

INVITATION TO TENDER

RETURN BIDS TO:

Bid Receiving / Agriculture and Agri-Food Canada

Agriculture and Agri-Food Canada
 Eastern Service Centre
 Tender Receiving Unit
 2001 Robert-Bourassa Blvd., Suite 671-TEN
 Montréal, Quebec
 H3A 3N2

TENDER TO:

Agriculture and Agri-Food Canada

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the construction listed herein and on any attached sheets at the price(s) set out therefor.

Comments
 All bids must be sent only by email at :

 aaafc.escprocurement-
 cseapprovisionnement.aac@agr.gc.ca

 Optional Site-Visit :

 Tuesday, September 12, 2023 at 10:00am (EDT)

ISSUING OFFICE

Agriculture and Agri-Food Canada
 Eastern Service Centre
 Tender Receiving Unit
 2001 Robert-Bourassa Blvd., Suite 671-TEN
 Montréal, Quebec
 H3A 3N2

Title Building 22, Room 127 walk-in Cooler Renovations - Central Experimental Farm Ottawa				
Solicitation No. 01B46-23-105			Date 2023-09-01	
Client Reference No.				
File No. 01B46-23-105				
Solicitation Closes:				
Day of Week Friday	Month September	Day 22	Year 2023	Time 02:00
Time of Day <input type="radio"/> AM <input checked="" type="radio"/> PM			Time Zone EDT	
F.O.B <input type="radio"/> Plant <input type="radio"/> Destination <input type="radio"/> Other				
Address Enquiries to: Claudia Lauzier				
Title: Contracts Specialist				
Email: claudia.lauzier@agr.gc.ca				
Telephone Number	Ext.	Fax Number		
438 455-2392				
Destination Central Experimental Farm 960 Carling Avenue Ottawa, ON K1A 0C6				

Instructions: See Herein

Delivery Required	Delivery Offered	
Vendor / Firm Name and Address		
Telephone Number	Ext.	Fax Number

Name and title of person authorized to sign on behalf of Vendor / Firm
(type or print)

Signature _____ Date _____



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Appendix "A"

GENERAL INSTRUCTIONS TO BIDDERS



GENERAL INSTRUCTIONS TO BIDDERS

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GI01 COMPLETION OF BID

- 1) The bid shall be:
 - (a) submitted on the BID AND ACCEPTANCE FORM provided by AAFC with the bid package or on a clear and legible reproduced copy of such BID AND ACCEPTANCE FORM that must be identical in content and format to the BID AND ACCEPTANCE FORM provided by AAFC;
 - (b) based on the Bid Documents listed in the Special Instructions to Bidders;
 - (c) correctly completed in all respects;
 - (d) signed, with an original signature, by a duly authorized representative of the Bidder; and
 - (e) accompanied by
 - (i) bid security as specified in GI07; and
 - (ii) any other document or documents specified elsewhere in the solicitation where it is stipulated that said documents are to accompany the bid.
- 2) Subject to paragraph 6) of GI10, any alteration to the pre-printed or pre-typed sections of the Bid and Acceptance Form, or any condition or qualification placed upon the bid shall be cause for disqualification. Alterations, corrections, changes or erasures made to statements or figures entered on the Bid and Acceptance Form by the Bidder shall be initialed by the person or persons signing the bid. Alterations, corrections, changes or erasures that are not initialed shall be deemed void and without effect.
- 3) Unless otherwise noted elsewhere in the Bid Documents, facsimile copies of bids are not acceptable.

GENERAL INSTRUCTIONS TO BIDDERS (Continued)

GI02 IDENTITY OR LEGAL CAPACITY OF THE BIDDER

- 1) In order to confirm the authority of the person or persons signing the bid or to establish the legal capacity under which the Bidder proposes to enter into Contract, any Bidder who carries on business in other than its own personal name shall, if requested by Canada, provide satisfactory proof of

- (a) such signing authority; and
- (b) the legal capacity under which it carries on business;

prior to contract award. Proof of signing authority may be in the form of a certified copy of a resolution naming the signatory(ies) that is (are) authorized to sign this bid on behalf of the corporation or partnership. Proof of legal capacity may be in the form of a copy of the articles of incorporation or the registration of the business name of a sole proprietor or partnership.

GI03 APPLICABLE TAXES

- 1) "Applicable Taxes" means the Goods and Services Tax (GST), the Harmonized Sales Tax (HST), and any provincial tax, by law, payable by Canada such as, the Quebec Sales Tax (QST) as of April 1, 2013.

GI04 CAPITAL DEVELOPMENT AND REDEVELOPMENT CHARGES

- 1) For the purposes of GC1.8 LAWS, PERMITS AND TAXES in the General Conditions of the Contract, only fees or charges directly related to the processing and issuing of building permits shall be included. The Bidder shall not include any monies in the bid amount for special municipal development, redevelopment or other fees or charges which a municipal authority may seek as a prerequisite to the issuance of building permits.

GI05 REGISTRY AND PRE-QUALIFICATION OF FLOATING PLANT

- 1) Dredges or other floating plant to be used in the performance of the Work must be of Canadian registry. For dredges or other floating plant that are not of Canadian make or manufacture, the Bidder must obtain a certificate of qualification from Industry Canada and this certificate must accompany the bid. Plant so qualified by Industry Canada may be accepted on this project.

GI06 LISTING OF SUBCONTRACTORS AND SUPPLIERS

- 1) Notwithstanding any list of Subcontractors that the Bidder may be required to submit as part of the bid, the Bidder shall, within 48 hours of receipt of a notice to do so, submit all information requested in the said notice including the names of Subcontractors and Suppliers for the part or parts of the Work listed. Failure to do so shall result in the disqualification of its bid.

GI07 BID SECURITY REQUIREMENTS

- 1) The Bidder shall submit bid security with the bid in the form of a bid bond or a security deposit in an amount that is equal to not less than 10 percent of the bid amount. Applicable Taxes shall not be included when calculating the amount of any bid security that may be required. The maximum amount of bid security required with any bid is \$2,000,000.00.

GENERAL INSTRUCTIONS TO BIDDERS (Continued)

- 2) A bid bond shall be in an approved form <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494#appS>, properly completed, with original signature(s) and issued by an approved company whose bonds are acceptable to Canada either at the time of solicitation closing or as identified in Treasury Board Appendix L: [Acceptable Bonding Companies](#).
- 3) A security deposit shall be an original, properly completed, signed where required and be either:
 - (a) a bill of exchange, bank draft or money order made payable to the Receiver General for Canada and certified by an approved financial institution or drawn by an approved financial institution on itself; or
 - (b) bonds of, or unconditionally guaranteed as to principal and interest by, the Government of Canada;
- 4) For the purposes of subparagraph 3) (a) of GI07
 - (a) a bill of exchange is an unconditional order in writing signed by the Bidder and addressed to an approved financial institution, requiring the said institution to pay, on demand, at a fixed or determinable future time a sum certain of money to, or to the order of, the Receiver General for Canada;
 - (b) if a bill of exchange, bank draft or money order is certified by or drawn on an institution or corporation other than a chartered bank, it must be accompanied by proof that the said institution or corporation meets at least one of the criteria described in subparagraph 4.c. of GI07, either by letter or by a stamped certification on the bill of exchange, bank draft or money; and
 - (c) An approved financial institution is:
 - (i) a corporation or institution that is a member of the Canadian Payments Association as defined in the [Canadian Payments Act](#);
 - (ii) a corporation that accepts deposits that are insured, to the maximum permitted by law, by the Canada Deposit Insurance Corporation or the "Autorité des marchés financiers";
 - (iii) a corporation that accepts deposits from the public if repayment of the deposit is guaranteed by Her Majesty the Queen in right of a province;
 - (iv) a corporation, association or federation incorporated or organized as a credit union or co-operative credit society that conforms to the requirements of a credit union which are more particularly described in paragraph 137(6) of the [Income Tax Act](#); or
 - (v) Canada Post Corporation.
- 5) Bonds referred to in subparagraph 3)(b) of GI07 shall be provided on the basis of their market value current at the date of solicitation closing, and shall be:
 - (a) payable to bearer;
 - (b) accompanied by a duly executed instrument of transfer of the bonds to the Receiver General for Canada in the form prescribed by the Domestic Bonds of Canada Regulations; or
 - (c) registered as to principal or as to principal and interest in the name of the Receiver General for Canada pursuant to the Domestic Bonds of Canada Regulations.

GENERAL INSTRUCTIONS TO BIDDERS (Continued)

- 6) As an alternative to a security deposit an irrevocable standby letter of credit is acceptable to Canada and the amount shall be determined in the same manner as a security deposit referred to above.
- 7) An irrevocable standby letter of credit referred to in paragraph 6) of GI07 shall
 - (a) be an arrangement, however named or described, whereby a financial institution (the "Issuer") acting at the request and on the instructions of a customer (the "Applicant) or on its own behalf,
 - (i) is to make a payment to, or to the order of, the Receiver General for Canada as the beneficiary;
 - (ii) is to accept and pay bills of exchange drawn by the Receiver General for Canada;
 - (iii) authorizes another financial institution to effect such payment or accept and pay such bills of exchange; or
 - (iv) authorizes another financial institution to negotiate against written demand(s) for payment provided that the terms and conditions of the letter of credit are complied with;
 - (b) state the face amount which may be drawn against it;
 - (c) state its expiry date;
 - (d) provide for sight payment to the Receiver General for Canada by way of the financial institution's draft against presentation of a written demand for payment signed by the Departmental Representative identified in the letter of credit by his/her office;
 - (e) provide that more than one written demand for payment may be presented subject to the sum of those demands not exceeding the face value of the letter of credit;
 - (f) provide that it is subject to the International Chamber of Commerce (ICC) Uniform Customs and Practice (UCP) for Documentary Credits, 2007 Revision, ICC Publication No. 600; pursuant to the ICC UCP; a credit is irrevocable even if there is no indication to that effect; and
 - (g) be issued or confirmed, in either official language, by a financial institution which is a member of the Canadian Payments Association and is on the letterhead of the Issuer or Confirmer. The format is left to the discretion of the Issuer or Confirmer.
- 8) Bid security shall lapse or be returned as soon as practical following:
 - (a) the solicitation closing date, for those Bidders submitting non-compliant bids; and
 - (b) the administrative bid review, for those Bidders submitting compliant bids ranked fourth to last on the schedule of bids; and
 - (c) the award of contract, for those Bidders submitting the second and third ranked bids; and
 - (d) the receipt of contract security, for the successful Bidder; or
 - (e) the cancellation of the solicitation, for all Bidders.
- 9) Notwithstanding the provisions of paragraph 8) of GI07 and provided more than three compliant bids have been received, if one or more of the bids ranked third to first is withdrawn or rejected for whatever reason then Canada reserves the right to hold the security of the next highest ranked compliant bid in order to retain the bid security of at least three valid and compliant bids.

GENERAL INSTRUCTIONS TO BIDDERS (Continued)

GI08 SUBMISSION OF BID

- 1) The Bid and Acceptance Form, duly completed, and the bid security shall be enclosed and sealed in an envelope provided by the Bidder, and shall be addressed and submitted to the office designated on the INVITATION TO TENDER Form for the receipt of bids. The bid must be received on or before the date and time set for solicitation closing.
- 2) Unless otherwise specified in the Special Instructions to Bidders
 - (a) the bid shall be in Canadian currency;
 - (b) exchange rate fluctuation protection is not offered; and
 - (c) any request for exchange rate fluctuation protection shall not be considered.
- 3) Prior to submitting the bid, the Bidder shall ensure that the following information is clearly printed or typed on the face of the bid envelope:
 - (a) Solicitation Number;
 - (b) Name of Bidder;
 - (c) Return address; and
 - (d) Closing Date and Time.
- 4) Timely and correct delivery of bids is the sole responsibility of the Bidder.

GI09 REVISION OF BID

- 1) A bid submitted in accordance with these instructions may be revised by letter or facsimile provided the revision is received at the office designated for the receipt of bids, on or before the date and time set for the closing of the solicitation. The letter or facsimile shall be on the Bidder's letterhead or bear a signature that identifies the Bidder;
- 2) A revision to a bid that includes unit prices must clearly identify the changes(s) in the unit price(s) and the specific item(s) to which each change applies.
- 3) A letter or facsimile submitted to confirm an earlier revision shall be clearly identified as a confirmation.
- 4) Failure to comply with any of the above provisions shall result in the rejection of the non-compliant revision(s) only. The bid shall be evaluated based on the original bid submitted and all other compliant revision(s).

GI10 REJECTION OF BID

- 1) Canada may accept any bid, whether it is the lowest or not, or may reject any or all bids.
- 2) Without limiting the generality of paragraph 1) of GI10, Canada may reject a bid if any of the following circumstances is present:
 - (a) the Bidder, or any employee or subcontractor included as part of the bid, has been

GENERAL INSTRUCTIONS TO BIDDERS (Continued)

convicted under Section 121 ("Frauds on the government" & "Contractor subscribing to election fund"), 124 "Selling or purchasing office"), 380 ("Fraud committed against Her Majesty") or 418 ("Selling defective stores to Her Majesty") of the Criminal Code of Canada, or under paragraph 80(1)(d) ("False entry, certificate or return"), subsection 80(2) ("Fraud against Her Majesty") or Section 154.01 ("Fraud against Her Majesty") of the *Financial Administration Act*;

- (b) the Bidder's bidding privileges are suspended or are in the process of being suspended;
 - (c) the bidding privileges of any employee or subcontractor included as part of the bid are suspended or are in the process of being suspended, which suspension or pending suspension would render that employee or subcontractor ineligible to bid on the Work, or the portion of the Work the employee or subcontractor is to perform;
 - (d) the Bidder is bankrupt, or where for whatever reason, its activities are rendered inoperable for an extended period;
 - (e) evidence, satisfactory to Canada, of fraud, bribery, fraudulent misrepresentation or failure to comply with any law protecting individuals against any manner of discrimination, has been received with respect to the Bidder, any of its employees or any subcontractor included as part of its bid;
 - (f) evidence satisfactory to Canada that based on past conduct or behavior, the Bidder, a sub-contractor or a person who is to perform the Work is unsuitable or has conducted himself/herself improperly;
 - (g) with respect to current or prior transactions with Canada
 - (i) Canada has exercised, or intends to exercise, the contractual remedy of taking the work out of the contractor's hands with respect to a contract with the Bidder, any of its employees or any subcontractor included as part of its bid; or
 - (ii) Canada determines that the Bidder's performance on other contracts is sufficiently poor to jeopardize the successful completion of the requirement being bid on.
- 3) In assessing the Bidder's performance on other contracts pursuant to subparagraph 2)(g)(ii) of GI10, Canada may consider, but not be limited to, such matters as:
- (a) the quality of workmanship in performing the Work;
 - (b) the timeliness of completion of the Work;
 - (c) the overall management of the Work and its effect on the level of effort demanded of the department and its representative; and
 - (d) the completeness and effectiveness of the Contractor's safety program during the performance of the Work.
- 4) Without limiting the generality of paragraphs 1), 2) and 3) of GI10, Canada may reject any bid based on an unfavourable assessment of the:
- (a) adequacy of the bid price to permit the work to be carried out and, in the case of a bid providing prices per unit or a combination of lump sum and prices per unit, whether each such price reasonably reflects the cost of performing the part of the work to which that

GENERAL INSTRUCTIONS TO BIDDERS (Continued)

price applies;

- (b) Bidder's ability to provide the necessary management structure, skilled personnel, experience and equipment to perform competently the work under the Contract; and
 - (c) Bidder's performance on other contracts.
- 5) Where Canada intends to reject a bid pursuant to a provision of paragraphs 1), 2), 3) or 4) of GI10, other than subparagraph 2)(g) of IT10, the contracting authority will inform the Bidder and provide the Bidder ten (10) days within which to make representations, before making a final decision on the bid rejection.
- 6) Canada may waive informalities and minor irregularities in bids received if Canada determines that the variation of the bid from the exact requirements set out in the Bid Documents can be corrected or waived without being prejudicial to other Bidders.

GI11 BID COSTS

- 1) No payment will be made for costs incurred in the preparation and submission of a bid in response to the bid solicitation. Costs associated with preparing and submitting a bid, as well as any costs incurred by the Bidder associated with the evaluation of the bid, are the sole responsibility of the Bidder.

GI12 COMPLIANCE WITH APPLICABLE LAWS

- 1) By submission of a bid, the Bidder certifies that the Bidder has the legal capacity to enter into a contract and is in possession of all valid licences, permits, registrations, certificates, declarations, filings, or other authorizations necessary to comply with all federal, provincial and municipal laws and regulations applicable to the submission of the bid and entry into any ensuing contract for the performance of the work.
- 2) For the purpose of validating the certification in paragraph 1) of GI12, a Bidder shall, if requested, provide a copy of every valid licence, permit, registration, certificate, declaration, filing or other authorization listed in the request, and shall provide such documentation within the time limit(s) set out in the said request.
- 3) Failure to comply with the requirements of paragraph 2) of GI12 shall result in disqualification of the bid.

GI13 APPROVAL OF ALTERNATIVE MATERIALS

- 1) When materials are specified by trade names or trademarks, or by manufacturers' or suppliers' names, the bid shall be based on use of the named materials. During the solicitation period, alternative materials may be considered provided full technical data is received in writing by the Contracting Officer at least 10 calendar days prior to the solicitation closing date.

GI14 CONFLICT OF INTEREST - UNFAIR ADVANTAGE

- 1) In order to protect the integrity of the procurement process, bidders are advised that Canada may reject a bid in the following circumstances:
- (a) if the Bidder, any of its subcontractors, any of their respective employees or former

GENERAL INSTRUCTIONS TO BIDDERS (Continued)

employees was involved in any manner in the preparation of the bid solicitation or in any situation of conflict of interest or appearance of conflict of interest;

- (b) if the Bidder, any of its subcontractors, any of their respective employees or former employees had access to information related to the bid solicitation that was not available to other bidders and that would, in Canada's opinion, give or appear to give the Bidder an unfair advantage.
- 2) The experience acquired by a bidder who is providing or has provided the goods and services described in the bid solicitation (or similar goods or services) will not, in itself, be considered by Canada as conferring an unfair advantage or creating a conflict of interest. This bidder remains however subject to the criteria established above.
- 3) Where Canada intends to reject a bid under this section, the Contracting Authority will inform the Bidder and provide the Bidder an opportunity to make representations before making a final decision. Bidders who are in doubt about a particular situation should contact the Contracting Authority before bid closing. By submitting a bid, the Bidder represents that it does not consider itself to be in conflict of interest nor to have an unfair advantage. The Bidder acknowledges that it is within Canada's sole discretion to determine whether a conflict of interest, unfair advantage or an appearance of conflict of interest or unfair advantage exists.

GI15 INTEGRITY PROVISIONS - BID

- 1) Ineligibility and Suspension Policy (the "Policy"), and all related Directives, are incorporated by reference into, and form a binding part of the procurement process. The Supplier must comply with the Policy and Directives, which can be found at [Ineligibility and Suspension Policy](#).
- 2) Under the Policy, charges and convictions of certain offences against a Supplier, its affiliates or first tier subcontractors, and other circumstances, will or may result in a determination by Public Works and Government Services Canada (PWGSC) that the Supplier is ineligible to enter, or is suspended from entering into a contract with Canada. The list of ineligible and suspended Suppliers is contained in PWGSC's Integrity Database. The Policy describes how enquiries can be made regarding the ineligibility or suspension of Suppliers.
- 3) In addition to all other information required in the procurement process, the Supplier must provide the following:
 - a. by the time stated in the Policy, all information required by the Policy described under the heading "Information to be Provided when Bidding, Contracting or Entering into a Real Property Agreement"; and
 - b. with its bid / quote / proposal, a complete list of all foreign criminal charges and convictions pertaining to itself, its affiliates and its proposed first tier subcontractors that, to the best of its knowledge and belief, may be similar to one of the listed offences in the Policy. The list of foreign criminal charges and convictions must be submitted using an Integrity Declaration Form, which can be found at [Declaration form for procurement](#).
- 4) Subject to subsection 5, by submitting a bid / quote / proposal in response a request by AAFC, the Supplier certifies that:
 - a. it has read and understands the [Ineligibility and Suspension Policy](#);
 - b. it understands that certain domestic and foreign criminal charges and convictions, and

GENERAL INSTRUCTIONS TO BIDDERS (Continued)

- other circumstances, as described in the Policy, will or may result in a determination of ineligibility or suspension under the Policy;
- c. it is aware that Canada may request additional information, certifications, and validations from the Supplier or a third party for purposes of making a determination of ineligibility or suspension;
 - d. it has provided with its bid / quote / proposal a complete list of all foreign criminal charges and convictions pertaining to itself, its affiliates and its proposed first tier subcontractors that, to the best of its knowledge and belief, may be similar to one of the listed offences in the Policy;
 - e. none of the domestic criminal offences, and other circumstances, described in the Policy that will or may result in a determination of ineligibility or suspension, apply to it, its affiliates and its proposed first tier subcontractors; and
 - f. it is not aware of a determination of ineligibility or suspension issued by PWGSC that applies to it.
- 5) Where a Supplier is unable to provide any of the certifications required by subsection 4, it must submit with its bid/ quote / proposal a completed Integrity Declaration Form, which can be found at [Declaration form for procurement](#).
- 6) Canada will declare non-responsive any bid / quote / proposal in respect of which the information requested is incomplete or inaccurate, or in respect of which the information contained in a certification or declaration is found by Canada to be false or misleading in any respect. If Canada establishes after award of the Contract that the Supplier provided a false or misleading certification or declaration, Canada may terminate the Contract for default. Pursuant to the Policy, Canada may also determine the Supplier to be ineligible for award of a contract for providing a false or misleading certification or declaration.

Ineligibility and Suspension Policy - <http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>

Declaration form for procurement - <http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>

GI16 CODE OF CONDUCT FOR PROCUREMENT - BID

- 1) The Code of Conduct for Procurement provides that Bidders must respond to bid solicitations in an honest, fair and comprehensive manner, accurately reflect their capacity to satisfy the requirements set out in the bid solicitation and resulting contract, submit bids and enter into contracts only if they will fulfill all obligations of the Contract. By submitting a bid, the Bidder is certifying that it is complying with the Code of Conduct for Procurement. Failure to comply with the Code of Conduct for Procurement may render the bid non-responsive.



Appendix "B"

SPECIAL INSTRUCTIONS TO BIDDERS



SPECIAL INSTRUCTIONS TO BIDDERS (SI)

- SI01 Bid Documents
- SI02 Enquiries during the Solicitation Period
- SI03 **Non-Mandatory Site Visit**
- SI04 Revision of Bid
- SI05 Bid Results
- SI06 Insufficient Funds
- SI07 Bid Validity Period
- SI08 Construction Documents
- SI09 Web Sites
- SI10 Personnel Security Requirements
- SI11 Certifications – Bid
- SI12 Rights of Canada

SI01 BID DOCUMENTS

- 1) The following are the bid documents:
 - (a) INVITATION TO TENDER - Page 1 form AAFC / AAC5323-E;
 - (b) SPECIAL INSTRUCTIONS TO BIDDERS form AAFC / AAC5301-E;
 - (c) GENERAL INSTRUCTIONS TO BIDDERS form AAFC / AAC5313-E;
 - (d) Clauses and Conditions identified in “CONTRACT DOCUMENTS”;
 - (e) Drawings and Specifications;
 - (f) BID AND ACCEPTANCE form AAFC / AAC5320-E and any Appendices attached thereto; and,
 - (g) Any amendment issued prior to solicitation closing.

Submission of a bid constitutes acknowledgement that the Bidder has read and agrees to be bound by these documents.

SI02 ENQUIRIES DURING THE SOLICITATION PERIOD

- 1) Enquiries regarding this bid must be submitted in writing to the Contracting Officer named on the INVITATION TO TENDER - Page 1 as early as possible within the solicitation period. Except for the approval of alternative materials as described in GI13 of the GENERAL INSTRUCTIONS TO BIDDERS, enquiries should be received no later than five (5) calendar days prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may not result in an answer being provided.
- 2) To ensure consistency and quality of the information provided to Bidders, the Contracting Officer shall examine the content of the enquiry and shall decide whether or not to issue an amendment.
- 3) All enquiries and other communications related to this bid sent throughout the solicitation period are to be directed ONLY to the Contracting Officer named on the INVITATION TO TENDER - Page 1. Non-compliance with this requirement during the solicitation period can, for that reason alone, result in disqualification of a bid.

SPECIAL INSTRUCTIONS TO BIDDERS (Continued)

SI03 NON-MANDATORY SITE VISIT

- 1) There will be a site visit on Tuesday, September, 12, 2023 at
10:00 AM PM EDT.

Interested bidders are to meet at:
Building 20 (Main Security Desk)
Central Experimental Farm, 960 Carling Avenue, Ottawa, ON K1A 0C6

SI04 REVISION OF BID

- 1) A bid may be revised by letter, facsimile or e-mail in accordance with GI09 of the GENERAL INSTRUCTIONS TO BIDDERS. The e-mail address for receipt of revisions is:

Email address aafc.escprocurement-cseapprovisionnement.aac@agr.gc.ca

SI05 BID RESULTS

- 1) Following bid closing, bid results may be obtained from the bid receiving office by email at claudia.lauzier@agr.gc.ca.

SI06 INSUFFICIENT FUNDING

- 1) In the event that the lowest compliant bid exceeds the amount of funding allocated for the Work, Canada in its sole discretion may:
- cancel the solicitation; or
 - obtain additional funding and award the Contract to the Bidder submitting the lowest compliant bid; and/or
 - negotiate a reduction in the bid price and/or scope of work of not more than 15% with the Bidder submitting the lowest compliant bid. Should an agreement satisfactory to Canada not be reached, Canada shall exercise option (a) or (b).

SI07 BID VALIDITY PERIOD

- 1) Canada reserves the right to seek an extension to the bid validity period prescribed in Clause 4 of the BID AND ACCEPTANCE Form. Upon notification in writing from Canada, Bidders shall have the option to either accept or reject the proposed extension.
- 2) If the extension referred to in paragraph 1) of SI07 is accepted, in writing, by all those who submitted bids, then Canada shall continue immediately with the evaluation of the bids and its approvals processes.
- 3) If the extension referred to in paragraph 1) of SI07 is not accepted in writing by all those who submitted bids then Canada shall, at its sole discretion, either:
- continue to evaluate the bids of those who have accepted the proposed extension and seek the necessary approvals; or
 - cancel the invitation to bid.
- 4) The provisions expressed herein do not in any manner limit Canada's rights in law or under GI10 of the GENERAL INSTRUCTIONS TO BIDDERS.

SPECIAL INSTRUCTIONS TO BIDDERS (Continued)

SI08 CONSTRUCTION DOCUMENTS

- 1) The successful contractor will be provided with one paper copy of the sealed and signed plans, the specifications and the amendments upon acceptance of the offer. Additional copies, up to a

maximum of zero

 (0), will be provided free of charge upon request by the Contractor. Obtaining more copies shall be the responsibility of the Contractor including costs.

SI09 WEB SITES

The connection to some of the Web sites in the solicitation documents is established by the use of hyperlinks. The following is a list of the addresses of the Web sites:

Treasury Board Appendix L, Acceptable Bonding Companies

<http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494§ion=text#appL>

Canadian economic sanctions

<http://www.international.gc.ca/sanctions/index.aspx?lang=eng>

SI10 PERSONNEL SECURITY REQUIREMENTS

- 1) The successful Bidder's personnel, as well as any subcontractor and its personnel, who are required to perform any part of the work pursuant to the subsequent contract, must meet the following contract security requirements:
 - Personnel who are required to perform any part of the work must EACH hold a valid personnel security screening at the level of RELIABILITY STATUS, granted or approved by Agriculture and Agri-Food Canada. Until the security screening of the personnel has been completed satisfactorily by Agriculture and Agri-Food Canada, the Contractor/Subcontractor personnel MAY NOT perform contract work. Each of the proposed staff must complete "Security Clearance Form" (TBS 330-23E) upon request from Canada.

SI11 Certifications – Bid

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after contract award. The Contracting Authority will have the right to ask for additional information to verify bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications or to comply with the request of the Contracting Authority for additional information will also render the bid non-responsive.

SI12 Rights of Canada

Canada reserves the right to:

- a) Reject any or all bids received in response to the bid solicitation;
- b) Enter into negotiations with bidders on any or all aspects of their bids;
- c) Accept any bid in whole or in part without negotiations;
- d) Cancel the bid solicitation at any time;
- e) Reissue the bid solicitation;
- f) If no compliant bids are received and the requirement is not substantially modified, reissue the bid solicitation by inviting only the bidders who bid to resubmit bids within a period designated by Canada; and
- g) Negotiate with the sole compliant Bidder to ensure best value to Canada.



Appendix "C"

BID AND ACCEPTANCE FORM

BID AND ACCEPTANCE FORM CONSTRUCTION CONTRACT - MAJOR WORKS

BA01 IDENTIFICATION					
Description of the Work The Central Experimental Farm, located at 960 Carling Avenue, Ottawa, Ontario wishes to offer a contract to a contractor for the removal of an existing walk-in cooler and the supply and installation of a new one in room 127 of Building 22. Full description of the work can be found in Appendix E - Specification and drawings.					
Solicitation Number 01B46-23-105			File / Project Number		
BA02 BUSINESS NAME AND ADDRESS OF BIDDER					
Name					
Address					
Unit/Suite/Apt.	Street number	Number suffix	Street name	Street type	Street direction
PO Box or Route Number			Municipality (City, Town, etc.)	Province	Postal code
Phone number		Fax number		Email address	
BA03 THE OFFER					
1) The Bidder offers to Canada as represented by the Minister of Agriculture and Agri-food Canada to perform and complete the Work for the above named project in accordance with the Bid Documents for the Total Bid Amount of: \$ _____ excluding Applicable Taxes (GST/HST/QST). (to be expressed in numbers only)					
BA04 BID VALIDITY PERIOD					
1) The bid shall not be withdrawn for a period of <u>60</u> days following the date of solicitation closing.					
BA05 APPENDICES					
1) The following appendices are included in this Bid and Acceptance Form: <input type="checkbox"/> No appendices <input type="checkbox"/> Appendix 1 <input checked="" type="checkbox"/> Appendix 2 <input type="checkbox"/> COVID-19 Vaccination Requirement Certification					
BA06 ACCEPTANCE AND CONTRACT					
1) Upon acceptance of the Bidder's offer by Canada, a binding Contract shall be formed between Canada and the resulting Contractor. The documents forming the Contract shall be the contract documents referred to in SC01 CONTRACT DOCUMENTS.					
BA07 CONSTRUCTION TIME					
1) The Contractor shall perform and complete the Work <u>within</u> <u>13</u> weeks from the date of notification of acceptance of the offer.					
BA08 BID SECURITY					
1) The Bidder shall enclose bid security with its bid in accordance with GI07 BID SECURITY REQUIREMENTS.					
2) If a security deposit is furnished as bid security, it shall be forfeited in the event that the bid is accepted by Canada and the Contractor fails to provide Contract Security in accordance with GC9 CONTRACT SECURITY, provided that Canada may, if it is in the public interest, waive the right of Canada to forfeiture any or all of the security deposit.					

BA09 SIGNATURE

Name and title of person authorized to sign on behalf of Bidder (type or print)	Name
	Title
	Signature _____ Date _____
	Name
	Title
Signature _____ Date _____	

BA10 INTEGRITY PROVISIONS - LIST OF NAMES

If the required list of names has not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to provide the names within the time frame specified will render the bid non-responsive. Providing the required names is a mandatory requirement for contract award.

Bidders who are incorporated, including those bidding as a joint venture, must provide a complete list of names of all individuals who are currently directors of the Bidder.

Bidders bidding as sole proprietorship, as well as those bidding as a joint venture, must provide the name of the owner(s).

Bidders bidding as societies, firms or partnerships do not need to provide lists of names.

BID AND ACCEPTANCE FORM
CONSTRUCTION CONTRACT - MAJOR WORKS
APPENDIX 2

LIST OF SUBCONTRACTORS

The Bidder will subcontract the parts of the work listed below to the subcontractor named for each part. The Bidder agrees not to make changes in the list of subcontractors without the written consent of the Departmental Representative. The Bidder understands that for each part of the work, if more than one subcontractor is named, or no subcontractor is named, or, the Bidder fails to state that the work will be done by its own forces where applicable, the bid will be subject to disqualification.

LIST OF EQUIPMENT

LIST OF MATERIALS



Appendix "D"

MAJOR WORKS - GENERAL CONDITIONS

MAJOR WORKS GENERAL CONDITIONS :

GC1	GENERAL PROVISIONS	R2810D (2017-11-28)
GC2	ADMINISTRATION OF THE CONTRACT	R2820D (2016-01-28)
GC3	EXECUTION AND CONTROL OF THE WORK	R2830D (2018-11-28)
GC4	PROTECTIVE MEASURES	R2840D (2008-05-12)
GC5	TERMS OF PAYMENT	R2850D (2019-11-28)
GC6	DELAYS AND CHANGES IN THE WORK	R2865D (2019-05-30)
GC7	DEFAULT, SUSPENSION OR TERMINATION OF CONTRACT	R2870D (2018-06-21)
GC8	DISPUTE RESOLUTION	R2880D (2019-11-28)
GC9	CONTRACT SECURITY	R2890D (2018-06-21)
GC10	INSURANCE	R2900D (2008-05-12)

The documents identified by title, number and date above are incorporated by reference and are set out in the Standard Acquisition Clauses and Conditions (SACC) manual, issued by Public Works and Government Services Canada (PWGSC). The SACC manual is available on the PWGSC web site:

<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>

All reference to the Minister of Public Works and Government Services Canada shall be deleted and replaced with the Minister of the Agriculture and Agri-Food Canada.



Appendix "E"

SPECIFICATION & DRAWINGS

National Master Specification

20-1246 / 247-2101 CEF Building 22 - Room 127, Cooler Panel Replacement

ISSUED FOR TENDER, R3

2023-05-10

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END OF TABLE

List of Drawing Sheets

DRAWING NO.	DESCRIPTION	[REVISION NO].
M-1	Mechanical - Legend and General Notes	Issued for Tender, R1
M-2	Mechanical – Refrigeration Systems and Fire Protection Systems	Issued for Tender, R1
E-1	Electrical – Existing & Demolition, Existing & New	Issued for Tender, R1

END OF SECTION

SUBMITTAL PROCEDURES

Part 1 General**1.1 ADMINISTRATIVE**

- .1 Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- .10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term shop drawings means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 5 days for Consultants review of each submission.
- .5 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

SUBMITTAL PROCEDURES

- .6 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor s name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor s stamp, signed by Contractor s authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .9 After Consultant s review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative/Consultant may reasonably request.
- .11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.

SUBMITTAL PROCEDURES

- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.
 - .1 Statements printed on manufacturer s letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
- .16 Documentation of the testing and verification actions taken by manufacturer s representative to confirm compliance with manufacturer s standards or instructions.
- .17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 CMMS DATA SHEETS

1. Immediately after the approval of the shop drawings, preparation of CMMS documents shall begin. Once the equipment is installed on site, all CMMS Data Sheets must be completed.
2. Submit CMMS Data Sheets for all equipment/system(s) being removed/decommissioned to Project Manager prior their removal.
3. Completed CMMS Data Sheets are to include all required information.
4. Submit CMMS Data Sheet to the Project Manager for distribution to the Consultant and 3rd party Cx agent (if applicable) review.

SUBMITTAL PROCEDURES

5. All CMMS documents must be turned over to the Project Manager for new, modified and or relocated, prior to equipment start up.
6. Consultant to review and confirm completeness of the information provided. Consultant will submit CMMS Data Sheets to the Project Manager no later than 5 business days from receipt of CMMS submission.
7. CMMS Data Sheet document (PDF) included in Annex at the end of this section.

1.4 MOCK-UPS

- .1 N/A

1.5 PHOTOGRAPHIC DOCUMENTATION

- .1 N/A
- .2

1.6 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit WSIB.
- .2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

- .1 Removal of all paneling and framing
- .2 Removal of the plaster walls and ceiling back to the concrete.

1.2 REFERENCES

- .1 American Conference of Governmental Industrial Hygienists (ACGIH), Bioaerosols Assessment and Control.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 United States Department of Labor Occupational Safety and Health Administration (OSHA)
 - .1 29 CFR 1910.134 - Respiratory Protection.
 - .2 29 CFR 1910.1200 - Hazard Communication.
- .4 Environmental Abatement Council of Canada (EACC). Mould Abatement Guidelines.
- .5 Alberta Health Services
 - .1 Fungal Air Testing, Investigation and Reporting Requirements for Extensively Mould-Contaminated Buildings

1.3 DEFINITIONS

- .1 Cleaning solution: detergent solution.
- .2 Competent person: individuals who can demonstrate that mould remediation training has been obtained, is capable of identifying existing microbial hazards in workplace and selecting appropriate control strategy for microbial exposure.
- .3 Contractor: remediation contractor providing demolition and removal services as defined in specifications.
- .4 Critical barrier or enclosure: minimum of two separate layers of 0.15 mm fibre reinforced polyethylene sheeting (FRPS) taped securely and separately over windows, doorways, diffusers, grilles and any other openings between work area and uncontaminated areas outside of work area including outside of building.
- .5 Curtained doorway: arrangement of closures to allow ingress and egress

from one room to another. Typically constructed as follows: Place two overlapping sheets (minimum overlap of 1 metre or width of doorway) of FRPS over existing or temporarily framed doorway, securing each along top of doorway, securing vertical edge of one sheet along one vertical side of doorway and securing vertical edge of other sheet along opposite vertical side of doorway. Reinforce free edges of FRPS with fibre reinforced adhesive tape and weight bottom edge to ensure proper closing. Space curtained doorways minimum of 2 metres apart.

- .6 Decontamination Room: enclosure located between Mould Contaminated Work Area and uncontaminated area for decontamination of equipment and workers, typically consisting of two curtained doorways at least 2 metres apart.
- .7 Fibre Reinforced Polyethylene Sheet (FRPS): rip-proof polyethylene sheeting with fibre reinforced adhesive tape added along edges.
- .8 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining particles greater than 0.3 microns at 99.97% efficiency.
- .9 HVAC: heating ventilating and air-conditioning system which serve occupied areas. Includes but is not limited to air handling units, duct work, terminal boxes and grills.
- .10 Mould Contaminated Work Area (MCWA): specific area or location where actual work is being performed or such other area of facility which it has been determined may be hazardous to public health as result of mould remediation.
- .11 Negative pressure: maintain Mould Contaminated Work Area at negative pressure relative to surrounding space to prevent contaminants from leaving contaminated area. Use exhaust fan with HEPA filter to maintain Mould Contaminated Work Area at lower pressure than surrounding areas. Maintain pressure differential of 5 to 7 Pa . Air flow movement can be verified with smoke pencil.
- .12 Occupied Area: areas of building or work site that are outside Mould Contaminated Work Area.
- .13 PPE: Personnel Protective Equipment.
- .14 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray; with minimum of six litres capacity for work.

1.4 REGULATORY REQUIREMENTS

- .1 Comply with regulations in effect at time work is performed. In case of conflict among these requirements or with these specifications more stringent requirement applies. If no regulations exist, follow

guidelines most widely accepted by recognized professional organizations such as occupational hygienists, health professionals or environmental engineers as listed in paragraph 1.2 References.

1.5 SUBMITTALS

- .1 Submit proof satisfactory to Departmental Representative that employees have had instruction on potential hazards of mould exposure, use of personal respirator and protective clothing, entry and exit from work areas and aspects of work procedures and protective measures.
- .2 Submit proof of qualifications of both remediation supervisor and subcontractors including relevant job experience to project.
- .3 Submit layout of proposed enclosures and decontamination facilities to Departmental Representative for review.
- .4 Submit Provincial and/or local requirements for Notice of Project form.
- .5 Submit proof of Contractors Liability Insurance for dealing with hazardous materials.
- .6 Submit proof that employees have respirator fit testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.
- .7 Submit Workers Compensation Board status and transcription of insurance.

1.6 CLOSEOUT SUBMITTALS

- .1 Maintain general log provide to permanent record of project. Maintain logs, including negative pressure records and other required documentation as part of permanent project file.
- .2 Daily log must be available for inspection upon request by Departmental Representative.
- .3 Visitor log must be available for inspection upon request by Departmental Representative.

1.7 INSTRUCTION AND TRAINING

- .1 Before commencing work, provide Departmental Representative proof that workers have had instruction and training in potential health hazards of mould exposure, handling of hazardous materials, in personal hygiene including protective clothing, entry and exit from Mould Contaminated Work Area, use of disposal procedures including building materials, respirators and protective clothing.

- .2 Instruction and training related to use of personal respirators:
 - .1 Fitting of equipment.
 - .2 Inspection and maintenance of equipment.
 - .3 Disinfecting of equipment.
 - .4 Limitations of equipment.
- .3 Instruction and training must be provided by designated construction safety advisor.
- .4 Supervisory personnel to complete required training in mould remediation.

1.8 WORKER PROTECTION

- .1 Provide tight-fitting full-face dual cartridge negative air purifying respirator equipped with HEPA filter cartridges to be worn. Disposable respirators not allowed.
- .2 Gloves that extend to middle of forearm.
- .3 Use mould-impervious polyethylene coated disposable head and foot coverings, and body suit made of breathable material. Seal gaps, such as those around ankles and wrists, with fibre reinforced adhesive tape.
- .4 Procedures for entering Mould Contaminated Work Area. Each worker to:
 - .1 Remove street clothes in Decontamination Room and put on respirator with new filters or reusable filters, clean disposable protective clothing and head covers before entering Mould Contaminated Work Area. Store street clothes, uncontaminated footwear and towels in Decontamination Room.
 - .2 Ensure that no person required to enter Mould Contaminated Work Area has facial hair that affects seal between respirator and face.
 - .3 Eating, drinking and chewing are not permitted in Mould Contaminated Work Area. Drinking is permitted in Decontamination Area.
- .5 Procedures for exiting Mould Contaminated Work Area. Workers to:
 - .1 Remove gross contamination from clothing before leaving work area then proceed to Decontamination Room and remove disposable protective clothing except respirators. Place contaminated worksuits in closed containers for disposal with mould contaminated materials.
 - .2 Clean outside of respirator with cleaning solution. Remove respirator, remove and dispose of filters in container provided for purpose. Wash and rinse inside of respirator.
 - .3 When not in use in work area, store reusable work footwear in

Decontamination Room. Upon completion of mould remediation, clean footwear thoroughly inside and out using cleaning solution before removing from Mould Contaminated Work Area or from Decontamination Room.

- .4 Proceed to decontamination room and change into street clothes at end of each day's work.
- .5 If re-entering work area, follow entering and exiting procedures.

- .6 Workers: to be fully protected with respirators and protective equipment clothing during preparation of erecting enclosure prior to commencing actual mould remediation.

- .7 Post in Decontamination room procedures specified, in both official languages.

1.9 VISITOR PROTECTION

- .1 Protective clothing and approved respirators to be worn by Authorized Visitors to Mould Contaminated Work Area.
- .2 Instruct Authorized Visitors in proper use of protective clothing, respirators, and procedures.
- .3 Instruct Authorized Visitors proper procedures to be followed in entering into and exiting from Mould Contaminated Work Area.

1.10 SITE CONDITIONS

- .1 Inform sub-trades of presence of mould-contaminated materials and potential health hazards of mould exposure.
- .2 Submit to Departmental Representative copy of notifications prior to start of work.

1.11 HOURS OF WORK

- .1 Work may be conducted during normal business hours

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Drop Sheets: fibre reinforced polyethylene 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.
- .2 Disposal bags: dust-tight 0.15 mm clear polyethylene waste bags.
- .3 Wetting Agent: water to mist mould-containing material.

- .4 Cleaning solution: detergent solution for damp wipe and/or mop.
- .5 Fibre reinforced adhesive tape: used in sealing joints of fibre reinforced polyethylene sheets and for attachment of fibre reinforced polyethylene sheet to finished and unfinished surfaces. Fibre reinforced adhesive tape must be capable of adhering under both dry and wet conditions.
- .6 Provide materials such as polyethylene sheeting, lumber, nails and other hardware necessary to construct and dismantle decontamination enclosures and barriers that isolate Mould Work Area as appropriate for work.

2.2 TOOLS AND EQUIPMENT

- .1 Tools and equipment: suitable for use with microbial contamination and must be able to withstand de-contamination.
- .2 Personnel protective equipment (protective clothing, personal respiratory filter cartridges, HEPA air filters, etc.) provide in sufficient quantities for duration of project.
- .3 Exhaust air fan systems: equipped with HEPA filters and be capable of providing sufficient exhaust air to create a minimum pressure differential of 5 to 7 Pa and to allow sufficient flow of air through area.
- .4 Pressure differential automatic recording instrument provide: to ensure exhaust air devices provide minimum pressure differential required between Mould Contaminated Work Area and uncontaminated areas. Install equipment in critical barrier between Mould Contaminated Work Area and uncontaminated areas and gap seal with fibre reinforced adhesive tape.
- .5 Vacuum cleaners: HEPA filters.
- .6 Ladders and/or scaffolds: adequate length, strength and sufficient quantity to support work schedule.

PART 3 - EXECUTION

3.1 PREPARATION OF MOULD CONTAMINATED WORK AREA

- .1 Mould Contaminated Work Area and areas adjacent and around: Vacating is required for persons having undergone recent surgery, immune suppressed people or people with chronic inflammatory lung diseases.
- .2 One supervisor for every ten trained mould remediation workers is required.

- .3 Approved supervisor must remain within Mould Contaminated Work Area during disturbance, removal, or other handling of mould-contaminated materials.
- .4 Turn off HVAC system serving Mould Contaminated Work Area prior to starting remediation work to prevent contamination and dust dispersal to other areas of building.
- .5 Clean movable objects within proposed Mould Contaminated Work Area using HEPA filtered vacuum, damp wipe surfaces and remove such objects from Mould Contaminated Work Area to a secure and clean area.
- .6 Clean fixed objects within proposed work area using HEPA filtered vacuum, damp wipe surfaces and enclose with 2 separate layers of 0.15 mm fibre reinforced polyethylene sheeting securely sealed with fibre reinforced adhesive tape.
- .7 Remove visible dust from surfaces in work area where dust is likely to be disturbed during course of mould remediation work. Use HEPA vacuum and damp wipe area.
- .8 Do not use compressed air to clean up or remove dust from surfaces.
- .9 Seal off windows, doorways, skylights, ducts, grilles, diffusers, ceiling plenums, electrical outlets and openings between work area and uncontaminated areas to prevent spread of dirt and spores with 2 separate layers of 0.15 mm (fibre reinforced polyethylene sheeting securely held in place by fibre reinforced adhesive tape. Doorways and corridors that will not be used for passage during work must be sealed with fixed critical barriers.
- .10 Erect critical barriers around perimeter of Mould Contaminated Work Area before remediation using two separate layers of 0.15 mm fibre reinforced polyethylene sheeting extending from floor slab to as close as possible to underside of above floor slab. Seal gaps due to ductwork, piping conduits with 2 separate layers of 0.15 mm fibre reinforced polyethylene sheeting. For larger areas, erect steel or wooden stud frame and fibre reinforced polyethylene sheeting attached to it. Frame openings greater than 3 square metres with 38 x 89 mm studs spaced 400 mm on center. Barriers must be constructed without disturbing contaminated materials.
- .11 Seal floor and wall surfaces within enclosure which are not to be removed as microbial waste with minimum of 2 separate layers of 0.15 mm polyethylene sheeting. Cover floors first so that fibre reinforced polyethylene extends at least 300 mm and fold up against enclosure wall, overlap vertical fibre reinforced polyethylene sheet with floor fold up.

- .12 Build worker Decontamination Room at exits from work area.
- .13 Put negative pressure system in operation and operate continuously from time first fibre reinforced polyethylene is installed to seal openings until final completion of work including final clean-up. Provide continuous monitoring of pressure differential using automatic recording instrument.
- .14 After Mould Contaminated Work Area enclosure is completed, remove HVAC filters, pack in sealed plastic bags 0.15 mm minimum thickness and treat as contaminated waste. Remove objects that might interfere with mould removal, as directed by Departmental Representative. Use HEPA vacuum during fixture removal to reduce dust dispersal.
- .15 Before beginning mould remediation work, at each access to Mould Contaminated Work Area, install warning signs in both official languages in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used :
'CAUTION MOULD HAZARD AREA (25 mm) / NO
UNAUTHORIZED ENTRY (19 mm) / WEAR ASSIGNED
PROTECTIVE EQUIPMENT (19 mm) / BREATHING MOULD
DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)'.

3.2 PREPARATION OF
WORKER
DECONTAMINATION
ENCLOSURE SYSTEM

- .1 Establish worker decontamination enclosure system between Mould Contaminated Work Area and uncontaminated area. Access to Mould Contaminated work area through this enclosure.
- .2 Access to Decontamination Room through double flap curtained openings.
- .3 Decontamination Room: build Decontamination Room between Mould Contaminated Work Area, with two curtained doorways, one to Mould Contaminated Work Area and one to uncontaminated area. Install waste receptor and storage facilities for workers' shoes and protective clothing to be reworn in Decontamination Room. Decontamination Room: large enough to accommodate specified facilities, equipment needed, and at least one worker allowing sufficient space to change clothes comfortably. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.
- .4 No personnel permitted to leave Decontamination Room unless first decontaminated by changing, wet cleaning or HEPA vacuuming to remove dust and mould spores. No contaminated materials or persons to enter uncontaminated area.

3.3 MAINTENANCE OF
ENCLOSURES

- .1 Maintain enclosures in tidy condition.
- .2 Ensure that barriers and fibre reinforced polyethylene linings are effectively sealed with duct tape at beginning of each working period. Repair damaged barriers and remedy defects immediately upon discovery.
- .3 Use smoke methods to test effectiveness of barriers when directed by Departmental Representative.

3.4 MICROBIAL
REMEDICATION WORK
AREA

- .1 Commence mould remediation work when:
 - .1 Mould Contaminated Work Area and decontamination enclosures are effectively segregated from parts of building required to remain in use. Enclosures are to be inspected by Departmental Representative.
 - .2 Tools, equipment and materials waste containers are on site.
 - .3 Warning signs as specified are displayed where access to contaminated areas is possible.
 - .4 Notifications have been completed and preparatory steps have been taken.
- .2 Authorized supervisor employed by contractor and qualified in microbial contamination remediation to be on job site to ensure establishment and maintenance of negative pressure enclosure and proper work practices throughout project.
- .3 Do not begin remediation work until authorized by Departmental Representative.
- .4 Use sprayer to mist where materials containing mould are to be scraped. Perform work to reduce dust creation to lowest levels practicable.
- .5 Remove microbially contaminated materials in designated locations as outlined in specification. Removal to include visibly contaminated material as determined by Departmental Representative.
- .6 Remove contaminated material in small sections within enclosure. Pack material in sealable plastic bags 0.15 mm minimum thickness and place in containers for disposal.
- .7 Non-porous and semi-porous materials that are identified as contaminated can be cleaned using HEPA-filtered vacuuming and damp wiping with detergent solution and reused depending on depth to which microbial growth has penetrated substrate. Wood is to be discarded if fungal growth has affected its soundness.

- .8 Where designed waste container is not used, remove sealed containers containing mould waste and dispose following specified procedures.
- .9 During mould remediation, should the Departmental suspect contamination of areas outside enclosed Mould Contaminated Work Area contractor to stop remediation work and immediately decontaminate these affected areas. Eliminate causes of such contamination. Unprotected individuals prohibited from entering these contaminated areas until air and swab sampling and visual inspections determine the area is free of contamination.

3.5 CLEAN-UP

- .1 During mould remediation and immediately after completion of mould remediation, clean enclosure starting within top of enclosure and working down to floors. Clean both enclosed area and Decontamination Room using HEPA vacuum and/or by damp mopping with cleaning solution.
- .2 HEPA vacuum inside layer of polyethylene sheeting within work area and damp wiped prior to removal. Removal of this layer to occur after removal and decontamination activities are completed and work area inspected by Departmental Representative.
- .3 Remove inside layer of fibre reinforced polyethylene sheeting by rolling it away from walls to centre of work area. Vacuum visible debris during cleanup, immediately, using HEPA vacuum.
- .4 HEPA vacuum, minimum of twelve hours after inside layer of fibre reinforced polyethylene sheeting has been removed, second layer of polyethylene sheeting and damp wipe.
- .5 Include Decontamination Room in similar clean-up.
- .6 Remove non-essential fibre reinforced polyethylene sheeting and visible accumulations of material and debris.
- .7 Dispose of used fibre reinforced polyethylene sheets, used fibre reinforced adhesive tape, cleaning material, clothing, and contaminated waste.
- .8 Include sealed waste containers and equipment used in Mould Contaminated Work Area in cleanup and removed from work area, via Decontamination Room.
- .9 Carry out final visual inspection check to ensure that no dust or debris remains on surfaces as result of dismantling operations. Perform final clearance air sampling acceptable by Departmental Representative prior to re-occupancy. Repeat cleaning using HEPA vacuum equipment, or damp cleaning methods, in conjunction with sampling

until levels meet these criteria.

- .10 Upon notification that final tests are acceptable remove remaining critical barriers. HEPA vacuum surfaces behind containment barriers, including walls, floors, ceiling tiles, windows, doors and other surfaces. HEPA vacuum adjacent interior spaces within 3 metres of former location of containment barriers.

3.6 WASTE DISPOSAL

- .1 Place debris and microbial infected waste in doubled-bagged dust-tight 0.15 mm clear polyethylene waste bags. Treat drop sheets and disposable protective clothing as waste; fold these items to contain dust, and place in plastic bags. Securely seal bags and place in waste containers for transport.
- .2 Cover large items that have heavy mould growth with two layers of polyethylene sheeting and sealed with fibre reinforced adhesive tape before they are removed from cleaned work area.
- .3 Clean outside of bags and/or waste containers with damp cloth and cleaning solution or HEPA vacuumed prior to their transport to uncontaminated areas of building.
- .4 Remove waste bags and/or containers from site and dispose. There is no special requirement for disposal of mouldy materials; as such they can be disposed of in landfill.

3.7 RE-ESTABLISHMENT OF SYSTEMS

- .1 Advise Building Operator to re-establish HVAC and electrical systems to proper working condition. Replace filters in HVAC system serving affected area.

3.8 AIR MONITORING AND FINAL CLEARANCE

- .1 Before and after work, take air samples inside of Mould Contaminated Work Area enclosure in accordance with recommended guidelines.
- .2 Departmental Representative to conduct thorough visual inspection to detect visible accumulations of dust or bulk materials remaining in work area. If dust, debris, microbial contamination, or residue be detected repeat cleaning at until area meets approval.
- .3 Perform final air monitoring of Mould Contaminated Work Area provided area has passed visual inspection and appropriate settling period of 12 hours has passed. If air monitoring results are deemed unacceptable by Departmental Representative re-cleaned area with HEPA vacuum and damp wiped until levels are found to be acceptable by Departmental Representative.

WALK-IN COOLERS AND FREEZERS

Part 1 General**1.1 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION**

- .1 Insulation for floor depressions at "walk-in" type refrigerated boxes.
- .2 Electrical disconnect boxes (remote) and electrical breaker panels (remote).

1.2 REFERENCE STANDARDS

- .1 American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME)
 - .1 ANSI/ASME B16.26- 2006, Cast Copper Alloy Fittings for Flared Copper Tubes.
 - .2 ANSI/ASME B16.29- 2007, Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings-DWV.
- .2 American National Standards Institute/National Fire Protection Association (ANSI/NFPA)
 - .1 ANSI/NFPA 255-2006, Standard Method of Test of Surface Burning Characteristics of Building Materials.
- .3 ASTM International (ASTM)
 - .1 ASTM A240/A240M-11a, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - .2 ASTM A480/A480M- 11a, Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
 - .1 Finish for sheet: No. 4 Finish-General purpose polished finish, one or both sides.
 - .3 ASTM A653/A653M-10, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .4 ASTM B88M- 09, Standard Specification for Seamless Copper Water Tube.
 - .5 ASTM B280-08, Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
 - .6 ASTM E84-11a, Standard Test Method for Surface Burning Characteristics of Building Materials.
 - .7 ASTM E162-11a, Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.
 - .8 ASTM F2913, Standard Test Method For Measuring The Coefficient Of Friction For Evaluation Of Slip Performance Of Footwear And Test Surfaces/Flooring Using A Whole Shoe Tester
- .4 Canadian General Standards Board (CGSB)

WALK-IN COOLERS AND FREEZERS

- .1 CAN/CGSB-19.13-M87, Sealing Compound, One-Component, Elastomeric, Chemical Curing.
- .5 CSA GROUP (CSA)
 - .1 CSA C22.2 No.120-13, Refrigeration equipment – Electrical connections
- .6 Society of Automotive Engineers (SAE)
- .7 Underwriters' Laboratories of Canada
 - .1 CAN/ULC-S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
 - .2 CAN/ULC-S138, Standard Method of Test for Fire Growth of Insulated Building Panels in a Full-Scale Room Configuration
 - .3 CAN/ULC-S705.1-2001, Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.
- .8 Natural Resources Canada (NRCan)
 - .1 Energy Efficiency Regulations, Amendment 14 and 16, Walk in cooler and freezer components.
- .9 American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE)
 - .1 ASHRAE 90.1 2013, Energy Standard for Buildings Except Low-Rise Residential Buildings
- .10 U.S. Department of Energy (DOE)
 - .1 DOE CFR 10 Part 431, Energy Efficiency Program For Certain Commercial And Industrial Equipment
- .11 National Sanitation Foundation (NSF)
 - .1 NSF Standard 7, Commercial Refrigerators and Storage Freezers

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's instructions, printed or electronic product literature and data sheets for walk-in coolers and include product characteristics, performance criteria, physical size, finish, and limitations.
- .2 Shop Drawings:
 - .1 Shop drawing shall be stamped by professional engineer registered or licensed in Province of Ontario, Canada when requested by authorities having jurisdiction where project is located.
 - .2 Indicate on drawings:
 - .1 Construction details of equipment by drawings and manufacturers' literature.
 - .2 Roughing-in requirements for mechanical and electrical services.
 - .3 Installation details.

WALK-IN COOLERS AND FREEZERS

1.4 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: submit operation and maintenance data for walk-in cooler for incorporation into manual.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors (away from direct sunlight) in clean, dry, well-ventilated area where temperature won't exceed 30 Celsius (86 Fahrenheit).
 - .2 Store and protect walk-in coolers equipment from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products**2.1 MATERIALS**

- .1 Stainless steel sheet: to ASTM A240/A240M, type 304with No. 4 finish.
- .2 Galvanized steel sheet: commercial grade to ASTM A653/A653M], with zinc coating (galvanized) to ASTM A653/A653M.
- .3 Mild steel sheet: cold rolled to Society of Automotive Engineers (SAE) 1010 to 1020 suitably prepared for specified finish.
- .4 Aluminum sheet: utility sheet with smooth finish
- .5 Sealant: to CAN/CGSB-19.13, colour to match panel.
- .6 Insulation for panels to CAN/ULC-S705.1, Class A, foamed-in-place type polyurethane (PUR), 101.6 mm thick. Insulation must meet Building code when tested to CAN/ULC-S102 and CAN/ULC-S138. Tests results "listings" must be available on an independent, third party certification body website. Insulation must meet thermal performances as described by NRCan Energy Efficiency Regulations (R25 coolers, R32 Freezer), Amendment 14, when tested to ASTM C518. Insulation system shall not contain HFC of CFC if manufactured after Jan 1rst 2021.

2.2 FABRICATION

- .1 Overall dimensions: Approximately 8,300mm x 6,400mm x 2,740mm (contractor to verify exact dimensions).
- .2 Panel sections: precision die formed metal pans accurately spaced and insulated Panel edges and corners to have tongue and grooves or flat faced nose, polyurethane formed-in-place, to assure airtight, vapour proof joints using gaskets or sealants.
- .3 Wall, ceiling and floor panels with ½ in increments.

WALK-IN COOLERS AND FREEZERS

- .4 Door panels: insulated and finished as per exterior and interior panels with 914 x 1980 mm clear door opening, reinforced to prevent door panels from twisting, racking or warping. Ensure that doors will close and seal opening. Equip each door panel with.
 - .1 One, in fitting flush mounted type, door (swing as indicated) to fit door opening, insulated and finished same as panels, having 1220 high x 1.6 mm thick stainless steel push/kick-plates on both exterior and interior and having soft thermoplastic gasket with magnetic steel core at top and both sides, adjustable rubber wiper gasket at bottom.
 - .1 Gaskets to be oil, fat, water and sunlight resistant and be replaceable.
 - .2 Hinges, spring loaded, self-closing type, with stainless steel pin and nylon cam-type bearing, of satin finished zinc.
 - .3 One latch, to match hinges, for opening door by breaking force of trigger-action door closer and magnetic gasket.
 - .1 Latch to have cylinder type lock and have inside safety release handle capable of opening door from within regardless of whether door is padlocked or not.
 - .4 One foot treadle to match hinges and latch, for opening door without use of hands.
 - .5 One trigger-action positive door closer, located on exterior, to assist in positive closing of door.
 - .6 Built-in thermostatically controlled heater cables inside perimeter of door and beneath sill plate and jambs of door opening. Heater cables shall be easy to access and replace without having to remove fasteners or rivets.
 - .7 Threshold: 6.0 mm Extruded aluminium with easy access to replace heater cables
 - .8 IM4 - Lighting, alarm and temperature monitor The IM4 monitor brings together the temperature display and alarm functions in addition to allowing control of cold room lighting. The unit must include the following:
 - .1 Power source failure alarm with adjustable set point for temperature.
 - .2 Jack for remote alarm telephone dialer and enunciator panel.
 - .3 Temperature display with minus 40 degrees C to plus 60 degrees C range.
 - .4 Built-in battery and charger.
- .5 Ceiling panels to be reinforced internally or externally as required, to support evaporator Supplied by cooler system manufacturer. Where external reinforcement is needed and through fasteners are used, fasteners to be of low heat conducting material such as Teflon.
 - .1 Insert fasteners in Teflon sleeves to prevent compressing of insulation.
- .6 Screeds: Made of non-conductive PVC. Cover shall be supplied to match wall panels color if necessary.

WALK-IN COOLERS AND FREEZERS

- .1 Reinforcing and floor fastenings to form an integral part of panel locking devices system.
- .7 Interior floor panels: 1.2 mm minimum, core galvanized steel, with anti-slip pattern having a minimum friction coefficient of .3 when tested with oil and water contaminated surface as per (ASTM F2913).
- .8 Panel thickness and finishes for exterior and interior panels, except floor panels: galvanised steel with a minimal thickness of 0.55 mm, pre-painted white with textured profile.
- .9 Locking devices: panel sections to have cam-action locking devices, spaced at maximum 950 mm vertically, 600 mm horizontally. Male and female or hybrid lock pockets.
- .10 LED light fixture: to CSA 22.2 No.137 Class III Hazardous Locations. controlled by item in 2.2.4.8 supplied by system manufacturer to be terminating in vapour-tight junction box that light is mounted on.
 - .1 LED Fixture 1810 LCT
 - .1 Energy-efficient lighting
 - .2 Surface mounting brackets
 - .3 Extremely durable polycarbonate housing and lens
 - .4 Designed for walk-in coolers and/or freezers
 - .5 Operating temp -40°F to 104°F (-40°C to 40°C)
 - .6 Rated 50,000+ hours of life
 - .7 Certifications: UL approved for wet location, NSF listed component, IP-65
- .11 Removable closure panels: extend from lower edge of erected prefabricated ceiling panels to finished building ceiling.
 - .1 Extend cover strips or angles from building floor to ceiling closure panels between exposed ends of walk-in boxes and building wall.
 - .2 Closure panels, cover strips or angles to match exposed exterior wall panels.
- .12 Protection Bumper: 19 x 200 white HDPE on exposed exterior and/or interior panels, mounted 300 mm from center of rail to finished building floor.
 - .1 Where rub rail is at external corner, mitre joint.
 - .2 Top and vertical ends where rail makes contact with wall panels are to be sealed.
 - .3 Include 2 rub rails on interior of garbage refrigerator mounted 600 and 300 mm from respective centers to refrigerator floor.
 - .4 Rub rails are not required at doors, door panels or within 200 mm of internal angles of walls.
- .13 Two-way pressure relief port: in freezer wall panel away from direct air stream flowing from coil.
 - .1 Embed anti-sweat heater cables in frame of port so intake and exhaust ports will not freeze.

WALK-IN COOLERS AND FREEZERS

- .2 Terminate wiring in junction box on interior panel over top of port.
- .14 If required, Walk-in Cooler and Freezer construction shall be engineered in accordance to provided seismic lateral loads, including:
 - .1 Fastening to the concrete slab
 - .2 Bracing and other lateral elements
 - .3 Seismic resistant suspension system

2.3 DRAIN LINES AND HEATER CABLES

- .1 Provide necessary drain lines to funnel drains and heater cables as required.

2.4 SOURCE QUALITY CONTROL

- .1 Ensure equipment is manufactured and installed by company having personnel skilled in manufacturing and installing of prefabricated walk-in freezers and coolers and has continuous proven experience within last five years.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for walk-in freezers and coolers installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Supply appropriate protection apparatus.
- .2 Install in accordance with manufacturer's installation manual and specific installation drawing set.
- .3 Erect work true-to-line, plumb, square and level with joints aligned. Fit joints and intersecting members accurately and in true planes adequately fastened.
- .4 Unless otherwise indicated, install units within 51 mm to 76 mm of building walls, with 914 mm minimum clearance between top of unit and room ceiling.
 - .1 Fasten screeds to building and/or wearing floor in accordance with manufacturer's instructions.
- .5 Caulk around perimeter of screeds after installation on floor slab / building floor.
- .6 Fill space between perimeter of floor panels and edge of floor depression with concrete or non-shrink grout and trowel flush with building floor / floor slab.

WALK-IN COOLERS AND FREEZERS

- .7 Cut or drill holes in panels, as required, to accommodate electrical and mechanical services, runs or connections as per walk in manufacturer's instructions.
 - .1 Only non-metallic conduits or wire harness sleeves are to be use into holes.
 - .2 After installation of services, fill remaining space with insulation and seal.
- .8 Fill allen key access holes with silicone and cap with in-fitting, flush, color matched PVC removable plug.
- .9 Install removable closure panels, cover strips, and angles.

3.3 ADJUSTING

- .1 Remove protective coverings and test and adjust operating equipment.

3.4 CLEANING

- .1 Progress Cleaning:
 - .1 Leave Work area clean at end of each day.
 - .2 Clean equipment and apparatus.
 - .3 Re-finish damaged coatings and finishes.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by walk-in cooler system installation.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 National Fire Prevention Association (NFPA)
 - .1 NFPA 13-2007, Standard for the Installation of Sprinkler Systems.
 - .2 NFPA 20-2007, Standard for the Installation of Stationary Pumps for Fire Protection.
 - .3 NFPA 24-2007, Standard for the Installation of Private Fire Service Mains and Their Appurtenances.
 - .4 NFPA 25-2008, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.
- .2 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN4 S543-M984, Standard for Internal Lug Quick Connect Couplings for Fire Hose.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Provide manufacturer's printed product literature and data sheets, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
 - .2 Indicate:
 - .1 Materials.
 - .2 Finishes.
 - .3 Method of anchorage
 - .4 Number of anchors.
 - .5 Supports.
 - .6 Reinforcement.
 - .7 Assembly details.
 - .8 Accessories.
- .3 Samples:
 - .1 Submit samples of following:
 - .1 Each type of sprinkler head.
 - .2 Signs.
- .4 Test reports:

Wet Pipe Sprinkler Systems

- .1 Submit certified test reports for wet pipe fire protection sprinkler systems from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
- .5 Certificates:
 - .1 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .6 Manufacturers' Instructions:
 - .1 Provide manufacturer's installation instructions.
- .7 Field Quality Control Submittals:
 - .1 Manufacturer's Field Reports: manufacturer's field reports specified.

1.3 CLOSEOUT SUBMITTALS

- .1 Provide operation, maintenance and engineering data for incorporation into manual specified in accordance with ANSI/NFPA 20.
- .2 Manufacturer's catalogue Data, including specific model, type, and size for:
 - .1 Pipe and fittings.
 - .2 Alarm valves.
 - .3 Valves, including gate, check, and globe.
 - .4 Water motor alarms.
 - .5 Sprinkler heads.
 - .6 Pipe hangers and supports.
 - .7 Pressure or flow switch.
 - .8 Fire department connections.
 - .9 Excess pressure pump.
 - .10 Mechanical couplings.
- .3 Records:
 - .1 As-built drawings of each system.
 - .1 After completion, but before final acceptance, submit complete set of as-built drawings of each system for record purposes.
 - .2 Submit 760mm by 1050 mm drawings on reproducible Mylar film with title block similar to full size contract drawings.
- .4 Operation and Maintenance Manuals:
 - .1 Provide Contractors Material and Test Certificate for aboveground piping and other documentation for incorporation into manual in accordance with NFPA 13.

1.4 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Installer: company or person certified in wet sprinkler systems with approved by manufacturer.

- .2 Supply grooved joint couplings, fittings, valves, grooving tools and specialties from a single manufacturer. Use date stamped castings for coupling housings, fittings, valve bodies, for quality assurance and traceability.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements:
 - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .3 Storage and Protection:
 - .1 Store materials indoors in dry location.
 - .2 Store and protect materials from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

Part 2 Products

2.1 ABOVE GROUND PIPING SYSTEMS

- .1 Provide fittings for changes in direction of piping and for connections.
 - .1 Make changes in piping sizes through tapered reducing pipe fittings, bushings will not be permitted.
- .2 Perform welding in shop; field welding will not be permitted.
- .3 Conceal piping in areas with suspended ceiling.

2.2 PIPE, FITTINGS AND VALVES

- .1 Pipe:
 - .1 Ferrous: to NFPA 13.
 - .2 Copper tube: to NFPA 13.
- .2 Fittings and joints to NFPA 13:
 - .1 Ferrous: screwed, welded, flanged or roll grooved.
 - .1 Grooved joints designed with two ductile iron housing segments, pressure responsive gasket, and zinc-electroplated steel bolts and nuts. Cast with offsetting angle-pattern bolt pads for rigidity and visual pad-to-pad offset contact.
 - .2 Copper tube: screwed, soldered, brazed, grooved.
 - .3 Provide welded, threaded, or grooved-end type fittings into which sprinkler heads, sprinkler head riser nipples, or drop nipples are threaded.
 - .4 Plain-end fittings with mechanical couplings and fittings which use steel gripping devices to bite into pipe when pressure is applied will not be permitted.
 - .5 Rubber gasketed grooved-end pipe and fittings with mechanical couplings are permitted in pipe sizes 32 mm and larger.

Wet Pipe Sprinkler Systems

- .6 Fittings: ULC approved for use in wet pipe sprinkler systems.
- .7 Ensure fittings, mechanical couplings, and rubber gaskets are supplied by same manufacturer.
- .8 Side outlet tees using rubber gasketed fittings are permitted.
- .9 Sprinkler pipe and fittings: metal.
- .3 Pipe hangers:
 - .1 ULC listed for fire protection services in accordance with NFPA.

2.3 SPRINKLER HEADS

- .1 General: to NFPA 13 and ULC listed for fire services.
- .2 Sprinkler Head Type:
 - .1 Type F: side wall chrome link and lever type.
- .3 Provide nominal 1.2 cm orifice sprinkler heads.
 - .1 Release element of each head to be of intermediate temperature rating or higher as suitable for specific application.
 - .2 Provide corrosion-resistant sprinkler heads and sprinkler head guards in accordance with NFPA 13.
 - .3 Provide sprinkler heads as indicated on drawings.

2.4 PIPE SLEEVES

- .1 Provide pipe sleeves where piping passes through floors/walls.
- .2 Secure sleeves in position and location during construction.
- .3 Provide sleeves of sufficient length to pass through entire thickness of floors / walls.
- .4 Provide 2.5 cm minimum clearance between exterior of piping and interior of sleeve or core-drilled hole.
 - .1 Firmly pack space with mineral wool insulation.
 - .2 Seal space at both ends of sleeve or core-drilled hole with plastic waterproof cement which will dry to firm but pliable mass.
 - .3 In fire walls and fire floors, seal both ends of pipe sleeves or core-drilled holes with ULC listed fill, void, or cavity material.
- .5 Sleeves in Masonry and Concrete Walls, Floors:
 - .1 Provide ductile-iron, hot-dip galvanized steel, or cast-iron sleeves.
 - .2 Core drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in core-drilled hole are completely grouted smooth.
- .6 Sleeves in Other Than Masonry and Concrete Walls, Floors:
 - .1 Provide 0.61mm thick galvanized steel sheet.

Part 3 Execution**3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

- .1 Install, inspect and test to acceptance in accordance with NFPA 13 and NFPA 25.

3.3 PIPE INSTALLATION

- .1 Install piping straight and true to bear evenly on hangers and supports. Do not hang piping from plaster ceilings.
- .2 Keep interior and ends of new piping and existing piping thoroughly cleaned of water and foreign matter.
- .3 Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close open ends of piping to prevent entry of water and foreign matter.
- .4 Inspect piping before placing into position.

3.4 DISINFECTION

- .1 Disinfect new piping and existing piping.
- .2 Fill piping systems with solution containing minimum of 50 parts per million of chlorine and allow solution to stand for minimum of 24 hours.
- .3 Flush solution from systems with clean water until maximum residual chlorine content is not greater than 0.2 part per million or residual chlorine content of domestic water supply.
- .4 Obtain at least two consecutive satisfactory bacteriological samples from piping, analyzed by certified laboratory, and submit results prior to piping being placed into service.

3.5 FIELD PAINTING

- .1 Clean, pre-treat, prime, and paint new systems including valves, piping, conduit, hangers, supports, miscellaneous metalwork, and accessories.
- .2 Apply coatings to clean, dry surfaces, using clean brushes.
- .3 Clean surfaces to remove dust, dirt, rust, and loose mill scale.
- .4 Immediately after cleaning, provide metal surfaces with 1 coat of pre-treatment primer applied to minimum dry film thickness of 0.3ml, and one coat of zinc chromate primer applied to minimum dry film thickness of 1.0ml.
- .5 Shield sprinkler heads with protective covering while painting is in progress.
- .6 Upon completion of painting, remove protective covering from sprinkler heads.
- .7 Remove sprinkler heads which have been painted and replace with new sprinkler heads.

- .8 Provide primed surfaces with following:
 - .1 Piping in Finished Areas:
 - .1 Provide primed surfaces with 2 coats of paint to match adjacent surfaces.
 - .2 Provide valves and operating accessories with 1 coat of red alkyd gloss enamel applied to minimum dry film thickness of 1.0 mil.
 - .3 Provide piping with self-adhering red plastic bands or 50mm wide red enamel bands - spaced at maximum of 6 m intervals throughout piping systems.
 - .2 Piping in Unfinished Areas:
 - .1 Provide primed surfaces with one coat of red alkyd gloss enamel applied to minimum dry film thickness of 1.0 mil in crawl spaces, spaces where walls or ceiling are not painted or not constructed of a prefinished material, mechanical equipment room, pipe chases, spaces above suspended ceilings, attic spaces.
 - .2 Provide piping with self-adhering red plastic bands or 50mm wide red enamel bands - spaced at maximum of 6 m intervals throughout piping systems.

3.6 FIELD QUALITY CONTROL

- .1 Site Test, Inspection:
 - .1 Perform test to determine compliance with specified requirements in presence of Departmental Representative.
 - .2 Test, inspect, and approve piping before covering or concealing.
 - .3 Preliminary Tests:
 - .1 Hydrostatically test each system at 200 psig for a 2hour period with no leakage or reduction in pressure.
 - .2 Flush piping with potable water in accordance with NFPA 13.
 - .3 Piping above suspended ceilings: tested, inspected, and approved before installation of ceilings.
 - .4 Test alarms and other devices.
 - .5 Test water flow alarms by flowing water through inspector's test connection. When tests have been completed and corrections made, submit signed and dated certificate in accordance with NFPA 13.
 - .4 Formal Tests and Inspections:
 - .1 Do not submit request for formal test and inspection until preliminary test and corrections are completed and approved.
 - .2 Submit written request for formal inspection at least 15 days prior to inspection date.
 - .3 Repeat required tests as directed.
 - .4 Correct defects and make additional tests until systems comply with contract requirements.
 - .5 Furnish all equipment and man-power required for tests.

Wet Pipe Sprinkler Systems

- .6 Authority of Jurisdiction will witness formal tests and approve systems before they are accepted.
- .2 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.7 CLEANING

- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General**1.1 SUMMARY**

- .1 This Section includes requirements for selective demolition and removal of heating, ventilation and air conditioning systems, controls and automated automation components, and related mechanical components and incidentals required to complete work described in this Section.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CSA S350 M1980 (R2003), Code of Practice for Safety in Demolition of Structures.

1.3 DEFINITIONS

- .1 Demolish: Detach items from existing construction and legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.
- .2 Remove: Planned deconstruction and disassembly of electrical items from existing construction including removal of conduit, junction boxes, cabling and wiring from electrical component to panel taking care not to damage adjacent assemblies designated to remain; legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.
- .3 Remove and Salvage: Detach items from existing construction and deliver them to Departmental Representative ready for reuse.
- .4 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- .5 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed and salvaged, or removed and reinstalled.
- .6 Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by the Federal Hazardous Products Act (RSC 1985) including latest amendments.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Action Submittals:
 - .1 Landfill Records: Indicate receipt and acceptance of selective demolition waste and hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate work of this Section to avoid interference with work by other Sections.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: Perform work of this Section in accordance with the following
 - .1 Federal Workers' Compensation Service / Provincial/Territorial Workers' Compensation Boards/Commissions
 - .2 Government of Canada, Labour Program: Workplace Safety, Provincial/Territorial Occupational Health and Safety Standards and Programs

1.7 SITE CONDITIONS

- .1 Existing Conditions: Condition of materials identified as being salvaged or demolished are based on their observed condition [on date that tender is accepted] [at time of site examination before tendering].
- .2 Existing Hazardous Substances:
 - .1 If detected via DSR investigation, hazardous substances will be removed by a hazardous abatement specialist engaged by the Departmental Representative before start of the Work.
 - .3 Discovery of Hazardous Substances: It is not expected that Hazardous Substances will be encountered in the Work; immediately notify Departmental Representative if materials suspected of containing hazardous substances are encountered and perform the following activities:
 - .1 Hazardous substances will be as defined in the Hazardous Products Act.
 - .2 Stop work in the area of the suspected hazardous substances.
 - .3 Take preventative measures to limit users' and workers' exposure, provide barriers and other safety devices and do not disturb.
 - .4 Hazardous substances will be removed by Departmental Representative under a separate contract or as a change to the Work.
 - .5 Proceed only after written instructions have been received from [Departmental Representative.

1.8 SALVAGE AND DEBRIS MATERIALS

- .1 Demolished items become Contractor s property (unless otherwise noted) and will be removed from Project site; except for items indicated as being reused, salvaged, or otherwise indicated to remain Owner's property.
- .2 Carefully remove materials and items designated for salvage and store in a manner to prevent damage or devaluation of materials.

Part 2 Products**2.1 MATERIAL**

- .1 HVAC Repair Materials: Use only new materials required for completion or repair matching materials damaged during performance of work of this Section; new materials are required to meet assembly or system characteristics as existing systems indicated to remain and carry CSA approval labels required by the Authority Having Jurisdiction.

- .2 Fire stopping Repair Materials: Use fire stopping materials compatible with existing fire stopping systems where removal or demolition work affects rated assemblies, restore to match existing fire rated performance.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Existing Conditions: Visit site, thoroughly examine and become familiar with conditions that may affect the work of this Section before tendering the Bid; Departmental Representative will not consider claims for extras for work or materials necessary for proper execution and completion of the contract that could have been determined by a site visit.

3.2 PREPARATION

- .1 Protection of Existing Systems to Remain: Protect systems and components indicated to remain in place during selective demolition operations and as follows:
 - .1 Prevent movement and install bracing to prevent settlement or damage of adjacent services and parts of existing buildings scheduled to remain.
 - .2 Notify Departmental Representative and cease operations where safety of buildings being demolished, adjacent structures or services appears to be endangered and await additional instructions before resuming demolition work specified in this Section.
 - .3 Prevent debris from blocking drainage inlets.
 - .4 Protect mechanical systems that must remain in operation.
- .2 Protection of Building Occupants: Sequence demolition work so that interference with the use of the building by the Owner and users is minimized and as follows:
 - .1 Prevent debris from endangering the safe access to and egress from occupied buildings.
 - .2 Notify Departmental Representative and cease operations where safety of occupants appears to be endangered and await additional instructions before resuming demolition work specified in this Section.

3.3 EXECUTION

- .1 Coordinate requirements of this Section as follows:
 - .1 Do not disrupt active or energized utilities without approval of the Departmental Representative.
 - .2 Erect and maintain dust proof and weather tight partitions to prevent the spread of dust and fumes to occupied building areas; remove partitions when complete.
 - .3 Demolish parts of existing building to accommodate new construction and remedial work as indicated.
 - .4 At end of each day's work, leave worksite in safe condition.
 - .5 Perform demolition work in a neat and workmanlike manner:

- .1 Remove any tools or equipment after completion of work, and leave site clean and ready for subsequent renovation work.
- .2 Repair and restore damages caused as a result of work of this Section to match existing materials and finishes.

3.4 CLOSEOUT ACTIVITIES

- .1 Demolition Waste Disposal: Arrange for legal disposal and remove demolished materials to accredited provincial landfill site or alternative disposal site (recycle centre) except where explicitly noted otherwise for materials being salvaged for re use.
- .2 Hazardous Substances Disposal: Arrange for disposal of hazardous substances as required by federal/provincial/municipal regulations and requirements.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 ASME
 - .1 ASME B16.22-12, Wrought Copper and Copper Alloy Solder - Joint Pressure Fittings.
 - .2 ASME B16.24-11, Cast Copper Pipe Flanges and Flanged Fittings: Class 150, 300, 600, 900, 1500 and 2500.
 - .3 ASME B16.26-11, Cast Copper Alloy Fittings for Flared Copper Tubes.
 - .4 ASME B31.5-10, Refrigeration Piping and Heat Transfer Components.
- .2 ASTM International (ASTM)
 - .1 ASTM A307-12, Standard Specification for Carbon Steel Bolts and Studs, and Threaded Rod 60,000 PSI Tensile Strength.
 - .2 ASTM B280-08, Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
- .3 CSA Group (CSA)
 - .1 CSA B52-05 (R2009), B52 Package, Mechanical Refrigeration Code.
- .4 Environment Canada (EC)
 - .1 EPS 1/RA/1-96, Environmental Code of Practice for the Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for refrigerant piping, fittings and equipment and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit WHMIS SDS. Indicate VOC's for adhesive and solvents during application and curing.
- .2 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
- .3 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.3 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: submit operation and maintenance data for refrigerant piping for incorporation into manual.
- .2 Submit copy of operation and maintenance manual.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location, off ground, indoors, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect refrigerant piping, fittings and equipment from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products**2.1 TUBING**

- .1 Processed for refrigeration installations, deoxidized, dehydrated and sealed.
 - .1 Hard copper: to ASTM B280, type B or ACR.
 - .2 Annealed copper: to ASTM B280, with minimum wall thickness as per CSA B52 and ASME B31.5.

2.2 FITTINGS

- .1 Service: design pressure 2,070 kPa and temperature 121 degrees C.
- .2 Brazed:
 - .1 Fittings: wrought copper to ASME B16.22.
 - .2 Joints: silver solder, 15% Ag-80% Cu-5%P, or copper-phosphorous, 95% Cu-5%P, and non-corrosive flux.
- .3 Flanged:
 - .1 Bronze or brass, to ASME B16.24, Class 150 and Class 300.
 - .2 Gaskets: suitable for service.
 - .3 Bolts, nuts and washers: to ASTM A307, heavy series.
- .4 Flared:
 - .1 Bronze or brass, for refrigeration, to ASME B16.26.

2.3 PIPE SLEEVES

- .1 Hard copper or steel, sized to provide 6 mm clearance around between sleeve and uninsulated pipe or between sleeve and insulation.

2.4 VALVES

- .1 22 mm and under: Class 500, 3.5 Mpa, globe or angle non-directional type, diaphragm, packless type, with forged brass body and bonnet, moisture proof seal for below freezing applications, brazed connections.
- .2 Over 22 mm: Class 375, 2.5 Mpa, globe or angle type, diaphragm, packless type, back-seating, cap seal, with cast bronze body and bonnet, moisture proof seal for below freezing applications, brazed connections.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for refrigerant piping installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.3 GENERAL

- .1 Install in accordance with CSA B52, EPS1/RA/1 and ASME B31.5.

3.4 BRAZING PROCEDURES

- .1 Bleed inert gas into pipe during brazing.
- .2 Remove valve internal parts, solenoid valve coils, sight glass.
- .3 Do not apply heat near expansion valve and bulb.

3.5 PIPING INSTALLATION

- .1 General:
 - .1 Soft annealed copper tubing: bend without crimping or constriction
 - .2 Hard drawn copper tubing: do not bend. Minimize use of fittings.
- .2 Hot gas lines:
 - .1 Pitch at least 1:240 down in direction of flow to prevent oil return to compressor during operation.

Refrigerant Piping

- .2 Provide trap at base of risers greater than 2400 mm high and at each 7600 mm thereafter.
- .3 Provide inverted deep trap at top of risers.
- .4 Provide double risers for compressors having capacity modulation.
 - .1 Large riser: install traps as specified.
 - .2 Small riser: size for 5.1 m³/s at minimum load. Connect upstream of traps on large riser.

3.6 PRESSURE AND LEAK TESTING

- .1 Close valves on factory charged equipment and other equipment not designed for test pressures.
- .2 Leak test to CSA B52 before evacuation to 2 MPa and 1 MPa on high and low sides respectively.
- .3 Test procedure: build pressure up to 35 kPa with refrigerant gas on high and low sides. Supplement with nitrogen to required test pressure. Test for leaks with electronic or halide detector. Repair leaks and repeat tests.

3.7 FIELD QUALITY CONTROL

- .1 Site Tests/Inspection:
 - .1 Close service valves on factory charged equipment.
- .2 Ambient temperatures to be at least 13 degrees C for at least 12 hours before and during dehydration.
- .3 Use copper lines of largest practical size to reduce evacuation time.
- .4 Use two-stage vacuum pump with gas ballast on 2nd stage capable of pulling 5 Pa absolute and filled with dehydrated oil.
- .5 Measure system pressure with vacuum gauge. Take readings with valve between vacuum pump and system closed.
- .6 Triple evacuate system components containing gases other than correct refrigerant or having lost holding charge as follows:
 - .1 Twice to 14 Pa absolute and hold for 4 hours.
 - .2 Break vacuum with refrigerant to 14 kPa.
 - .3 Final to 5 Pa absolute and hold for at least 12 hours.
 - .4 Isolate pump from system, record vacuum and time readings until stabilization of vacuum.
 - .5 Submit test results to Departmental Representative.
- .7 Charging:
 - .1 Charge system through filter-drier and charging valve on high side. Low side charging not permitted.
 - .2 With compressors off, charge only amount necessary for proper operation of system. If system pressures equalize before system is fully charged, close

Refrigerant Piping

charging valve and start up. With unit operating, add remainder of charge to system.

- .3 Re-purge charging line if refrigerant container is changed during charging process.
- .8 Checks:
 - .1 Make checks and measurements as per manufacturer's operation and maintenance instructions.
 - .2 Record and report measurements to Departmental Representative.
- .9 Manufacturer's Field Services:
 - .1 Have manufacturer of products, supplied under this Section, review Work involved in the handling, installation/application, protection and cleaning, of its product[s] and submit written reports, in acceptable format, to verify compliance of Work with Contract.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - .3 Schedule site visits, to review Work, at stages listed:
 - .1 After delivery and storage of products, and when preparatory Work, or other Work, on which the Work of this Section depends, is complete but before installation begins.
 - .2 Twice during progress of Work at 25% and 60% complete.
 - .3 Upon completion of the Work, after cleaning is carried out.
 - .4 Obtain reports, within three (3) days of review, and submit, immediately, to Departmental Representative.

3.8 DEMONSTRATION

- .1 Instructions:
 - .1 Post instructions in frame with glass cover in accordance with CSA B52.

3.9 CLEANING

- .1 Progress Cleaning:
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 CSA Group
 - .1 CSA C22.1-18, Canadian Electrical Code, Part 1 (24th Edition), Safety Standard for Electrical Installations.
 - .2 CSA C22.2.

1.2 DEFINITIONS

- .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, electronic (PDF) product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop drawings:
 - .1 Submit drawings for review to consultant.
 - .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure co-ordinated installation.
 - .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
 - .4 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.
 - .5 If changes are required, notify Consultant of these changes before they are made.
- .4 Certificates:
 - .1 Provide CSA certified material and equipment.
 - .2 Submit test results of installed electrical systems and instrumentation.
 - .3 Permits and fees: in accordance with General Conditions of contract.
 - .4 Submit, upon completion of Work, load balance report as described in PART 3 - LOAD BALANCE.
 - .5 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Consultant.
- .5 Manufacturer's Field Reports: Consultant manufacturer's written report, within 5 days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

Part 2 Products**2.1 DESIGN REQUIREMENTS**

- .1 Operating voltages: to CAN3-C235.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.
 - .1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language operating requirements: provide identification nameplates for control items in English.
- .4 Use one nameplate for each language.

2.2 MATERIALS AND EQUIPMENT

- .1 Provide material and equipment in accordance with Section 01 61 00 - Common Product Requirements.

2.3 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

- .1 Verify installation and co-ordination responsibilities related to motors, equipment and controls, as indicated.

2.4 WARNING SIGNS

- .1 Warning Signs: in accordance with requirements of authority having jurisdiction.
- .2 Decal signs, minimum size 175 x 250 mm.

2.5 WIRING TERMINATIONS

- .1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

2.6 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with nameplates as follows:
 - .1 Nameplates: lamicoïd, black face, white core, lettering accurately aligned and engraved into core, mechanically attached.
 - .2 Sizes as follows:

NAMEPLATE SIZES			
Size 1	10 x 50 mm	1 line	3 mm high letters

COMMON WORK RESULTS FOR ELECTRICAL

Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

- .2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.
- .3 Wording on nameplates to be approved by Consultant/Departmental Representative prior to manufacture.
- .4 Allow for minimum of twenty-five (25) letters per nameplate.
- .5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .6 Identify equipment with Size 3 labels engraved.
- .7 Disconnects, starters and contactors: indicate equipment being controlled and voltage.
- .8 Terminal cabinets and pull boxes: indicate system and voltage.
- .9 Transformers: indicate capacity, primary and secondary voltages.

2.7 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour coding: to CSA C22.1.
- .4 Use colour coded wires in communication cables, matched throughout system.

2.8 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits, boxes and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.
- .3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

Type	Prime	Auxiliary
up to 250 V	Yellow	
up to 600 V	Yellow	Green
up to 5 kV	Yellow	Blue
up to 15 kV	Yellow	Red
Telephone	Green	
Other Communication Systems	Green	Blue
Fire Alarm	Red	
Emergency Voice	Red	Blue
Other Security Systems	Red	Yellow

2.9 FINISHES

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.

- .1 Paint indoor switchgear and distribution enclosures light gray.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

- .1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.

3.3 NAMEPLATES AND LABELS

- .1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.4 LOCATION OF OUTLETS

- .1 Locate outlets in accordance with Section 26 05 32 - Outlet Boxes, Conduit Boxes and Fittings.
- .2 Do not install outlets back-to-back in wall; allow minimum 150 mm horizontal clearance between boxes.
- .3 Change location of outlets at no extra cost or credit, providing distance does not exceed 3000 mm, and information is given before installation.
- .4 Locate light switches on latch side of doors.

3.5 MOUNTING HEIGHTS

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.
- .3 Install electrical equipment at following heights unless indicated otherwise.
 - .1 Local switches: 1400 mm.
 - .2 Wall receptacles:
 - .1 General: 300 mm.
 - .2 Above top of continuous baseboard heater: 200 mm.
 - .3 Above top of counters or counter splash backs: 175 mm.
 - .4 In mechanical rooms: 1400 mm.

COMMON WORK RESULTS FOR ELECTRICAL

- .3 Panelboards: as required by Code or as indicated.
- .4 Telephone and interphone outlets: 300 mm.
- .5 Wall mounted telephone and interphone outlets: 1500 mm.
- .6 Fire alarm stations: 1500 mm.
- .7 Fire alarm bells: 2100 mm.
- .8 Television outlets: 300 mm.
- .9 Wall mounted speakers: 2100 mm.
- .10 Clocks: 2100 mm.
- .11 Door bell pushbuttons: 1500 mm.

3.6 CO-ORDINATION OF PROTECTIVE DEVICES

- .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

3.7 FIELD QUALITY CONTROL

- .1 Load Balance:
 - .1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance; adjust branch circuit connections as required to obtain best balance of current between phases and record changes.
 - .2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.
 - .3 Provide upon completion of work, load balance report as directed in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS, phase and neutral currents on panelboards, dry-core transformers and motor control centres, operating under normal load, as well as hour and date on which each load was measured, and voltage at time of test.
- .2 Conduct following tests in accordance with Section 01 45 00 - Quality Control.
 - .1 Power distribution system including phasing, voltage, grounding and load balancing.
 - .2 Systems: fire alarm / Inergen
- .3 Provide copy of test results to Consultant.
- .4 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .5 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.8 SYSTEM STARTUP

.1 N/A

3.9 CLEANING

.1 Leave Work area clean at end of each day.

END OF SECTION

Part 1 General**1.1 SUMMARY**

- .1 This Section includes requirements for selective demolition and removal of electrical components including removal of conduit, junction boxes, and panels to source (home run removal) and incidentals required to complete work described in this Section.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CSA S350 M1980 (R2003), Code of Practice for Safety in Demolition of Structures

1.3 DEFINITIONS

- .1 Demolish: Detach items from existing construction and legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.
- .2 Remove: Planned deconstruction and disassembly of electrical items from existing construction including removal of conduit, junction boxes, cabling and wiring from electrical component to panel taking care not to damage adjacent assemblies designated to remain; legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.
- .3 Remove and Salvage: Detach items from existing construction and deliver them to Departmental Representative ready for reuse.
- .4 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- .5 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed and salvaged, or removed and reinstalled.
- .6 Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by Federal Hazardous Products Act (RSC 1985) including latest amendments.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Action Submittals: Provide in accordance with Section 01 33 00– Submittal Procedures before starting work.

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate work of this Section to avoid interference with work by other Sections.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: Perform work of this Section in accordance with:

SELECTIVE DEMOLITION FOR ELECTRICAL

- .1 Provincial/Territorial Workers' Compensation Boards/Commissions
- .2 Government of Canada, Labour Program: Workplace Safety.

1.7 SITE CONDITIONS

- .1 Existing Conditions: Condition of materials identified as being salvaged or demolished are based on their observed condition at time of site examination before tendering.
- .2 Existing Hazardous Substances: Departmental Representative] performed a hazardous substances assessment and it is not expected that hazardous substances will be encountered in Work.
- .3 Discovery of Hazardous Substances: It is not expected that Hazardous Substances will be encountered in Work; immediately notify Departmental Representative if materials suspected of containing hazardous substances are encountered and perform following activities:
 - .1 Refer to Section 01 41 00– Regulatory Requirements for directives associated with specific material types.
 - .2 Hazardous substances will be as defined in Hazardous Products Act.
 - .3 Stop work in area of suspected hazardous substances.
 - .4 Take preventative measures to limit users' and workers' exposure, provide barriers and other safety devices and do not disturb.
 - .5 Hazardous substances will be removed by under a separate contract or as a change to Work.
 - .6 Proceed only after written instructions have been received from Departmental Representative.

1.8 SALVAGE AND DEBRIS MATERIALS

- .1 Demolished items become Contractor's property and will be removed from Project site.

Part 2 Products**2.1 MATERIALS**

- .1 General Patching and Repair Materials: Refer to Section 02 41 19.16 - Selective Interior Demolition for listing of patching and repair materials incidental to removal or demolition of components associated with work of this Section.
- .2 Electrical Repair Materials: Use only new materials, CSA or ULC labelled as appropriate and matching components remaining after work associated with components identified for removal or demolition are completed.
- .3 Fire stopping Repair Materials: Use fire stopping materials compatible with existing fire stopping systems where removal or demolition work affects rated assemblies, restore to match existing fire rated performance.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Existing Conditions: Visit site, thoroughly examine and become familiar with conditions that may affect the work of this Section before tendering the Bid; Departmental Representative/Consultant will not consider claims for extras for work or materials necessary for proper execution and completion of the contract that could have been determined by a site visit.

3.2 PREPARATION

- .1 Protection of Existing Systems to Remain: Protect systems and components indicated to remain in place during selective demolition operations.
- .2 Protection of Building Occupants: Sequence demolition work so that interference with the use of the building by the users is minimized and as follows:
 - .1 Prevent debris from endangering safe access to and egress from occupied buildings.
 - .2 Notify Departmental Representative and cease operations where safety of occupants appears to be endangered and await additional instructions before resuming demolition work specified in this Section.

3.3 EXECUTION

- .1 Removal/Demolition: Coordinate requirements of this Section with information contained in Section 02 41 19.16 - Selective Interior Demolition and as follows:
 - .1 Disconnect electrical circuits and panel feeders; maintain electrical service and main distribution panel as is, ready for subsequent Work.
 - .2 Remove existing luminaires, electrical devices and equipment including associated conduits, boxes, wiring, and similar items unless specifically noted otherwise.
 - .3 Disconnect and remove existing fire alarm system including associated conduits, boxes, wiring, and similar items unless specifically noted otherwise.
 - .4 Disconnect and remove communication systems including associated conduits, boxes, cabling, and similar items unless specifically noted otherwise.
 - .5 Disconnect and remove telephone outlets, associated conduit, cabling and sub terminal backboards and related accessories; maintain telephone service and main terminal backboard as is.
 - .6 Perform demolition work in a neat and workmanlike manner:
 - .1 Remove tools or equipment after completion of work, and leave site clean and ready for subsequent renovation work.
 - .2 Repair and restore damages caused as a result of work of this Section to match existing materials and finishes.
 - .7 Disconnect panel feeders back to main distribution panel and re label respective circuit breaker as "SPARE".
 - .8 Place weatherproof blank cover plates on exterior outlet boxes remaining after demolition and removal activities.

SELECTIVE DEMOLITION FOR ELECTRICAL

- .9 Remove existing conduits, boxes, cabling and wiring associated with removed luminaires, electrical devices and equipment.
- .10 Grind off conduits and make flush with surface of shield; seal open ends of conduit with fire stop sealant and leave in place.
- .11 Seal open ends of conduit with fire stop sealant and leave in place where they are inaccessible or cannot be removed without damaging adjacent construction.

3.4 CLOSEOUT ACTIVITIES

- .1 Demolition Waste Disposal: Arrange for legal disposal and remove demolished materials to accredited provincial landfill site or alternative disposal site (recycle centre).

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 N/A

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CAN/CSA-C22.2 No.18-98 (R2003), Outlet Boxes, Conduit Boxes and Fittings.
 - .2 CAN/CSA-C22.2 No.65-03 (R2008), Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE-03).
- .2 National Electrical Manufacturers Association (NEMA)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for wire and box connectors and include product characteristics, performance criteria, physical size, finish and limitations.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for wire and box connectors for incorporation into manual.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions & 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products**2.1 MATERIALS**

- .1 Pressure type wire connectors to: CAN/CSA-C22.2 No.65, with current carrying parts of copper/copper alloy sized to fit copper conductors as required.

WIRE AND BOX CONNECTORS (0-1000 V)

- .2 Fixture type splicing connectors to: CAN/CSA-C22.2 No.65, with current carrying parts of copper/copper alloy sized to fit copper conductors 10 AWG or less.
- .3 Clamps or connectors for armoured cable, flexible conduit, TECK cable as required to: CAN/CSA-C22.2 No.18.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wire and box connectors installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

- .1 Remove insulation carefully from ends of conductors / cables and:
 - .1 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CAN/CSA-C22.2 No.65.
 - .2 Install fixture type connectors and tighten to CAN/CSA-C22.2 No.65. Replace insulating cap.
 - .3 Install bushing stud connectors in accordance with NEMA.

3.3 CLEANING

- .1 Leave Work area clean at end of each day.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 N/A

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CAN/CSA-C22.2 No.18-98 (R2003), Outlet Boxes, Conduit Boxes and Fittings.

Part 2 Products**2.1 BUILDING WIRES**

- .1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.
- .2 Copper conductors: size as indicated, with 600 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE.

2.2 TECK 90 CABLE

- .1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Conductors:
 - .1 Grounding conductor: copper
 - .2 Circuit conductors: copper, size as indicated.
- .3 Insulation:
 - .1 Cross-linked polyethylene XLPE.
 - .2 Rating: 600 V.
- .4 Inner jacket: polyvinyl chloride material.
- .5 Armour: galvanized steel
- .6 Overall covering: thermoplastic polyvinyl chloride, compliant to applicable Building Code classification for this project.
- .7 Fastenings:
 - .1 One hole aluminum straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.
 - .2 Threaded rods: 6 mm diameter to support suspended channels.
- .8 Connectors:
 - .1 Watertight approved for TECK cable.

2.3 ARMOURED CABLES

- .1 Conductors: insulated, copper, size as indicated.

WIRES AND CABLES (0-1000 V)

- .2 Type: AC90 - lead sheath over cable assembly and under armour.
- .3 Armour: interlocking type fabricated from galvanized steel strip.
- .4 Type: ACWU90 flame retardant PVC jacket over thermoplastic armour and compliant to applicable Building Code classification for this project wet locations.
- .5 Connectors: anti short connectors.

Part 3 Execution**3.1 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests before energizing electrical system.

3.2 GENERAL CABLE INSTALLATION

- .1 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - (0-1000 V).
- .2 Cable Colour Coding: to Section 26 05 00 - Common Work Results for Electrical.
- .3 Conductor length for parallel feeders to be identical.
- .4 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.
- .5 Wiring in walls: typically drop or loop vertically from above to better facilitate future renovations. Generally wiring from below and horizontal wiring in walls to be avoided unless indicated.
- .6 Branch circuit wiring for surge suppression receptacles and permanently wired computer and electronic equipment to be 2-wire circuits only, i.e. common neutrals not permitted.
- .7 Provide numbered wire collars for control wiring. Numbers to correspond to control shop drawing legend. Obtain wiring diagram for control wiring.

3.3 INSTALLATION OF BUILDING WIRES

- .1 Install wiring as follows:
 - .1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

3.4 INSTALLATION OF TECK90 CABLE (0 -1000 V)

- .1 Group cables wherever possible on channels.
- .2 Install cable concealed, securely supported by straps/hangers.

3.5 INSTALLATION OF ARMOURED CABLES

- .1 Group cables wherever possible on channels.

END OF SECTION

CONNECTORS AND TERMINATIONS

- Part 1 General**
- 1.1 RELATED REQUIREMENTS**
- .1 N/A
- 1.2 REFERENCE STANDARDS**
- .1 CSA Group
- .1 CSA C22.1-(18), Canadian Electrical Code, Part 1 (24th Edition), Safety Standard for Electrical Installations.
- 1.3 CLOSEOUT SUBMITTALS**
- .1 Operation and Maintenance Data: submit operation and maintenance data for connectors and terminations for incorporation into manual.
- 1.4 DELIVERY, STORAGE AND HANDLING**
- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- Part 2 Products**
- 2.1 CONNECTORS AND TERMINATIONS**
- .1 Copper compression connectors to CSA C22.2 No.65 as required sized for conductors.
- Part 3 Execution**
- 3.1 EXAMINATION**
- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for connectors and terminations installation in accordance with manufacturer's written instructions.
- 3.2 INSTALLATION**
- .1 Install stress cones, terminations, and splices in accordance with manufacturer's instructions.
- .2 Bond and ground as required to CSA C22.2No.41.
- 3.3 CLEANING**
- .1 Leave Work area clean at end of each day.
- .2 Upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

- Part 1 General**
- 1.1 RELATED REQUIREMENTS**
- .1 N/A
- 1.2 REFERENCE STANDARDS**
- .1 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)
- .2 CSA Group (CSA)
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS**
- .1 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for grounding equipment and include product characteristics, performance criteria, physical size, finish, and limitations.
- 1.4 CLOSEOUT SUBMITTALS**
- .1 Operation and Maintenance Data: submit operation and maintenance data for grounding equipment for incorporation into manual.
- 1.5 DELIVERY, STORAGE AND HANDLING**
- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
- .1 Store materials in dry location, indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Store and protect grounding equipment from nicks, scratches, and blemishes.
- .3 Replace defective or damaged materials with new.
- Part 2 Products**
- 2.1 EQUIPMENT**
- .1 Grounding conductors: bare stranded copper, soft annealed, size as indicated.
- .2 Insulated grounding conductors: green, copper conductors, size as indicated.
- .3 Ground bus: copper, size as indicated, complete with insulated supports, fastenings, connectors.
- .4 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:

GROUNDING - SECONDARY

- .1 Grounding and bonding bushings.
- .2 Protective type clamps.
- .3 Bolted type conductor connectors.
- .4 Thermit welded type conductor connectors.
- .5 Bonding jumpers, straps.
- .6 Pressure wire connectors.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for grounding equipment installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION GENERAL

- .1 Install complete permanent, continuous grounding system including, electrodes, conductors, connectors, accessories. Where EMT is used, run ground wire in conduit.
- .2 Install connectors in accordance with manufacturer's instructions.
- .3 Protect exposed grounding conductors from mechanical injury.
- .4 Use mechanical connectors for grounding connections to equipment provided with lugs.
- .5 Soldered joints not permitted.
- .6 Install bonding wire for flexible conduit, connected at both ends to grounding bushing, solderless lug, clamp or cup washer and screw. Neatly cleat bonding wire to exterior of flexible conduit.
- .7 Install flexible ground straps for bus duct enclosure joints, where such bonding is not inherently provided with equipment.

3.3 EQUIPMENT GROUNDING

- .1 Install grounding connections to typical equipment included in, but not necessarily limited to following list. Service equipment, transformers, switchgear, duct systems, frames of motors, motor control centres, starters, control panels, building steel work, generators, elevators and escalators, distribution panels, outdoor lighting, cable trays.

3.4 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests before energizing electrical system.

3.5 CLEANING

- .1 Leave Work area clean at end of each day.
- .2 Final Cleaning - upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 N/A

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for hangers and supports and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect hangers and supports from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products**2.1 SUPPORT CHANNELS**

- .1 U shape, size 41 x 41 mm, 2.5 mm thick, surface mounted, suspended.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for hangers and supports installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

- .1 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.
- .2 Fasten exposed conduit or cables to building construction or support system using straps.

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

- .1 One-hole steel or malleable iron straps to secure surface conduits and cables 50 mm and smaller.
- .2 Two-hole steel straps for conduits and cables larger than 50 mm.
- .3 Beam clamps to secure conduit to exposed steel work.
- .3 Suspended support systems.
 - .1 Support individual cable or conduit runs with 6 mm diameter threaded rods and spring clips.
 - .2 Support 2 or more cables or conduits on channels supported by 6 mm diameter threaded rod hangers where direct fastening to building construction is impractical.
- .4 For surface mounting of two or more conduits use channels at 3 m on centre spacing.
- .5 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.
- .6 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.
- .7 Do not use wire lashing or perforated strap to support or secure raceways or cables.
- .8 Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval of Consultant/Departmental Representative.
- .9 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

3.3 CLEANING

- .1 Work area clean at end of each day.
- .2 Final Cleaning - upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 N/A

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CSA C22.1-18, Canadian Electrical Code, Part 1, 24th Edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Provide shop drawings.

Part 2 Products**2.1 SPLITTERS**

- .1 Construction: sheet metal enclosure, welded corners and formed hinged cover suitable for locking in closed position.
- .2 Terminations: main and branch lugs to match required size and number of incoming and outgoing conductors as indicated.
- .3 Spare Terminals: minimum three spare terminals or lugs on each connection or lug block sized less than 400 A.

2.2 JUNCTION AND PULL BOXES

- .1 Construction: welded steel enclosure.
- .2 Covers Flush Mounted: 25 mm minimum extension all around.
- .3 Covers Surface Mounted: screw-on turned edge covers.

2.3 CABINETS

- .1 Construction: welded sheet steel hinged door, lock 2 keys and catch
- .2 Type E Empty: surface return flange mounting as indicated.

Part 3 Execution**3.1 SPLITTER INSTALLATION**

- .1 Mount plumb, true and square to building lines.

- .2 Extend splitters full length of equipment arrangement except where indicated otherwise.

3.2 JUNCTION, PULL BOXES AND CABINETS INSTALLATION

- .1 Install pull boxes in inconspicuous but accessible locations.
- .2 Mount cabinets with top not higher than 2 m above finished floor except where indicated otherwise.
- .3 Install terminal block as indicated in Type T cabinets.
- .4 Only main junction and pull boxes are indicated. Install additional pull boxes as required by CSA C22.1.

3.3 IDENTIFICATION

- .1 Equipment Identification: to Section 26 05 00 - Common Work Results for Electrical.
- .2 Identification Labels: size 2 indicating voltage and phase or as indicated.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 N/A

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CSA C22.1-18, Canadian Electrical Code, Part 1, 24th Edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's requirements.

Part 2 Products**2.1 OUTLET AND CONDUIT BOXES GENERAL**

- .1 Size boxes in accordance with CSA C22.1.
- .2 102 mm square or larger outlet boxes as required.
- .3 Gang boxes where wiring devices are grouped.
- .4 Blank cover plates for boxes without wiring devices.
- .5 347 V outlet boxes for 347 V switching devices.
- .6 Combination boxes with barriers where outlets for more than one system are grouped.

2.2 GALVANIZED STEEL OUTLET BOXES

- .1 One-piece electro-galvanized construction.
- .2 Single and multi gang flush device boxes for flush installation, minimum size as indicated. 102 mm square outlet boxes when more than one conduit enters one side with extension and plaster rings as indicated.
- .3 Utility boxes for outlets connected to surface-mounted EMT conduit, minimum size 102 x 54 x 102 mm.
- .4 102 mm square or octagonal outlet boxes for lighting fixture outlets.
- .5 Extension and plaster rings for flush mounting devices in finished walls.

2.3 FITTINGS - GENERAL

- .1 Bushing and connectors with nylon insulated throats.
- .2 Knock-out fillers to prevent entry of debris.

OUTLET BOXES, CONDUIT BOXES, AND FITTINGS

- .3 Conduit outlet bodies for conduit up to 35 mm and pull boxes for larger conduits.
- .4 Double locknuts and insulated bushings on sheet metal boxes.

Part 3 Execution**3.1 INSTALLATION**

- .1 Support boxes independently of connecting conduits.
- .2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.
- .3 For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm of opening.
- .4 Provide correct size of openings in boxes for conduit, mineral insulated and armoured cable connections. Do not install reducing washers.
- .5 Vacuum clean interior of outlet boxes before installation of wiring devices.
- .6 Identify systems for outlet boxes as required.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 N/A

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CAN/CSA C22.2 No. 18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.
 - .2 CSA C22.2 No. 45-M1981 (R2003), Rigid Metal Conduit.
 - .3 CSA C22.2 No. 56-04, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
 - .4 CSA C22.2 No. 83-M1985 (R2003), Electrical Metallic Tubing.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals.

Part 2 Products**2.1 CABLES AND REELS**

- .1 Provide cables on reels or coils.
 - .1 Mark or tag each cable and outside of each reel or coil, to indicate cable length, voltage rating, conductor size, and manufacturer's lot number and reel number.
- .2 Each coil or reel of cable to contain only one continuous cable without splices.

2.2 CONDUITS

- .1 Rigid metal conduit: to CSA C22.2 No. 45, galvanized steel threaded.
- .2 Epoxy coated conduit: to CSA C22.2 No. 45, with zinc coating and corrosion resistant epoxy finish inside and outside.
- .3 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.
- .4 Rigid PVC conduit: to CSA C22.2 No. 211.2.
- .5 Flexible metal conduit: to CSA C22.2 No. 56, liquid-tight flexible metal.

2.3 CONDUIT FASTENINGS

- .1 One hole malleable iron straps to secure surface conduits 50 mm and smaller.
 - .1 Two hole steel straps for conduits larger than 50 mm.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Channel type supports for two or more conduits at 3 m on centre.

- .4 Threaded rods, 6 mm diameter, to support suspended channels.

2.4 CONDUIT FITTINGS

- .1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified.
Coating: same as conduit.
- .2 Ensure factory “ells” where 90 degrees bends for 25 mm and larger conduits.
- .3 Watertight connectors and couplings for EMT.
 - .1 Set-screws are not acceptable.

2.5 EXPANSION FITTINGS FOR RIGID CONDUIT

- .1 Weatherproof expansion fittings with internal bonding assembly suitable for 200 mm linear expansion.
- .2 Watertight expansion fittings with integral bonding jumper suitable for linear expansion and 19 mm deflection.
- .3 Weatherproof expansion fittings for linear expansion at entry to panel.

2.6 FISH CORD

- .1 Polypropylene.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .2 Conceal conduits except in unfinished areas in mechanical and electrical service rooms.
- .3 Use rigid galvanized steel threaded conduit except where specified otherwise.
- .4 Use electrical metallic tubing (EMT) above 2.4 m not subject to mechanical injury.
- .5 Use flexible metal conduit for connection to surface or recessed fluorescent fixtures connection to motors in dry areas, work in movable metal partitions, connection to recessed incandescent fixtures without prewired outlet box.
- .6 Minimum conduit size for lighting and power circuits: 19 mm.
- .7 Install EMT conduit from computer room branch circuit panel to outlet boxes located in sub floor.
- .8 Install EMT conduit from computer room branch circuit panel to junction box in sub-floor immediately below panel.

- .9 Bend conduit cold:
 - .1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .10 Mechanically bend steel conduit over 19 mm diameter.
- .11 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .12 Install fish cord in empty conduits.

3.3 SURFACE CONDUITS

- .1 Run parallel or perpendicular to building lines.
- .2 Locate conduits behind infrared or gas fired heaters with 1.5 m clearance.
- .3 Run conduits in flanged portion of structural steel.
- .4 Group conduits wherever possible on [surface] [suspended] channels.
- .5 Do not pass conduits through structural members except as indicated.
- .6 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.

3.4 CONCEALED CONDUITS

- .1 Run parallel or perpendicular to building lines.

3.5 CLEANING

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

WIRING DEVICES

- Part 1 General**
- 1.1 RELATED REQUIREMENTS**
- .1 N/A
- 1.2 REFERENCE STANDARDS**
- .1 CSA Group (CSA)
- .1 CSA C22.2 No.42-10, General Use Receptacles, Attachment Plugs and Similar Devices.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS**
- .1 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for wiring devices and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.4 CLOSEOUT SUBMITTALS**
- .1 Operation and Maintenance Data: submit operation and maintenance data for wiring devices for incorporation into manual.
- 1.5 DELIVERY, STORAGE AND HANDLING**
- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
- .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Replace defective or damaged materials with new.
- Part 2 Products**
- 2.1 SWITCHES**
- .1 15A, 120 V, single pole switches to: CSA C22.2.
- .2 Manually-operated general purpose AC switches with following features:
- .1 Terminal holes approved for No. 10 AWG wire.
- .2 Silver alloy contacts.
- .3 Urea or melamine moulding for parts subject to carbon tracking.
- .4 Suitable for back and side wiring.
- .5 White, decora.

WIRING DEVICES

- .3 Switches of one manufacturer throughout project.

2.2 RECEPTACLES

- .1 Duplex receptacles, CSA type 5-15 R, 125 V, 15 A, U ground, to: CSA C22.2 No.42 with following features:
 - .1 White urea moulded housing.
 - .2 Suitable for No. 10 AWG for back and side wiring.
 - .3 Break-off links for use as split receptacles.
 - .4 Eight back wired entrances, four side wiring screws.
 - .5 Triple wipe contacts and rivetted grounding contacts.
- .2 Single receptacles CSA type 5-15 R, 125 V, 15 A, U ground with following features:
 - .1 White urea moulded housing.
 - .2 Suitable for No. 10 AWG for back and side wiring.
 - .3 Four back wired entrances, 2 side wiring screws.
- .3 Other receptacles with ampacity and voltage as indicated.
- .4 Receptacles of one manufacturer throughout project.

2.3 COVER PLATES

- .1 Cover plates for wiring devices to: CSA C22.2 No.42.1.
- .2 Sheet steel utility box cover for wiring devices installed in surface-mounted utility boxes.
- .3 Stainless steel, cover plates, for wiring devices mounted in flush-mounted outlet box.

2.4 SOURCE QUALITY CONTROL

- .1 Cover plates from one manufacturer throughout project.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wiring devices installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

- .1 Switches:
 - .1 Install single throw switches with handle in UP position when switch closed.
 - .2 Install switches in gang type outlet box when more than one switch is required in one location.
 - .3 Mount toggle switches at height as indicated in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Receptacles:

WIRING DEVICES

- .1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.
 - .2 Mount receptacles at height as indicated in accordance with Section 26 05 00 - Common Work Results for Electrical.
 - .3 Where split receptacle has one portion switched, mount vertically and switch upper portion.
 - .4 Install GFI type receptacles as indicated.
- .3 Cover plates:
- .1 Install suitable common cover plates where wiring devices are grouped.
 - .2 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

3.3 CLEANING

- .1 Leave Work area clean at end of each day.
- .2 Final Cleaning - upon completion remove surplus materials, rubbish, tools and equipment.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Protect stainless steel cover plate finish with paper or plastic film until painting and other work is finished.
- .3 Repair damage to adjacent materials caused by wiring device installation.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 N/A

1.2 REFERENCE STANDARDS

- .1 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)
- .2 CSA Group (CSA)
- .3 Underwriters' Laboratories of Canada (ULC)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Provide complete photometric data prepared by independent testing laboratory for luminaires where specified, for review Consultant.

1.4 QUALITY ASSURANCE

- .1 Provide mock-ups in accordance with Section 01 45 00 - Quality Control.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .3 Divert unused metal materials from landfill to metal recycling facility.
- .4 Disposal and recycling of fluorescent lamps as per local regulations.
- .5 Disposal of old PCB filled ballasts.

Part 2 Products**2.1 FIXTURES**

- .1 As indicated on drawings.

2.2 FINISHES

- .1 Light fixture finish and construction to meet ULC listings and CSA certifications related to intended installation.

2.3 OPTICAL CONTROL DEVICES

- .1 As indicated in luminaire schedule.

2.4 LUMINAIRES

- .1 As indicated in luminaire schedule.

Part 3 Execution**3.1 INSTALLATION**

- .1 Locate and install luminaires as indicated.
- .2 Provide adequate support to suit ceiling system.

3.2 WIRING

- .1 Connect luminaires to lighting circuits:
 - .1 Install flexible or rigid conduit for luminaires as indicated.

3.3 LUMINAIRE SUPPORTS

- .1 For suspended ceiling installations [support luminaires independently of ceiling] [support luminaires from ceiling grid in accordance with local inspection requirements].

3.4 LUMINAIRE ALIGNMENT

- .1 Align luminaires mounted in continuous rows to form straight uninterrupted line.
- .2 Align luminaires mounted individually parallel or perpendicular to building grid lines.

3.5 CLEANING

- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

EMERGENCY LIGHTING

- Part 1 General**
- 1.1 RELATED REQUIREMENTS**
- .1 N/A
- 1.2 REFERENCE STANDARDS**
- .1 CSA Group (CSA)
- .1 CSA C22.2 No.141-10, Emergency Lighting Equipment.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS**
- .1 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for emergency lighting and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.4 CLOSEOUT SUBMITTALS**
- .1 Operation and Maintenance Data: submit operation and maintenance data for emergency lighting for incorporation into manual.
- 1.5 DELIVERY, STORAGE AND HANDLING**
- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
- .1 Store materials in dry location, indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Store and protect emergency lighting from nicks, scratches, and blemishes.
- .3 Replace defective or damaged materials with new.
- 1.6 WARRANTY**
- .1 For batteries in this Section 26 52 13.13 - Emergency Lighting, 12 months warranty period is extended to 120 months.
- Part 2 Products**
- 2.1 EQUIPMENT**
- .1 Emergency lighting equipment: to CSA C22.2 No.141.
- .2 Supply voltage: 120 V, AC.
- .3 Output voltage: 24 or 12 V DC.

EMERGENCY LIGHTING

- .4 LED
- .5 Operating time: 120 minutes.
- .6 Battery: sealed, maintenance free.
- .7 Solid state transfer circuit.
- .8 Low voltage disconnect: solid state, modular, operates at 80% battery output voltage.
- .9 Signal lights: solid state, for 'AC Power ON'.
- .10 Auxiliary equipment:
 - .1 Test switch.

2.2 WIRING OF REMOTE HEADS

- .1 Conduit: EMT, in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.
- .2 Conductors in accordance with Section 26 05 21 - Wires and Cables (0-1000 V), sized as indicated in accordance with manufacturer's recommendations.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for emergency lighting installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

- .1 Install unit equipment and remote mounted fixtures.
- .2 Direct heads.
- .3 Connect exit lights to unit equipment.

3.3 CLEANING

- .1 Leave Work area clean at end of each day.
- .2 Final Cleaning- upon completion remove surplus materials, rubbish, tools and equipment.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by emergency lighting installation.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 N/A

1.2 REFERENCE STANDARDS

- .1 CSA Group
 - .1 CSA C22.2 No.141-(15), Emergency Lighting Equipment.
 - .2 CSA C860-11(R2016), Performance of Internally-Lighted Exit Signs.
- .2 National Fire Protection Association (NFPA)
 - .1 NFPA 101-(2015), Life Safety Code.
- .3 International Organization for Standardization (ISO)
 - .1 ISO 3864-1 (2011), Graphical symbols - Safety colours and safety signs - Part 1: Design principles for safety signs and safety markings.
 - .2 ISO 7010 (2011), Safety colours and safety signs - Registered safety signs.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Quality Assurance Submittals: submit following in accordance with Section 01 45 00 - Quality Control.
 - .1 Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

Part 2 Products**2.1 SELF-POWERED UNITS**

- .1 Exit lights: to CSA C22.2 No.141 and CSA C860.
- .2 Housing: extruded aluminum housing, brush aluminum finish.
- .3 Lamps: two - LED-12W, 120V over 100,000 hours.
- .4 Graphics: Green pictogram and white graphical symbol and directional arrows to ISO 3864-1. Dimensions to ISO 7010.
- .5 Face plate to remain captive for relamping.
- .6 Supply voltage: 120 V, ac.

EXIT SIGNS

- .7 Output voltage: 12 or 24 V dc.
- .8 Operating time: 60 minimum.
- .9 Recharge time: 12 hours
- .10 Battery: sealed, maintenance free.
- .11 Charger: solid state, voltage/current regulated, inverse temperature compensated, short circuit protected, with regulated output of plus or minus 0.01 V for plus or minus 10% V input variation.
- .12 Solid state transfer circuit.
- .13 Signal lights: solid state, for 'AC Power ON' condition.
- .14 Mounting: suitable for universal mounting directly on junction box and c/w knockouts for conduit.
 - .1 Removable or hinged front panel for easy access to batteries.
- .15 Cabinet: finish: White.
- .16 Auxiliary equipment:
 - .1 Test switch.
 - .2 RFI suppressor.
 - .3 Cord and plug connection for AC power supply.

Part 3 Execution**3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install exit lights to manufacturer's recommendations, listing requirements, NFPA standard and local regulatory requirements.
- .2 Connect fixtures to exit light circuits.
- .3 Lock exit light circuit breaker in on position.

3.3 CLEANING

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

JRP ENGINEERING

Professional Engineers

110 Didsbury Road – Unit M090, Kanata, ON, K2T 0C2
 Tel: 613-627-2462 Email: Admin@jrpeng.com

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MECHANICAL LEGEND	
SYMBOL	DESCRIPTION
	SPRINKLER HEAD (UPRIGHT, PENDANT, WALL MOUNTED)
	FIRE HOSE CABINET
	FLOOR DRAIN
	FUNNEL DRAIN
	HUB DRAIN
	D.C.W. PIPING
	D.H.W. PIPING
	SANITARY UNDERGROUND
	SANITARY UNDER FLOOR
	SANITARY VENT PIPING
	GATE VALVE
	BALL VALVE
	SOLENOID VALVE
	PUMP
	SUCTION DIFFUSER
	CHECK VALVE
	TEMPERATURE SENSOR
	TEMPERATURE GAUGE
	PRESSURE RELIEF VALVE
	AIR VENT
	GAS VALVE
	GAS SHUT OFF VALVE
	ELECTRIC CONVECTOR
	DRAWING NOTE

NOT ALL SYMBOLS SHOWN IN LEGEND ARE NECESSARILY USED IN THE DRAWING SET.

GENERAL NOTES:

- ALL MECHANICAL EQUIPMENT SHOWN IN THIN SOLID LINES IS EXISTING TO REMAIN.
- ALL MECHANICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT.
- ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'R' IS EXISTING TO BE RELOCATED AS SHOWN.
- ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'X' IS EXISTING TO BE REMOVED BACK TO SOURCE.
- THIS DRAWING WAS BASED ON PARTIAL SITE REVIEW. ALL EQUIPMENT, DUCTS, PIPING AND ALL ACCESSORIES' SIZES, LOCATIONS AND DETAILS OF INSTALLATIONS TO BE CONFIRMED BY MECHANICAL CONTRACTOR ON SITE.
- MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROOF, WALL AND BUILDING ENVELOPE CUTTING, PATCHING AND REPAIRS, AS REQUIRED FOR EXECUTION OF WORK INCLUDED IN THIS CONTRACT.
- PROVIDE ALL NEW EQUIPMENT, CONTROLS, DUCTWORK, PIPING, VALVES AND ACCESSORIES AS SHOWN AND NOTED ON DETAILS AND AS REQUIRED FOR COMPLETE FUNCTIONING SYSTEMS.
- PROVIDE ADDITIONAL DUCTWORK, PIPING, FITTINGS AND OFFSETS WHERE REQUIRED TO SUIT EXISTING CONDITIONS AND TO AVOID COLLISIONS WITH EXISTING SYSTEMS AND BUILDING STRUCTURE.
- NOT ALL MECHANICAL ELEMENTS SHOWN, AFFECTED AREAS ONLY.
- SEISMIC RESTRAINT SYSTEM (SRS) – PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION.
- HATCHED AREA INDICATED ON FLOOR PLANS NOT IN CONTRACT.

No	DESCRIPTION	DATE
4	ISSUED FOR TENDER, R3	MAY 10, 2023
3	ISSUED FOR TENDER, R2	NOV. 17, 2022
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1	ISSUED FOR TENDER	APRIL 1, 2021
0	ISSUED FOR REVIEW	MAR. 22, 2021

REVISIONS

client:

project:
 ROOM 127 – REPLACE COOLER PANELS
 BUILDING 22 – CENTRAL EXPERIMENTAL FARM
 OTTAWA, ONTARIO

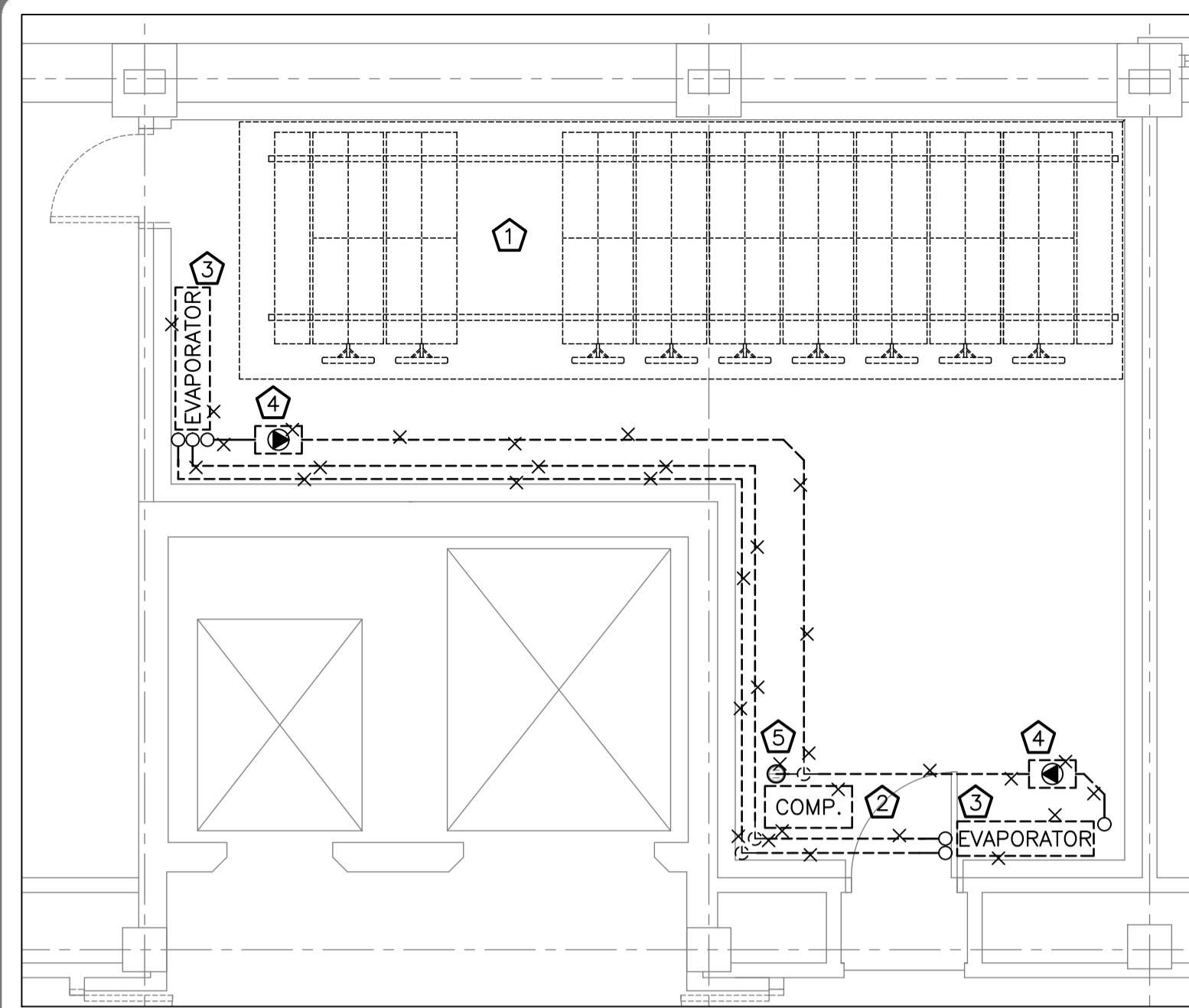
drawing title:
 MECHANICAL LEGEND AND GENERAL NOTES

scale:	AS NOTED	drawn by:	L.C.
designed by:	L.C.	reviewed by:	P.P.
approved by:	P.P.	date:	MAY 2023

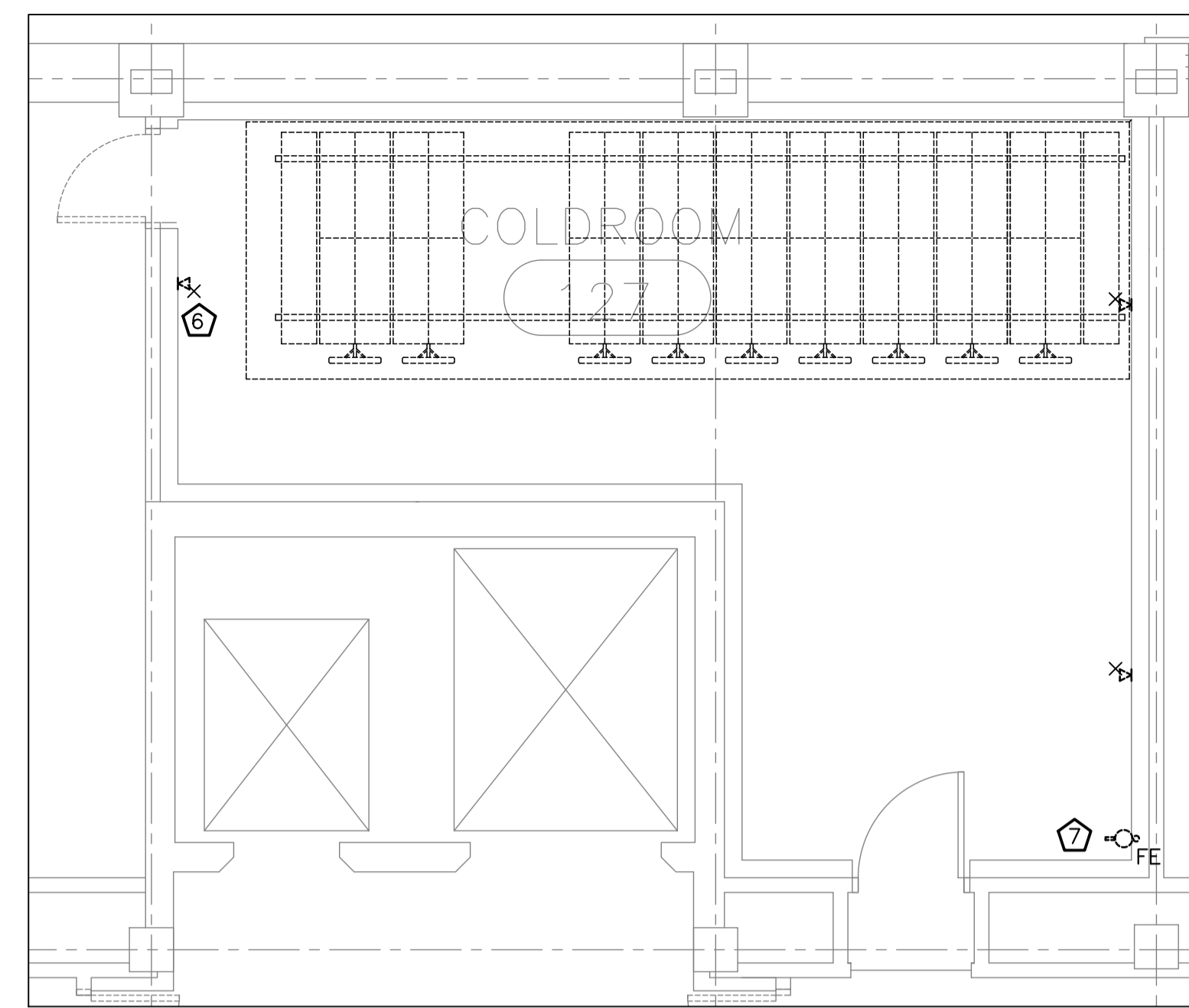
project no.: 247-2101
 drawing no.: M-1 of 3

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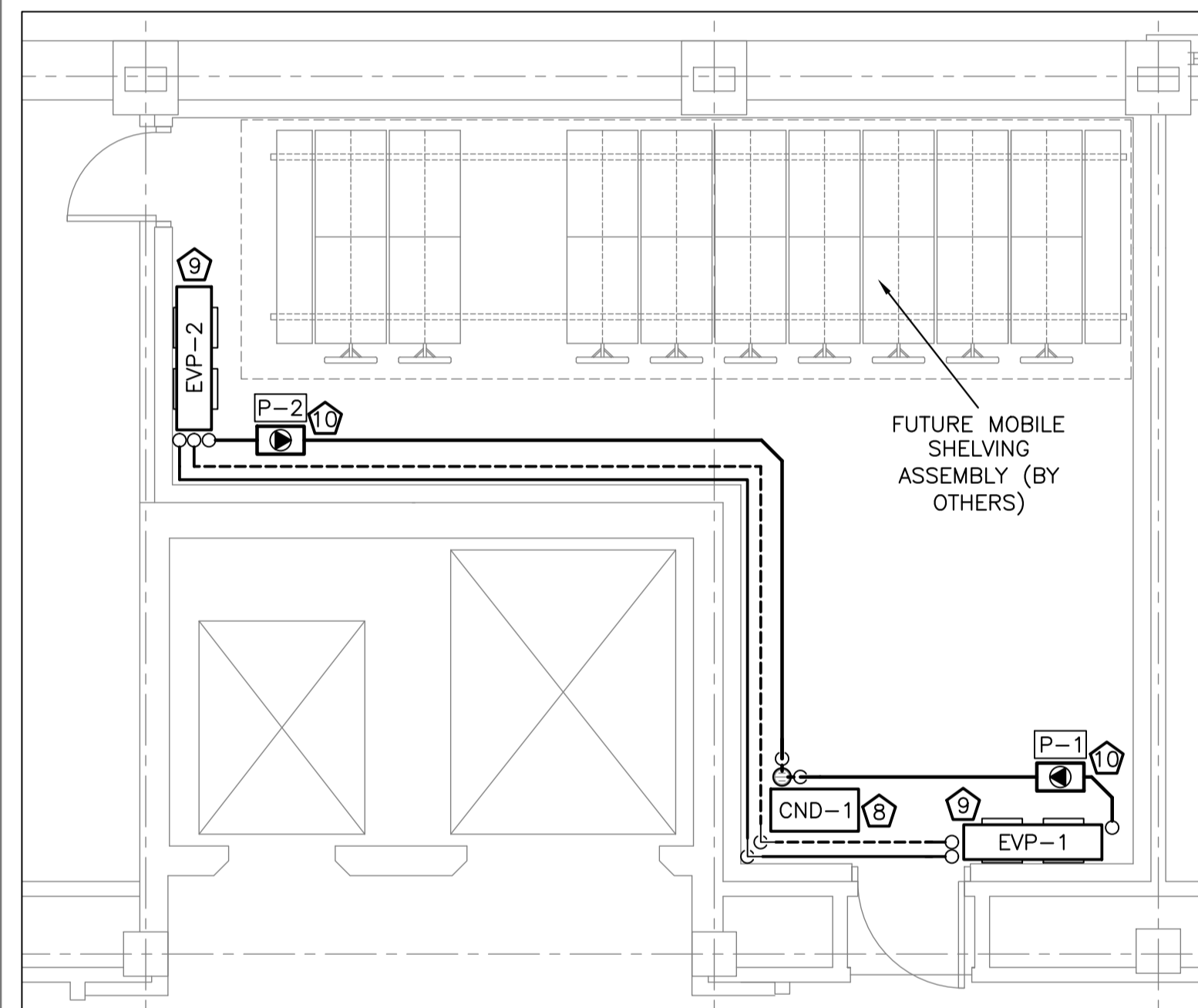
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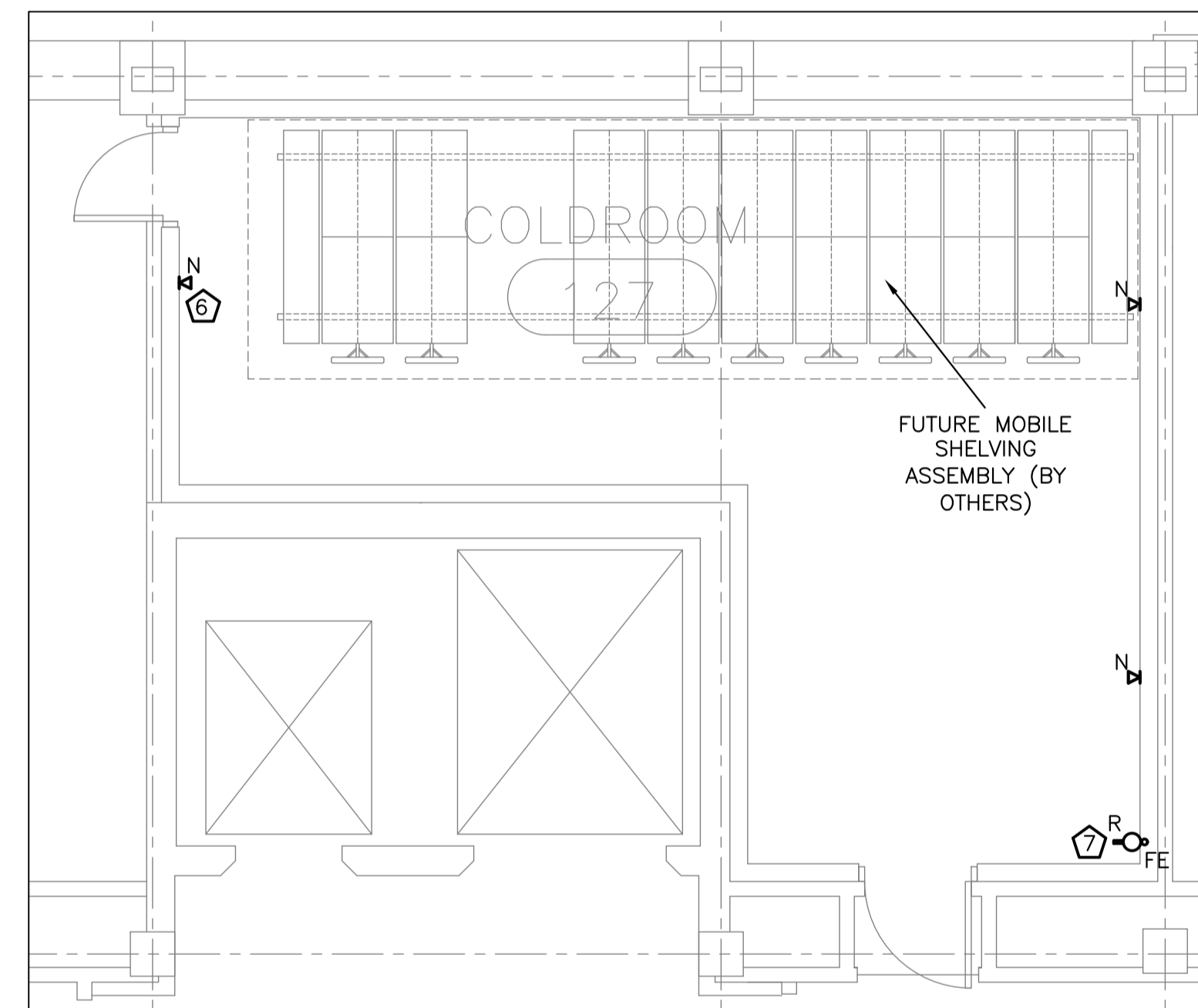
1 PARTIAL GROUND FLOOR PLAN
REFRIGERATION SYSTEMS – EXISTING & DEMOLITION
M-2 1:50



3 PARTIAL GROUND FLOOR PLAN
FIRE PROTECTION SYSTEMS – EXISTING & DEMOLITION
M-2 1:50



2 PARTIAL GROUND FLOOR PLAN
REFRIGERATION SYSTEMS – EXISTING & NEW
M-2 1:50



4 PARTIAL GROUND FLOOR PLAN
FIRE PROTECTION SYSTEMS – EXISTING & NEW
M-2 1:50

SCOPE OF WORK:

- ALL TENANT EQUIPMENT (TEMPERATURE SENSORS AND ALARMS) TO BE DISCONNECTED AND REMOVED BY OTHERS. TENANT TO REMOVE ALL TENANT EQUIPMENT PRIOR TO MECHANICAL DEMOLITION/REMOVALS.
- CONTRACTOR TO DISASSEMBLE AND REMOVE ALL REMAINING MILLWORK, SHELVING, AND MOBILE SHELVING (SAMPLE STORAGE) EQUIPMENT AND TURN OVER TO CLIENT FOR RE-USE – STORAGE LOCATION TO BE ARRANGED WITH CLIENT REPRESENTATIVE AND AAFIC PROJECT MANAGER.
- EXISTING MECHANICAL EQUIPMENT TO BE DISCONNECTED AND REMOVED (REFER TO ADJACENT DRAWING VIEWS). COORDINATE ELECTRICAL REMOVALS WITH ELECTRICAL DIVISION.
- EXISTING COOLER CONSTRUCTION (INCLUDING WALLS, FLOOR, CEILING, AND DOORS) TO BE DEMOLISHED AND REMOVED.
- AFTER COOLER REMOVALS ARE COMPLETE, CLIENT REPRESENTATIVE TO REVIEW SITE CONDITIONS TOGETHER WITH CONTRACTOR AND CONSULTANT. SITE CONDITIONS TO BE REVIEWED AND CORRECTIVE ACTIONS ISSUED AS REQUIRED.
- CONTRACTOR TO VERIFY ALL SITE MEASUREMENTS PRIOR TO ORDERING REFRIGERANT COOLING PANEL SYSTEM FOR ALL SURFACES OF ROOM 127. REMAINING STRUCTURE IN ROOM 127 TO BE PREPARED TO RECEIVE NEW REFRIGERATION COOLER PANEL SYSTEM, INCLUDING:
 - WALLS: 4" THICK, FIRE-RATED, PRE-PAINTED INTERIOR/EXTERIOR, WITH TEXTURED FINISH, 26GA GALVANIZED STEEL CONSTRUCTION.
 - CEILING: 4" THICK, FIRE-RATED, PRE-PAINTED INTERIOR/EXTERIOR, WITH TEXTURED FINISH, 26GA GALVANIZED STEEL CONSTRUCTION.
 - FLOOR: 4" THICK, FIRE-RATED, INTERIOR FINISH: 18GA GALVANIZED STEEL CONSTRUCTION.
 - ALL JOINTS, CORNERS, AND SEALANT: SILICONE, TO PANEL SYSTEM MANUFACTURER'S REQUIREMENTS.
 - DOORS (SOUTH AND WEST), COMPLETE WITH FLUSH HINGES, CLOSER, MAGNETIC GASKET, AND SWEEP. FOR SOUTH DOOR, INTEGRAL THRESHOLD, AND EXTERNAL ACCESS RAMP. SOUTH DOOR COMPLETE WITH PUSH-BUTTON DOOR OPERATOR (REFER TO ELECTRICAL DRAWINGS FOR DETAILS)
 - DIGITAL THERMOMETER WITH INTERIOR AND EXTERIOR DISPLAY (°C/°F READOUT).
- PROVIDE AND INSTALL REFRIGERATION EQUIPMENT, REFER TO SCHEMATICS AND EQUIPMENT SCHEDULES ON DRAWING SHEET M-3. PROVIDE ALL MATERIALS, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE RE-INSTALLATION. COORDINATE ELECTRICAL CONNECTIONS WITH ELECTRICAL DIVISION. COMMISSION REFRIGERATION SYSTEM, PROVIDE COMPLETE START-UP VERIFICATION REPORT.
- UPON COMPLETION OF MECHANICAL WORKS, ALL TENANT EQUIPMENT (TEMPERATURE SENSORS, ALARMS, MOBILE SHELVING ASSEMBLY) TO BE INSTALLED BY OTHERS.

DRAWING NOTES:

- TYPICAL: DISASSEMBLE AND REMOVE ALL REMAINING MILLWORK, SHELVING, AND MOBILE SHELVING (SAMPLE STORAGE) EQUIPMENT AND TURN OVER TO CLIENT FOR RE-USE
- EXISTING REFRIGERATION SYSTEM TO BE DECOMMISSIONED AND REFRIGERANT RECOVERED AS PER FEDERAL HALOCARBON REGULATIONS COMPLETE WITH ASSOCIATED RECORD DOCUMENTS, PROVIDE TO AAFIC PROJECT MANAGER FOR ACCEPTANCE. EXISTING FLOOR-MOUNTED, WATER-COOLED REFRIGERATION CONDENSER / COMPRESSOR UNIT TO BE DISCONNECTED AND REMOVED. REFER TO SCHEMATIC DRAWING SHEET M-3 FOR PIPING CONNECTIONS TO BASE BUILDING CHILLED WATER LOOP AND DOMESTIC COLD WATER DISTRIBUTION. COORDINATE ELECTRICAL DISCONNECTION AND REMOVALS WITH ELECTRICAL DIVISION.
- TYPICAL: EXISTING REFRIGERATION EVAPORATOR UNIT TO BE DISCONNECTED AND REMOVED COMPLETE WITH REFRIGERATION PIPING CONNECTIONS. COORDINATE ELECTRICAL DISCONNECTION AND REMOVALS WITH ELECTRICAL DIVISION.
- TYPICAL OF TWO: EXISTING CONDENSATE PUMP SERVING REFRIGERATION EVAPORATOR UNIT AND ASSOCIATED CONDENSATE DRAIN PIPE CONNECTIONS TO BE DISCONNECTED AND REMOVED.
- EXISTING FUNNEL FLOOR DRAIN TO BE REMOVED AND REPLACED WITH NEW (MATCH EXISTING), RE-CONNECT TO EXISTING SANITARY PLUMBING. MODIFY/EXTEND EXISTING SANITARY PIPING CONNECTIONS AS REQUIRED.
- TYPICAL OF THREE: EXISTING SIDE-WALL MOUNTED SPRINKLER HEAD TO BE REMOVED AND REPLACED AS SHOWN. ALL WORK AND MATERIALS TO LATEST EDITION OF NFPA13 BY CERTIFIED BASE BUILDING FIRE PROTECTION CONTRACTOR.

- EXISTING WALL-MOUNTED FIRE EXTINGUISHER TO BE RELOCATED AS SHOWN.
- PROVIDE AND INSTALL FLOOR-MOUNTED, WATER-COOLED REFRIGERATION CONDENSER/COMPRESSOR UNIT (CND-1) COMPLETE WITH PLUMBING CONNECTIONS TO BASE BUILDING CHILLED WATER AND DOMESTIC COLD WATER SERVICES. ALL WORK AND MATERIALS TO MANUFACTURER'S WRITTEN INSTRUCTIONS. REFER TO PLUMBING SCHEMATIC AND EQUIPMENT SCHEDULE ON DRAWING SHEET M-3. COORDINATE ELECTRICAL CONNECTIONS WITH ELECTRICAL DIVISION.
- TYPICAL: PROVIDE AND INSTALL CEILING-HUNG REFRIGERATION EVAPORATOR UNIT (EVP-1, EVP-2) COMPLETE WITH REFRIGERATION PIPING CONNECTIONS TO CONDENSER/COMPRESSOR UNIT (CND-1). PROVIDE ALL SUPPORTS, PIPING, THERMAL INSULATION/JACKETING, AND ALL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION. ALL WORK AND MATERIALS TO MANUFACTURER'S WRITTEN INSTRUCTIONS. REFER TO PLUMBING SCHEMATIC AND EQUIPMENT SCHEDULE ON DRAWING SHEET M-3. COORDINATE ELECTRICAL CONNECTIONS WITH ELECTRICAL DIVISION.
- TYPICAL: PROVIDE AND INSTALL CONDENSATE LIFT PUMP (P-1, P-2) COMPLETE WITH MOUNTING BRACKET AND CONDENSATE PIPING CONNECTION (19#) BETWEEN NEW REFRIGERATION EVAPORATOR UNIT (EVP-1, EVP-2) AND NEW FUNNEL FLOOR DRAIN. REFER TO PLUMBING SCHEMATIC AND EQUIPMENT SCHEDULE ON DRAWING SHEET M-3. COORDINATE ELECTRICAL CONNECTIONS WITH ELECTRICAL DIVISION.

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0	ISSUED FOR REVIEW	MAR. 22, 2021

REVISIONS

client:

project:
ROOM 127 – REPLACE COOLER PANELS
BUILDING 22 – CENTRAL EXPERIMENTAL FARM
OTTAWA, ONTARIO

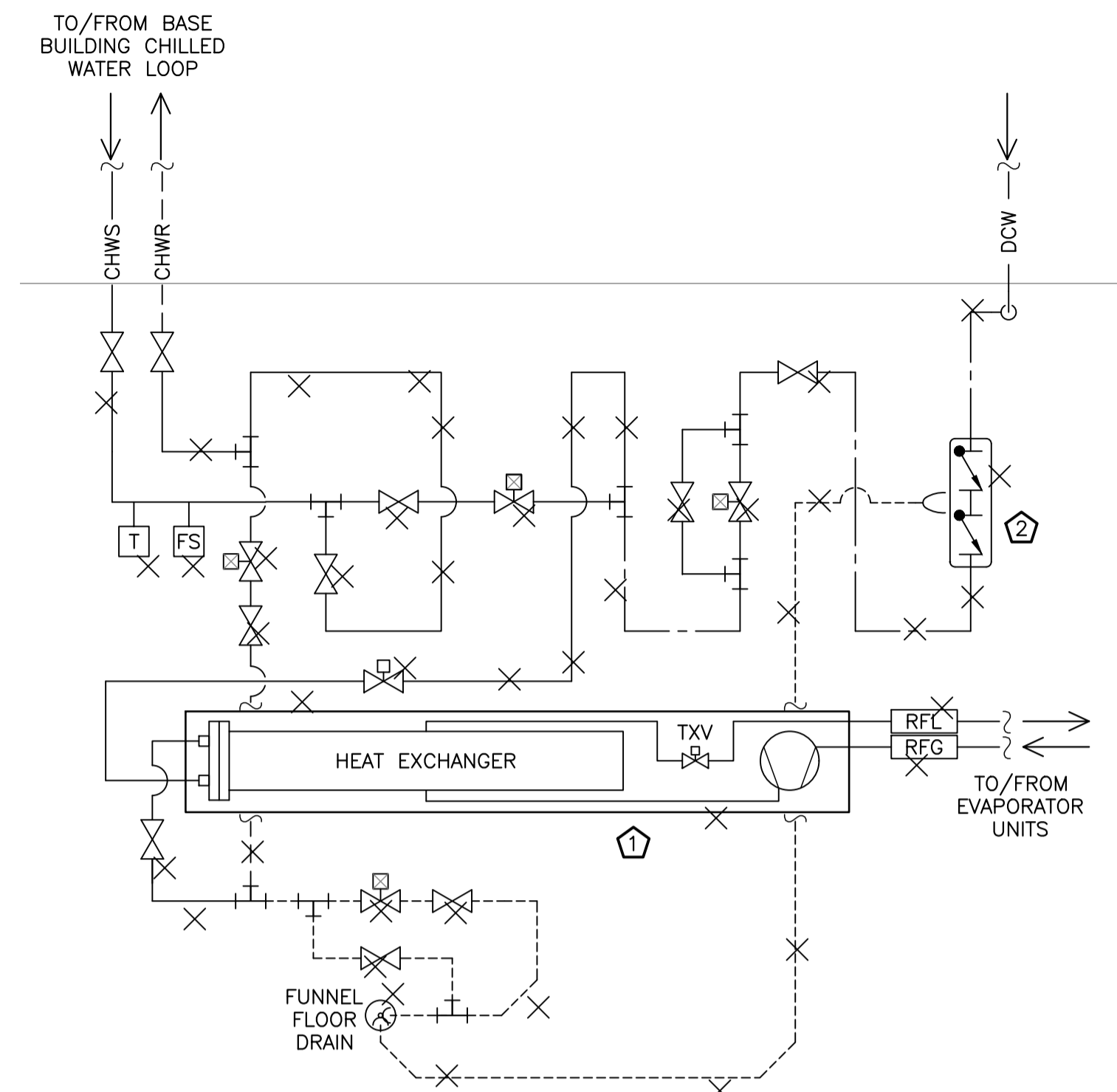
drawing title:
REFRIGERATION SYSTEMS AND FIRE PROTECTION SYSTEMS

scale:	AS NOTED	drawn by:	L.C.
designed by:	L.C.	reviewed by:	P.P.
approved by:	P.P.	date:	MAY 2023

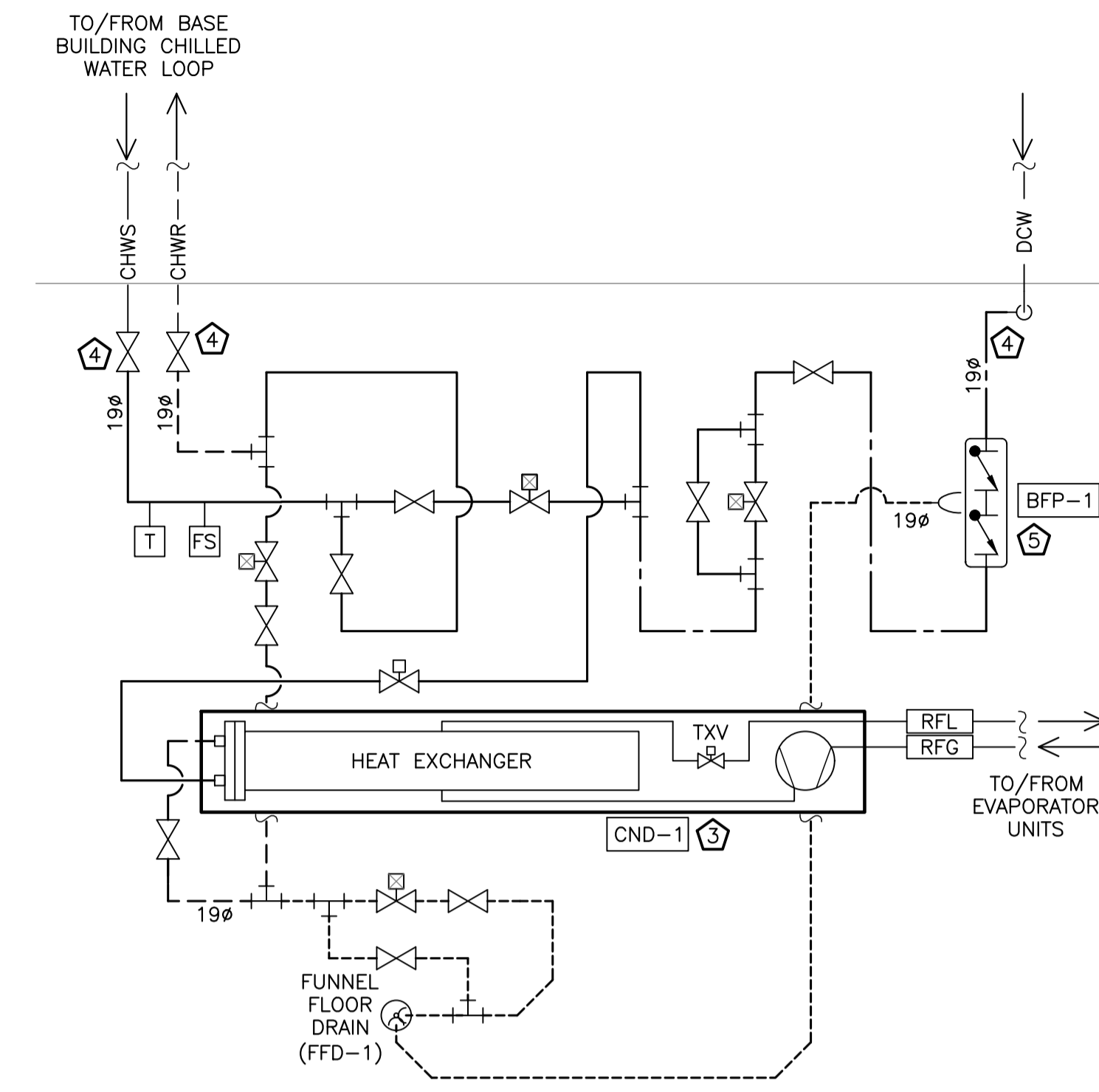
project no.: 247-2101
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1 PIPING SCHEMATIC – WATER-COOLED CONDENSER, EXISTING & DEMOLITION
M-3 NTS



2 PIPING SCHEMATIC – WATER-COOLED CONDENSER, EXISTING & NEW
M-3 NTS

DRAWING NOTES:

- 1 DISCONNECT AND REMOVE EXISTING COMPRESSOR /HEAT EXCHANGER EQUIPMENT FROM BASE BUILDING CHILLED WATER SUPPLY/RETURN, AND DCW CONNECTIONS, DECOMMISSION REFRIGERATION SYSTEM AND REFRIGERANT RECOVERED AS PER FEDERAL HALOCARBON REGULATIONS COMPLETE WITH ASSOCIATED RECORD DOCUMENTS, PROVIDE TO AAFC PROJECT MANAGER FOR ACCEPTANCE.
- 2 DISCONNECT AND REMOVE EXISTING REDUCED PRESSURE PRINCIPAL TYPE BACKFLOW PREVENTER AND ASSOCIATED INDIRECT DRAIN CONNECTION TO ADJACENT FLOOR DRAIN.
- 3 PROVIDE AND INSTALL PACKAGED WATER-COOLED SHELL AND TUBE SCROLL REFRIGERATION CONDENSING UNIT (CND-1) AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS. REFER TO EQUIPMENT SCHEDULE ON THIS DRAWING SHEET.
- 4 TYPICAL: PROVIDE PIPING CONNECTIONS FROM BASE BUILDING CHILLED WATER SUPPLY/RETURN AND DCW SERVICES, SIZE INDICATED. PROVIDE ALL PIPING, VALVES, SUPPORTS, THERMAL INSULATION/JACKETING, AND ALL OTHER ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
- 5 PROVIDE AND INSTALL REDUCED PRESSURE PRINCIPAL TYPE BACKFLOW PREVENTER (BFP-1) AND ASSOCIATED INDIRECT DRAIN CONNECTION TO ADJACENT FLOOR DRAIN (FFD-1), SIZE INDICATED.

MECHANICAL EQUIPMENT SCHEDULE:

P-1, P-2

TYPE: CONDENSATE LIFT PUMP

DESCRIPTION:
- PERFORMANCE: 190 LPH @ 1.52M HEAD,
SHUT-OFF @ 4.6M HEAD
- 2.3L TANK CAPACITY
- 60°C MAXIMUM INLET TEMPERATURE
- PROVIDE COMPLETE WITH ALL-MOUNTED HANGER BRACKET.

ELECTRICAL:
- 115V/60HZ/1PH, 1/2 HP / 60W MAX.
- 1.8M 3-CONDUCTOR CABLE WITH GROUNDED 3-PRONG PLUG

CND-1

TYPE: PACKAGED SHELL AND TUBE SCROLL REFRIGERATION CONDENSING UNIT, WATER-COOLED

DESCRIPTION:
- CAPACITY: 5.9KW
- SUCTION TEMPERATURE: -4.2°C
- CONDENSER TEMPERATURE: 40.6°C
- SYSTEM REFRIGERANT: R448A
- WATER CONNECTION: 39ø (1-1/2"ø)
- REFRIGERANT SUCTION: 22ø (7/8"ø)
- REFRIGERANT LIQUID: 12ø (1/2"ø)

ACCESSORIES:
- ADJUSTABLE DUAL HIGH/LOW PRESSURE CONTROL
- ANTI-SHORT CYCLE TIME DELAY
- COPPER TUBING SECURED WITH CUSHION CLAMPS
- FLEXIBLE HOSE ON ALL COMPRESSOR PRESSURE CONTROL CONNECTIONS.
- SHELL AND TUBE WATER WATER-COOLED CONDENSER WITH FUSIBLE PLUG OR PRESSURE RELIEF VALVE AND LIQUID SHUT-OFF VALVE.
- ELECTRICAL CONTROL BOX WITH COMPRESSOR CONTACTOR AND FUSED CONTROL CIRCUIT, WITH HINGED ACCESS DOOR.
- SUCTION AND DISCHARGE SERVICE VALVES
- UNITS SHIPPED WITH HELIUM HOLDING CHARGE
- WELDED HERMETIC SCROLL-TYPE COMPRESSOR
- COMPATIBLE WITH LOW GWP REFRIGERANTS

ELECTRICAL:
- 575V/60HZ/3PH, 2HP
- MCA: 4.9A, MOP: 15A

EVP-1, EVP-2

TYPE: REFRIGERATION EVAPORATOR UNIT, CEILING-HUNG, LOW-PROFILE, COOLER ROOM

DESCRIPTION:
- CAPACITY: 3.35 KW
- AIR FLOW: 665.4 L/S
- COOLER ROOM TEMPERATURE: 1.7°C
- EVAPORATOR TEMPERATURE: -3.9°C
- REFRIGERANT: R448A

ACCESSORIES:
- 9.5ø (3/8"ø) TUBING COIL CONSTRUCTION, HIGH-EFFICIENCY COPPER TUBE W/ ALUMINUM FIN COIL DESIGN, 6 FPI, AWEF = 9.0
- FACTORY-INSTALLED SOLENOID VALVE WIRE HARNESS
- HEAVY-GAUGE TEXTURED ALUMINUM CABINET CONSTRUCTION
- HINGED DRAIN PAN WITH CENTRAL UNIVERSAL DRAIN CONNECTION (19ø)
- SCHRADER VALVE CONNECTION ON SUCTION HEADER
- ECM MOTOR WITH VARIABLE SPEED CONTROL
- AWEF/NRCAN COMPLIANT WITH R404A/R507/R448A/R449A/R407/R407C.

ELECTRICAL:
- 120V/60HZ/1PH, 0.07HP
- FLA: 1A, 60W, MCA: 2.3, MOP: 15A

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4	ISSUED FOR TENDER, R3	MAY 10, 2023
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0	ISSUED FOR REVIEW	MAR. 22, 2021

REVISIONS

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client:	
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project:	ROOM 127 – REPLACE COOLER PANELS BUILDING 22 – CENTRAL EXPERIMENTAL FARM OTTAWA, ONTARIO
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drawing title:	REFRIGERATION SYSTEMS (CONTINUED)
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scale:	AS NOTED	drawn by:	L.C.
designed by:	L.C.	reviewed by:	P.P.
approved by:	P.P.	date:	MAY 2023

project no.:	drawing no.:
247-2101	M-3 of 3

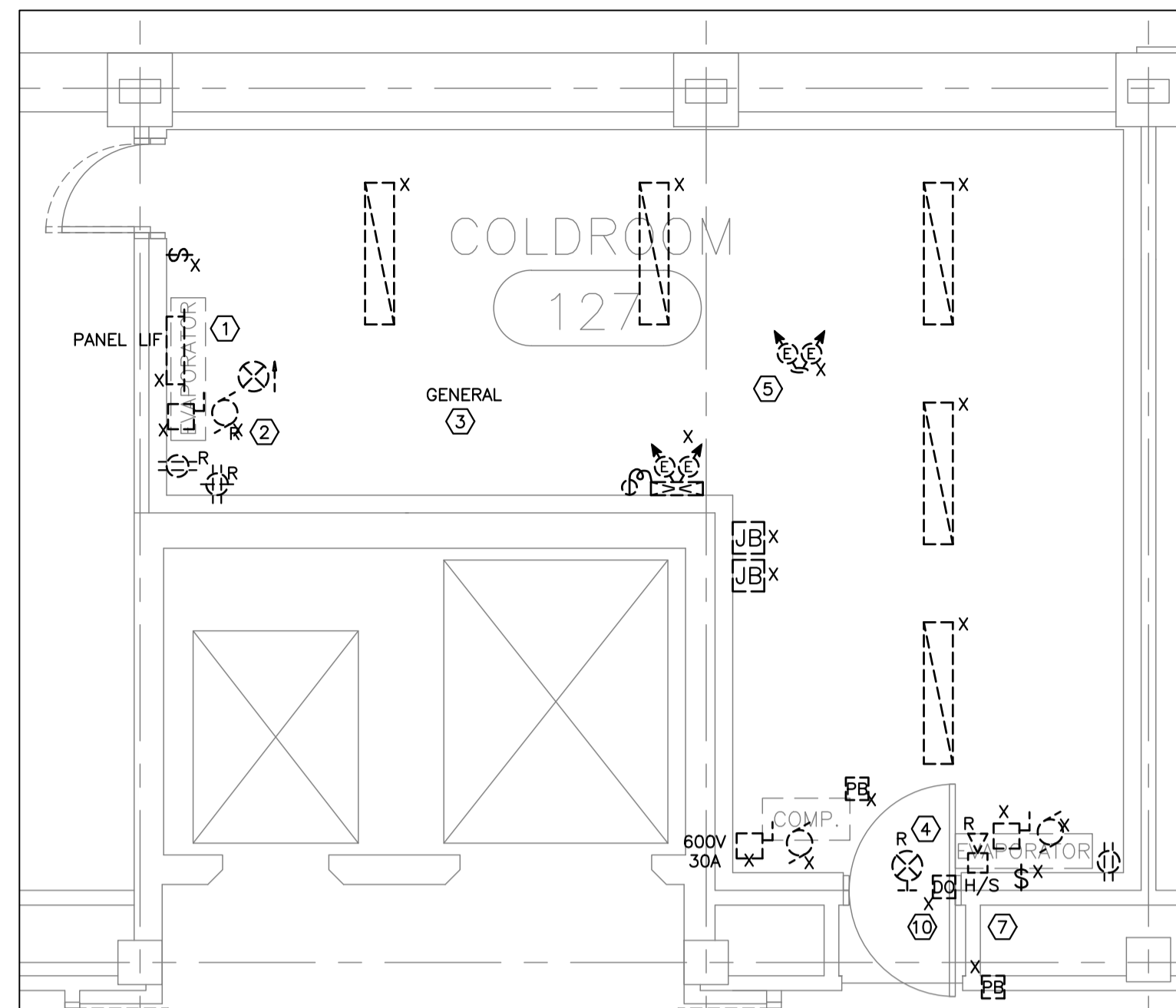
ELECTRICAL LEGEND	
ITEM	DESCRIPTION
\$	SWITCH
\$ _{OC} (OC)	WALL/CEILING MOUNTED OCCUPANCY SENSOR
□	ELECTRICAL PANEL
⊕	DUPLEX RECEPTACLE WALL MOUNTED
□ ⊕	NON-FUSED/FUSED DISCONNECT SWITCH
○ ⊕	1Ø/3Ø DIRECT CONNECTION
⊕	DEDICATED DUPLEX RECEPTACLE
NOT ALL SYMBOLS SHOWN IN LEGEND SET ARE NECESSARILY USED IN DRAWING SET.	

GENERAL NOTES:

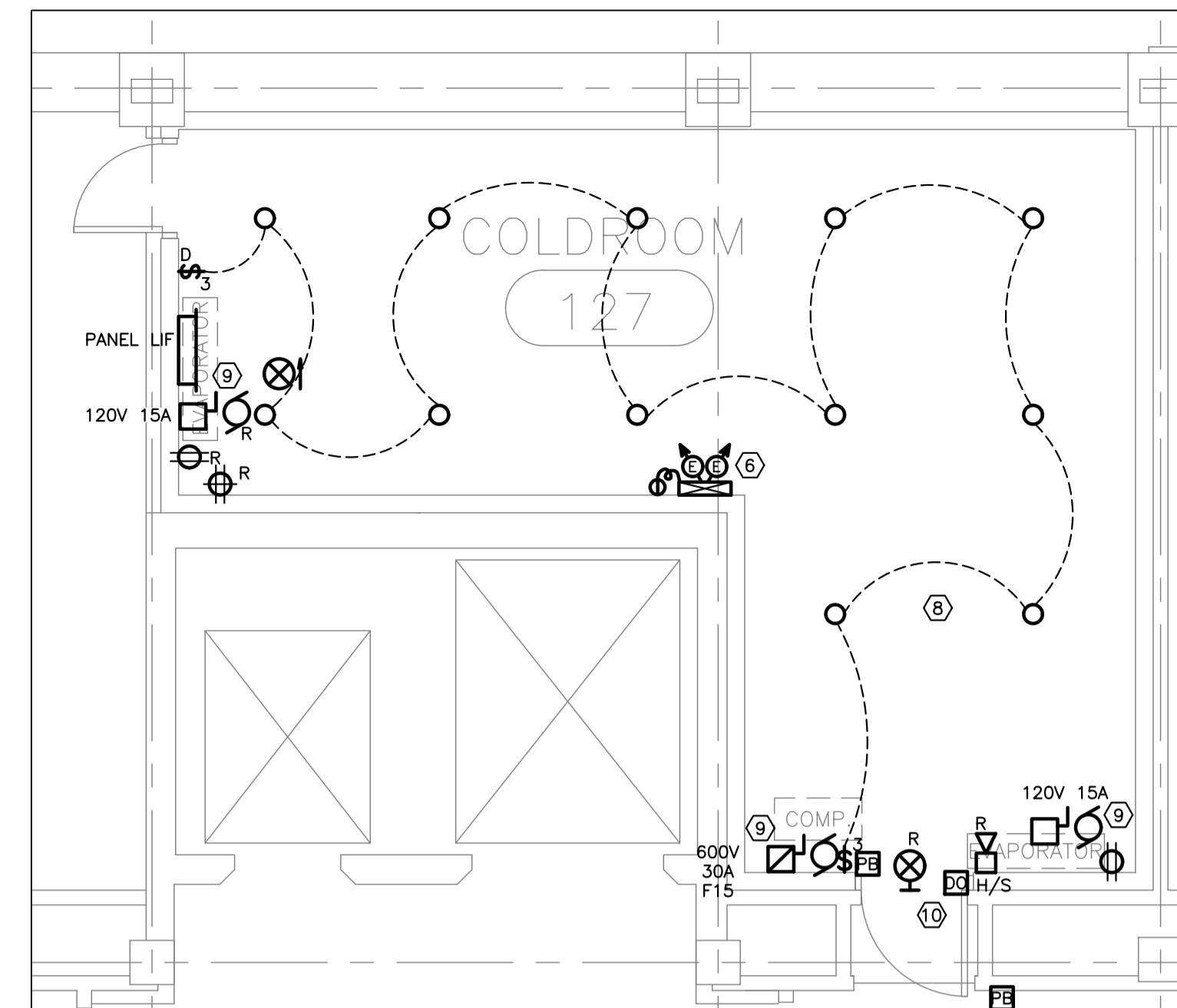
- ALL ELECTRICAL EQUIPMENT SHOWN IN THIN SOLID LINES IS EXISTING TO REMAIN.
- ALL ELECTRICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT, TOGETHER WITH ALL ASSOCIATED CONDUITS AND WIRING.
- ALL ELECTRICAL EQUIPMENT SHOWN IN THICK DASHED LINES WITH LETTER 'R' IS EXISTING TO BE DISCONNECTED, REMOVED AND REINSTATED/RELOCATED AS SHOWN. EXTEND ALL CONDUITS AND WIRING TO SUIT.
- ALL ELECTRICAL EQUIPMENT SHOWN IN THICK DASHED LINES WITH LETTER 'X' IS EXISTING TO BE REMOVED C/W ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE BACK TO NEAREST J/B.
- FOR ANY REQUIRED SHUT DOWN, CONTRACTOR TO COORDINATE WITH SITE MANAGER AND OBTAIN APPROVAL BEFORE SHUT DOWN CAN BE PERFORMED.
- FIRE ALARM SYSTEM TO REMAIN OPERATIONAL FOR DURATION OF THIS PROJECT, PROVIDE DUST PROTECTION. PROVIDE FIRE WATCH IF REQUIRED.
- PROVIDE NEW BREAKERS AS REQUIRED IN EXISTING ELECTRICAL PANELS TO ACCOMMODATE NEW CONNECTIONS. ALSO PROVIDE BLANK PLATES WHERE CIRCUIT BREAKERS ARE NOT INSTALLED. PROVIDE NEW TYPED PANEL LEGEND TYPICAL FOR ALL PANELS TOUCHED BY THIS CONTRACT. TURN OVER TO THE OWNER ALL BREAKERS REMOVED UNDER THIS CONTRACT.
- ALL EXISTING AND NEW CONDUITS AND WIRING PASSING THRU FLOOR AND FIRE RATED WALLS TO BE FIRE STOP USING 3M FIRE RETARDANT MASTIC SEALANT NO EQUIVALENT.
- ALL WIRING TO BE R/RW90, MINIMUM SIZE #12AWG COPPER, IN EMT CONDUIT UNLESS OTHERWISE NOTED.
- ALL ELECTRICAL CIRCUITS ARE SHOWN FOR GROUPING PURPOSES ONLY. CONTRACTOR TO USE AVAILABLE CIRCUITS IN EXISTING ELECTRICAL PANELS. REUSE EXISTING AND/OR PROVIDE NEW ELECTRICAL BREAKERS AS REQUIRED.
- REGROUP CIRCUITS AS REQUIRED.
- COORDINATE ALL WORK WITH ARCHITECTURAL AND MECHANICAL CONTRACTORS.
- THIS DRAWING WAS BASED ON PARTIAL SITE REVIEW ONLY. ALL EQUIPMENT, ACCESSORIES, SIZES, LOCATIONS AND DETAILS OF INSTALLATIONS TO BE CONFIRMED ON SITE.
- FIRE ALARM SYSTEM DEVICES SHALL BE INSTALLED AS PER CAN/ULC S524 AND SHALL BE VERIFIED AS PER CAN/ULC S537

DRAWING NOTES:

- DISCONNECT AND REPLACE EXISTING ELECTRICAL PANEL. REFER TO PANEL LEGEND. CONTRACTOR TO CONFIRM AND COORDINATE ALL BEAKER SIZES TO REPLACE WITH NEW. ALL EXISTING CIRCUITS TO BE REF-FED FROM NEW PANEL. C/W ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE. CONTRACTOR TO TRACE EXISTING CIRCUITS AND PROVIDE UPDATED PANEL LEGEND.
- DISCONNECT AND REMOVE EXISTING ELECTRICAL CONNECTION TO MECHANICAL EQUIPMENT. COORDINATE WITH MECHANICAL DRAWINGS. C/W ALL CONDUIT AND WIRING (NOT ALL CONDUITS AND DEVICES ARE SHOWN).
- GENERAL: ALL CONDUITS AND WIRING TO BE REMOVED FROM COOLER PANEL PRIOR TO DEMOLITION OF PANELS. TRACE, LABEL AND REMOVE ALL CIRCUITS BACK TO NEAREST J/B OUTSIDE OF COOLER. CIRCUITS TO BE RE-USED FOR NEW INSTALLATIONS.
- DISCONNECT, REMOVE ALL CONDUIT AND WIRING (AS PER NOTE 3) AND REINSTATE/RELOCATE OR PROVIDE NEW ELECTRICAL DEVICES AS SHOWN. EXTEND ALL CONDUIT AND WIRING TO SUIT.
- DISCONNECT, REMOVE ALL CONTROLS CONDUIT AND WIRING. PRIOR TO DEMOLITION OF PANELS. TRACE, LABEL AND REMOVE ALL CIRCUITS BACK TO NEAREST J/B OUTSIDE OF COOLER.
- PROVIDE NEW BATTERY BACK WITH REMOTE HEAD. C/W ALL CONDUIT AND WIRING.
- RELOCATE F/A DEVICE AS SHOWN. C/W ALL CONDUIT AND WIRING. PROVIDE F/A VERIFICATION REPORT.
- LIGHT FIXTURE(S) AND LIGHTING CONTROL SWITCHES PROVIDED BY COOLER PANEL SUPPLIER AND WIRING AND INTERCONNECTION PROVIDED UNDER THIS CONTRACT C/W ALL CONDUIT & HARDWARE.
- PROVIDE NEW DIRECT CONNECTION AND ALL REQUIRED INTERCONNECTIONS TO MECHANICAL EQUIPMENT (REFER TO MANUFACTURERS SPECIFICATIONS FOR FULL DETAILS C/W ALL CONDUIT, WIRING AND DISCONNECTING MEANS.
- DISCONNECT AND REMOVE EXISTING DOOR OPERATOR WITH PUSH BUTTONS. CIRCUIT TO BE RE-USED IN NEW LAYOUT. PROVIDE NEW DOOR OPERATOR WITH PUSH BUTTONS AS SHOWN. COORDINATE EXACT LOCATION OF PUSH BUTTONS ON SITE. C/W ALL CONDUIT AND WIRING.



1 COOLER ROOM – EXISTING/DEMOLITION
E-1 1:50



2 COOLER ROOM – EXISTING/NEW WORK
E-1 1:50

DEMO PANEL LIF 120/240V, 200A, 1PH, 3 WIRE					
DESCRIPTION	BREAKER SIZE	CIRCUIT NUMBER	CIRCUIT NUMBER	BREAKER SIZE	DESCRIPTION
UNKNOWN	15A	1	2	15A	UNKNOWN
UNKNOWN	15A	3	4	15A	UNKNOWN
UNKNOWN	15A	5	6	15A	UNKNOWN
UNKNOWN	15A	7	8	15A	UNKNOWN
UNKNOWN	30A	9	10	15A	UNKNOWN
UNKNOWN	30A	11	12	15A	UNKNOWN
UNKNOWN	30A	13	14	15A	UNKNOWN
UNKNOWN	30A	15	16	15A	UNKNOWN
UNKNOWN	15A	17	18	15A	UNKNOWN
UNKNOWN	15A	19	20	15A	UNKNOWN
UNKNOWN	15A	21	22	15A	UNKNOWN
UNKNOWN	15A	23	24	15A	UNKNOWN
UNKNOWN	15A	25	26	15A	UNKNOWN
UNKNOWN	15A	27	28	15A	UNKNOWN
UNKNOWN	15A	29	30	15A	UNKNOWN
UNKNOWN	15A	31	32	15A	UNKNOWN
		33	34		
		35	36		
		37	38		

NEW PANEL LIF 120/240V, 225A, 1PH, 3 WIRE, 200 MAIN BREAKER (CONFIRM BREAKERS)					
DESCRIPTION	BREAKER SIZE	CIRCUIT NUMBER	CIRCUIT NUMBER	BREAKER SIZE	DESCRIPTION
	15A	1	2	15A	
	15A	3	4	15A	
	15A	5	6	15A	
	15A	7	8	15A	
	30A	9	10	15A	
	30A	11	12	15A	
	30A	13	14	15A	
	30A	15	16	15A	
	15A	17	18	15A	
	15A	19	20	15A	
	15A	21	22	15A	
	15A	23	24	15A	
	15A	25	26	15A	
	15A	27	28	15A	
	15A	29	30	15A	
	15A	31	32	15A	
		33	34		
		35	36		
		37	38		
		39	40		
		41	42		

JRP ENGINEERING
Professional Engineers

110 Didsbury Road – Unit M090, Kanata, ON, K2T 0C2
Tel: 613-627-2462 Email: Admin@jrpeng.com

An exact copy of all working documents including, without limitations, the original of the present document or plan is kept on file by J.R.P. Engineering. Any modification carried out to this document or plan or to accompanying documents without written authorization by the engineer is prohibited.

Authorized modifications must be signed and sealed by an engineer and this engineer will be completely responsible for these modifications. J.R.P. Engineering is not and will not be responsible for the consequences of these modifications or for modifications carried out without its consent.

No	DESCRIPTION	DATE
4	ISSUED FOR TENDER, R3	MAY 10, 2023
3	ISSUED FOR TENDER, R2	NOV. 17, 2022
2	ISSUED FOR TENDER, R1	OCT. 7, 2022
1	ISSUED FOR TENDER	APRIL 1, 2021
0	ISSUED FOR REVIEW	MAR. 22, 2021

REVISIONS

client:

project:
ROOM 127 – REPLACE COOLER PANELS
BUILDING 22 – CENTRAL EXPERIMENTAL FARM OTTAWA, ONTARIO

drawing title:
ELECTRICAL DEMOLITION/NEW WORK

scale:	AS NOTED	drawn by:	C.M.
designed by:	C.M.	reviewed by:	M.G.
approved by:	M.G.	date:	MAY 2023

project no.: 247-2101
drawing no.: E-1 of 1



Appendix "F"

INSURANCE TERMS



INSURANCE TERMS

IN1 GENERAL

- IN1.1 Worker's Compensation
- IN1.2 Indemnification
- IN1.3 Proof of Insurance
- IN1.4 Insured
- IN1.5 Payment of Deductible

IN2 COMMERCIAL GENERAL LIABILITY

- IN2.1 Scope of Policy
- IN2.2 Period of Insurance

IN3 AUTOMOBILE INSURANCE

- IN3.1 Scope of Policy

IN4 BUILDER'S RISK / INSTALLATION FLOATER

- IN4.1 Scope of Policy
- IN4.2 Amount of Insurance
- IN4.3 Period of Insurance
- IN4.4 Insurance Proceeds

IN1 GENERAL

IN1.1 Worker's Compensation

- 1) The Contractor shall provide and maintain Worker's Compensation Insurance in accordance with the legal requirements of the Province or Territory where the work is being carried out.

IN1.2 Indemnification

- 1) The insurance required by the provisions of these Insurance Terms shall in no way limit the Contractor's responsibility under the Indemnification clause of the General Conditions of the contract. Any additional coverage the Contractor may deem necessary to fulfill his obligations under the aforesaid clause shall be at his own discretion and expense.

IN1.3 Proof of Insurance

- 1) Before commencement of the Work, and within thirty (30) days after acceptance of its bid, the Contractor shall deposit with Canada a CERTIFICATE OF INSURANCE (form AAFC / AAC5314) available upon request.
- 2) In the event that the Contractor already possesses an insurance certificate clearly demonstrating that their insurance coverage meets IN2.1 Scope of Policy provisions, then the Contractor may deposit an original copy of this insurance certificate.
- 3) Upon request by Canada, the Contractor shall provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the provisions contained herein.

IN1.4 Insured

- 1) Each policy shall insure the Contractor and shall include Her Majesty the Queen in right of Canada, represented by the Minister of Agriculture & Agri-Food Canada as an additional Insured, with respect to liability arising out of the operations of the contractor with regard to the work.

INSURANCE TERMS (Continued)

IN1.5 Payment of Deductible

- 1) The payment of monies up to the deductible amount made in satisfaction of a claim shall be borne by the Contractor.

IN2 COMMERCIAL GENERAL LIABILITY

IN2.1 Scope of Policy

- 1) The insurance coverage provided shall not be less than that provided by IBC Form 2100, as amended from time to time, and shall have:
 - (a) an Each Occurrence Limit of not less than \$5,000,000.00 ;
 - (b) a Products/Completed Operations Aggregate Limit of not less than \$5,000,000.00 ; and
 - (c) a General Aggregate Limit of not less than \$10,000,000.00 per policy year, if the policy is subject to such a limit.
- 2) The policy shall either include or be endorsed to include coverage for the following exposures or hazards if the Work is subject thereto:
 - (a) Blasting.
 - (b) Pile driving and caisson work.
 - (c) Underpinning.
 - (d) Removal or weakening of support of any building or land whether such support be natural or otherwise if the work is performed by the insured contractor.
 - (e) Asbestos.
 - (f) Non-owed Automobile Policy.

IN2.2 Period of Insurance

- 1) Unless otherwise directed in writing by Canada, or, otherwise stipulated elsewhere herein, the policy required herein shall be in force and be maintained from the date of contract award until the day of issue of the Certificate of Completion except that the coverage for Completed Operations Liability shall, in any event, be maintained for a period of at least six (6) years beyond the date of the CERTIFICATE OF SUBSTANTIAL PERFORMANCE.

IN3 AUTOMOBILE INSURANCE

IN3.1 Scope of Policy

- 1) Automobile Liability Insurance in respect of licensed vehicles shall have limits of not less than one million dollars inclusive per occurrence for bodily injury, death, and damage to property.

INSURANCE TERMS (Continued)

IN4 BUILDER'S RISK / INSTALLATION FLOATER

IN4.1 Scope of Policy

- 1) The insurance coverage provided by a Builder's Risk policy or an Installation Floater policy shall not be less than that provided by IBC Forms 4042 and 4047, as amended from time to time.
- 2) The policy shall permit use and occupancy of the project, or any part thereof, where such use and occupancy is for the purposes for which the project is intended upon completion.
- 3) The policy may exclude or be endorsed to exclude coverage for loss or damage caused by any of the following:
 - (a) Asbestos.
 - (b) Fungi or spores.
 - (c) Cyber.
 - (d) Terrorism.

IN4.2 Amount of Insurance

- 1) The amount of insurance shall not be less than the sum of the contract value plus the declared value (if any) set forth in the contract documents of all material and equipment supplied by Canada at the site of the project to be incorporated into and form part of the finished Work. If the value of the Work is changed, the policy shall be changed to reflect the revised contract value.

IN4.3 Period of Insurance

- 1) Unless otherwise directed in writing by Canada, or, stipulated elsewhere herein, the policy required herein shall be in force and be maintained from prior to the commencement of work until the day of issue of the CERTIFICATE OF SUBSTANTIAL PERFORMANCE.

IN4.4 Insurance Proceeds

- 1) The policy shall provide that the proceeds thereof are payable to Her Majesty or as Canada may direct in accordance with GC 10.2 Insurance Proceeds.
- 2) The Contractor shall, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.



Appendix "G"

CONTRACT DOCUMENTS



MAJOR WORKS - CONTRACT DOCUMENTS

SC01 CONTRACT DOCUMENTS

- 1) The following are the contract documents:
 - (a) Contract page when signed by Canada;
 - (b) Duly completed Bid and Acceptance Form and any Appendices attached thereto;
 - (c) Drawings and Specifications;
 - (d) AAFC General Conditions form AAFC / AAC5321-E:
 - (i) GC1 General Provisions
 - (ii) GC2 Administration of the Contract
 - (iii) GC3 Execution and Control of the Work
 - (iv) GC4 Protective Measures
 - (v) GC5 Terms of Payment
 - (vi) GC6 Delays and Changes in the Work
 - (vii) GC7 Default, Suspension or Termination of Contract
 - (viii) GC8 Dispute Resolution
 - (ix) GC9 Contract Security
 - (x) GC10 Insurance
 - (e) Supplementary Conditions, if any;
 - (f) Insurance Terms form AAFC / AAC5315-E;
 - (g) Any amendment issued or any allowable bid revision received before the date and time set for solicitation closing;
 - (h) Any amendment incorporated by mutual agreement between Canada and the Contractor before acceptance of the bid; and
 - (i) Any amendment or variation of the contract documents that is made in accordance with the General Conditions.
- 2) The language of the contract documents shall be the language of the Bid and Acceptance Form submitted.

SC02 ACCEPTANCE AND CONTRACT

- 1) Upon acceptance of the Contractor's offer by Canada, a binding Contract shall be formed between Canada and the Contractor. The documents forming the Contract shall be the contract documents referred to in SC01 CONTRACT DOCUMENTS.



Appendix "H"

CONTRACT



CONTRACT

Select Purchasing Office:

Your tender is accepted to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the construction listed herein and on any attached sheets at the price or prices set out therefor.

Comments

Vendor / Firm Name and Address

Title		
Solicitation / Contract No.		Date
Client Reference No.		
File No.		
Financial Code(s)		<input type="radio"/> GST <input type="radio"/> HST <input type="radio"/> QST
F.O.B Destination		
Applicable Taxes Included		
Destination		
Invoices - Original and two copies to be sent to :		
Address Enquiries to:		
Telephone No.	Ext.	Fax No.
Total Estimated Cost		Currency Type CAD
For the Minister		
Signature		Date(YYYY-MM-DD)



FORMS

- Bid Bond
- Certificate of Insurance
- Labour and Material Payment Bond
- Performance Bond
- T4-A Certification

BID BOND

BOND NUMBER: _____

AMOUNT: _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____ as Principal,
hereinafter called the Principal, and _____ as Surety,

hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto Her Majesty the Queen in right of Canada as represented by the Minister of Agriculture and Agri-Food, as Oblige, hereinafter called the Crown, in the amount of

_____ dollars (\$ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____, 20__.

WHEREAS, the Principal has submitted a written tender to the Crown, dated the _____ day of _____, 20__,

for _____

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that if:

- (a) the Principal, should his tender be accepted within the period specified by the Crown, or, if no period be specified, within sixty (60) days after closing date of the tender, does execute within a period specified by the Crown, or, if no period be specified therein, within fourteen (14) days after the prescribed forms are presented to him for signature, execute such further contractual documents, if any, as may be required by the terms of the tender as accepted, and does furnish a Performance Bond and a Labour and Material Payment Bond, each in the amount of 50% of the Contract price and satisfactory to the Crown, or other security acceptable to the Crown, or
- (b) the Principal does pay to the Crown the difference between the amount of the Principal's tender and the amount of the Contract entered into by the Crown for the work, supplies and services which were specified in the said tender, if the latter amount be in excess of the former,

then this obligation shall be void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that the Surety and the Principal shall not be liable to the Crown for an amount greater than the amount specified in this bond.

PROVIDED FURTHER that the Surety shall not be subject to any suit or action unless such suit or action is instituted and process therefore served upon the Surety at its Head Office in Canada, within twelve (12) months from the date of this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal

Witness

Surety

Note: Affix Corporate seal if applicable.

CERTIFICATE OF INSURANCE

To be completed by the Insurer

CONTRACT						
Description and location of work					Contract No.	
					Project No.	
INSURER			BROKER			
Company name			Company name			
Unit/Suite/Apt.	Street number	Number suffix	Unit/Suite/Apt.	Street number	Number suffix	
Street name			Street name			
Street type	Street direction	PO Box or Route Number	Street type	Street direction	PO Box or Route Number	
Municipality (City, Town, etc.)			Municipality (City, Town, etc.)			
Province/State	Postal/ZIP code		Province/State	Postal/ZIP code		
INSURED			ADDITIONAL INSURED			
Contractor name			Her Majesty the Queen in right of Canada as represented by the Minister of Agriculture and Agri-Food Canada.			
Unit/Suite/Apt.	Street number	Number suffix				
Street name						
Street type	Street direction	PO Box or Route Number				
Municipality (City, Town, etc.)						
Province/State	Postal/ZIP code					
This insurer certifies that the following policies of insurance are at present in force covering all operations of the Insured, in connection with the contract made between the named insured and Her Majesty the Queen in right of Canada, represented by the Minister of Agriculture and Agri-Food Canada.						
POLICY						
Scope of Policy	Number	Inception Date	Expiry Date	Limit of Liability		
				Per Occurrence	General Aggregate Limit	Products / Completed Operations Aggregate Limit
Commercial General Liability						
Builder's Risk "All Risks"/ Installation Floater "All Risks"						
Automobile Insurance				(not less than \$1,000,000.00 inclusive per occurrence)		
Other (list)						
Each of these policies includes the coverages and provisions as specified in Insurance Terms and each policy has been endorsed to cover Her Majesty as an Additional Insured. The Insurer agrees to notify Her Majesty and the Named insured in writing thirty (30) days prior to any material change in, or cancellation of any policy or coverage.						
Name of Insurer's Officer or Authorized Employee			Telephone number		Ext.	
Signature			Date			

LABOUR AND MATERIAL PAYMENT BOND

BOND NUMBER: _____

AMOUNT: _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____ as Principal,
hereinafter called the Principal, and _____ as Surety,

hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto Her Majesty the Queen in right of Canada as represented by the Minister of Agriculture and Agri-Food, as Obligee, hereinafter called the Crown, in the amount of

_____ dollars (\$ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____, 20__

WHEREAS, the Principal has entered into a Contract with the Crown dated the _____ day of _____, 20__,
for _____

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that, if payment is promptly made to all Claimants who have performed labour or services or supplied material in connection with the Contract and any and all duly authorized modifications and extensions of the Contract that may hereafter be made, notice of which modifications and extensions to the Surety being hereby waived, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. For the purpose of this bond, a Claimant is defined as one having a direct contract with the Principal or any Sub-Contractor of the Principal for labour, material or both, used or reasonably required for use in the performance of the Contract, labour and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone services or rental of equipment (but excluding rental of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract.
2. For the purpose of this Bond, no payment is required to be made in respect of a claim for payment for labour or services performed or material supplied in connection with the Contract that represents a capital expenditure, overhead or general administration costs incurred by the Principal during the currency or in respect of the Contract.
3. The Principal and the Surety hereby jointly and severally agree with the Crown that if any Claimant has not been paid as provided for under the terms of his contract with the Principal or a Sub-Contractor of the Principal before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's labour or service was done or performed or materials were supplied by such Claimant, the Crown may sue on this bond, have the right to prosecute the suit to final judgment for such sum or sums as may be due and have execution thereon; and such right of the Crown is assigned by virtue of Part VIII of the *Financial Administration Act* to such Claimant.
4. For the purpose of this bond the liability of the Surety and the Principal to make payment to any claimant not having a contract directly with the Principal shall be limited to that amount which the Principal would have been obliged to pay to such claimant had the provisions of the applicable provincial or territorial legislation on lien or privileges been applicable to the work. A claimant need not comply with provisions of such legislation setting out steps by way of notice, registration or otherwise as might have been necessary to preserve or perfect any claim for lien or privilege which the claimant might have had. Any such claimant shall be entitled to pursue a claim and to recover judgment hereunder subject to the terms and notification provisions of the Bond.
5. Any material change in the Contract between the Principal and the Crown shall not prejudice the rights or interest of any Claimant under this Bond who is not instrumental in bringing about or has not caused such change.

6. No suit or action shall be commenced hereunder by any Claimant:

- (a) Unless such Claimant shall have given written notice within the time limits hereinafter set forth to the Principal and the Surety above named, stating with substantial accuracy the amount claimed. Such notice shall be served by mailing the same by registered mail to the Principal and the Surety at any place where an office is regularly maintained for the transaction of business by such persons or served in any manner in which legal process may be served in the Province or other part of Canada in which the subject matter of the Contract is located. Such notice shall be given
 - (i) in respect of any claim for the amount or any portion thereof required to be held back from the Claimant by the Principal or by the Sub-Contractor of the Principal under either the terms of the Claimant's Contract with the Principal or the Claimant's Contract with the Sub-Contractor of the Principal within one hundred and twenty (120) days after such Claimant should have been paid in full under this Contract;
 - (ii) in respect of any claim other than for the holdback or portion thereof referred to above within one hundred and twenty (120) days after the date upon which such Claimant did or performed the last of the service, work or labour or furnished the last of the materials for which such claim is made under the Claimant's Contract with the Principal or a Sub-Contractor of the Principal;
- (b) After the expiration of one (1) year following the date on which the Principal ceased work on the said Contract, including work performed under the guarantees provided in the Contract;
- (c) Other than in a court of competent jurisdiction in the province or district of Canada in which the subject matter of the Contract or any part thereof is situated and not elsewhere, and the parties hereto hereby agree to submit to the jurisdiction of such court.

7. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.

8. The Surety shall not be entitled to claim any moneys relating to the Contract and the liability of the Surety under this Bond shall remain unchanged and, without restricting the generality of the foregoing, the Surety shall pay all valid claims of Claimants under this Bond before any moneys relating to the Contract held by the Crown are paid to the Surety by the Crown.

9. The Surety shall not be liable for a greater sum than the amount specified in this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal

Witness

Surety

Note: Affix Corporate seal if applicable.

PERFORMANCE BOND

BOND NUMBER: _____

AMOUNT: _____

KNOW ALL PERSONS BY THESE PRESENTS, that _____ as Principal,
hereinafter called the Principal, and _____ as Surety,

hereinafter called the Surety, are, subject to the conditions hereinafter contained, held and firmly bound unto Her Majesty the Queen in right of Canada as represented by the Minister of Agriculture and Agri-Food, as Obligee, hereinafter called the Crown, in the amount of

_____ dollars (\$ _____), lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED this _____ day of _____, 20__.

WHEREAS, the Principal entered into a Contract with the Crown dated the _____ day of _____, 20__,
for _____

which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that, if the Principal shall well and faithfully observe and perform all the obligations on the part of the Principal to be observed and performed in connection with the Contract, then this obligation shall be void, otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. Whenever the Principal shall be, and declared by the Crown to be, in default under the Contract, the Surety shall:
 - (a) if the work is not taken out of the Principal's hands, remedy the default of the Principal,
 - (b) if the work is taken out of the Principal's hands and the Crown directs the Surety to undertake the completion of the work, complete the work in accordance with the Contract provided that if a contract is entered into for the completion of the work,
 - (i) it shall be between the Surety and the completing contractor, and
 - (ii) the selection of such completing contractor shall be subject to the approval of the Crown,
 - (c) if the work is taken out of the Principal's hands and the Crown, after reasonable notice to the Surety, does not direct the Surety to undertake the completion of the work, assume the financial responsibility for the cost of completion in excess of the moneys available to the Crown under the Contract,
 - (d) be liable for and pay all the excess costs of completion of the Contract, and
 - (e) not be entitled to any Contract moneys earned by the Principal, up to the date of his default on the Contract and any holdbacks relating to such earned Contract moneys held by the Crown, and the liability of the Surety under this Bond shall remain unchanged provided, however, and without restricting the generality of the foregoing, upon the completion of the Contract to the satisfaction of the Crown, any Contract moneys earned by the Principal or holdbacks related thereto held by the Crown may be paid to the Surety by the Crown.
2. The Surety shall not be liable for a greater sum than the amount specified in this Bond.
3. No suit or action shall be instituted by the Crown herein against the Surety pursuant to these presents after the expiration of two (2) years from the date on which final payment under the Contract is payable.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its authorized signing authority, the day and year first above written.

SIGNED, SEALED AND DELIVERED in the presence of:

Principal

Witness

Surety

Note: Affix Corporate seal if applicable.



T4-A CERTIFICATION

The Contractor shall complete and submit this T4-A Certification within fourteen (14) calendar days of Notification of Contract award and within fourteen (14) calendar days immediately following any change to the information already provided under the Contract. Failure to provide this information or failure to provide the correct information shall result in a fundamental breach of the Contract.

1. **The Contractor shall enter a [x] in one of the boxes below opposite the description that best describes its status.**

- A business incorporated either federally or provincially;
- An unincorporated business, either as a sole proprietor or a partnership; or
- An individual.

Note: The information provided in Section 2 must correspond with that provided in Section 1.

Corporate or unincorporated business or individual's name: _____

Street Name or Box #: _____

City, Town or Village: _____

Province: _____

Postal Code: _____

2. **Contractor shall complete Section 2(a) or 2(b) or 2(c), whichever is applicable to its situation.**

(a) If incorporated:

Business Number (BN): _____, or
GST / HST Number: _____, or
T2 Corporation Tax Number (T2N): _____, whichever is applicable

(b) If unincorporated:

Social Insurance Number (SIN): _____, and
Business Number (BN): _____, or
GST / HST Number: _____, whichever is applicable

Note: The Unincorporated Business Name must be the same as the name associated with the Revenue Canada Business Number or the GST Number.

(c) If individual:

Social Insurance Number (SIN): _____, and
Business Number (BN): _____, or
GST / HST Number: _____, whichever is applicable

Note: The Individual's Name must be the same as the name associated with the Social Insurance Number.

3. **WE HEREBY CERTIFY** that I/We have examined the information provided above, including the legal name, address and Revenue Canada identifier (SIN, BN, GST / HST No., T2N), as applicable, and that it is correct and complete, and fully discloses my/our identification.

_____ Contractor's signature	_____ Title of Signatory	_____ Date
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