208VOLT-2POLE  
LABEL PANEL ACCORDINGLY.
- 5) a) PROVIDE REMOVE ANNUNCIATOR C/W WIRING TO GENERATOR. MOUNT NEXT TO EXISTING MANUAL TRANSFER SWITCHES. REFER TO SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.  
b) PROVIDE STOP/START STATION NEXT TO REMOVE ANNUNCIATOR. INCORPORATING STOP/START INTO ANNUNCIATOR IS ALSO ACCEPTABLE.
- 6) a) ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR CONTRACTING THE INSTALLATION OF A STRUCTURALLY REINFORCED CONCRETE PAD (15'x24'x12"). SIZE SHALL BE ADJUSTED AS REQUIRED TO ACCOMMODATE THE GENERATOR & 1-METER WORKING CLEARANCE AROUND GENERATOR. CONCRETE SHALL BE 2500 PSI WITH MINIMUM #6 REINFORCING BARS ON 12" CENTERS. ELECTRICAL CONTRACTOR SHALL HIRE A STRUCTURAL ENGINEER TO SIGN OFF ON PAD INSTALLATION & SEISMIC RESTRAINT. INCLUDE FOR THE CUTTING OF THE EXISTING ASPHALT WHERE THE NEW PAD IS TO BE LOCATED.  
b) ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR CONTRACTING THE INSTALLATION OF A WIRE MESH FENCE, 8 FEET TALL C/W LOCKABLE DOUBLE WIDE GATE ENTRY ON EAST SIDE NEXT TO GENERATOR ACCESS. FENCE SHALL SURROUND GENERATOR TO PREVENT UNAUTHORIZED ACCESS. (REFER TO SPECIFICATION).



**REVISIONS:**

ISSUED FOR 95% REVIEW FEB/23/2011  
ISSUED FOR TENDER MAY/2/2011

**PROJECT TITLE:**

**STAND-BY GENERATOR  
RICHMOND ICE CENTRE  
1414Q, TRIANGLE ROAD, RICHMOND**

**SHEET TITLE:**

**POWER LAYOUT**

**NEMETZ (S/A) &  
ASSOCIATES LTD.**  
ELECTRICAL CONSULTING ENGINEERS  
2009 WEST 4TH AVENUE, VANCOUVER, B.C., CANADA V6J 1N3  
TEL: (604) 736-6562 FAX: (604) 736-9805  
E-MAIL: ARNOLD@NEMETZ.COM

**E-1/1**

DRN: EH SCALE: AS NOTED  
CHK: DN/JC DATE: FEB.03.2011

DWG:

JOB No: 11776

REV: #