RETURN BIDS TO - RETOURNER LES SOUMISSIONS A:

AAFC - AAC
Bid Receiving/Réception des soumissions

Attn: Claudia Lauzier
aafc.escprocurement-cseapprovisionnement.aac@agr.gc.ca

INVITATION TO TENDER

INVITATION À SOUMISSIONNER

Proposal 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 goods, services and construction listed herein and on any attached sheets at the price(s) set out therefore.

Proposition aux: Agriculture et Agroalimentaire Canada

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments – Commentaires :

Mandatory Site Visit
Friday, October 27, 2023 at 10 :00am (EDT)

Title-Sujet: Boiler Replacement Central Experimental Farm - Ottawa	**Date :** 2023-10-20
Solicitation No. – Nº de l'invitation : 01B46-23-159	
Client Reference No. - No. De Référence du Client :	
Solicitation Closes –L'invitation prend fin	
at/à: 2:00pm	EDT(Eastern Daylight Time)
on/le: **November 3, 2023**	

Delivery – Livraison : See herein.	**Taxes :** See herein.	**Duty – Droits :** See herein.
Destination of Goods and Services – Destinations des biens et services : See herein.		
Instructions : See herein.		
Address Enquiries to - Adresser toute demande de renseignements à : claudia.lauzier@agr.gc.ca		
Telephone No. – No. de téléphone: 438-455-2392		
Delivery Required - Livraison exigée: See herein.	**Delivery Offered - Livraison propose:**	
Vendor/Firm Name, Address and Representative – Raison sociale, adresse et représentant du fournisseur/de l'entrepreneur:		
Telephone No. – No. de téléphone:		
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) – Nom et titre de la personne autorisée à signer au nom du fournisseur/de l'entrepreneur (taper ou écrire en caractères d'imprimerie) :		
Signature	**Date**	

INVITATION TO TENDER

Boiler Replacement
Central Experimental Farm Ottawa
K.W. Neatby Building
960 Carling Avenue
Ottawa, ON K1A 0C6

IMPORTANT NOTICE TO BIDDERS

Note to Bidders, there will no Public Opening for the purposes of this solicitation. See SI07 for further Instructions.

SI03 Mandatory Site Visit has changed

SI11 Security Clearance Requirements has changed

THIS DOCUMENT CONTAINS A SECURITY CLEARANCE REQUIREMENT
For further instructions please consult “Special Instruction to Bidders”, SI11, “Security Clearance Requirements”.

LISTING OF SUBCONTRACTORS AND SUPPLIERS
Take note that R2710T, GI07 R2410T, GI06 “Listing of Subcontractors and Suppliers” has been amended. See SI12 of the Special Instructions. **Failure to do so will result in the disqualification of its bid**.

TABLE OF CONTENTS

SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SI01 BID DOCUMENTS

1. The following are the Bid Documents:

   a. Invitation to Tender - Page 1;
   b. Special Instructions to Bidders;
   c. General Instructions - Construction Services - Bid Security Requirements R2710T (2021-04-01)
      Delete: Subsection GI16 Performance Evaluation: in its entirety
      Insert: GI16 intentionally left blank
      Delete: point 3 in its entirety
   d. Clauses & Conditions identified in “Contract Documents”;
   e. Drawings and Specifications;
   f. Bid and Acceptance Form and related Appendix(s); 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.

2. General Instructions - Construction Services - Bid Security Requirements R2710T is incorporated by reference and is 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/5/R

SI02 ENQUIRIES DURING THE SOLICITATION PERIOD

1. Enquiries regarding this bid must be submitted in writing to the Contracting Authority named on the Invitation to Tender - Page 1 at **claudia.lauzier@agr.gc.ca** Except for the approval of alternative materials as described in GI15 of R2710T, enquiries should be received no later than 5 business days prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may result in an answer NOT being provided.

2. To ensure consistency and quality of the information provided to Bidders, AAFC will examine the content of the enquiry and will decide whether to issue an amendment.

3. All enquiries and other communications related to this bid sent throughout the solicitation period must be directed ONLY to the Contracting Authority named in paragraph 1 above. Failure to comply with this requirement may result in the bid being declared non- compliant**.**

SI03 MANDATORY SITE VISIT

1. There will be a site visit on **Friday, October 27, 2023 at 10:00am (EDT)**. Interested bidders are to meet at **Central Experimental Farm, Building 20, 960 Carling Avenue, Ottawa, Ontario K1A 0C6**. Bidders must communicate with the Contracting Authority no later than Thursday, October 26, 2023 at 2:00pm (EDT) to confirm attendance and provide the name(s) of the person(s) who will attend.

2. The site visit for this project is MANDATORY. The representative of the Bidder must sign the Site Visit Attendance Sheet at the site visit. Bids submitted by **Bidders who have not signed the attendance sheet will be rejected.**

3. Safety Attire: In order to be guaranteed access to the site visit all persons should have the proper personal protection equipment (safety glasses, footwear, vests and hard hats etc.). Contractor`s personnel/individuals who do not have the proper safety attire may be denied access to the site.

SI04 REVISION OF BID

Bids may be revised using the email address indicated on page 1 (cover page) of this invitation to tender (ITT) or using Canada Post Corporation (CPC) Connect service.

Section GI10 of R2710T is replaced by the following;

1. A bid submitted in accordance with these instructions may be revised, provided the revision is received through Canada Post Corporation's (CPC) Connect service, on or before the date and time set for the closing of the solicitation. The revision shall be on the Bidder's letterhead or bear a signature that identifies the Bidder.
    a. The only acceptable email address to use with CPC Connect is: aafc.procbidreceiving-receptiondesoumissionaprov.aac@agr.gc.ca
2. A revision to a bid that includes unit prices must clearly identify the change(s) in the unit price(s) and the specific item(s) to which each change applies.
3. Multiple revisions to a bid must clearly identify the sequence of the revisions (i.e. Bid revision #1; Bid revision #2, etc.).
4. Failure to comply with any of the above provisions may 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).
5. For revised bids transmitted by CPC Connect service, Canada will not be responsible for any failure attributable to the transmission or receipt of the bid including, but not limited to, the following:
    i. receipt of a garbled, corrupted or incomplete bid;
    ii. availability or condition of the CPC Connect service;
    iii. incompatibility between the sending and receiving equipment;
    iv. delay in transmission or receipt of the bid;
    v. failure of the Bidder to properly identify the bid;
    vi. illegibility of the bid;
    vii. security of bid data; or,
    viii. inability to create an electronic conversation through the CPC Connect service.

SI05 BID SECURITY REQUIREMENTS

R2710T - General Instructions - Construction Services - Bid Security Requirements is modified as follow:

Delete GI08.2 and replace with the following:

2. A bid bond (form PWGSC-TPSGC 504) shall be in an approved form, properly completed, with valid and enforceable signatures and sealed by the approved bonding 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.

2.1 A bid bond may be submitted in an electronic format (Electronic Bonding (E-Bond)) if it meets the following criteria:

a. The version submitted by the Bidder must be an electronic encrypted file with embedded digital certificate verifiable by Canada with respect to the totality and wholeness of the bond form, including: the content; all digital signatures; all digital seals; with the Surety Company, or an approved verification service provider of the Surety Company.
b. The version submitted must be viewable, printable and storable in standard electronic file formats compatible with Canada, and in a single file, allowable format pdf.
c. The verification may be conducted by Canada immediately or at any time during the life of the Bond and at the discretion of Canada.
d. The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding Item 2.1.a.
e. Submitting copies **(non-original, non-verifiable or scanned copy)** of signed and sealed bid bond are not acceptable. Failure to submit an original or verifiable bond will render the bid non-compliant. Non-compliant bids will be given no further consideration. A scanned copy of a bond does not constitute a digital bond.

2.2 Bonds failing the verification process will NOT be considered valid.

2.3 Bonds passing the verification process will be treated as original and authentic.

SI06 SUBMISSION OF BID

Bids can be submitted using the email address indicated on page 1 (cover page) of this invitation to tender (ITT) or using Canada Post Corporation (CPC) Connect service.

Section GI09 of R2710T is modified by the following:

Insert the following text under subparagraph 4.

5. Electronic Bid Submission by Canada Post Corporation (CPC) Connect service

a. Unless specified otherwise in the bid solicitation, bids may be submitted by using the Connect service provided by Canada Post Corporation.

   The only acceptable email address to use with CPC Connect for responses to bid solicitations issued by Agriculture and Agri-Food Canada is: aafc.procbidreceiving-receptiondesoumissionaprov.aac@agr.gc.ca

   Note: Bids will not be accepted if emailed directly to this email address. This email address is to be used to open a CPC Connect conversation, as detailed in "c." below of this solicitation, or to send bids through a CPC Connect message if the bidder is using its own licensing agreement for CPC Connect service.

b. To submit a bid using CPC Connect service, the Bidder must either:
   i. send directly its bid only to the specified AAFC Bid Receiving Unit, using its own licensing agreement for CPC Connect provided by Canada Post Corporation; or
   ii. send as early as possible, and in any case, at least six business days prior to the solicitation closing date and time, (in order to ensure a response), an email that includes the bid solicitation number to the specified AAFC Bid Receiving Unit requesting to open a CPC Connect conversation. Requests to open a CPC Connect conversation received after that time may not be answered.
c. If the Bidder sends an email requesting CPC Connect service to the specified AAFC Bid Receiving Unit in the bid solicitation, an officer of the AAFC Bid Receiving Unit will then initiate a CPC Connect conversation. The CPC Connect conversation will create an email notification from Canada Post Corporation prompting the Bidder to access and action the message within the conversation. The Bidder will then be able to transmit its bid afterward at any time prior to the solicitation closing date and time.
d. If the Bidder is using its own licensing agreement to send its bid, the Bidder must keep the CPC Connect conversation open until at least 30 business days after the solicitation closing date and time.
e. The bid solicitation number should be identified in the CPC Connect message field of all electronic transfers.
f. It should be noted that the use of CPC Connect service requires a Canadian mailing address. Should a bidder not have a Canadian mailing address, they may use the AAFC Bid Receiving Unit address specified in the solicitation in order to register for the CPC Connect service.
g. For bids transmitted by CPC Connect service, Canada will not be responsible for any failure attributable to the transmission or receipt of the bid including, but not limited to, the following:
   i. receipt of a garbled, corrupted or incomplete bid;
   ii. availability or condition of the CPC Connect service;
   iii. incompatibility between the sending and receiving equipment;
   iv. delay in transmission or receipt of the bid;
   v. failure of the Bidder to properly identify the bid;
   vi. illegibility of the bid;
   vii. security of bid data; or,
   viii. inability to create an electronic conversation through the CPC Connect service.

h. AAFC Bid Receiving Unit will send an acknowledgement of the receipt of bid document(s) via the CPC Connect conversation, regardless of whether the conversation was initiated by the supplier using its own license or AAFC Bid Receiving Unit. This acknowledgement will confirm only the receipt of bid document(s) and will not confirm if the attachments may be opened nor if the content is readable.
i. Bidders must ensure that that they are using the correct email address for the AAFC Bid Receiving Unit when initiating a conversation in CPC Connect or communicating with the AAFC Bid Receiving Unit and should not rely on the accuracy of copying and pasting the email address into the CPC Connect system.
j. A bid transmitted by CPC Connect service constitutes the formal bid of the Bidder.
k. Alternate arrangements of bid receipt can be made by contacting the Contracting Authority identified on page 1 of the solicitation package no later than one (1) business day prior to bid closing.

SI07 BID RESULTS

1. There will be no Public Opening for the purposes of this solicitation.

2. The responsive bid carrying the lowest price will be recommended for contract award.

3. Following solicitation closing, bid results may be obtained by e-mail a request to claudia.lauzier@agr.gc.ca.

SI08 INSUFFICIENT FUNDING

In the event that the lowest compliant bid exceeds the amount of funding allocated for the Work, Canada in its sole discretion may

a. cancel the solicitation; or

b. obtain additional funding and award the Contract to the Bidder submitting the lowest compliant bid.

SI09 BID VALIDITY PERIOD

1. Canada reserves the right to seek an extension to the bid validity period prescribed in BA04 of the Bid and Acceptance Form. Upon notification in writing from Canada, Bidders will have the option to either accept or reject the proposed extension.

2. If the extension referred to in paragraph 1. above is accepted, in writing, by all those who submitted bids, then Canada will continue immediately with the evaluation of the bids and its approvals processes.

3. If the extension referred to in paragraph 1.above is not accepted in writing by all those who submitted bids then Canada will, at its sole discretion, either

a. continue to evaluate the bids of those who have accepted the proposed extension and seek the necessary approvals; or
b. cancel the invitation to tender.

4. The provisions expressed herein do not in any manner limit Canada's rights in law or under GI11 of R2710T.

SI10 RIGHTS OF CANADA

1. 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.

SI11 SECURITY CLEARANCE REQUIREMENTS

The Bidder will be given the opportunity to provide any information deemed missing from either Form, or, if required, provide any additional information related to the request for security clearance, within a timeframe set by the Contracting Authority. If the Bidder fails to provide that information within the specified timeframe, the bid will be declared non-compliant.

1. Before award of a contract, the Bidder must hold a valid Security Clearance as indicated in section SC01 of the Supplementary Conditions.
2. 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 mandatory security requirement as indicated in section SC01 of the Supplementary Conditions. Individuals who do not have the required level of security will not be allowed on site. It is the responsibility of the successful Bidder to ensure that the security requirements are met throughout the performance of the contract. Canada will not be held liable or accountable for any delays or additional costs associated with the successful Bidder's non-compliance with the mandatory security requirement.

SI12 LISTING OF SUBCONTRACTORS AND SUPPLIERS

R2710T, GI07 has been amended to the following.
GI07 **(2015-02-25) Listing of Subcontractors and Suppliers**
The Bidder must submit the names of Subcontractors and Suppliers for the part or parts of the Work listed. See APPENDIX 2. **Failure to do so will result in the disqualification of its bid**.

SI13 BID CHALLENGE AND RECOURSE MECHANISMS

(a) Several mechanisms are available to potential suppliers to challenge aspects of the procurement process up to and including contract award.

(b) Canada encourages suppliers to first bring their concerns to the attention of the Contracting Authority. Canada's Buy and Sell website, under the heading "Bid Challenge and Recourse Mechanisms" contains information on potential complaint bodies such as:

- Office of the Procurement Ombudsman (OPO)
- Canadian International Trade Tribunal (CITT)

(c) Suppliers should note that there are **strict deadlines** for filing complaints, and the time periods vary depending on the complaint body in question. Suppliers should therefore act quickly when they want to challenge any aspect of the procurement process.

SI14 CONSTRUCTION DOCUMENTS

The successful Contractor will be provided **with 1 electronic copy** of the sealed and signed drawings, the specifications and the amendments upon acceptance of the offer. Additional copies, up to a maximum (0), will be provided free of charge upon request by the Contractor. Obtaining more copies will be the responsibility of the Contractor including costs.

SI15 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&section=text#appL

Buy and Sell
https://www.achatsetventes-buyandsell.gc.ca

Canadian economic sanctions
http://www.international.gc.ca/sanctions/index.aspx?lang=eng

Bid Bond (form PWGSC-TPSGC 504)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/504.pdf

Performance Bond (form PWGSC-TPSGC 505)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/505_eng.pdf

Labour and Material Payment Bond (form PWGWSC-TPSGC 506)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/506.pdf

Standard Acquisition Clauses and Conditions (SACC) Manual
https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

Declaration Form
http://www.tpsgc-pwgsc.gc.ca/ci-if/formulaire-form-eng.html

Trade agreements
https://buyandsell.gc.ca/policy-and-guidelines/Policy-and-Legal-Framework/Trade-Agreements

R2710T GENERAL INSTRUCTIONS - CONSTRUCTION SERVICES - BID SECURITY REQUIREMENTS (GI) (2021-04-01**)**

The following GI's are included by reference and are available at the following Web Site
https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R/R2710T/23

GI01 Integrity Provisions - Bid
GI02 Completion of Bid
GI03 Identity or Legal Capacity of the Bidder
GI04 Applicable Taxes
GI05 Capital Development and Redevelopment Charges
GI06 Registry and Pre-qualification of Floating Plant
GI07 Listing of Subcontractors and Suppliers
GI08 Bid Security Requirements
GI09 Submission of Bid
GI10 Revision of Bid
GI11 Rejection of Bid
GI12 Bid Costs
GI13 Procurement Business Number
GI14 Compliance with Applicable Laws
GI15 Approval of Alternative Materials
GI16 Performance Evaluation
GI17 Conflict of Interest-Unfair Advantage
GI18 Code of Conduct for Procurement—bid

CONTRACT DOCUMENTS (CD)

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. General Conditions and clauses

GC1	General Provisions – Construction Services	R2810D	(2017-11-28);

Subsection GC1.22 Performance-evaluation: incorporated by reference above, is amended as follows:
Delete: in its entirety
Insert: GC1.22 Intentionally left blank.

GC2	Administration of the Contract	R2820D	(2016-01-28);
GC3	Execution and Control of the Work	R2830D	(2019-11-28);
GC4	Protective Measures	R2840D	(2008-05-12);
GC5	Terms of Payment	R2850D	(2019-11-28);
GC6	Delays and Changes in the Work	R2860D	(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);
	Allowable Costs for Contract Changes Under GC6.4.1	R2950D	(2015-02-25);

   e. Supplementary Conditions
   f. Any amendment issued or any allowable bid revision received before the date and time set for solicitation closing;
   g. Any amendment incorporated by mutual agreement between Canada and the Contractor before acceptance of the bid; and
   h. Any amendment or variation of the contract documents that is made in accordance with the General Conditions.

2. 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

3. The language of the contract documents is the language of the Bid and Acceptance Form submitted.

SUPPLEMENTARY CONDITIONS (SC)

SC01 SECURITY CLEARANCE REQUIREMENTS

The following security requirement (SRCL and related clauses) applies and form part of the Contract :

- The contractor/offeror personnel requiring access to sensitive work site(s) must **each** hold a valid **reliability status**, granted or approved by AAFC;
- The contractor and/or its employees MUST NOT have access to PROTECTED and/or CLASSIFIED information or assets;
- The contractor and/or its employees MUST NOT remove any PROTECTED and/or CLASSIFIED information or assets from the identified work site(s);
- The contractor and/or its employees MUST NOT use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data;
- Subcontracts which contain security requirements are **not** to be awarded without the prior written permission of the AAFC; and
- The contractor/offeror must comply with the provisions of the:
  Security Requirements Check List.

SC02 LIMITATION OF LIABILITY

GC1.6 of R2810D is deleted and replaced with the following:

GC1.6 Indemnification by the Contractor

1. The Contractor shall indemnify and save Canada harmless from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings whether in respect to losses suffered by Canada or in respect of claims by any third party, brought or prosecuted and in any manner based upon, arising out of, related to, occasioned by, or attributable to the activities of the Contractor in performing the Work, provided such claims are caused by the negligent or deliberate acts or omissions of the Contractor, or those for whom it is responsible at law.

   The Contractor's obligation to indemnify Canada for losses related to first party liability shall be limited to:

   a. In respect to each loss for which insurance is to be provided pursuant to the insurance requirements of the Contract, the Commercial General Liability insurance limit for one occurrence as referred to in the insurance requirements of the Contract .

   b. In respect to losses for which insurance is not required to be provided in accordance with the insurance requirements of the Contract, the greater of the Contract Amount or $5,000,000, but in no event shall the sum be greater than $20,000,000.

2. The limitation of this obligation shall be exclusive of interest and all legal costs and shall not apply to any infringement of intellectual property rights or any breach of warranty obligations.

3. The Contractor's obligation to indemnify Canada for losses related to third party liability shall have no limitation and shall include the complete costs of defending any legal action by a third party. If requested by Canada, the Contractor shall defend Canada against any third party claims.

4. The Contractor shall pay all royalties and patent fees required for the performance of the Contract and, at the Contractor's expense, shall defend all claims, actions or proceedings against Canada charging or claiming that the Work or any part thereof provided or furnished by the Contractor to Canada infringes any patent, industrial design, copyright trademark, trade secret or other proprietary right enforceable in Canada.

5. Notice in writing of a claim shall be given within a reasonable time after the facts, upon which such claim is based, became known.

SC03 INSURANCE TERMS

1) Insurance Contracts

(a) The Contractor must, at the Contractor's expense, obtain and maintain insurance contracts in accordance with the requirements of the Certificate of Insurance. Coverage must be placed with an Insurer licensed to carry out business in Canada.

(b) Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract. The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

2) Period of Insurance

(a) The policies required in the Certificate of Insurance must be in force from the date of contract award and be maintained throughout the duration of the Contract.

(b) The Contractor must be responsible to provide and maintain coverage for Products/Completed Operations hazards on its Commercial General Liability insurance policy, for a period of six (6) years beyond the date of the Certificate of Substantial Performance.

3) Proof of Insurance

(a) Before commencement of the Work, and no later than thirty (30) days after contract award, the Contractor must deposit with Canada a Certificate of Insurance on the form attached herein.

(b) Upon request by Canada, the Contractor must provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the Certificate of Insurance.

4) Insurance Proceeds

In the event of a claim, the Contractor must, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.

5) Deductible

The payment of monies up to the deductible amount made in satisfaction of a claim must be borne by the Contractor.

SC04 TYPES AND AMOUNTS OF CONTRACT SECURITY

Remove and Replace GC9.2.2. with the following

A performance bond (form PWGSC-TPSGC 505) and a labour and material payment bond (form PWGSC-TPSGC 506) referred to in subparagraph 1)(a) of GC9.2 shall be in a form and be issued by a bonding or surety company (see Treasury Board Appendix L, *Acceptable Bonding Companies*) that is approved by Canada. They can be in the form of Signed and Sealed paper version OR electronic digital version.

Electronic digital versions must meet the following;

1. A performance bond and a labour and material payment bond may be submitted in an electronic or digital format if it meets the following criteria:

1.1. The versions submitted by the Contractor must be verifiable by Canada with respect to the totality and wholeness of the bonds form, including: the content; all digital signatures; all digital seals; with the Surety Company, or an approved verification service provider of the Surety Company.

1.2. The versions submitted must be viewable, printable and storable in standard electronic file formats compatible with Canada, and in a single file. Allowable formats include pdf.

1.3. The verification may be conducted by Canada immediately or at any time during the life of the bonds and at the discretion of Canada with no requirement for passwords or fees.

1.4. The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding Item 1.1.

2. Bonds failing the verification process will NOT be considered to be valid.

DRAWINGS AND SPECIFICATIONS

National Master Specification

23-0025 / 247-2301 CEF Building 91 – Boiler Replacement

ISSUED FOR TENDER

2023-08-24

TABLE OF CONTENTS

Pages

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.

.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.

.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.

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 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 SUMMARY

.1 Section Includes:

.1 Materials and components for metering steam and chilled/hot water including installation.

1.2 REFERENCE STANDARDS

.1 American Society of Mechanical Engineers (ASME)

.1 ASME Fluid Meter's Handbook: Their Theory and Application, Sixth Edition 1971.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.

.2 Shop Drawings:

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.1 Shop drawings: Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

.3 Submittals to include:

.1 Piping configuration and sizing - straight pipe upstream and downstream, distances to first weld, protrusion, thermowell, pressure tap.

.2 Service conditions.

.3 Full details of primary element - standard of design and construction, materials, type serial number, flow rate, differential pressure, irrecoverable head loss (IHL), calculation sheets.

.4 Accuracy statements for each component at specified flow rates and other conditions.

.5 Flow and temperature ranges.

.6 Signal processor calibration data.

.7 Minimum turndown ratio.

.4 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.

.1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.5 Closeout Submittals:

.1 Submit maintenance data including monitoring requirements for incorporation into closeout submittals (O&M Manual).

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle in accordance with manufacturer's written instructions.

Part 2 Products

2.1 ACCURACY

.1 Calculate overall accuracy of each installation using following expression: Overall accuracy = (E (accuracy of individual components of system)2)1/2.

.2 Components to include:

.1 Primary flow measuring elements.

.2 Transmitters: flow, differential pressure, pressure, temperature, temperature difference.

.3 RTD's.

.4 Signal processors, recorders.

.5 Calibration of signal processors: assume 0.20% per processor.

.6 Installation tolerances: assume 1% for concentricity of pipe, difference in height of transmitter piping.

.3 Show in proposal overall accuracy at 100%, 70%, 10%, minimum specified design flow rate.

.4 Indicate minimum measurable flow rate.

2.2 HEATING HOT WATER

.1 Temperature sensors:

.1 100 ohm RTD.

.2 Thermowells to NPS 3/4 stainless steel thermowell filled with conductive paste with following insertion lengths:

.1 Up to NPS 6: 75 mm.

.2 NPS 8 and over: 150 mm.

.3 Sensors for temperature difference measurements to be matched pairs.

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 OF PRIMARY ELEMENT

.1 Follow manufacturer's instructions.

3.3 INSTALLATION OF DIFFERENTIAL PRESSURE TAPS AND PIPING

.1 Differential pressure taps horizontal and level with each other to within +/- 1.5 mm.

.2 Tubing: straight, supported throughout its length, sloped 5%-10% upward to main for drainage and venting, without air pockets, with blowdown valves at bottom.

3.4 START-UP

.1 Follow manufacturer's recommendations.

3.5 CLEANING

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

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Materials and requirements for the identification of piping systems, duct work, valves and controllers, including the installation and location of identification systems.

.2 Sustainable requirements for construction and verification.

1.2 REFERENCE STANDARDS

.1 Canadian Gas Association (CGA)

.1 CSA/CGA B149.1-05, Natural Gas and Propane Installation Code.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.60-97, Interior Alkyd Gloss Enamel.

.2 CAN/CGSB-24.3-92, Identification of Piping Systems.

.3 National Fire Protection Association (NFPA)

.1 NFPA 13-2002, Standard for the Installation of Sprinkler Systems.

.2 NFPA 14-2003, Standard for the Installation of Standpipe and Hose Systems.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

.2 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.3 Product data to include paint colour chips, other products specified in this section.

.4 Samples:

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedure.

.2 Samples to include nameplates, labels, tags, lists of proposed legends.

1.4 QUALITY ASSURANCE

.1 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Dispose of unused paint, and/or coating material at official hazardous material collections site approved by Departmental Representative.

.3 Do not dispose of unused coating/paint material into sewer system, into streams, lakes, onto ground or in locations where it will pose health or environmental hazard.

Part 2 Products

MANUFACTURER'S EQUIPMENT NAMEPLATES

.1 Metal or plastic laminate nameplate mechanically fastened to each piece of equipment by manufacturer.

.2 Lettering and numbers raised or recessed.

.3 Information to include, as appropriate:

.1 Equipment: manufacturer's name, model, size, serial number, capacity.

.2 Motor: voltage, Hz, phase, power factor, duty, frame size.

2.2 SYSTEM NAMEPLATES

.1 Colours:

.1 Hazardous: red letters, white background.

.2 Elsewhere: black letters, white background (except where required otherwise by applicable codes).

.2 Construction:

.1 3 mm thick laminated plastic, matte finish, with square corners, letters accurately aligned and machine engraved into core.

.3 Sizes:

.1 Conform to following table:

Size # mm	Sizes (mm)	No. of Lines	Height of Letters (mm)
1	10 x 50	1	3
2	13 x 75	1	5
3	13 x 75	2	3
4	20 x 100	1	8
5	20 x 100	2	5
6	20 x 200	1	8
7	25 x 125	1	12
8	25 x 125	2	8
9	35 x 200	1	20

.2 Use maximum of 25 letters/numbers per line.

.4 Locations:

.1 Terminal cabinets, control panels: use size # 5.

.2 Equipment in Mechanical Rooms: use size # 9.

.5 Identification for PSPC Preventive Maintenance Support System (PMSS):

.1 Use arrangement of Main identifier, Source identifier, Destination identifier.

.2 Equipment in Mechanical Room:

.1 Main identifier: size #9.

.2 Source and Destination identifiers: size #6.

.3 Terminal cabinets, control panels: size #5.

.3 Equipment elsewhere: sizes as appropriate.

2.3 EXISTING IDENTIFICATION SYSTEMS

.1 Apply existing identification system to new work.

.2 Where existing identification system does not cover for new work, use identification system specified this section.

.3 Before starting work, obtain written approval of identification system from Departmental Representative.

2.4 PIPING SYSTEMS GOVERNED BY CODES

.1 Identification:

.1 Natural gas: to CSA/CGA B149.1.

2.5 IDENTIFICATION OF PIPING SYSTEMS

.1 Identify contents by background colour marking, pictogram (as necessary), legend; direction of flow by arrows. To CAN/CGSB 24.3 except where specified otherwise.

.2 Pictograms:

.1 Where required: Workplace Hazardous Materials Information System (WHMIS) regulations.

.3 Legend:

.1 Block capitals to sizes and colours listed in CAN/CGSB 24.3.

.4 Arrows showing direction of flow:

.1 Outside diameter of pipe or insulation less than 75 mm: 100 mm long x 50 mm high.

.2 Outside diameter of pipe or insulation 75 mm and greater: 150 mm long x 50 mm high.

.3 Use double-headed arrows where flow is reversible.

.5 Extent of background colour marking:

.1 To full circumference of pipe or insulation.

.2 Length to accommodate pictogram, full length of legend and arrows.

.6 Materials for background colour marking, legend, arrows:

.1 Pipes and tubing 20 mm and smaller: waterproof and heat-resistant pressure sensitive plastic marker tags.

.2 Other pipes: pressure sensitive [plastic-coated cloth] [vinyl] with protective overcoating, waterproof contact adhesive undercoating, suitable for ambient of 100% RH and continuous operating temperature of 150 degrees C and intermittent temperature of 200 degrees C.

.7 Colours and Legends:

.1 Where not listed, obtain direction from Departmental Representative.

.2 Colours for legends, arrows: to following table:

Background colour:	Legend, arrows:
Yellow	BLACK
Green	WHITE
Red	WHITE

.3 Background colour marking and legends for piping systems:

Contents	Background colour marking	Legend
** Add design temperature		
++ Add design temperature and pressure		
Raw water	Green	RAW WATER
River water	Green	RIVER WATER
Sea water	Green	SEA WATER
City water	Green	CITY WATER
Treated water	Green	TREATED WATER
Brine	Green	BRINE
Condenser water supply	Green	COND. WTR. SUPPLY
Condenser water return	Green	COND. WTR. RETURN
Chilled water supply	Green	CH. WTR. SUPPLY
Chilled water return	Green	CH. WTR. RETURN
Hot water heating supply	Yellow	HEATING SUPPLY
Hot water heating return	Yellow	HEATING RETURN
High temp HW Htg. supply	Yellow	HTHW HTG. SUPPLY++
High temp HW Htg. return	Yellow	HTHW HTG. RETURN++
Make-up water	Yellow	MAKE-UP WTR
Boiler feed water	Yellow	BLR. FEED WTR
Steam [_____] kPa	Yellow	[_____] kPa STEAM
Steam condensate (gravity)	Yellow	ST.COND.RET (GRAVITY)
Steam condensate (pumped)	Yellow	ST.COND.RET (PUMPED)
Safety valve vent	Yellow	STEAM VENT
Intermittent blow-off	Yellow	INT. BLOW-OFF
Continuous blow-off	Yellow	CONT. BLOW-OFF
Chilled drinking water	Green	CH. DRINK WTR
Drinking water return	Green	CH. DRINK WTR. CIRC
Domestic hot water supply	Green	DOM. HW SUPPLY
Dom. HWS recirculation	Green	DOM. HW CIRC
Domestic cold water supply	Green	DOM. CWS
Waste water	Green	WASTE WATER
Contaminated lab waste	Yellow	CONT. LAB WASTE
Acid waste	Yellow	ACID WASTE (add source)
Storm water	Green	STORM
Sanitary	Green	SAN
Plumbing vent	Green	SAN. VENT
Refrigeration suction	Yellow	REF. SUCTION
Refrigeration liquid	Yellow	REF. LIQUID
Refrigeration hot gas	Yellow	REF. HOT GAS

No. [_____] fuel oil suction	Yellow	# [_____] FUEL OIL
No. [_____] fuel oil return	Yellow	# [_____] FUEL OIL
Engine exhaust	Yellow	ENGINE EXHAUST
Lubricating oil	Yellow	LUB. OIL
Hydraulic oil	Yellow	HYDRAULIC OIL
Gasoline	Yellow	GASOLINE
Natural gas	to Codes	
Propane	to Codes	
Gas regulator vents	to Codes	
Distilled water	Green	DISTILL. WTR
Demineralized water	Green	DEMIN. WATER
Chlorine	Yellow	CHLORINE
Nitrogen	Yellow	NITROGEN
Oxygen	Yellow	OXYGEN
Compressed air (<700kPa)	Green	COMP. AIR [_____] kPa
Compressed air (>700kPa)	Yellow	COMP. AIR [_____] kPa
Vacuum	Green	VACUUM
Fire protection water	Red	FIRE PROT. WTR
Sprinklers	Red	SPRINKLERS
Carbon dioxide	Red	CO^2
Instrument air	Green	INSTRUMENT AIR

2.6 IDENTIFICATION DUCTWORK SYSTEMS

.1 50 mm high stencilled letters and directional arrows 150 mm long x 50 mm high.

.2 Colours: back, or co-ordinated with base colour to ensure strong contrast.

2.7 VALVES, CONTROLLERS

.1 Brass tags with 12 mm stamped identification data filled with black paint.

.2 Include flow diagrams for each system, of approved size, showing charts and schedules with identification of each tagged item, valve type, service, function, normal position, location of tagged item.

2.8 CONTROLS COMPONENTS IDENTIFICATION

.1 Identify all systems, equipment, components, controls, sensors with system nameplates specified in this section.

.2 Inscriptions to include function and (where appropriate) fail-safe position.

2.9 LANGUAGE

.1 Identification in English and French.

.2 Use one nameplate and label for both languages

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 TIMING

.1 Provide identification only after painting (if required) has been completed.

3.3 INSTALLATION

.1 Perform work in accordance with CAN/CGSB-24.3 except as specified otherwise.

.2 Identify systems, equipment to conform to PWGSC PMSS.

3.4 NAMEPLATES

.1 Locations:

.1 In conspicuous location to facilitate easy reading and identification from operating floor.

.2 Standoffs:

.1 Provide for nameplates on hot and/or insulated surfaces.

.3 Protection:

.1 Do not paint, insulate, or cover.

3.5 LOCATION OF IDENTIFICATION ON PIPING AND DUCTWORK SYSTEMS

.1 On long straight runs in open areas in boiler rooms, equipment rooms, galleries, tunnels: at not more than 17 m intervals and more frequently if required to ensure that at least one is visible from any one viewpoint in operating areas and walking aisles.

.2 Adjacent to each change in direction.

.3 At least once in each small room through which piping or ductwork passes.

.4 On both sides of visual obstruction or where run is difficult to follow.

.5 On both sides of separations such as walls, floors, partitions.

.6 Where system is installed in pipe chases, ceiling spaces, galleries, confined spaces, at entry and exit points, and at access openings.

.7 At beginning and end points of each run and at each piece of equipment in run.

.8 At point immediately upstream of major manually operated or automatically controlled valves, and dampers. Where this is not possible, place identification as close as possible, preferably on upstream side.

.9 Identification easily and accurately readable from usual operating areas and from access points.

.1 Position of identification approximately at right angles to most convenient line of sight, considering operating positions, lighting conditions, risk of physical damage or injury and reduced visibility over time due to dust and dirt.

3.6 VALVES, CONTROLLERS

.1 Valves and operating controllers, except at plumbing fixtures, radiation, or where in plain sight of equipment they serve: Secure tags with non-ferrous chains or closed "S" hooks.

.2 Install one copy of flow diagrams, valve schedules mounted in frame behind non-glare glass where directed by Departmental Representative. Provide one copy (reduced in size if required) in each operating and maintenance manual.

.3 Number valves in each system consecutively.

3.7 CLEANING

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

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 ASME

.1 ASME Boiler and Pressure Vessel Code (BPVC), Section VII-2013.

.2 ASTM International (ASTM)

.1 ASTM A47/A47M-99 (2009), Standard Specification for Ferritic Malleable Iron Castings.

.2 ASTM A278/A278M-01 (2011), Standard Specification for Grey Iron Castings for Pressure-Containing Parts for Temperatures up to 650 degrees F (350 degrees C).

.3 ASTM A516/A516M-10, Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate - and Lower - Temperature Service.

.4 ASTM A536-84 (2009), Standard Specification for Ductile Iron Castings.

.5 ASTM B62-09, Standard Specification for Composition Bronze or Ounce Metal Castings.

.3 CSA Group (CSA)

.1 CSA B51-09, Boiler, Pressure Vessel, and Pressure Piping Code.

1.2 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 expansion tanks, air vents, separators, valves, and strainers and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

1.3 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: submit operation and maintenance data for hydronic specialties for incorporation into manual.

.2 Submit copies of operation and maintenance manual.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 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 hydronic specialties from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 AUTOMATIC AIR VENT

.1 Standard float vent: brass body and NPS 1/8 connection and rated at 690 kPa working pressure.

.2 Industrial float vent: cast iron body and NPS 1/2 connection and rated at 860 kPa working pressure.

.3 Float: solid material suitable for 115 degrees C working temperature.

2.2 PIPE LINE STRAINER

.1 NPS 1/2 to 2: bronze body to ASTM B62, screwed connections, Y pattern.

.2 NPS 2 1/2 to 12: cast iron body to ASTM A278/A278M, Class 30,

.3 NPS 2 to 12: T type with ductile iron body to ASTM A536, grooved ends.

.4 Blowdown connection: NPS 1.

.5 Screen: stainless steel or brass] with 1.19 mm perforations.

.6 Working pressure: 860 kPa.

Part 3 Execution

3.1 APPLICATION

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and data sheets.

3.2 GENERAL

.1 Run drain lines and blow off connections to terminate above nearest drain.

.2 Maintain adequate clearance to permit service and maintenance.

.3 Should deviations beyond allowable clearances arise, request and follow Departmental Representative's directive.

.4 Check shop drawings for conformance of tappings for ancillaries and for equipment operating weights.

3.3 STRAINERS

.1 Install in horizontal or down flow lines.

.2 Ensure clearance for removal of basket.

.3 Install ahead of each pump.

.4 Install ahead of each automatic control and as indicated.

3.4 AIR VENTS

.1 Install at high points of systems.

.2 Install gate valve on automatic air vent inlet. Run discharge to nearest [drain] [service sink].

3.5 PRESSURE SAFETY RELIEF VALVES

.1 Run discharge pipe to terminate above nearest drain.

3.6 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 ASME

.1 ASME Boiler and Pressure Vessel Code (BPVC), Section VII2013.

.2 CSA Group (CSA)

.1 CAN1-3.1-77 (R2011), Industrial and Commercial Gas-Fired Package Boilers.

.2 CSA B51-09, Boiler, Pressure Vessel, and Pressure Piping Code.

.3 CSA B139-09, Installation Code for Oil Burning Equipment.

.4 CSA B140.7-05 (R2010), Oil Burning Equipment: Steam and Hot-Water Boilers.

.5 CSA B149.1-10, Natural Gas and Propane Installation Code.

.6 ANSI Z21.13-10 /CSA 4.9-10, Gas-Fired Low-Pressure Steam and Hot Water Boilers.

.3 Electrical and Electronic Manufacturers Association of Canada (EEMAC)

1.2 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 heating boilers and include product characteristics, performance criteria, physical size, finish, and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

.2 Indicate on drawings:

.1 General arrangement showing terminal points, instrumentation test connections.

.2 Clearances for operation, maintenance, servicing, tube cleaning, tube replacement.

.3 Foundations with loadings, anchor bolt arrangements.

.4 Piping hook-ups.

.5 Equipment electrical drawings.

.6 Burners and controls.

.7 All miscellaneous equipment.

.8 Flame safety control system.

.9 Breeching and stack configuration.

.3 Engineering data to include:

.1 Boiler efficiency at 25%, 50%, 75%, 100%, and 110% of design capacity.

.2 Radiant heat loss at 100% design capacity.

.4 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 [heating boilers] for incorporation into manual.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements: work to be performed in compliance with applicable Provincial/Territorial regulations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra materials:

.1 Special tools for burners, access opening, handholes and Operation and Maintenance.

.2 Spare parts for 1 year of operation.

.3 Spare gaskets.

.4 Spare gauge glass inserts.

.5 Probes and sealants for electronic indication.

.6 Spare burner tips.

.7 Spare burner gun.

.8 Safety valve test gauge.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 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, off ground, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect boiler and equipment from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 GENERAL

.1 Packaged boiler:

.1 Complete with burner and necessary accessories and controls.

.2 Factory tested at rated capacity to, and bearing seal or nameplate certifying compliance with CSA 4.9-2017 / ANSI Z21.13-2017.

.3 Ready for attachment to piping, electrical power, controls, flue gases exhaust, combustion air inlet.

.4 Designed and constructed to ASME Boiler and Pressure vessel Code.

.5 CRN (Canadian Registration Number), to CSA B51.

.2 Performance:

.1 In accordance with ANSI Z21.13/CSA 4.9 (gas burning) testing procedures.

.2 Heating Hot water: 199kW gross output. 44 degrees C maximum temperature difference. 1,103 kPa maximum operating pressure.

.3 Firing rate: natural gas; 20.5-205 kW input, gas pressure range at metre outlet: 998-3,487 Pa.

.4 Boiler efficiency: 97 % minimum at 30% to 100% firing rates.

.5 Flue gas temperature leaving boiler:

.1 Not to exceed 260 degrees C.

.2 Above dewpoint conditions at minimum firing rate.

.3 Electrical:

.1 Power: 120 V, single phase, 60 Hz, 195 W (full fire) – not including pumps.

.2 Controls: 120 V, single phase, 60 Hz.

.3 Electrical components: CSA approved.

.4 Controls: factory wired.

.5 Thermal insulation:

.1 50 mm thick mineral fibre. Seal insulation at handholes, access opening, mudholes, piping connections with insulating cement or asphaltic paint. Finish with heat resisting paint.

.6 Jackets: heavy gauge metal, finished with heat resisting paint.

.7 Mounting:

.1 Structural steel base, lifting lugs.

.8 Anchor bolts and templates:

.1 As required by Ontario Building Code.

.9 Start-up, instruction, on-site performance tests: 3 days per boiler.

.10 Trial usage:

.1 Departmental Representative may authorize use boilers for test purposes prior to acceptance and commencement of warranty period.

.2 Supply labour, materials and instruments required for tests.

.11 Temporary use by contractor:

.1 Contractor may use boilers only after written approval from Departmental Representative.

.2 Monitor and record performance continuously. Keep log of maintenance activities carried out.

.3 Refurbish to as-new condition before final inspection and acceptance.

2.2 MODULAR HOT WATER BOILER, NATURAL GAS PULSE FIRED, CONDENSING TYPE

.1 Heating boiler seasonal efficiency rating: 97%. Flue gas exhaust temperature: [45 to 55] degrees C, when operating in condensing mode.

.2 Flue gas: individually direct vented. Combustion air: individually drawn from outdoors through plastic pipes as indicated and as recommended by manufacturer.

.3 Factory-assemble each module to include:

.1 Combustion air inlet chamber.

.2 Pre-purge blower assembly.

.3 Air-gas fuel control valve.

.4 Cast pulse combustion chamber.

.5 Welded absorption chamber with spiralled fire tubes and exhaust chamber.

.6 House assembly in insulated jacket which includes boiler mounted electrical control panel enclosure with operation sequence indicator lights.

.7 Provide coupling on combustion air inlet and exhaust chambers for connections of plastic piping, CPVC (System 636) for outside air intake and CPVC (System 636) for outside exhaust.

.8 Provide condensate drain fitting on exhaust chamber.

.9 Boiler materials will enable operation with flue gas temperature below dewpoint without corrosion.

.4 Absorption unit: constructed in accordance with ASME Boiler and Pressure Vessel Code for Low-Pressure Heating Boilers for 207 kPa working pressure.

.5 Controls for each module to include:

.1 Solid state controller with auxiliary relay.

.2 Fan prove pressure switch and pressure sensing flame safeguard system.

.3 Provide combination gas control with:

.1 Manual shut off valve.

.2 System pressure controlled regulator.

.3 Automatic redundant shut off valves.

.4 High limit water temperature control with adjustable differential.

.5 ASME approved pressure relief valve and temperature/pressure indicator.

.6 Factory wire each module and operationally test.

.1 Each module suitable for individual firing.

.2 Step firing accomplished by firing individual modules without reducing their thermal efficiency.

.3 Control system: designed and provided for heating plant by manufacturer.

2.3 AUXILIARIES

.1 Provide auxiliaries for each boiler and to meet ASME requirements.

.2 Hot water boilers:

.1 Relief valve: ASME rated, set at 414 kPa, to release entire boiler capacity.

.2 Pressure gauge: 90 mm diameter complete with shut-off cock.

.3 Thermometer: 115 mm diameter range 10 to 150 degrees C.

.4 Low water cut-off: with visual and audible alarms.

.5 Auxiliary low water cut-off: with separate cold water connection to boiler.

.6 Isolating gate valves: on supply and return connections.

.7 Drain valve: NPS 3/4.

.8 Stack thermometer: range 65 to 400 degrees C.

.9 Outdoor controller: to reset operating temperature controller.

.10 1 set of cleaning tools.

2.4 GAS BURNERS

.1 General:

.1 Forced draft with:

.1 Built-in blower to supply combustion air, complete with motor, silencer and damper.

.2 High voltage ignition transformer.

.3 Flame observation port.

.4 Easy access to nozzles and electrodes.

.2 Gas pilot:

.1 To building code and provincial regulations including solenoid gas valve, pressure regulator, pressure gauge, manual shut-off valve.

.3 Main gas train:

.1 To building code and provincial regulations including main shut-off valve, pressure regulator, motorized electric shut-off valve, downstream block-test valve with test connection and pressure gauge.

.4 Controls:

.1 Electronic combustion control relay with flame detector for combustion control and flame supervision.

.2 Control to shut off fuel within 5 seconds upon pilot flame or main flame failure or upon signal of safety interlock and to ensure, when restarted, in sequence:

.1 Pre-purge.

.2 Pilot ignition and supervision.

.3 Main gas valve opening.

.4 Pilot cut-off. Pilot-proving period not to exceed 10 seconds.

.5 Burner operation.

.6 Post-purge burner shut-down.

.3 Static pressure interlock. To shut off burner upon loss of combustion air pressure.

.4 Fuel-air mixture: control through:

.1 2-position motor with end switch to provide for low-fire start and high fire run.

.2 2-position motor with linkage to control fuel and air and with end switches to prove low-fire start and energize high fire solenoid valve for high-low fire operation.

.3 Modulating motor with end switch to provide for low-fire start and fully modulating operation down to 10 % of design capacity.

.5 Immersion controllers:

.1 Operating: to start and stop burner, and operating between adjustable setpoints.

.2 High-low: to shift burner operation to high or low fire.

.3 Modulating: to modulate burner output.

.6 Visual and audible alarms: to indicate burner shutdown due to flame failure, low water level, high [temperature] [pressure], low air pressure, low gas pressure.

.7 Pilot lights: to indicate:

.1 Normal burner operation.

.2 All stages of burner operation.

.8 Burner to start up in low fire position.

2.5 EMISSION CONTROL

.1 Rate of discharge of air contaminants from boiler not to exceed:

.1 For nitrogen oxides expressed as nitrogen dioxide:

.1 Complies with SCAQMD Rule 1146.2 Paragraph (C) (8) for low NOx (<20ppm).

.2 For particulate matter measured undiluted, 160 mg/m^3, when fired with solid fossil fuel.

.3 For carbon monoxide, 125 ng/J of heat input.

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 heating boiler 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 INSTALLATION

.1 Install in accordance with ASME Boiler and Pressure Vessels Code, regulations of Province of Ontario, Canada, having jurisdiction, except where specified otherwise, and manufacturers recommendations.

.2 Make required piping connections to inlets and outlets recommended by boiler manufacturer.

.3 Maintain clearances as indicated or if not indicated, as recommended by manufacturer for operation, servicing and maintenance without disruption of operation of any other equipment/system.

.4 Mount unit level.

.5 Pipe hot water relief valves full size to nearest drain.

.6 Pipe blowdown/drain to blowdown tank/floor drain.

.7 Natural gas fired installations: in accordance with CSA B149.1.

3.4 MOUNTINGS AND ACCESSORIES

.1 Safety valves and relief valves:

.1 Run separate discharge from each valve.

.2 Terminate discharge pipe as indicated.

.3 Run drain pipe from each valve outlet and drip pan elbow to above nearest drain.

.2 Blowdown valves:

.1 Run discharge to terminate as indicated.

3.5 FIELD QUALITY CONTROL

.1 Commissioning:

.1 Manufacturer to:

.1 Certify installation.

.2 Start up and commission installation.

.3 Carry out on-site performance verification tests.

.4 Demonstrate operation and maintenance.

.2 Provide Departmental Representative at least 24 hours notice prior to inspections, tests, and demonstrations. Submit written report of inspections and test results.

3.6 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 C22.1-21, Canadian Electrical Code, Part 1 (25th Edition), Safety Standard for Electrical Installations.

1.2 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.

.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.

1.3 CLOSEOUT SUBMITTALS

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

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturers specifications.

Part 2 Products

2.1 DESIGN REQUIREMENTS

.1 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.

.2 Language operating requirements: provide identification nameplates for control items in English.

.3 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 WARNING SIGNS

.1 Warning Signs: in accordance with requirements of authority having jurisdiction.

.2 Decal signs, minimum size 175 x 250 mm.

2.4 WIRING TERMINATIONS

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

2.5 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates as follows:

.1 Nameplates: lamicoid, 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
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.

2.6 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.

2.7 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

2.8 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 as indicated on below, as per architectural drawings and CSA B651-18:

.1 Wall receptacles/Data Outlets:

.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.

.2 Panelboards: as required by Code or as indicated.

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 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

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:

.1 Provincial/Territorial Workers' Compensation Board (WSIB)/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: Patch 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:

- .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.

.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 REFERENCE STANDARDS

.1 CSA Group (CSA)

.1 CAN/CSA-C22.2 No.18.1-13(R2018), Metallic Outlet Boxes (Tri-national standard, with UL 514A and ANCE NMX-J-023/1).

.2 CAN/CSA-C22.2 No.18.2-06(R2016), Nonmetallic Outlet Boxes.

.3 CAN/CSA-C22.2 No.18.3-12(R2017), Conduit, Tubing and Cable Fittings (Tri-national Standard, with ANCE NMX-J-017 and UL 514B)

.4 CAN/CSA-C22.2 No.18.4-15, Hardware for the Support of Conduit, Tubing and Cable (Bi-National Standard, with UL 2239).

.5 CSA C22.2 No.18.5-13, Positioning devices (Bi-national standard, with UL 1565)

.6 CAN/CSA-C22.2 No.65-03 (R2017), Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE-03).

.2 National Electrical Manufacturers Association (NEMA)

1.2 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.

1.3 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.

1.4 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 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.

.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.18.4.

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 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 CSA Group (CSA)

- .1 CAN/CSA-C22.2 No.203-16 Modular Wiring systems for office furniture.
- .2 CAN/CSA-C22.2 No.38-18 Thermoset-Insulated Wires and Cables
- .3 CAN/CSA-C22.2 No75-17 Thermoplastic-Insulated Wires and Cables (Tri-National Standard with UL 83 and NMX-J-010-ANCE-2017)

1.2 PRODUCT DATA

.1 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Packaging Waste Management in accordance with Section 01 74 19 - Waste Management and Disposal.

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.

.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

Part 1 General

1.1 REFERENCE STANDARDS

.1 CSA Group

.1 CSA C22.1-21, Canadian Electrical Code, Part 1 (25th Edition), Safety Standard for Electrical Installations.

.2 CSA-C22.2 No.65-03 (R2008) Wire Connectors.

.3 CSA-C22.2 No.41-13 (R2017) Grounding and bonding equipment (Tri-national standard, with NMX-J-590-ANCE and UL 467)

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

1.3 CLOSEOUT SUBMITTALS

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

.2 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 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General

1.1 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 hangers and supports and include product characteristics, performance criteria, physical size, finish and limitations.

1.2 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.

.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 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 CSA Group (CSA)

.1 CSA C22.1-21, Canadian Electrical Code, Part 1, 25th Edition.

1.2 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.

.3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.

Part 2 Products.

2.1 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.

Part 3 Execution

3.1 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.

3.2 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 REFERENCE STANDARDS

.1 CSA Group (CSA)

.1 CSA C22.1-21, Canadian Electrical Code, Part 1, 25th Edition.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit samples for floor box in accordance with Section 01 33 00 - Submittal Procedures.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Manufacturers Specifications.

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.

.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 REFERENCE STANDARDS

.1 CSA Group (CSA)

.1 CAN/CSA-C22.2 No.18.1-13(R2018), Metallic Outlet Boxes (Tri-national standard, with UL 514A and ANCE NMX-J-023/1).

.2 CSA C22.2 No. 83.1-07 (R2017) Electrical Metallic Tubing – Steel (Tri-National Standard, with UL 797 and NMX-J-536-ANCE-2007)

.3 CSA C22.2 No. 56-17, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.

.4 CSA C22.2 No. 83-M1985 (R2017), Electrical Metallic Tubing.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

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 Electrical metallic tubing (EMT): to CSA C22.2 No. 83.1, with couplings.

.2 Rigid pvc conduit: to CSA C22.2 No. 211.2.

.3 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. 18.1, 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 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 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 Proceed in accordance with Section 01 74 00 - Cleaning.

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

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

.1 CSA Group (CSA)

.1 CSA C22.2 No.42-10 (R2020), General Use Receptacles, Attachment Plugs and Similar Devices.

.2 CSA C22.2 No.42.1-13 (R2017), Cover plates for flush-mounted wiring devices (Bi-National standard, with UL 514D), Update No.1 (2016) and Update No.2 (2020)

1.2 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 wiring devices and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 CLOSEOUT SUBMITTALS

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

.2 Operation and Maintenance Data: submit operation and maintenance data for wiring devices 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.

.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 – Toggle (on/off)

.1 15A, 120 V, single pole switches to: CSA C22.2. No. 42.1

.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.

.3 Switches of one manufacturer throughout project.

2.2 SWITCHES - Occupancy

.1 15A, 120 V, single pole switches to: CSA C22.2. No. 42.1

.2 Dual-tech-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.
.6 Dual-tech- Infrared and ultrasonic occupancy sensors.
.7 Manual override

.3 Switches of one manufacturer throughout project.

2.3 SWITCHES - Dimmer

.1 15A, 120 V, single pole switches to: CSA C22.2. No. 42.1

.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.
.6 ON/OFF switch
.7 Dimmer: Slider

.3 Switches of one manufacturer throughout project.

2.4 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.

2.5 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.

2.6 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:

.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 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

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 REFERENCE STANDARDS

.1 CSA Group (CSA)

.1 CSA C22.2 No. 5-2016, Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures Tri-national standard with UL 489, and NMX-J-266-ANCE-2010.

1.2 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 circuit breakers and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Certificates:

.1 Prior to installation of circuit breakers in either new or existing installation, Contractor must submit 3 copies of a production certificate of origin from the manufacturer. Production certificate of origin must be duly signed by factory and local manufacturer's representative certifying that circuit breakers come from this manufacturer and are new and meet standards and regulations.

.1 Production certificate of origin must be submitted to Departmental Representative for approval.

.2 Delay in submitting production of certificate of origin will not justify any extension of contract and additional compensation.

.3 Any work of manufacturing, assembly or installation to begin only after acceptance of production certificate of origin Departmental Representative. Unless complying with this requirement, Departmental Representative/Consultant reserves the right to mandate manufacturer listed on circuit breakers to authenticate new circuit breakers under the contract, and to Contractor's expense.

.4 Production certificate of origin must contain:

.1 Manufacturer's name and address and person responsible for authentication. Person responsible must sign and date certificate.

.2 Licensed dealer's name and address and person of distributor responsible for Contractor's account.

.3 Contractor's name and address and person responsible for project.

.4 Local manufacturer's representative name and address. Local manufacturer's representative must sign and date certificate.

.5 Name and address of building where circuit breakers will be installed:

.1 Project title & List of circuit breakers

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 circuit breakers indoors and 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 BREAKERS GENERAL

.1 Ground-fault circuit-interrupters, fused circuit breakers, Moulded-case circuit breakers, Circuit breakers: to CSA C22.2 No. 5

.2 Bolt-on moulded case circuit breaker: quick- make, quick-break type, for manual and automatic operation with temperature compensation for 40 degrees C ambient.

.3 Plug-in moulded case circuit breakers: quick- make, quick-break type, for manual and automatic operation with temperature compensation for 40 degrees C ambient.

.4 Common-trip breakers: with single handle for multi-pole applications.

.5 Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting.

.1 Trip settings on breakers with adjustable trips to range from 3-8 times current rating.

.6 Circuit breakers with interchangeable trips as indicated.

.7 Circuit breakers to match existing symmetrical rms interrupting capacity rating.

2.2 THERMAL MAGNETIC BREAKERS

.1 Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

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 Install circuit breakers as required. For new layout

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 N/A

1.2 REFERENCE STANDARDS

.1 CSA Group

.1 CAN/CSA-C22.2 No.4-04 R2009, Enclosed and Dead-Front Switches (Tri-National Standard, with ANCE NMX-J-162-2004 and UL 98).

.2 CSA C22.2 No.39-13, Fuseholder Assemblies.

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 disconnect switches - fused and non-fused and include product characteristics, performance criteria, physical size, finish and limitations.

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 indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect disconnect switches - fused and non-fused from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 DISCONNECT SWITCHES

.1 Fusible, disconnect switch in CSA enclosure to CAN/CSA-C22.2 No.4 size as indicated.

.2 Provision for padlocking in on-off switch position by 3 locks.

.3 Mechanically interlocked door to prevent opening when handle in ON position.

.4 Fuses: size as indicated.

.5 Fuseholders: to CSA C22.2 No.39 relocatable and suitable without adaptors, for type and size of fuse indicated.

.6 Quick-make, quick-break action.

.7 ON-OFF switch position indication on switch enclosure cover.

2.2 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.

.2 Indicate name of load controlled on size 4 nameplate.

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 disconnect switches - fused and non-fused installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

.1 Install disconnect switches complete with fuses if applicable.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

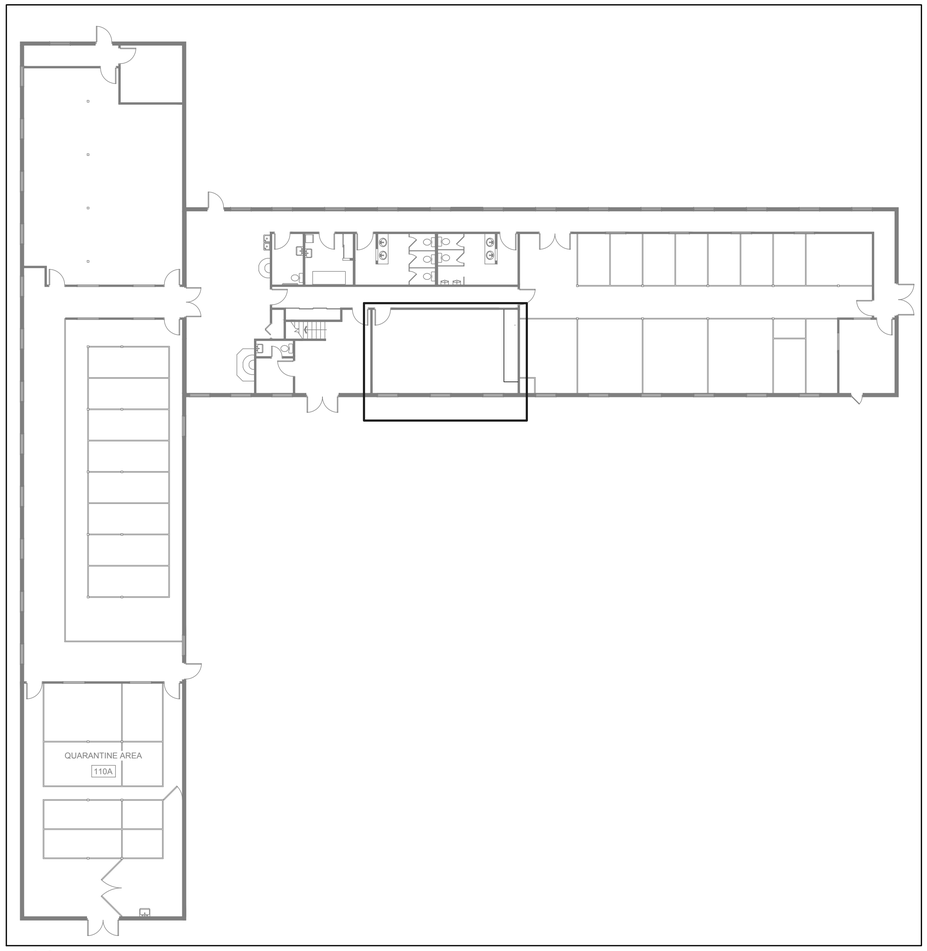
MECHANICAL LEGEND

SYMBOL	DESCRIPTION
FD	FLOOR DRAIN
	FUNNEL DRAIN
HD	HUB DRAIN
— - —	D.C.W. PIPING
—--—	D.H.W. PIPING
— + —	SANITARY UNDERGROUND
—— ——	SANITARY UNDER FLOOR
—V—	SANITARY VENT PIPING
	GATE VALVE
	BALL VALVE
	SOLENOID VALVE
	PUMP
S	SUCTION DIFFUSER
	CHECK VALVE
T	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:

1. ALL MECHANICAL EQUIPMENT SHOWN IN THIN SOLID LINES IS EXISTING TO REMAIN.
2. ALL MECHANICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT.
3. ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'R' IS EXISTING TO BE RELOCATED AS SHOWN.
4. ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'X' IS EXISTING TO BE REMOVED BACK TO SOURCE.
5. 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.
6. 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.
7. PROVIDE ALL NEW EQUIPMENT, CONTROLS, DUCTWORK, PIPING, VALVES AND ACCESSORIES AS SHOWN AND NOTED ON DETAILS AND AS REQUIRED FOR COMPLETE FUNCTIONING SYSTEMS.
8. PROVIDE ADDITIONAL DUCTWORK, PIPING, FITTINGS AND OFFSETS WHERE REQUIRED TO SUIT EXISTING CONDITIONS AND TO AVOID COLLISIONS WITH EXISTING SYSTEMS AND BUILDING STRUCTURE.
9. NOT ALL MECHANICAL ELEMENTS SHOWN, AFFECTED AREAS ONLY.
10. 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.
11. HATCHED AREA INDICATED ON FLOOR PLANS NOT IN CONTRACT.



1 / M-1 KEY PLAN – CEF BUILDING 91, GROUND FLOOR – AREA OF WORK
1:200

JRP ENGINEERING
Professional Engineers
110 Didsbury Rd – Unit M090, Kanata, ON, K2T 0C2
Tel: 613-627-2462 Email: Admin@jrpeng.com

No	DESCRIPTION	DATE
1	ISSUED FOR TENDER	AUG. 23, 2023
0	ISSUED FOR REVIEW	AUG. 8, 2023

REVISIONS

LICENSED PROFESSIONAL ENGINEER
2023.10.11
P.PUETZ
100190159
PROVINCE OF ONTARIO

client:

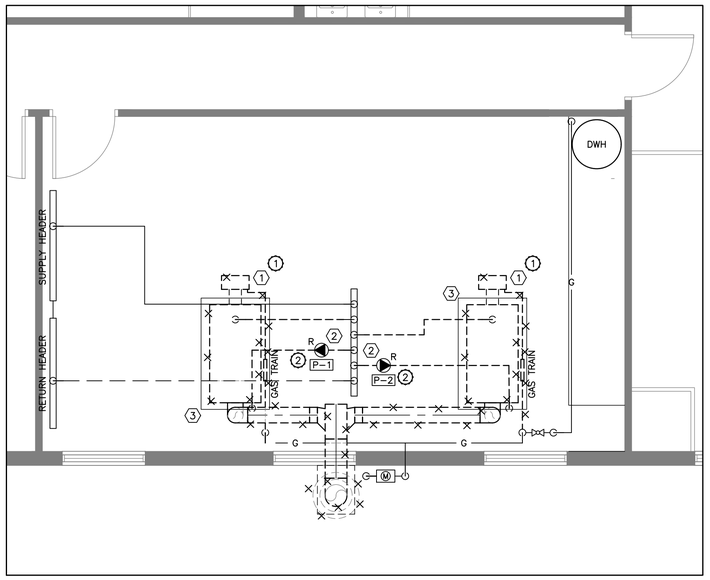
project:
CEF BUILDING 91 – BOILER REPLACEMENT
CEF23-0025
930 CARLING AVENUE
OTTAWA, ONTARIO

drawing title:
MECHANICAL LEGEND, GENERAL NOTES, DRAWING LIST, AND TYPICAL DETAILS

scale:	AS NOTED	drawn by:	K.P. / M.G.
designed by:	K.P./M.G.	reviewed by:	P.P.
approved by:	P.P.	date:	AUG. 2023

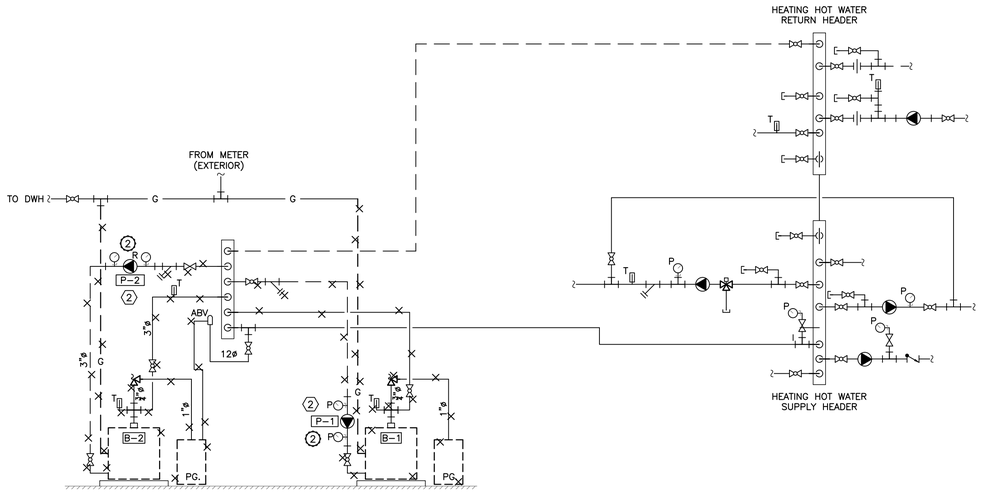
project no.: 247-2301

drawing no.: ME-1 of 2



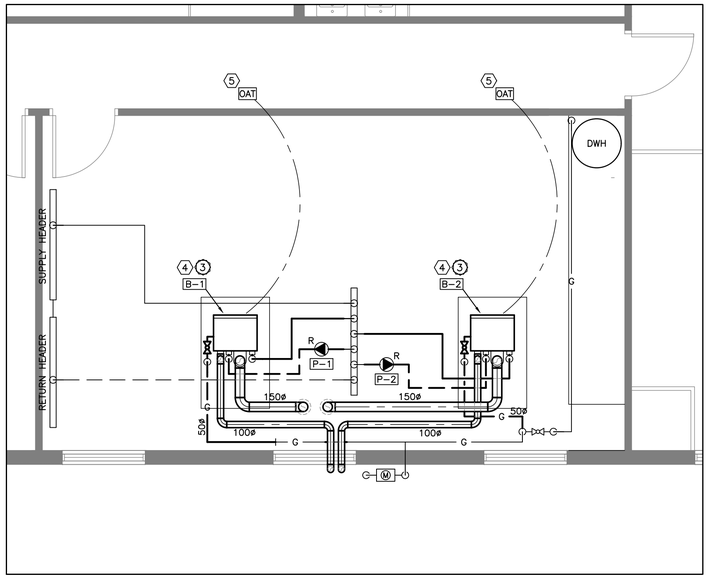
1 ME-2 PARTIAL GROUND FLOOR PLAN – EXISTING & DEMOLITION

1:50



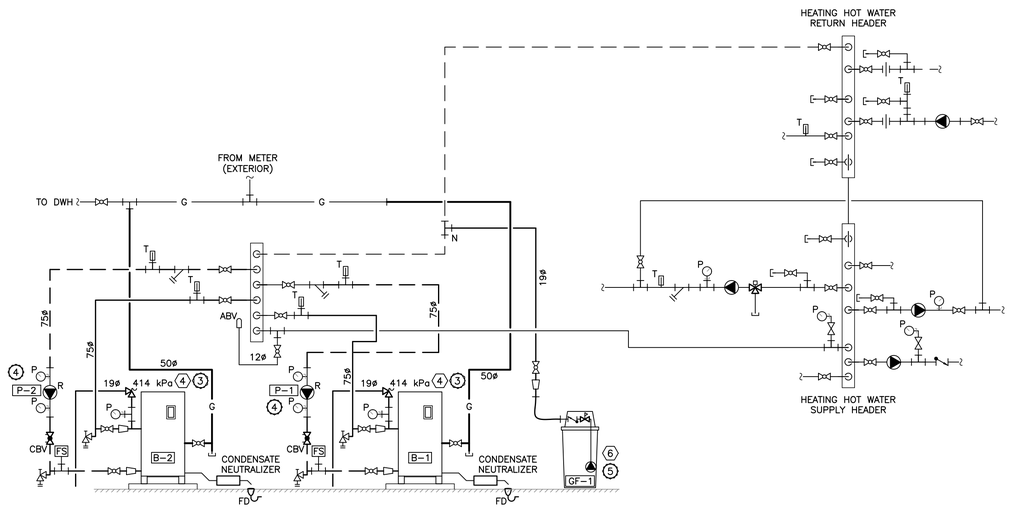
3 ME-2 PARTIAL HEATING HOT WATER PLUMBING SCHEMATIC – EXISTING & DEMOLITION

NTS



2 ME-2 PARTIAL GROUND FLOOR PLAN – EXISTING & NEW

1:50



4 ME-2 PARTIAL HEATING HOT WATER PLUMBING SCHEMATIC – EXISTING & NEW

NTS

VERIFICATION OF HEATING HOT WATER CHEMISTRY

CONTRACTOR TO CARRY FOR HYDRONIC CHEMICAL TREATMENT SPECIALIST TO VERIFY PROPYLENE GLYCOL CONCENTRATION (SYSTEM DESIGNED FOR 50% PG) AND CHEMISTRY OF HEATING HOT WATER LOOP. PROVIDE WRITTEN REPORT TO DEPARTMENTAL REPRESENTATIVE FOR REVIEW AND COMPARISON WITH BOILER MANUFACTURER'S REQUIREMENTS. CHEMISTRY ASSAY TO INCLUDE MEASUREMENTS OF THE FOLLOWING PARAMETERS:

- PH (ACIDITY)
- CHLORIDES
- IRON
- COPPER
- CONDUCTIVITY
- HARDNESS

MECHANICAL DRAWING NOTES:

1. TYPICAL: EXISTING BOILER (CLEAVER BROOKS MTF–700–750–60HW, NON–CONDENSING, 700,000 BTU/HR THERMAL INPUT, NATURAL GAS FIRED) TO BE DISCONNECTED AND REMOVED. BURNERS AND BURNER MANAGEMENT (CONTROLS) FROM DECOMMISSIONED BOILERS TO BE TURNED OVER TO AAFC BUILDING MAINTENANCE. REMOVE BACK ALL B–VENTING TO EXTERIOR TERMINATION. REMOVE BACK NATURAL GAS PIPING CONNECTION COMPLETE WITH GAS TRAIN, REFER TO SCHEMATIC ON THIS DRAWING SHEET. REMOVE BACK HEATING HOT WATER SUPPLY AND RETURN PIPING CONNECTIONS TO BOILER HEADER, REFER TO SCHEMATIC ON THIS DRAWING SHEET. REFER TO ADJACENT DRAWING VIEW FOR NEW INSTALLATIONS.
2. TYPICAL: EXISTING BOILER CIRCULATION PUMP (P–1, P–2) TO BE DISCONNECTED AND REMOVED, AND STORED ON SITE FOR RE–USE. REFER TO ADJACENT DRAWING VIEW FOR NEW INSTALLATIONS.
3. TYPICAL: CLEAN EXISTING HOUSEKEEPING PAD, REPAIR AS REQUIRED AND PREPARE FOR INSTALLATION OF NEW BOILERS.
4. TYPICAL: PROVIDE AND INSTALL MODULATING CONDENSING BOILER (B–1, B–2: 160,000–700,000 BTU/HR THERMAL INPUT, 672,000 BTU/HR MAXIMUM GROSS THERMAL OUTPUT, 96% THERMAL EFFICIENCY, DIRECT COMBUSTION) AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS. PROVIDE COMBUSTION AIR INTAKE AND COMBUSTION EXHAUST VENTING (SIZES INDICATED), CONTRACTOR TO VERIFY EXACT ROUTING ON SITE. PROVIDE HEATING HOT WATER SUPPLY AND RETURN PIPING CONNECTIONS FROM EXISTING BOILER HEADER, REFER TO PLUMBING SCHEMATIC ON THIS DRAWING FOR DETAILS. PROVIDE NATURAL GAS PIPING CONNECTION FROM EXISTING NATURAL GAS MAIN, ALL WORK AND MATERIALS BY LICENSED CONTRACTOR TO LATEST EDITION OF CSA B149.1. PROVIDE COMPLETE WITH ALL PIPING, OFFSETS, SUPPORTS, FITTINGS, VALVES, CONDENSATE NEUTRALIZER, THERMAL INSULATION AND JACKETING, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
5. TYPICAL: INSTALL OUTDOOR AIR TEMPERATURE (OAT) SENSORS AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS IN SUITABLE LOCATION ON NORTHERN BUILDING FAÇADE.
6. PROVIDE AND INSTALL AUTOMATIC GLYCOL FILL STATION (GF–1). GLYCOL FILL STATION TO HAVE 208 LITRE CAPACITY STORAGE/MIXING TANK WITH COVER, PUMP SUCTION HOSE WITH INLET STRAINER, PRESSURE PUMP WITH THERMAL CUT–OUT, INTEGRAL PRESSURE SWITCH, INTEGRAL CHECK VALVE, ELECTRICAL CHORD AND PLUG, PRE–CHARGED ACCUMULATOR TANK WITH EPDM DIAPHRAM, MANUAL DIVERTER VALVE FOR PURGING AIR AND AGITATING CONTENTS OF TANK, PRESSURE REGULATING VALVE (35–380 KPA) COMPLETE WITH PRESSURE GAUGE, AND LOW–LEVEL PUMP CUT–OUT. PRESSURE PUMP TO BE CAPABLE OF RUNNING DRY WITHOUT DAMAGE. PROVIDE COMPLETE WITH LOW–LEVEL ALARM PANEL AND REMOTE MONITORING DRY CONTACTS AND SELECTABLE AUDIBLE ALARM. PROVIDE PIPING CONNECTION TO EXISTING RETURN MAIN AS INDICATED. PROVIDE ALL PIPING, FITTINGS, VALVES, SUPPORTS, AND ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION. INSTALL GLYCOL FILL STATION AS PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

ELECTRICAL DRAWING NOTES:

1. TYPICAL: DISCONNECT ELECTRICAL POWER CONNECTION EXISTING HEATING HOT WATER BOILER.
2. TYPICAL: DISCONNECT ELECTRICAL POWER CONNECTION EXISTING HEATING HOT WATER BOILER CIRCULATION PUMP (P–1, P–2) THAT ARE TO BE RELOCATED. REFER TO ADJACENT DRAWING VIEW FOR NEW INSTALLATIONS.
3. TYPICAL: PROVIDE ELECTRICAL POWER CONNECTION TO INSTALLED MODULATING CONDENSING BOILER (B–1, B–2).
4. TYPICAL: RELOCATED HEATING HOT WATER BOILER CIRCULATION PUMP (P–1, P–2). EXTEND/MODIFY WIRING/CONDUIT AS REQUIRED TO SUIT NEW INSTALLATION LOCATION.
5. PROVIDE ELECTRICAL POWER CONNECTION TO GLYCOL FEED STATION (GF–1): DUPLEX RECEPTACLE. PROVIDE UNISTRUT SUPPORT, CONDUIT, CONDUCTORS, AND ANY ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.

JRP ENGINEERING
Professional Engineers

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Tel: 613–627–2462 Email: Admin@jrpeng.com

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REVISIONS

LICENSED PROFESSIONAL ENGINEER
2023.10.11
P.PUETZ
100190159
PROVINCE OF ONTARIO

client:

project:
CEF BUILDING 91 – BOILER REPLACEMENT
CEF23–0025
930 CARLING AVENUE
OTTAWA, ONTARIO

drawing title:
HVAC SYSTEMS, PIPING, AND NATURAL GAS

scale:	AS NOTED	drawn by:	K.P. / M.G.
designed by:	K.P./M.G.	reviewed by:	P.P.
approved by:	P.P.	date:	AUG. 2023

project no.: 247–2301

drawing no.: ME–2 of 2

BID AND ACCEPTANCE FORM (BA)

BA01 IDENTIFICATION
Boiler Replacement – Central Experimental Farm Ottawa

BA02 LEGAL NAME AND ADDRESS OF BIDDER

Legal Name:					
Operating Name (if any):					
Address:					
Telephone:		Fax:		PBN:	
E-mail address:					
Contract Security Program Organisation Number (when required)					

BA03 THE OFFER

The Bidder offers to 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 Taxe(s).
(amount in numbers)

BA04 BID VALIDITY PERIOD
The bid must not be withdrawn for a period of 60 days following the date of solicitation closing.

BA05 ACCEPTANCE AND CONTRACT
Upon acceptance of the Bidder's offer by Canada, a binding Contract will be formed between Canada and the Bidder. The documents forming the Contract will be the Contract Documents identified in "Contract Documents (CD)" section.

BA06 CONSTRUCTION TIME

The Contractor must perform and complete the Work **within six (6) weeks** from the date of notification of acceptance of the offer.

BA07 BID SECURITY
The Bidder must enclose bid security with its bid in accordance with GI08 - Bid Security Requirements of R2710T - General Instructions - Construction Services - Bid Security Requirements.

BA08 SIGNATURE

Name and title of person authorized to sign on behalf of Bidder (Type or print)

Signature

Date

APPENDIX 1 – INTEGRITY PROVISIONS

(Text copied from the Ineligibility and Suspension Policy http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html dated 2016-04-04)

List of names: All Bidders, regardless of their status under the Policy, must submit the following information when participating in a procurement process or real property transaction:

- Bidders that are corporate entities, including those bidding as joint ventures, must provide a complete list of the names of all current directors or, for a privately owned corporation, the names of the owners of the corporation;
- Bidders Bidding as sole proprietors, including sole proprietors bidding as joint ventures, must provide a complete list of the names of all owners; or
- Bidders that are a partnership do not need to provide a list of names.

If the list of names has not been received in a procurement process or real property transaction by the time the evaluation of Bids or Offers is completed, or has not been received in a procurement process or real property transaction where no Bid/Offer will be submitted, the Contracting Authority will inform the Bidder of a time within which to provide the information. Providing the required names is a mandatory requirement for award of a contract or real property agreement. Failure to provide the list of names within the time specified will render a Bid or Offer non-responsive, or the Bidder otherwise disqualified for award of a contract or real property agreement.

APPENDIX 2 - LISTING OF SUBCONTRACTORS AND SUPPLIERS

The Bidder must submit the list of Subcontractors and Suppliers for any division of the Work as listed in the table below. If “own forces” of the General Contractor are planned to be used to execute certain division(s) of work it must also be indicated in the table below.

	Subcontractor and Suppliers	Division
1		
2		
3		
4		

ANNEX A - SECURITY REQUIREMENT CHECK LIST (SRCL)

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
CEF 23 - 0067
Security Classification / Classification de sécurité

SECURITY REQUIREMENTS CHECK LIST (SRCL)
LISTE DE VÉRIFICATION DES EXIGENCES RELATIVES À LA SÉCURITÉ (LVERS)

PART A - CONTRACT INFORMATION / PARTIE A - INFORMATION CONTRACTUELLE

1. Originating Government Department or Organization / Ministère ou organisme gouvernemental d'origine	2. Branch or Directorate / Direction générale ou Direction
Agriculture & Agri-Foods	Corporate Management Branch

3. a) Subcontract Number / Numéro du contrat de sous-traitance	3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant

4. Brief Description of Work - Brève description du travail

Remove End of Life Boilers and Replace with New Technologically advanced Boilers.

5. a) Will the supplier require access to Controlled Goods? Le fournisseur aura-t-il accès à des marchandises contrôlées?	☑ No / Non	☐ Yes / Oui
5. b) Will the supplier require access to unclassified military technical data subject to the provisions of the Technical Data Control Regulations? Le fournisseur aura-t-il accès à des données techniques militaires non classifiées qui sont assujetties aux dispositions du Règlement sur le contrôle des données techniques?	☑ No / Non	☐ Yes / Oui
6. Indicate the type of access required - Indiquer le type d'accès requis		
6. a) Will the supplier and its employees require access to PROTECTED and/or CLASSIFIED information or assets? Le fournisseur ainsi que les employés auront-ils accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS? (Specify the level of access using the chart in Question 7. c) (Préciser le niveau d'accès en utilisant le tableau qui se trouve à la question 7. c)	☑ No / Non	☐ Yes / Oui
6. b) Will the supplier and its employees (e.g. cleaners, maintenance personnel) require access to restricted access areas? No access to PROTECTED and/or CLASSIFIED information or assets is permitted. Le fournisseur et ses employés (p.ex. nettoyeurs, personnel d'entretien) auront-ils accès à des zones d'accès restreintes? L'accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS n'est pas autorisé.	☐ No / Non	☑ Yes / Oui
6. c) Is this a commercial courier or delivery requirement with **no** overnight storage? S'agit-il d'un contrat de messagerie ou de livraison commerciales **sans** entreposage de nuit?	☑ No / Non	☐ Yes / Oui

7. a) Indicate the type of information that the supplier will be required to access / Indiquer le type d'information auquel le fournisseur devra avoir accès

Canada ☐	**NATO / OTAN** ☐	**Foreign / Étranger** ☐
7. b) Release restrictions / Restrictions relatives à la diffusion		
No release restrictions / Aucune restriction relative à la diffusion ☐	All NATO countries / Tous les pays de l'OTAN ☐	No release restrictions / Aucune restriction relative à la diffusion ☐
Not releasable / À ne pas diffuser ☐		
Restricted to: / Limité à : ☐	Restricted to: / Limité à : ☐	Restricted to: / Limité à : ☐
Specify country(ies): / Préciser le(s) pays :	Specify country(ies): / Préciser le(s) pays :	Specify country(ies): / Préciser le(s) pays :
7. c) Level of information / Niveau d'information		
PROTECTED A / PROTÉGÉ A ☐	NATO UNCLASSIFIED / NATO NON CLASSIFIÉ ☐	PROTECTED A / PROTÉGÉ A ☐
PROTECTED B / PROTÉGÉ B ☐	NATO RESTRICTED / NATO DIFFUSION RESTREINTE ☐	PROTECTED B / PROTÉGÉ B ☐
PROTECTED C / PROTÉGÉ C ☐	NATO CONFIDENTIAL / NATO CONFIDENTIEL ☐	PROTECTED C / PROTÉGÉ C ☐
CONFIDENTIAL / CONFIDENTIEL ☐	NATO SECRET / NATO SECRET ☐	CONFIDENTIAL / CONFIDENTIEL ☐
SECRET / SECRET ☐	COSMIC TOP SECRET / COSMIC TRÈS SECRET ☐	SECRET / SECRET ☐
TOP SECRET / TRÈS SECRET ☐		TOP SECRET / TRÈS SECRET ☐
TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) ☐		TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) ☐

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
CEF 23 - 0067

Security Classification / Classification de sécurité

PART A *(continued)* / PARTIE A *(suite)*

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets?
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS?
If Yes, indicate the level of sensitivity:
Dans l'affirmative, indiquer le niveau de sensibilité :
☑ No / Non ☐ Yes / Oui

9. Will the supplier require access to extremely sensitive INFOSEC information or assets:
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate?
☑ No / Non ☐ Yes / Oui

Short Title(s) of material / Titre(s) abrégé(s) du matériel :

Document Number / Numéro du document :

PART B - PERSONNEL (SUPPLIER) / PARTIE B - PERSONNEL (FOURNISSEUR)

10. a) Personnel security screening level required / Niveau de contrôle de la sécurité du personnel requis

☑ RELIABILITY STATUS / COTE DE FIABILITÉ
☐ CONFIDENTIAL / CONFIDENTIEL
☐ SECRET / SECRET
☐ TOP SECRET / TRÈS SECRET
☐ TOP SECRET - SIGINT / TRÈS SECRET - SIGINT
☐ NATO CONFIDENTIAL / NATO CONFIDENTIEL
☐ NATO SECRET / NATO SECRET
☐ COSMIC TOP SECRET / COSMIC TRÈS SECRET
☐ SITE ACCESS / ACCÈS AUX EMPLACEMENTS

Special comments:
Commentaires spéciaux : _____

NOTE: If multiple levels of screening are identified, a Security Classification Guide must be provided.
REMARQUE : Si plusieurs niveaux de contrôle de sécurité sont requis, un guide de classification de la sécurité doit être fourni.

10. b) May unscreened personnel be used for portions of the work?
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?
☑ No / Non ☐ Yes / Oui

If Yes, will unscreened personnel be escorted:
Dans l'affirmative, le personnel en question sera-t-il escorté?
☑ No / Non ☐ Yes / Oui

PART C - SAFEGUARDS (SUPPLIER) / PARTIE C - MESURES DE PROTECTION (FOURNISSEUR)

INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS

11. a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED information or assets on its site or premises?
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?
☑ No / Non ☐ Yes / Oui

11. b) Will the supplier be required to safeguard COMSEC information or assets?
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC?
☑ No / Non ☐ Yes / Oui

PRODUCTION

11. c) Will the production (manufacture, and/or repair and/or modification) of PROTECTED and/or CLASSIFIED material or equipment occur at the supplier's site or premises?
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matérial PROTÉGÉ et/ou CLASSIFIÉ?
☑ No / Non ☐ Yes / Oui

INFORMATION TECHNOLOGY (IT) MEDIA / SUPPORT RELATIF À LA TECHNOLOGIE DE L'INFORMATION (TI)

11. d) Will the supplier be required to use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data?
Le fournisseur sera-t-il tenu d'utiliser ses propres systèmes informatiques pour traiter, produire ou stocker électroniquement des renseignements ou des données PROTÉGÉS et/ou CLASSIFIÉS?
☑ No / Non ☐ Yes / Oui

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency?
Disposera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale?
☑ No / Non ☐ Yes / Oui

PART C *(continued)* / PARTIE C *(suite)*

For users completing the form **manually** use the summary chart below to indicate the category(ies) and level(s) of safeguarding required at the supplier's site(s) or premises.
Les utilisateurs qui remplissent le formulaire **manuellement** doivent utiliser le tableau récapitulatif ci-dessous pour indiquer, pour chaque catégorie, les niveaux de sauvegarde requis aux installations du fournisseur.

For users completing the form online (via the Intenet), the summary chart is automatically populated by your responses to previous questions.
Dans le cas des utilisateurs qui remplissent le formulaire en ligne (par Internet), les réponses aux questions précédentes sont automatiquement saisies dans le tableau récapitulaif.

SUMMARY CHART / TABLEAU RÉCAPITULATIF

Category Catégorie	PROTECTED PROTÉGÉ			CLASSIFIED CLASSIFIÉ			NATO				COMSEC					
	A	B	C	Confidential Confidentiel	Secret	Top Secret Très Secret	NATO Restricted NATO Diffusion Restreinte	NATO Confidential NATO Confidentiel	NATO Secret	COSMIC Top Secret COSMIC Très Secret	Protected Protégé A	 B	 C	Confidential Confidentiel	Secret	Top Secret Très Secret
Information / Assets Renseignements / Biens	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Production	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
IT Media Support TI	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
IT Link Lien électronique	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED?
La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉ et/ou CLASSIFIÉE?

☑ No / Non ☐ Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification".
Dans l'affirmative, classifier le présent formulaire en indiquant le niveau de sécurité dans la case intitulée.

12. b) Will the document attached to this SRCL be PROTECTED and/or CLASSIFIED?
La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE?

☑ No / Non ☐ Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification" and indicate with attachments (e.g. SECRET with Attachments).
Dans l'affirmative, classifier le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquer qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
CEF 23 - 0067
Security Classification / Classification de sécurité

PART D - AUTHORIZATION / PARTIE D - AUTORISATION

13. Organization Project Authority / Chargé de projet de l'organisme

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature
Darren O'Melia	Technical Project Officer	Omelia, Darren Digitally signed by Omelia, Darren DN: C=CA, O=GC, OU=AGR, CN="Omelia, Darren" Reason: I am the author of this document Location: Date: 2023.10.04 08:31:59-04'00' Foxit PDF Editor Version: 12.1.3

Telephone no. - Nº de téléphone	Facsimile - Télécopieur	E-mail address - Adresse courriel	Date
(343) 597-7497		darren.omelia@agr.gc.ca	2023-10-04

14. Organization Security Authority / Responsable de la sécurité de l'organisme

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature
Lise Levesque-Masson	SRCL Coordinator	Lise Levesque-Masson Digitally signed by Lise Levesque-Masson Date: 2023.10.10 09:06:34 -04'00'

Telephone no. - Nº de téléphone	Facsimile - Télécopieur	E-mail address - Adresse courriel	Date
		Lise.Levesque-Masson@AGR.GC/CA	

15. Are there additional instructions (e.g. Security Guide, Security Classification Guide) attached?
Des instructions supplémentaires (p. ex. Guide de sécurité, Guide de classification de la sécurité) sont-elles jointes?
☐ No Non ☐ Yes Oui

16. Procurement Officer / Agent d'approvisionnement

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature

Telephone no. - Nº de téléphone	Facsimile - Télécopieur	E-mail address - Adresse courriel	Date

17. Contracting Security Authority / Autorisé contractante en matière de sécurité

Name (print) - Nom (en lettres moulées)	Title - Titre	Signature

Telephone no. - Nº de téléphone	Facsimile - Télécopieur	E-mail address - Adresse courriel	Date

ANNEX B - CERTIFICATE OF INSURANCE

(Not required at solicitation closing)

CERTIFICATE OF INSURANCE

Travaux publics et Services gouvernementaux Canada | Public Works and Government Services Canada

Description and Location of Work	Contract No.
	Project No.

Name of Insurer, Broker or Agent	Address (No., Street)	City	Province	Postal Code
Name of Insured (Contractor)	**Address (No., Street)**	**City**	**Province**	**Postal Code**

Additional Insured

His Majesty the King in right of Canada as represented by the Minister of Public Works and Government Services

Type of Insurance	Insurer Name and Policy Number	Inception Date D / M / Y	Expiry Date D / M / Y	Limits of Liability		
Commercial General Liability **Umbrella/Excess Liability**				Per Occurrence **$** **$**	Annual General Aggregate **$** **$**	Completed Operations Aggregate **$** **$**
Builder's Risk / Installation Floater				**$**		
Pollution Liability				**$** ☐ Per Incident ☐ Per Occurence		Aggregate **$**
Marine Liability				**$**		
Aviation Liability				**$** ☐ Per Incident ☐ Per Occurence		Aggregate **$**
Insert other type of insurance as required				**$**		

I certify that the above policies were issued by insurers in the course of their Insurance business in Canada, are currently in force and include the applicable insurance coverage's stated on page 2 of this Certificate of Insurance, including advance notice of cancellation / reduction in coverage.

Name of person authorized to sign on behalf of Insurer(s) (Officer, Agent, Broker)

Telephone number

Signature

Date D / M / Y

General

The insurance policies required on page 1 of the Certificate of Insurance must be in force and must include the insurance coverage listed under the corresponding type of insurance on this page.

The policies must insure the Contractor and must include His Majesty the King in right of Canada as represented by the Minister of Public Works and Government Services as an additional Insured.

The Policy shall be endorsed to provide the Owner with not less than 30 days' notice in writing in advance of any cancellation or change or amendment restricting coverage.

Without increasing the limit of liability, the policies must protect all insured parties to the full extent of coverage provided. Further, the policies must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

Commercial General Liability

The insurance coverage provided must not be substantially less than that provided by the latest edition of IBC Form 2100.
The policy must 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 structure or land whether such support be natural or otherwise if the work is performed by the insured contractor.
(e) Damage to existing structure

The policy must have the following minimum limits:
(a) **$5,000,000** Each Occurrence Limit;
(b) **$10,000,000** General Aggregate Limit per policy year if the policy contains a General Aggregate; and
(c) **$5,000,000** Products/Completed Operations Aggregate Limit.

Umbrella or excess liability insurance may be used to achieve the required limits.