Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
Bid Receiving - PWGSC / Réception des soumissions - TPSGC
11 Laurier St./11 rue Laurier
Place du Portage, Phase III
Core 0B2 / Noyau 0B2
Gatineau, Québec K1A 0S5

SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires
THIS DOCUMENT CONTAINS A SECURITY REQUIREMENT/ CE DOCUMENT COMPORTE UNE EXIGENCE EN MATIÈRE DE SÉCURITÉ

Title - Sujet
Construction Management Services

Solicitation No. - N° de l'invitation EP775-150701/B	**Amendment No. - N° modif.** 001
Client Reference No. - N° de référence du client 20150701	**Date** 2015-07-13
GETS Reference No. - N° de référence de SEAG PW-$$FG-353-67647	
File No. - N° de dossier fg353.EP775-150701	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2015-09-02	**Time Zone** **Fuseau horaire** Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Searchwell, Suzette	**Buyer Id - Id de l'acheteur** fg353
Telephone No. - N° de téléphone (819) 956-6645 ( )	**FAX No. - N° de FAX** ( ) -

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:
Department of Public Works and Government Services
Postal Station "B" Building
59 Sparks Street
Ottawa, Ontario
K1P 6E4

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Telephone No. - N° de téléphone
Facsimile No. - N° de télécopieur

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**

Issuing Office - Bureau de distribution
Construction Services Division/Division des services de construction
11 Laurier St./11 Rue Laurier
3C2, Place du Portage
Phase III
Gatineau, Québec K1A 0S5

Canada

This amendment is being raised for the following change:

Delete in its entirety solicitation document issued on July 13, 2015 at 7am

REPLACE WITH

The attached solicitation document.

REQUEST FOR PROPOSAL For

CONSTRUCTION MANAGEMENT SERVICES

POSTAL STATION “B” ENVELOPE REHABILITATION AND BASE BUILDING UPGRADE PROJECT

59 Sparks Street, Ottawa, Ontario

REQUEST FOR PROPOSAL

IMPORTANT NOTICE TO BIDDERS

THIS DOCUMENT CONTAINS A SECURITY REQUIREMENT

For further instructions please consult “Special Instruction to Bidders”, SI13, “Security related requirements” and “Supplementary Conditions” SC03 “Security related requirements, document safeguarding location”.

TWO-ENVELOPE BID

This Bid shall be submitted following a “two-envelope” procedure. Refer to GI02 and GI07 of the Special Instructions to Bidders.

LIMITATION OF LIABILITY

PWGSC is limiting the Contractor’s first party liability for work in Low Rise, High Rise and Heritage Buildings. See changes to SC01, GC1.6 “Indemnification by the Contractor” of R2810D in the Supplementary Conditions.

INSURANCE TERMS

Insurance Terms of this tender are modified. Refer to SC02

SUPPORT THE USE OF APPRENTICES

Through Canada’s Economic Action Plan 2013, the Government of Canada proposes to support the employment of apprentices in federal construction and maintenance projects. Refer to SI14

TABLE OF CONTENTS

SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SI01 BID DOCUMENTS

1. The following are the bid documents:
(a) Request for Proposal - Page 1;
(b) Special Instructions to Bidders;
(c) General Instructions to Bidders;
(d) Supplementary Conditions
(e) Submission Requirements and Evaluation;
(f) Contract documents;
(g) Appendix A - Bid and Acceptance Form
(h) Appendix B - Client Reference Form for Representative Project;
(i) Appendix C - Document Safeguarding Security Information
(j) Annex A - Terms of Reference;
(k) Annex B - Basis of Payment;
(l) Annex C - Security Requirements Checklist
(m) Annex D - Certificate of Insurance
(n) Annex E - Voluntary Reports for Apprentices Employed during the Contract
(o) Technical Documentation; and
(p) Any amendment issued prior to solicitation closing.

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

SI02 STANDARD INSTRUCTIONS, CLAUSES AND CONDITIONS

Pursuant to the Department of Public Works and Government Services Act (S.C. 1996, c.16), the instructions, clauses and conditions identified in the bid solicitation and resulting contract by number, date, and title are incorporated by reference into and form part of the bid solicitation and resulting contract as though expressly set out in the bid solicitation and resulting contract. Refer to CD 2.

SI03 DEFINITION OF BIDDER

"Bidder" means the person or entity (or, in the case of a joint venture, the persons or entities) submitting a bid to perform a contract for goods, services or both. It does not include the parent, subsidiaries or other affiliates of the Bidder, or its subcontractors.

SI04 ENQUIRIES DURING THE SOLICITATION PERIOD

1. Enquiries regarding this bid must be submitted in writing to the Contracting Officer named on the Request for Proposal (RFP)- Page 1 as early as possible within the solicitation period. Enquiries should be received no later than ten **(10) working days** prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may not result in an answer being provided.

2. To ensure consistency and quality of the information provided to Bidders, the Contracting Officer shall examine the content of the enquiry and shall decide whether or not to issue an amendment.

3. All enquiries and other communications related to this bid sent throughout the solicitation period are to be directed ONLY to the Contracting Officer named on the Request for Proposal - Page 1. Failure to comply with this requirement may result in the bid being declared non-responsive.

SI05 OPTIONAL SITE VISIT

Pre-qualified Bidders are invited to a site visit on <u>August 6, 2015</u>. Attendees are invited to meet at 11 Metcalfe Street, Ottawa, Ontario, Main Entrance. Due to the stringent security requirement for this project; the following is to be noted:

- It is anticipated that several site visits will be scheduled for the day
- All attendees must be SECRET cleared
- Only two participants from each pre-qualified firm will be allowed to attend the site visit
- The names and date of birth for each attendee must be submitted to the contracting officer by end of business day **<u>July 28, 2015</u>** to allow sufficient time for the security verification process
- No electronic devices will be permitted on site
- Attendees must present government issued photo ID
- Time notifications for scheduled visit will be sent to each proponent by end of Business day **<u>July 31, 2015</u>**
- Questions will not be addressed during the site visits
- NO personnel/ individuals will be permitted to access the site without the required clearance.

SI06 BID VALIDITY PERIOD

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

2. If the extension referred to in paragraph 1) of SI06 is accepted, in writing, by all those who submitted bids, then Canada shall continue immediately with the evaluation of the bids and its approvals processes.

3. If the extension referred to in paragraph 1) of SI06 is not accepted in writing by all those who submitted bids then Canada shall, 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 Request for Proposal.

4. The provisions expressed herein do not in any manner limit Canada's rights in law or under GI10 Rejection of Bid.

SI07 RIGHTS OF CANADA

Canada reserves the right to:

a. reject any or all bids received in response to the bid solicitation;
b. enter into negotiations with bidders on any or all aspects of their bids;
c. accept any bid in whole or in part without negotiations;
d. cancel the bid solicitation at any time;
e. reissue the bid solicitation;
f. if no responsive 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 responsive Bidder to ensure best value to Canada.

SI08 CONDUCT OF EVALUATION

1. In conducting its evaluation of the proposals, Canada may, but will have no obligation, to do the following:

a. seek clarification or verification from bidders regarding any or all information provided by them with respect to the RFP;
b. contact any or all references supplied by bidders to verify and validate any information submitted by them;
c. request, before award of any contract, specific information with respect to bidders' legal status;
d. conduct a survey of bidders' facilities and/or examine their technical, managerial and financial capabilities to determine if they are adequate to meet the requirements of the RFP;
e. correct any error in the total bid amount by using unit pricing and any error in quantities in bids to reflect the quantities stated in the bid solicitation; in case of error in the estimated amount of prices, the unit price will govern,
f. verify any information provided by bidders through independent research, use of any government sources or by contacting third parties; and
g. interview, at the sole costs of bidders, any bidder and/or any or all of the resources proposed by bidders to fulfil the requirement of the RFP.

2. Bidders will have the number of days specified in the request by the Contracting Officer to comply with any request related to any of the above items. Failure to comply with the request may result in the proposal being declared non-responsive.

SI09 ENTIRE REQUIREMENT

The bid solicitation documents contain all the requirements relating to the bid solicitation issued on the Government of Canada Electronic Tendering System, buyandsell.gc.ca . Any other information or documentation provided to or obtained by a bidder from any source are not relevant. Bidders should not assume that practices used under previous contracts will continue, unless they are described in the bid solicitation. Bidders should also not assume that their existing capabilities meet the requirements of the bid solicitation simply because they have met previous requirements.

SI10 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

Contracts Canada (Buy and Sell)
Http://buyandsell.gc.ca/

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

Contractor Performance Evaluation Report (Form PWGSC-TPSGC 2913)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913.pdf

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.pdf

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

Certificate of Insurance (form PWGSC-TPSGC 357)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/357.pdf

SACC Manual
http://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

PWGSC, Industrial Security Services
http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html

PWGSC, Code of Conduct and Certifications
Http://www.tpsgc-pwgsc.gc.ca/app-acq/cndt-cndct/index-eng.html

PWGSC Consent to a Criminal Record Verification (PWGSC-TPSGC 229)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/229.pdf

SI11 COMMUNICATIONS NOTIFICATION

The Government of Canada requires the successful Bidder to notify the Contracting Officer named on the Request for Proposal - Page 1 in advance of their intention to make public an announcement related to the award of a contract.

SI12 PREQUALIFICATION

All the prequalification requirements in Phase One (Prequalification) are carried over to this Phase Two (RFP). Only those Bidders who have been prequalified by PWGSC in Phase One will be eligible to submit a bid in response to this RFP.

SI13 SECURITY CLEARANCE

This document contains a mandatory security requirement for the performance of the subsequent contract (refer to clause SC03 of the Supplementary Conditions included herein).

1. **At bid closing, the Bidder (or in the case of a Joint Venture, each member of the Joint Venture) must hold a valid** Security Clearance as indicated in section SC03 of the Supplementary Conditions. Failure to comply with this requirement will render the Bid non-compliant and no further consideration will be given to the Bid.

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 SC03 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.

3. The Bidder's proposed location of work performance or document safeguarding must meet the security requirement as indicated in Supplementary Clauses (SC03);

4. The Bidder must provide the address(es) of proposed location(s) of work performance or document safeguarding as indicated in Supplementary Clauses (SC03).

5. For additional information on security requirements, bidders should consult the "Security Requirements for PWGSC Bid Solicitations - Instructions for Bidders" on the Standard Procurement Documents Web site Industrial Security Program

SI14 PUBLIC WORKS AND GOVERNMENT SERVICES CANADA APPRENTICE PROCUREMENT INITIATIVE

1. To encourage employers to participate in apprenticeship training, Contractors bidding on construction and maintenance contracts by Public Works and Government Services Canada (PWGSC) are being asked to sign a voluntary certification, signaling their commitment to hire and train apprentices.

2. Canada is facing skills shortages across various sectors and regions, especially in the skilled trades. Equipping Canadians with skills and training is a shared responsibility. In Economic Action Plan (EAP) 2013, the Government of Canada made a commitment to support the use of apprentices in federal construction and maintenance contracts. Contractors have an important role in supporting apprentices through hiring and training and are encouraged to certify that they are providing opportunities to apprentices as part of doing business with the Government of Canada.

3. Through the Economic Action Plan 2013 and support for training programs, the Government of Canada is encouraging apprenticeships and careers in the skilled trades. In addition, the government offers a tax credit to employers to encourage them to hire apprentices. Information on this tax measure administered by the Canada Revenue Agency can be found at: www.cra-arc.gc.ca. Employers are also encouraged to find out what additional information and supports are available from their respective provincial or territorial jurisdiction.

4. Signed certifications (Annex E) will be used to better understand contractor use of apprentices on Government of Canada maintenance and construction contracts and may inform future policy and program development.

5. The Contractor hereby certifies the following:

   In order to help meet demand for skilled trades people, the Contractor agrees to use, and require its subcontractors to use, reasonable commercial efforts to hire and train registered apprentices, to strive to fully utilize allowable apprenticeship ratios* and to respect any hiring requirements prescribed by provincial or territorial statutes

   The Contractor hereby consents to this information being collected and held by PWGSC, and Employment and Social Development Canada to support work to gather data on the hiring and training of apprentices in federal construction and maintenance contracts.

   To support this initiative, a voluntary certification signaling the Contractor's commitment to hire and train apprentices is available at Annex E.

   If you accept fill out and sign Annex E.

** The journeyperson-apprentice ratio is defined as the number of qualified/certified journeypersons that an employer must employ in a designated trade or occupation in order to be eligible to register an apprentice as determined by provincial/territorial (P/T) legislation, regulation, policy directive or by law issued by the responsible authority or agency.*

GENERAL INSTRUCTIONS TO BIDDERS

GI01 APPLICABLE TAXES

Applicable Taxes" means the Goods and Services Tax (GST), the Harmonized Sales Tax (HST) and any provincial tax, by law, payable by Canada such as, the Quebec Sales Tax (QST) as of the date of bid submission by the Bidder or the date of submission of the last revision whichever is later.

GI02 OVERVIEW OF SELECTION PROCEDURE

1. Bid

a. Bids are submitted following a "two-envelope" procedure, in which Bidders submit the "technical" component of their Bid in one sealed envelope and the proposed price of the services (Bid Price) in a second sealed envelope.

b. The information that Bidders are required to provide is set out in detail elsewhere in the RFP.

2. Bid Evaluation and Rating

a. Technical components of all eligible Bids are reviewed, evaluated and rated by a Public Works and Government Services Canada (PWGSC) Evaluation Board in accordance with the criteria, components and weight factors set out in the Submission Requirements and Evaluation (SRE). Upon completion of the evaluation, technical scores are established.

b. Technical Bids achieving the minimum technical score specified in the Submission Requirements and Evaluation section of the RFP are further considered.

c. The price envelopes of all responsive technical Bids are opened upon completion of the technical evaluation.

3. Notification

PWGSC normally expects to advise unsuccessful Bidders, in writing, within one week after PWGSC has entered into a contractual arrangement with the successful Bidder.

GI03 RESPONSIVE BIDS

Refer to SRE 4 of Submission Requirements and Evaluation.

GI04 COMPLETION OF BID

The Bidder shall base the bid on the applicable bid documents listed in the Special Instructions to Bidders. It is the responsibility of the Bidder to obtain clarification of any terms, conditions or technical requirements contained in the RFP.

GI05 BID PRICE

Unless specified otherwise in the bid documents:

a. the price shall be in Canadian currency; and
b. the price bid shall not include any amount for Applicable Taxes, and
c. exchange rate fluctuation protection is not offered; and
d. any request for exchange rate fluctuation protection will not be considered, and may render the bid non-responsive.

GI06 BID SECURITY REQUIREMENTS

1. The Bidder shall submit bid security with the bid in the form of a bid bond or a security deposit in an amount that is equal to not less than 10 percent of the total bid amount. Applicable Taxes shall not be included when calculating the amount of any bid security that may be required. The maximum amount of bid security required with any bid is $2,000,000.
2. A bid bond (form PWGSC-TPSGC 504) shall be in an approved form, properly completed, with original 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.
3. A security deposit shall be an original, properly completed, signed where required and be either
    a. a bill of exchange, bank draft or money order made payable to the Receiver General for Canada and certified by an approved financial institution or drawn by an approved financial institution on itself; or
    b. bonds of, or unconditionally guaranteed as to principal and interest by, the Government of Canada.
4. For the purposes of subparagraph 3. a. of GI06
    a. a bill of exchange is an unconditional order in writing signed by the Bidder and addressed to an approved financial institution, requiring the said institution to pay, on demand, at a fixed or determinable future time a sum certain of money to, or to the order of, the Receiver General for Canada;
    b. if a bill of exchange, bank draft or money order is certified by or drawn on an institution or corporation other than a chartered bank, it must be accompanied by proof that the said institution or corporation meets at least one of the criteria described in

subparagraph 4.c. of GI06, either by letter or by a stamped certification on the bill of exchange, bank draft or money; and

c. An approved financial institution is

i. a corporation or institution that is a member of the Canadian Payments Association as defined in the Canadian Payments Act;

ii. a corporation that accepts deposits that are insured, to the maximum permitted by law, by the Canada Deposit Insurance Corporation or the "Autorité des marchés financiers";

iii. a corporation that accepts deposits from the public if repayment of the deposit is guaranteed by Her Majesty the Queen in right of a province;

iv. a corporation, association or federation incorporated or organized as a credit union or co-operative credit society that conforms to the requirements of a credit union which are more particularly described in paragraph 137(6) of the Income Tax Act; or

v. Canada Post Corporation.

5. Bonds referred to in subparagraph 3. b. of GI06 shall be provided on the basis of their market value current at the date of solicitation closing, and shall be

a. payable to bearer;

b. accompanied by a duly executed instrument of transfer of the bonds to the Receiver General for Canada in the form prescribed by the Domestic Bonds of Canada Regulations; or

c. registered as to principal or as to principal and interest in the name of the Receiver General for Canada pursuant to the Domestic Bonds of Canada Regulations.

6. As an alternative to a security deposit an irrevocable standby letter of credit is acceptable to Canada and the amount shall be determined in the same manner as a security deposit referred to above.

7. An irrevocable standby letter of credit referred to in paragraph 6) of GI06 shall

a. be an arrangement, however named or described, whereby a financial institution (the "Issuer") acting at the request and on the instructions of a customer (the "Applicant") or on its own behalf,

i. is to make a payment to, or to the order of, the Receiver General for Canada as the beneficiary;

ii. is to accept and pay bills of exchange drawn by the Receiver General for Canada;

iii. authorizes another financial institution to effect such payment or accept and pay such bills of exchange; or

iv. authorizes another financial institution to negotiate against written demand(s) for payment provided that the terms and conditions of the letter of credit are complied with;

b. state the face amount which may be drawn against it;

c. state its expiry date;

d. provide for sight payment to the Receiver General for Canada by way of the financial institution's draft against presentation of a written demand for payment signed by the Departmental Representative identified in the letter of credit by his/her office;

e. provide that more than one written demand for payment may be presented subject to the sum of those demands not exceeding the face value of the letter of credit;

f. provide that it is subject to the International Chamber of Commerce (ICC) *Uniform Customs and Practice (UCP) for Documentary Credits, 2007 Revision*, ICC Publication No. 600, Pursuant to the ICC UCP, a credit is irrevocable even if there is no indication to that effect; and

g. be issued or confirmed, in either official language, by a financial institution which is a member of the Canadian Payments Association and is on the letterhead of the Issuer or Confirmer. The format is left to the discretion of the Issuer or Confirmer.

8. Bid security shall lapse or be returned as soon as practical following

a. the solicitation closing date, for those Bidders submitting non-compliant bids; and

b. the administrative bid review, for those Bidders submitting compliant bids ranked fourth to last on the schedule of bids; and

c. the award of contract, for those Bidders submitting the second and third ranked bids; and

d. the receipt of contract security, for the successful Bidder; or

e. the cancellation of the solicitation, for all Bidders.

9. Notwithstanding the provisions of paragraph 8 of GI06 and provided more than three compliant bids have been received, if one or more of the bids ranked third to first is withdrawn or rejected for whatever reason then Canada reserves the right to hold the security of the next highest ranked compliant bid in order to retain the bid security of at least three valid and compliant bids.

GI07 SUBMISSION OF BID

1. Canada requires that the Bid and Acceptance Form (Appendix A), be signed by the Bidder or by an authorized representative of the Bidder. If a bid is submitted by a joint venture, it must be in accordance with section GI14.

2. It is the Bidder's responsibility to:

a. submit a bid, duly completed, IN THE FORMAT REQUESTED, on or before the closing date and time set;

b. send its bid ONLY to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit specified on page 1 of the RFP;

c. ensure that the Bidder's name, return address, the solicitation number and description, and solicitation closing date and time are clearly visible on the envelope or the parcel(s) containing the bid; and

d. provide a comprehensive and sufficiently detailed bid that will permit a complete evaluation in accordance with the criteria set out in this RFP.

3. Bidders are requested to submit the technical and price components of the bid in separate, easily identified envelopes in accordance with the instructions contained in the bid documents. Bidders are requested to submit both envelopes as one package which

clearly and conspicuously display and indicate on the outside of the package the information identified in subsection 1.(c) above.

4. Timely and correct delivery of bids to the office designated for receipt of bids is the sole responsibility of the Bidder. PWGSC will not assume or have transferred to it those responsibilities. All risks and consequences of incorrect delivery of bids are the responsibility of the Bidder.

5. Bids and supporting information may be submitted in either English or French.

GI08 LATE SUBMISSIONS

Submissions delivered after the stipulated closing date and time will be returned unopened.

GI09 REVISION OF BID

1. A bid submitted in accordance with these instructions may be revised by letter or facsimile provided the revision is received at the office designated for the receipt of bids, on or before the date and time set for the closing of the solicitation. The letter or facsimile shall be on the Bidder's letterhead or bear a signature that identifies the Bidder.

2. A revision to a bid that includes unit prices must clearly identify the change(s) in the unit price(s) and the specific item(s) to which each change applies.

3. A letter or facsimile submitted to confirm an earlier revision shall be clearly identified as a confirmation.

4. Failure to comply with any of the above provisions shall result in the rejection of the non-compliant revision(s) only. The bid shall be evaluated based on the original bid submitted and all other compliant revision(s).

GI10 REJECTION OF BID

1. Canada may accept any bid, whether it is the lowest or not, or may reject any or all bids.

2. Without limiting the generality of paragraph 1) of GI10, Canada may reject a bid if any of the following circumstances is present:

    a. the Bidder's bidding privileges are suspended or are in the process of being suspended;

    b. the bidding privileges of any employee or subcontractor included as part of the bid are suspended or are in the process of being suspended, which suspension or pending suspension would render that employee or subcontractor ineligible to bid on the Work, or the portion of the Work the employee or subcontractor is to perform;

    c. the Bidder is bankrupt, or where for whatever reason, its activities are rendered inoperable for an extended period;

    d. evidence, satisfactory to Canada, of fraud, bribery, fraudulent misrepresentation or failure to comply with any law protecting individuals against any manner of discrimination, has been received with respect to the Bidder, any of its employees or any subcontractor included as part of its bid;

e. evidence satisfactory to Canada that based on past conduct or behavior, the Bidder, a sub-contractor or a person who is to perform the Work is unsuitable or has conducted himself/herself improperly;

f. with respect to current or prior transactions with Canada
   i. Canada has exercised, or intends to exercise, the contractual remedy of taking the work out of the contractor's hands with respect to a contract with the Bidder, any of its employees or any subcontractor included as part of its bid; or

   ii. Canada determines that the Bidder's performance on other contracts is sufficiently poor to jeopardize the successful completion of the requirement being bid on.

3. In assessing the Bidder's performance on other contracts pursuant to subparagraph 2)(f)(ii) of GI10, Canada may consider, but not be limited to, such matters as:

   a. the quality of workmanship in performing the Work;

   b. the timeliness of completion of the Work;

   c. the overall management of the Work and its effect on the level of effort demanded of the department and its representative; and

   d. the completeness and effectiveness of the Contractor's safety program during the performance of the Work.

4. Without limiting the generality of paragraphs 1), 2) and 3) of GI10, Canada may reject any bid based on an unfavourable assessment of the

   a. adequacy of the bid price to permit the work to be carried out and, in the case of a bid providing prices per unit, whether each such price reasonably reflects the cost of performing the part of the work to which that price applies;

   b. Bidder's ability to provide the necessary management structure, skilled personnel, experience and equipment to perform competently the work under the Contract; and

   c. Bidder's performance on other contracts.

5. Where Canada intends to reject a bid pursuant to a provision of paragraphs 1), 2), 3) or 4) of GI11, other than subparagraph 2)(a) of GI10, the contracting Authority will inform the Bidder and provide the Bidder ten (10) days within which to make representations, before making a final decision on the bid rejection.

6. Canada may waive informalities and minor irregularities in bids received if Canada determines that the variation of the bid from the exact requirements set out in the Bid Documents can be corrected or waived without being prejudicial to other Bidders.

GI11 BID COSTS AND LIMITATION OF LIABILITY

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

Except as expressly and specifically permitted in this RFP, no Bidder or Potential Bidder shall have any claim for any compensation of any kind whatsoever in relation to this RFP, or any aspect of the procurement process, and by submitting a bid each Bidder shall be deemed to have agreed that it has no claim.

GI12 PROCUREMENT BUSINESS NUMBER

Bidders are required to have a Procurement Business Number (PBN) before contract award. Bidders may register for a PBN online at Supplier Registration Information. For non-Internet registration, Bidders may contact the InfoLine at 1-800-811-1148 to obtain the telephone number of the nearest Supplier Registration Agent.

GI13 LEGAL CAPACITY

The Bidder must have the legal capacity to contract. If the Bidder is a sole proprietorship, a partnership or a corporate body, the Bidder must provide, if requested by the Contracting Officer, a statement and any requested supporting documentation indicating the laws under which it is registered or incorporated together with the registered or corporate name and place of business. This also applies to bidders submitting a bid as a joint venture.

GI14 JOINT VENTURE

1. A joint venture is an association of two or more parties who combine their money, property, knowledge, expertise or other resources in a single joint business enterprise, sometimes referred to as a consortium, in order to submit together a response to the Request for Proposal. Bidders who submit a response to the Request for Proposal, as a joint venture must indicate clearly that it is a joint venture and provide the following information:

   i. the name of each member of the joint venture;

   ii. the name of the representative of the joint venture, i.e. the member chosen by the other members to act on their behalf, if applicable;

   iii. the name of the joint venture, if applicable.

2. The response to the Request for Proposal must be signed by all the members of the joint venture unless one member has been appointed to act on behalf of all members of the joint venture. Canada may, at any time, require each member of the joint venture to prove that the representative has been appointed with full authority to act as its representative for the purposes of submitting a response to the Request for Proposal.

3. All of the members of the joint venture are jointly and severally responsible for the obligations entered into by the Bidder in accordance with the Contract Documents.

GI15 CAPITAL DEVELOPMENT AND REDEVELOPMENT CHARGES

For the purposes of GC1.8, of R2810D "Laws, Permits and Taxes", in the General Conditions of the Contract, only fees or charges directly related to the processing and issuing of building permits shall be included. The Bidder shall not include any monies in the bid amount for special municipal development, redevelopment or other fees or charges which a municipal authority may seek as a prerequisite to the issuance of building permits.

GI16 COMPLIANCE WITH APPLICABLE LAWS

1. By submission of a bid, the Bidder certifies that the Bidder has the legal capacity to enter into a contract and is in possession of all valid licenses, permits, registrations, certificates, declarations, filings, or other authorizations necessary to comply with all federal, provincial and municipal laws and regulations applicable to the submission of the bid and entry into any ensuing contract for the performance of the work.

2. For the purpose of validating the certification in paragraph 1) of GI17, a Bidder shall, if requested, provide a copy of every valid license, permit, registration, certificate, declaration, filing or other authorization listed in the request, and shall provide such documentation within the time limit(s) set out in the request.

3. Failure to comply with the requirements of paragraph 2) of GI17 shall result in disqualification of the bid.

GI17 PERFORMANCE EVALUATION

1. Bidders shall take note that the performance of the Contractor during and upon completion of the work shall be evaluated by Canada. The evaluation shall be based on the quality of workmanship; timeliness of completion of the work; project management, contract management and management of health and safety. Should the Contractor's performance be considered unsatisfactory, the Contractor's bidding privileges on future work may be suspended indefinitely.

2. The form PWGSC-TPSGC 2913, SELECT - Contractor Performance Evaluation Report Form, is used to record the performance.

GI18 CONFLICT OF INTEREST - UNFAIR ADVANTAGE

1. In order to protect the integrity of the procurement process, bidders are advised that Canada may reject a bid in the following circumstances:

a. if the Bidder, its Affiliates, any of its subcontractors, any of their respective employees or former employees was involved in any manner in the preparation of the bid solicitation or in any situation of conflict of interest or appearance of conflict of interest;

b. if the Bidder, its Affiliates, any of its subcontractors, any of their respective employees or former employees had access to information related to the bid solicitation that was not available to other bidders and that would, in Canada's opinion, give or appear to give the Bidder an unfair advantage.

2. The experience acquired by a Bidder, or its Affiliates, who is providing or has provided the goods and services described in the bid solicitation (or similar goods or services) will not, in itself, be considered by Canada as conferring an unfair advantage or creating a conflict of interest. This Bidder, or its Affiliates, remains however subject to the criteria established above.

3. Where Canada intends to reject a bid under this section, the Contracting Officer will inform the Bidder and provide the Bidder an opportunity to make representations before making a final decision. Bidders who are in doubt about a particular situation should contact the Contracting Officer before bid closing. By submitting a bid, the Bidder represents that it does not consider itself to be in conflict of interest nor to have an unfair advantage. The Bidder acknowledges that it is within Canada's sole discretion to determine whether a conflict of interest, unfair advantage or an appearance of conflict of interest or unfair advantage exists.

GI19 CODE OF CONDUCT AND CERTIFICATIONS

1. Statement

a) The Contractor must comply with the *Code of Conduct for Procurement* and must comply with the terms set out in these Integrity Provisions.

b) The Contractor confirms that it understands that convictions of certain offences, a false declaration in its bid, a false declaration under the Contract or failing to maintain up-to-date information requested may lead to a termination for default. If the Contractor or any of its Affiliates fail to remain free and clear of any convictions and any conditional or absolute discharges specified in these Integrity Provisions during the contract period, Canada may, following a notice period, terminate for default. The Contractor understands that a termination for default will not restrict Canada's right to exercise any other remedies that may be available against the Contractor and agrees to immediately return any advance payments.

2. List of Names

The Contractor must immediately inform Canada in writing of any changes affecting the list of names of directors and owners during the contract period.

3. Information Verification

The Contractor certifies that it is aware, and its Affiliates are aware, that Canada may verify at any time during the contract period, the information provided by the Contractor, including the information relating to the acts or convictions and any conditional or absolute discharges specified In these Integrity Provisions. Canada may request additional information, validations from a qualified third party, consent forms and other evidentiary elements proving identity and eligibility to contract with Canada.

4. Lobbying Act

The Contractor certifies that neither it nor its Affiliates have directly or indirectly, paid or agreed to pay, and will not, directly or indirectly, pay a contingency fee to any individual for the solicitation, negotiation or obtaining of the Contract if the payment of the fee would require the individual to file a return under section 5 of the *Lobbying Act*.

5. Canadian Offences Resulting in Legal Incapacity

a) The Contractor has certified that neither it nor any of its Affiliates have been convicted of or have pleaded guilty to an offence under any of the following provisions, which result in legal incapacity under section 750(3) of the *Criminal Code.* , and for which they have not been pardoned or received a record of discharge under the Canadian Pardons subsection:

i. paragraph 80(1)(d) (*False entry, certificate or return), subsection 80(2) (Fraud against Her Majesty) or section 154.01 (Fraud against Her Majesty) of the Financial Administration Act*, or

ii. section 121 (*Frauds on the government and Contractor subscribing to election fund), section 124 (Selling or Purchasing Office), section 380 (Fraud) for fraud committed against Her Majesty or section 418 (Selling defective stores to Her Majesty) of the Criminal Code*,or

b) the Contractor has not been convicted of or pleaded guilty to the offences described in paragraph (a) and has certified that it has not directed, influenced, authorized, assented to, acquiesced in or participated in the commission or omission of the acts or offences that would render that Affiliate ineligible to be awarded a contract under (a).

6. Canadian Offences

The Contractor has certified that:

a) it and its Affiliates have not, in the last three years, from the date of contract award, been convicted of or pleaded guilty to an offence under any of the following provisions for which it would be ineligible for contract award under these Integrity Provisions and for which they have not been pardoned or received a record of discharge under the Canadian Pardons subsection:

i. section 119 (*Bribery of judicial officers, etc), section 120 (Bribery of officers), section 346 (Extortion), sections 366 to 368 (Forgery and other offences resembling forgery), section 382 (Fraudulent manipulation of stock exchange transactions), section 382.1 (Prohibited insider trading), section 397 (Falsification of books and documents), section 422 (Criminal breach of contract), section 426 (Secret commissions), section 462.31 (Laundering proceeds of crime) or sections 467.11 to 467.13 (Participation in activities of criminal organization) of the Criminal Code*, or

ii. section 45 (*Conspiracies, agreements or arrangements between competitors), section 46 (Foreign directives), section 47 (Bid rigging), section 49 (Agreements or arrangements of federal financial institutions), section 52 (False or misleading representation), section 53 (Deceptive notice of winning a prize) of the Competition Act*, or

iii. section 239 (*False or deceptive statements) of the Income Tax Act*, or

iv. section 327 (*False or deceptive statements) of the Excise Tax Act*, or

v. section 3 (*Bribing a foreign public official), section 4 (Accounting), or section 5 (Offence committed outside Canada) of the Corruption of Foreign Public Officials Act*, or

vi. section 5 (*Trafficking in substance), section 6 (Importing and exporting), or section 7 (Production of substance) of the Controlled Drugs and Substance Act*, or

b) the Contractor has not been convicted of or pleaded guilty to the offences described in paragraph (a) and has certified that it has not directed, influenced, authorized, assented to, acquiesced in or participated in the commission or omission of the acts or offences that would make that Affiliate ineligible for contract award.

7. Foreign Offences

The Contractor has certified that:

a) it and its Affiliates have not, in the last three years, from the date of contract award, been convicted of or pleaded guilty to an offence in a jurisdiction other than Canada of having committed an act or omission that would, in Canada's opinion, be similar to an offence referenced in the Canadian Offences Resulting in Legal Incapacity and the Canadian Offences subsections and for which it would be ineligible for contract award under these Integrity Provisions and for which they have not been pardoned or received a record of discharge under the Foreign Pardons subsection:

i. the court before which the Contractor or the Affiliate of the Contractor appeared acted within the court's jurisdiction;
ii. the Contractor or the Affiliate of the Contractor appeared during the court's proceedings or submitted to the court's jurisdiction;
iii. the court's decision was not obtained by fraud; and
iv. the Contractor or the Affiliate of the Contractor was entitled to present to the court every defence that the Contractor or the Affiliate of the Contractor would have been entitled to present had the proceeding been tried in Canada; or

b) it has not been convicted of or pleaded guilty to the offences described in paragraph (a) and has certified that it has not directed, influenced, authorized, assented to, acquiesced in or participated in the commission or omission of the acts or offences that would render that Affiliate ineligible to be awarded a contract under (a).

8. Ineligibility to Contract with Canada

a) The Contractor confirms that it understands that if after contract award they have been convicted of certain offences, as described in the Canadian Offences Resulting in Legal Incapacity, the Canadian Offences and the Foreign Offences subsections, they will be ineligible to contract with Canada. If, after contract award, a Contractor becomes ineligible for contract award, Canada may, following a notice period, declare the Contractor to be ineligible and, to the extent that a contract has been awarded:

i. terminate the contract for default; or
ii. require the Contractor to enter into an Administrative Agreement with the Minister of PWGS on such terms and conditions as are necessary to safeguard the integrity of the procurement process.

b) The Contractor confirms that it understands that where its Affiliate has been convicted of certain offences, as described in the Canadian Offences Resulting in Legal Incapacity, the Canadian Offences and the Foreign Offences subsections, the Affiliate is ineligible to contract with Canada. If, after contract award, an Affiliate of a Contractor becomes ineligible to contract with Canada, Canada may, following a notice period, declare the Contractor to be ineligible and, to the extent that a contract has been concluded:

i. terminate the contract for default if, in the opinion of Canada, there is evidence that the Contractor directed, influenced, authorized, assented to, acquiesced in or participated in the commission or omission of certain acts or offences that make that Affiliate ineligible; or

ii. require the Contractor to enter into an Administrative Agreement with the Minister of PWGS on such terms and conditions as are necessary to safeguard the integrity of the procurement process.

c) The Contractor confirms that it understands that where it has been declared to be ineligible to contract with Canada under the *Ineligibility and Suspension Policy*, it is also ineligible to contract with Canada under these Integrity Provisions for the duration of the period that has been determined by the Minister of PWGS. Where the Contractor has been declared to be ineligible under the *Ineligibility and Suspension Policy after contract award, Canada may, following a notice period:*

i. terminate the contract for default; or
ii. require the Contractor to enter into an Administrative Agreement with the Minister of PWGS on such terms and conditions as are necessary to safeguard the integrity of the procurement process.

d) The Contractor confirms that it understands that where it or its Affiliates have been held responsible for breaches under the Lobbying Act subsection, it is ineligible to contract with Canada under these Integrity Provisions for the duration of the period that has been determined by the Minister of PWGS. Where the Contractor has been declared to be ineligible under the Ineligibility and Suspension Policy after contract award, Canada may, following a notice period:

i. terminate the contract for default; or
ii. require the Contractor to enter into an Administrative Agreement with the Minister of PWGS on such terms and conditions as are necessary to safeguard the integrity of the procurement process.

9. Declaration of Offences Committed

The Contractor understands that it has a continuing obligation to immediately declare all convictions to Canada under the Canadian Offences Resulting in Legal Incapacity, the Canadian Offences and the Foreign Offences subsections.

10. Period of Ineligibility

The following rules determine the period for which a Contractor or its Affiliate that has been convicted of certain offences is, ineligible to contract with Canada:

a) for all offences referenced under the Canadian Offences Resulting in Legal Incapacity subsection for which a Contractor or its Affiliate has pleaded guilty to or has been convicted of, the period of ineligibility to be awarded a contract is indefinite, subject to the Canadian Pardons subsection;

b) subject to an Administrative Agreement, for all offences referenced under the Canadian Offences and Foreign Offences subsections for which a Contractor or its Affiliate has pleaded guilty to or been convicted of, as the case may be, in the last three years, the period of ineligibility to contract with Canada is ten years from the date of determination by the Minister of PWGS, subject to the Canadian Pardons and Foreign Pardons subsections;

c) subject to an Administrative Agreement, for all breaches under the Lobbying Act subsection for which a Contractor or its Affiliate has been found responsible, in the last

three years, the period of ineligibility to contract with Canada is ten years from the date of determination by the Minister of PWGS.

11. Canadian Pardons

A determination of ineligibility to contract with Canada will not be made or maintained by the Minister of PWGS under these Integrity Provisions, in respect of an offence or act that gave rise or that could give rise to a determination of ineligibility, if the Contractor or its Affiliate has:

a) been granted an absolute discharge in respect of the offence, or has been granted a conditional discharge in respect of the offence and those conditions have been satisfied;
b) been granted a pardon under Her Majesty's royal prerogative of mercy;
c) been granted a pardon under section 748 of the *Criminal Code.*;
d) received a record of suspension ordered under the *Criminal Records Act*; and
e) been granted a pardon under the *Criminal Records Act*, as that Act read immediately before the day section 165 of the *Safe Streets and Communities Act* comes into force.

12. Foreign Pardons

A determination of ineligibility to contract with Canada will not be made or maintained, as the case may be, by the Minister of PWGS in respect of matters referenced in the Foreign Offences subsection and with respect to an offence or act that gave rise or will give rise to a determination of ineligibility, if the Contractor or its Affiliate, has at any time, benefited from foreign measures that are similar to Canadian pardons at the sole discretion of Canada, conditional discharges, absolute discharges, record of suspensions, or restoration of legal capacities by the Governor in Council.

13. Period of Ineligibility for Breaching Administrative Agreements

The Contractor confirms that it understands that where it has concluded an Administrative Agreement and that it has breached any of its terms and conditions, the Minister of PWGS will lengthen the period of ineligibility for a period to be determined by the Minister of PWGS.

14. Obligations on Subcontractors

The Contractor confirms that it understands that to the extent that it relies on a subcontractor(s) to perform the Contract, the Contractor will not enter into a subcontract with a company that has been convicted of or pleaded guilty or an Affiliate of the company has been convicted of or pleaded guilty, as the case may be, to any of the offences referenced in the Canadian Offences Resulting in Legal Incapacity, the Canadian Offences and the Foreign Offences subsections for which no pardon or equivalent has been received under the Canadian Pardons and Foreign Pardons subsections, without the prior written approval of the Minister of PWGS. Where the Contractor has entered into a contract with an ineligible subcontractor and for which no prior written approval has been received by Canada, the Minister of PWGS will declare the Contractor to be ineligible to contract with Canada for a period of five years.

GI20 DEBRIEFING

After contract award, Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Officer named on the Request for Proposal - Page 1 within 15 working days of receipt of the results of the bid solicitation process. The confidentiality of

information relating to other submissions will be protected. The debriefing may be in writing, by telephone or in person.

SUBMISSION REQUIREMENTS AND EVALUATION

SUBMISSION REQUIREMENTS AND EVALUATION

SRE 1 GENERAL INFORMATION

1.1 Submission of Bids

1.1.1 Bids are to be submitted following a "two-envelope" procedure in which Bidders submit technical aspects of their bid in one envelope and the proposed price and bid security in a second envelope failure to do so may result in non-compliance.

1.1.2 Submit one (1) signed original and four (4) copies of the technical bid in a sealed envelope (envelope one).

1.1.3 Submit one (1) original price bid in a sealed envelope (envelope two) which must include the signed Bid and Acceptance Form (Appendix A) plus bid security.

1.2 Format of Bids

1.2.1 Technical Bid

In their technical bid, bidders should demonstrate their understanding of the requirements contained herein and explain how they meet these requirements. Bidders should demonstrate their capability in a thorough, clear and concise manner for carrying out the work.

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that the bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed. Information is subject to verification by Canada. Incorrect information will be excluded from the evaluation.

The following bid format information should be implemented when preparing the bid, failure to do so may result in non-compliance:

- Paper size should be - 216mm x 279mm (8.5" x 11");
- Smallest font size should be 11 point Times or equal;
- Margins should be 12 mm left, right, top, and bottom;
- Double-sided submissions are preferred.
- One (1) 'page' means one side of a 216mm x 279mm (8.5" x 11") sheet of paper; 279mm x 432 mm (11" x 17") fold-out sheets for spreadsheets, organization charts etc. will be counted as two pages.

The order of the technical bid should follow the order established in the Submission Requirements Section of the RFP. The maximum number of pages (including text and graphics) to be submitted is thirty (30). The following are not part of this page limitation:

- Covering Letter;
- Front Page of the Proposal;
- Price Bid (Appendix A);
- Client Reference Forms (Appendix B)
- Health and Safety documentation. Refer to SRE 2.2.3 c);
- Resumes (limit 2 pages each);
- Sample Project reports. Refer to SRE 2.2.1 c).

The consequence of exceeding the maximum 30 page limitation is that all pages that extend beyond the 30 page limitation will be removed from the technical proposal submission and will not be forwarded to the PWGSC Evaluation Committee for evaluation.

1.2.2 Price Bid

Bidders must submit their price bid in accordance with Appendix A - Bid and Acceptance Form and GI06 Bid Security Requirements of the General Instructions to Bidders.

SRE 2 TECHNICAL BID SUBMISSION REQUIREMENTS AND EVALUATION

2.1 Definitions

Note: For the purposes of the Submissions Requirements and Evaluation (SREs) the definition of Construction Manager provided below wiill apply . The resulting contract between the successful Bidder and Canada the definition of Construction Manager at GC1.1.2 will apply.

Bidder: means the person or entity (or in the case of a joint venture, the persons or entities) submitting a bid to perform a contract for goods, services or both. It does not include the parent, subsidiaries or other affiliates of the Bidder, or its subcontractors.

Completed: means a project where all the terms and conditions of the contract were met and where a final certificate of completion has been issued or a final invoice paid and where the date on the certificate or payment instrument indicates the date of completion.

Construction Manager: means a construction firm responsible for providing construction management advice and services during the design phase and also is responsible for the construction work in accordance with the drawings and specifications. The Construction Manager acts as Constructor (as defined by Occupational Health and Safety Act) in charge of a single integrated construction site.

Construction Value: means the value of construction put in place being a measure of the value of construction installed or erected at the site during a given period. For an individual project, this includes:
1. Cost of materials installed or erected.

2. Cost of labor (both by contractors and force account) and a proportionate share of the cost of construction equipment rental.
3. Contractor's profit.
4. Cost of architectural and engineering work (in the case of design-build).
5. Miscellaneous overhead and office costs chargeable to the project.
6. Interest, levies, permits and taxes chargeable to the project.

Pre-construction Services: Category of services provided by the Construction Manager as described in the Terms of Reference for this contract.

Construction Services: Category of services provided by the Construction Manager as described in the Terms of Reference for this contract.

Post-construction Services: Category of services provided by the Construction Manager as described in the Terms of Reference for this contract.

2.2 Point Rated Requirements

2.2.1 Experience of the Bidder (Construction Management): (Maximum Points: 250 points)

Describe the accomplishments and achievements of the Bidder for work related to the identified project.
Information to be supplied:

Description of two (2) representative projects, at least one of which, the Bidder has delivered as a Construction Manager. Any proposal presenting more than two projects will result in the evaluation of the first two projects and any other projects after the first two will not be evaluated. Both projects submitted shall have been Completed after January 1, 2005.

The representative projects should be relevant to the scope of services required, and the scale and scope of the project described in this RFP. The following information is to be included for each representative project:

a) Representative project relevance:

- A brief project description and intention of the project including total Construction Value and contracts managed as well as start and completion dates. Include a breakdown of the Construction Values for major work packages such as: demolition, asbestos abatement, electrical work, HVAC, fire protection, structural, security systems, building envelope restoration, heritage protection.;
- Clearly indicate how and why each referenced project is comparable to the subject Project of this RFP against the following criteria: Size of project, extent of rehabilitation and renovations, type and protection of heritage components, complexity, work in an occupied building, asbestos abatement in occupied building, phased floor-by-floor work, and other criteria that bidders identify based on their understanding of the project; and
- Bidders must complete and submit Appendix B "CLIENT REFERENCE FORM FOR REPRESENTATIVE PROJECT" for each project as validation of the Bidder's representative projects. If any of the information requested in Appendix B is not provided in the Bidders submission, Canada will provide a timeframe by which it must be provided. Failure to provide the requested information may render the Bidder non-responsive.

b) Management of representative projects:

- How budget was controlled and managed (i.e. contract price & final construction cost with explanation to address variances);
- How schedule was controlled and managed (i.e. initial schedule and revised schedule with explanation to address variances);
- How scope, quality and risks were managed to achieve client's expectations;
- Names of key personnel responsible for delivery, including a brief description of their roles and responsibilities; and

c) Project reporting:

- How project reporting was undertaken for either of the two (2) referenced projects. Submit a sample of monthly project report along with a sample field daily report of one of the referenced projects or from another project;

Bidders are hereby advised; the referenced projects provided under SRE 2.2.1 shall also be separately assessed for Health and Safety performance under SRE 2.2.3 below.

2.2.2 Experience of Key Personnel of the Bidder: (Maximum Points: 200 points)

Identify the key personnel proposed for the required services including Pre-Construction Services, Construction Services and Post-Construction Services. Key personnel should include, at a minimum: Project Management staff, Site Superintendent(s), Assistant Site Superintendent(s), Quality Management staff, Site Safety Officers, Cost Estimator(s), Scheduler(s), Commissioning Agent, and Interference Drawing Specialist.

The following minimum requirements should be met:

- Cost estimator with minimum 10 years experience and completely conversant with construction economy and market conditions relevant to the project requirements;
- Scheduler with minimum 10 years experience in construction scheduling and experience using Microsoft Project or Oracle Primavera scheduling software;
- At least one Site Safety Officer to be one of the following: a Canadian Registered Safety Professional (CRSP), certified Health & Safety Consultant (CHSC), Gold Seal certified or Construction Health & Safety Officer (CHSO); and
- Commissioning Agent with minimum 10 years experience.

<u>Information to be supplied for each member of the key personnel and back up:</u>

a) Experience of the Project Management Team:

- Academic and other relevant qualifications such as PMP, Gold Seal, etc.; include accomplishments and achievements;
- Pertinent experience/qualifications as it relates to the Postal B requirements as presented in the Terms of Reference;
- Relevant experience in the proposed position and number of years experience in both the proposed position and the construction industry (if not done with Bidder firm, specify name of firm);
- Role, responsibility and degree of involvement of individual in past projects (especially those identified in SRE2.2.1); A higher score will be given to key personnel who had a significant role in projects identified in SRE2.2.1).

b) Experience of Site Superintendants:

- Supply the same information for this category of resource as identified in SRE 2.2.2 a) above.

c) Experience of Remaining Support Members:

- Supply the same information for this category of resource as identified in SRE 2.2.2 a) above.

2.2.3 Management of Services: (Maximum Points: 350 points)

The Bidder should demonstrate their firm's capability to manage the services to meet Project challenges and ensure consistent control throughout the project. The Bidder should demonstrate how the team will be organized and managed.

Information to be supplied:

a) Organization Chart & Resource Allocation Matrices

Provide your Team's organization chart with all proposed key personnel in accordance with the response to evaluation criteria 2.2.2 above, as well as other proposed position titles and names of the Bidder's team which will be used to deliver the project. Describe, in detail, roles and responsibilities of the personnel selected and provide a narrative clearly explaining the rationale for the proposed project resourcing against the project objectives, including the category of resource, quantity of resource, and the individuals proposed.

Include resource allocation matrices for Pre-Construction Services, Construction Services and Post-Construction Services respectively, in accordance with the following templates. The resource allocation matrix for each required Services of the project should identify the individuals' names, their proposed positions and percent of utilization.

Pre-Construction Services (estimated duration 31 months)		
Category of Personnel	**Individual Names**	**Percentage of Utilization**

Construction Services (estimated duration 26 months)		
Category of Personnel	**Individual Names**	**Percentage of Utilization**

Post-Construction Services (estimated duration 26 months)		
Category of Personnel	**Individual Names**	**Percentage of Utilization**

b) Work Plan and Methodologies

- Describe how advisory services will be provided during the implementation stages;
- Provide a description of the proposed time services and explain how schedule control will be applied throughout the delivery of the Project;
- Provide a description of the proposed cost services and explain how cost control will be applied throughout the delivery of the Project;
- Describe the Change Management Methodology: Approach to foreseeing, minimizing, and mitigating changes in the Work;
- Describe the proposed quality control methodology, explain how quality control will be applied throughout the delivery of the Project;
- Describe the reporting relationships within the Bidder's organization and with PWGSC;
- Describe the proposed communication strategy, including a description of the communication management approach that addresses the needs of the various stakeholders;
- Provide a Work Plan with a breakdown of Work tasks and deliverables. Include a narrative describing the Work Plan. In the narrative, indicate how the Bidder will address any adjustments to the Work Plan for changes in the duration of Work shifts, or for additional Work shifts when required to maintain schedule, including how provision of the Bidders key project resourcing will be addressed.
- Describe the proposed commissioning methodology;
- Describe how the Bidder will contribute to the process of aligning the design to meet both cost and schedule constraints, which are critical to the success of the project.
- Risk management: Mitigating risk and doing regular constructability reviews will reduce cost of construction. Describe how the Bidder will support and contribute to the design and construction phases with respect to risk management.
- Cost estimating: Following the Schematic Design and Design Development stages, responsibility for cost estimating services for the remainder of the project will be transferred over to the Construction Manager. Describe how the Bidder will review and reconcile the final cost estimate produced by the Consultant at the end of Design Development, and the estimating process the Bidder will use to produce updated cost estimates during the Construction

Documents stage. Describe the estimating process the Bidder will use to document the cost of each bid package, and explain how costs will be compared to market conditions.

- Design and Construction Document Review: Describe how the Bidder will perform document reviews and communicate assumptions, risks and constructability review comments to the consultant team and PWGSC.

c) Health & Safety (H&S) Plan and Record

- Describe the Bidder's Company Health and Safety philosophy and provide a copy of any Corporate Health and Safety Policy, Process and Procedural documentation.
- Based on the Bidder's understanding of the project from the information provided in this RFP, provide a narrative describing how the Bidder will implement a Site Specific Health & Safety Plan for this project.
- Provide a description of how the Bidder intends to provide ongoing health and safety staffing and services throughout the duration of the project, including shift work when required.
- Consideration in awarding points will be given to how well the Health and Safety information provided aligns with the requirements of this project.

2.2.4 Management of Challenges and Issues: Schedule (Maximum Points: 200)

Provide a detailed construction schedule based on the information disclosed in the RFP and additional reasonable assumptions that anticipates the various issues that may be faced by the Bidder in undertaking the Work.

Information to be supplied:

a) Project Schedule

- A detailed schedule indicating the required Services including Pre-Construction Services, Construction Services and Post-Construction Services. The schedule shall outline activities, sequencing and interdependence of construction activities and work packages backed up with a detailed narrative report describing;

b) Management of Challenges and Issues

- Challenges and issues;
- Work restrictions;
- The project goals with highlights of those that are particularly significant to the Project;
- The detailed commentary on the proposed schedule and describe the methodology as to how the Bidder will maintain the schedule;
- Brief description of Work packaging.
- Any assumptions made.

What will be evaluated:

SRE	Maximum Score:1000 Points Mandatory Minimum Points:600	Rating	Weight Factor	Weighted Rating
2.2.1	**Experience of Bidder: Maximum Points 250**			
a)	Representative project relevance	0-10	12	0-120
b)	Management of representative projects	0-10	8	0-80
c)	Project reporting	0-10	5	0-50
2.2.2	**Experience of Key Personnel of the Bidder: Maximum Points 200**			
a)	Experience of the Project Management Team (Senior Project Manager and Project Manager)	0-10	8	0-80
b)	Experience of the Site Superintendents Team (Senior and Assistants)	0-10	7	0-70
c)	Experience of the remaining support members	0-10	5	0-50
2.2.3	**Management of the Project: Maximum Points 350**			
a)	Organization Chart & Resources Allocation Matrices	0-10	8	0-80
b)	Work Plan and Methodologies	0-10	20	0-200
c)	Health & Safety Plan and Record	0-10	7	0-70
2.2.4	**Management of Challenges and Issues: Schedule : Maximum Points 200**			
a)	Project Schedule	0-10	5	0-50
b)	Management of Challenges and Issues	0-10	15	0-150

EVALUATION GRID

The evaluation will be conduct in accordance with the table provided below.

Non Responsive	Inadequate	Weak	Adequate	Fully Satisfactory	Strong
0 Point	**2 Points**	**4 points**	**6 points**	**8 points**	**10 points**
Did not submit information which could be evaluated	Substantially below the desirable minimum	Just fails to meet the desirable minimum	Meets the desirable minimum	Exceeds the desirable minimum	Exceptionally strong proposal
	For example: -Bidder lacks qualifications and experience	For example: -Bidder does not have minimum qualifications and experience	For example: -Bidder has minimum qualifications and experience	For example: -Bidder is well qualified and experienced	For example: -Bidder is highly qualified and experienced
	-Team proposed is not likely able to meet requirements	-Team does not cover all components or overall experience is weak	- Team capable of just fulfilling requirements	-Good team -some members have previously worked together	-Strong team -has worked well together before on comparable work
	-Sample projects generally not related to this project's needs	-Sample projects only marginally related to this project's needs	-Sample projects generally related to this project's needs	-Sample projects are closely related to this project's needs	-Sample projects are almost identical to this
	- Little capability to meet performance requirements	- Just below acceptable capability	-Minimum acceptable capability, should meet minimum performance	- Satisfactory capability, should ensure effective results	- Superior capability, should ensure effective results

SRE 3 PRICE BID EVALUATION

The price envelopes of all responsive bids will be opened upon completion of the evaluation of technical submissions (refer to GI02- Overview of Selection Procedure).

SRE 4 BASIS OF SELECTION

1. To be declared responsive, a bid must:

   (a) comply with all the requirements of the bid solicitation; and
   (b) obtain the required minimum points (600 out of 1000 points) for the total of the technical bid evaluation criteria which are subject to point rating; and
   (c) the price bid must consist of the Bid and Acceptance Form, duly completed and accompanied by the required bid security.

2. Bids not meeting (a), or (b), or (c) above will be declared non-responsive.

3. Neither the responsive bid that receives the highest number of points nor the one that proposed the lowest price will necessarily be accepted. The responsive bid with the lowest evaluated price per point will be recommended for award of a contract. In the case of a tie, the Bidder submitting the lowest bid amount will be selected.

   Evaluated Price per Point = Total Bid Amount / Technical Score

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. Request for Proposal and all Annexes, Appendices and Amendments thereto;
d. Drawings and Specifications;
e. General Conditions and clauses

GC1	General Provisions	R2810D	(2015-07-03);
GC2	Administration of the Contract	R2820D	(2015-02-25);
GC3	Execution and Control of the Work	R2830D	(2015-02-25);
GC4	Protective Measures	R2840D	(2008-05-12);
GC5	Terms of Payment	R2850D	(2015-02-25);
GC6	Delays and Changes in the Work	R2860D	(2013-04-25);
GC7	Default, Suspension or Termination of Contract	R2870D	(2008-05-12);
GC8	Dispute Resolution	R2882D	(2015-02-25);
GC9	Contract Security	R2890D	(2014-06-26)
GC10	Insurance	R2900D	(2008-05-12);
Allowable Costs for Contract Changes under GC6.4.1		R2950D	(2015-02-25)
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.

i. The Contractor's technical bid.

2. The documents identified by title, number and date in 1) (e) 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:
http://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

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

SUPPLEMENTARY CONDITIONS (SC)

SC01 CHANGES TO CONTRACT DOCUMENTS

1. R2810D:

a. In GC1.1.2, delete:
"Contractor" means the person contracting with Canada to provide or furnish all labour, Material and Plant for the execution of the Work under the Contract, and includes the Contractor's superintendent as designated in writing to Canada.

b. In GC1.1.2 add:
"Contractor" and “Construction Manager” means the person contracting with Canada to provide or furnish all labour, Material and Plant and construction management services for the execution of the Work under the Contract, and includes the Contractor's superintendent as designated in writing to Canada.

c. Add the following subparagraph 1) (g) under GC1.2.2:
(g) Terms of Reference

2. R2850D:

a. The following paragraph is added to GC5.4:

6) The portion of the Work done under the Fixed Monthly Fee shall be invoiced in fixed monthly installments over the duration of the Contract.

b. The following paragraph is added to GC5.5

5) If, at any time before the issuance of a Certificate of Completion, Canada determines that a Work Package has reached Substantial Performance as described in subparagraph 1) (b) of GC 1.1.4, "Substantial Performance", paragraphs 1) through 4) of GC 5.5 may be applied with respect to the specific Work Package.

3. R2860D: GC6.4 is replaced in its entirety with the following:

1. Any adjustment to the price of the Work resulting from a change in the Work pursuant to GC6.1 will represent all reasonable and proper costs including delay incurred by or savings accruing to the Contractor in respect of the labour, Plant and Material that are payable as Construction Costs.

2. If the final price of the Work, excluding the Contractor' fees, is not within 75 and 125 percent of the total Estimated Construction Cost, the value of which includes the total of the original Estimated Construction Costs and the Estimated Construction Costs of the optional services, either party to the Contract may request to negotiate a change in the Contractor' Percentage Fee for the Work outside of these thresholds if:

a. there is a demonstrable difference between the cost to the Contractor of performing the Work for the Estimated Construction Cost and the cost to the Contractor of performing the Work for the actual Construction Cost; and,

b. if the difference in cost is due solely to the difference in actual and estimated Construction Costs. The onus of establishing, justifying and quantifying a proposed change lies with the party making the request for negotiation. In no event shall the total amount paid as the Contractor' Percentage Fee, amended as a result of a reduction in the price of the Work, exceed the amount that would have been payable to the Contractor had the price of the Work actually accounted for 75 percent of the Estimated Construction Cost.

3.The amount of the Contract shall be the final sum of the Fixed Monthly Fees, the actual Construction Cost, the Percentage Fee and any adjustments that are made in accordance with the Contract.

4. GC1.6 of R2810D is deleted and replaced with the following LIMITATION OF LIABILITY:

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.

2. 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 GC10.1 "Insurance Contracts" of R2900D, the general liability insurance limits for one occurrence as referred to in the "Insurance Terms". It is limited to the ceiling per loss, civil responsibility insurance, as stated in the R2910D "Insurance Conditions";

b.In respect to losses for which insurance is not required to be provided in accordance with GC10.1 "Insurance Contracts" of R2900D, the greater of the Contract Amount or $5,000,000, but in no event shall the sum be greater than $20,000,000.

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.

SC02 INSURANCE TERMS

In addition to the Insurance terms indicated below, see Annex "D" (completed certificate is not required at bid closing).

IT1 General
- IT1.1 Proof of Insurance
- IT1.2 Payment of Deductible

IT2 Commercial General Liability
- IT2.1 Scope of Policy
- IT2.2 Insured
- IT2.3 Period of Insurance

IT3 Wrap-up General Liability
- IT3.1 Scope of Policy
- IT3.2 Amount of Insurance
- IT3.3 Insured
- IT3.4 Period of Insurance

IT4 Builder's Risk
- IT4.1 Scope of Policy
- IT4.2 Amount of Insurance
- IT4.3 Insured
- IT4.4 Period of Insurance
- IT4.5 Insurance Proceeds

IT5 All Risk in Transit Insurance

IT6 Environmental Impairment Liability Insurance

IT1 General

IT1.1 Proof of Insurance

1. Before commencement of the Work, and within thirty (30) days after acceptance of its bid, the Contractor must deposit with Canada a Certificate of Insurance.

2. 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 provisions contained herein.

3. The insurance policies must be endorsed to provide Canada and any additional insured with not less than thirty (30) days notice in writing in advance of a cancellation of insurance or any reduction in coverage.

IT1.2 Payment of Deductible

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

IT2 Commercial General Liability

IT2.1 Scope of Policy

1. The insurance coverage provided must not be less than that provided by IBC Form 2100, as amended from time to time, and must have:

a. an Each Occurrence Limit of not less than $5,000,000; and
b. a Completed Operations Aggregate Limit of not less than $5,000,000.

IT2.2 Insured

The policy must insure the Contractor and must include Canada, represented by Public Works and Government Services Canada as an additional Insured, with respect to liability arising out of the operations of the contractor with regard to the work.

IT2.3 Period of Insurance

1. Unless otherwise directed in writing by Canada, or, otherwise stipulated elsewhere herein, the policy required herein must be in force and be maintained from the date of contract award until the day of issue of the Certificate of Completion.

2. The Contractor must be responsible to provide and maintain coverage for Completed Operations Liability for a period of four (4) years, starting two (2) years after the date of the Certificate of Substantial Performance.

IT3 Wrap-up General Liability

IT3.1 Scope of Policy

1. The insurance coverage provided must be primary to all other insurance policies and must not be substantially less than that provided by IBC Form 2100, as amended from time to time, except for liability arising from damage to the Work during construction, which must be limited to the completed operations period.

2. The policy must include an extension for a standard provincial and territorial form of non-owed automobile liability policy.

3. 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 building or land whether such support be natural or otherwise if the work is performed by the insured contractor.

e. Damage to existing structure

IT3.2 Amount of Insurance

1. The policy must have:

   a. an Each Occurrence Limit of not less than $25,000,000; and
   b. a Completed Operations Aggregate Limit of not less than $25,000,000.

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

IT3.3 Insured

1. The policy must insure the Contractor and must include, as additional insured:

   a. Canada, represented by Public Works and Government Services Canada;
   b. All consultant; and
   c. Any Subcontractor at any tier performing any part of the Work.

2. The Insurer must provide a waiver of subrogation against any named or additional insured.

IT3.4 Period of Insurance

Unless otherwise directed in writing by Canada, or, otherwise stipulated elsewhere herein, the policy required herein must be in force and be maintained from the date of contract award until the day of issue of the Certificate of Completion except that the coverage for completed operations hazards must, in any event, be maintained for a period of at least two (2) years beyond the date of the Certificate of Substantial Performance.

IT4 Builder's Risk

IT4.1 Scope of Policy

1. The insurance coverage provided by a Builder's Risk policy must not be less than that provided by IBC Forms 4042 and 4047, as amended from time to time.

2. The policy must permit use and occupancy of the project, or any part thereof, where such use and occupancy is for the purposes for which the project is intended upon completion.

3. The policy may exclude or be endorsed to exclude coverage for loss or damage caused by any of the following:

   a. Asbestos;
   b. Fungi or spores;
   c. Cyber;
   d. Terrorism.

IT4.2 Amount of Insurance

The amount of insurance must not be less than the sum of the contract value plus the declared value (if any) set forth in the contract documents of all material and equipment

supplied by Canada at the site of the project to be incorporated into and form part of the finished Work. If the value of the Work is changed, the policy must be changed to reflect the revised contract value.

IT4.3 Insured

The policy must insure the Contractor and must include, as an additional Insured, Canada, represented by Public Works and Government Services Canada.

IT4.4 Period of Insurance

Unless otherwise directed in writing by Canada, or, stipulated elsewhere herein, the policy required herein must be in force and be maintained from prior to the commencement of work until the day of issue of the Certificate of Substantial Performance.

IT4.5 Insurance Proceeds

1. The policy must provide that the proceeds thereof are payable to Her Majesty or as Canada may direct in accordance with GC10.2, "Insurance Proceeds".

2. The Contractor must, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.

IT5 All Risk in Transit Insurance

The Contractor must obtain on the Government's Property, and maintain in force throughout the duration of the Contract, All Risk Property in Transit insurance coverage for all applicable conveyances while under its care, custody or control, in an amount of not less than $750,000.00. The Government Property must be insured on replacement cost (new) basis.

1 Administration of Claims: The Contractor must notify Canada promptly about any losses or damages to Government Property and monitor, investigate and document losses of or damage to ensure that claims are properly made and paid.

2. The All Risk Property in Transit insurance must include the following:
   a. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority at least thirty (30) days written notice of any policy cancellation.
   b. Loss Payee: Canada as its interest appears or as it may direct.
   c. Waiver of Subrogation Rights: Contractor's Insurer to waive all rights of subrogation against Canada as represented by Public Works and Government Services Canada for any and all loss of or damage to the property however caused.

IT6 Environmental Impairment Liability Insurance

1. The Contractor must obtain Contractors Pollution Liability insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than $10,000,000 per accident or occurrence and in the annual aggregate.
2. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.

3. The Pollution Liability insurance policy must include the following: Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada as additional insured should read as follows:

a. Canada, represented by Public Works and Government Services Canada.
b. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Officer thirty (30) days written notice of policy cancellation.
c. Separation of Insureds: The policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
d. Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.
e. Incidental Transit Extension: The policy must extend to losses arising from any waste, products or materials transported, shipped, or delivered via any transportation mode to a location beyond the boundaries of a site at which the Contractor or any entity for which the Contractor is legally liable is performing or has performed the operations described in the contract.
f. Litigation Rights: Pursuant to subsection 5(d) of the Department of Justice Act, S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgment of receipt.

For the province of Quebec, send to:
Director Business Law Directorate,
Quebec Regional Office (Ottawa),
Department of Justice,
284 Wellington Street, Room SAT-6042,
Ottawa, Ontario, K1A 0H8

For other provinces and territories, send to:
Senior General Counsel,
Civil Litigation Section,
Department of Justice
234 Wellington Street, East Tower
Ottawa, Ontario K1A 0H8

A copy of the letter must be sent to the Contracting Officer. Canada reserves the right to co-defend any action brought against Canada. All expenses incurred by Canada to co-defend such actions will be at Canada's expense. If Canada decides to co-defend any action brought against it, and Canada does not agree to a proposed settlement agreed to by the Contractor's insurer and the plaintiff(s) that would result in the settlement or dismissal of the action against Canada, then Canada will be responsible to the Contractor's insurer for any difference between the proposed settlement amount and the amount finally awarded or paid to the plaintiffs (inclusive of costs and interest) on behalf of Canada.

SC03 SECURITY REQUIREMENT FOR CANADIAN CONTRACTORS
PWGSC FILE # EP775150701 – Revised #1

1. The Contractor must, at all times during the performance of the Contract, hold a valid Facility Security Clearance at the level of **SECRET**, with approved Document safeguarding at the level of **SECRET**, issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).

2. The Contractor personnel requiring access to CLASSIFIED information, assets or sensitive work site(s) must EACH hold a valid personnel security screening at the level of **SECRET** and all others must have a valid **SITE ACCESS** clearance required, granted or approved by the Canadian Industrial Security Directorate, Public Works and Government Services Canada.

3. Processing of CLASSIFIED information electronically at the Contractor's site is NOT permitted under this Contract.

4. Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of CISD/PWGSC.

5. The Contractor must comply with the provisions of the:

   (a) Security Requirements Check List and security guide attached at Annex "C";
   (b) Industrial Security Manual (Latest Edition).

SC04 DETERMINATION OF CONSTRUCTION COST

1. The Construction Cost, as defined in Annex B, item 3, initially will be determined based on the Estimated Construction Cost specified in the Request for Proposal. The Estimated Construction Cost will be adjusted periodically throughout the term of the contract to reflect the actual Construction Cost.
2. Any adjustment to the amount of a subcontract shall require Canada's approval in writing. The Contractor shall not be entitled to any additional fees other than the Percentage Fee.

3.. Any request for adjusting the amount of a subcontract shall be substantiated with a cost estimate breakdown itemizing all Labour, Material, and Plant costs, and the amount of any allowance for the subcontractor's overhead, administration and profit. The Contractor shall ensure that all prices included in the breakdown are fair and reasonable and in conformance with the following:

   a. Labour rates shall be established in accordance with applicable trade union agreements. Non-union labour rates shall be established in accordance with the Schedule of Wage Rates, of the Fair Wages and Hours of Labour Act. All labour rates shall require approval by Canada in writing.
   b. The costs of all Material and Plant must represent the actual amount paid to suppliers and said costs are to include all applicable discounts.
   c. Allowances for the subcontractor's overhead, administration and profit shall be negotiated by the Contractor for each change, and shall represent a reasonable amount for the nature and complexity of each change. However, in no circumstance shall the subcontractor's allowance exceed 15%.

4. The price of any portion of the Work that is not subcontracted or paid for as a Fixed Fee shall be equal to the actual cost of that portion of the Work plus the applicable Contractor's Percentage Fee.

SC05 DETERMINATION OF PRICE FOR SUBCONTRACT CHANGES

1. Price Determination Prior to Undertaking Changes

a. If a Lump Sum Arrangement applies to the Contract or a part thereof, the price of any change shall be the aggregate estimated cost of labour, Plant and Material that is required for the change as agreed upon in writing by the Contractor and Canada plus an allowance for supervision, co-ordination, administration, overhead, margin and the risk of undertaking the work within the stipulated amount, which allowance shall be in accordance with SC04 3)(c).

b. If a Unit Price Arrangement applies to the Contract or a part thereof, the Contractor and Canada may, by agreement in writing, add items, units of measurement, estimated quantities and prices per unit to the Unit Price Table.

c. A price per unit referred to in paragraph (b) of SC05 1), shall be determined on the basis of the aggregate estimated cost of labour, Plant and Material that is required for the additional item as agreed upon by the Contractor and Canada, plus an allowance determined in accordance with SC04 3)(c).

d. To facilitate approval of the price of the change or the additional price per unit as applicable, the Contractor shall submit a cost estimate breakdown identifying, as a minimum, the estimated cost of labour, Plant, Material, each subcontract amount, and the amount of the allowance.

e. If no agreement is reached as contemplated in paragraph (a) of SC05 1), the price shall be determined in accordance with SC05 3).

2. Allowable Costs under SC05 1)

a. General

i. The Contractor shall submit a cost estimate breakdown for each contemplated change, in accordance with SC04 3). The breakdown shall itemize all labour, material, plant and equipment costs estimated by the Contractor and subcontractors, and the amount of each allowance; It is the responsibility of the Contractor to ensure that all prices included in the Contractor's breakdown to Canada, including those of subcontractors, are fair and reasonable in view of the terms expressed herein;

ii. The labour hours required for the contemplated change shall be based on the estimated number of hours to perform the work;

iii. Time spent by a working foreman may be included in the number of labour hours, at a rate agreed to in writing by the Contractor and Canada;

iv. Time attributable to material handling, productivity factors and approved rest periods is to be included in the number of hours required by the contemplated change and will not be paid as a separate item under hourly rates;

v. Allowances referred to in paragraph (d) - Allowance to the Subcontractor below are not to be included in the hourly labour rates;

vi. Credit for work deleted will only be for the work directly associated with the change;

vii. When a change deletes work which has not yet been performed, Canada is entitled to an adjustment in the Contract Amount equal to the cost the Contractor would have incurred had the work not been deleted;

viii. Allowances referred to in paragraph (d) - Allowance to the Subcontractor below shall not be applied to any credit amounts for deleted work;

ix. In those cases where the change involves additions and deletions to the work, the allowances referred to in paragraph (d) - Allowance to the Subcontractor below shall apply only when the cost of the additions minus the cost of the deletions would result in an increase in the Contract Amount. The percentage allowance shall only be applied to that portion of the costs of the additions that is in excess of the cost of the deletions;

x. If the contemplated change in the work necessitates a change in the contract completion date, or has an impact on the work, the Contractor shall identify and include the resulting cost in the breakdown.

b. Hourly Labour Rates

i. The hourly labour rates listed in the Contractor's breakdown shall be determined in accordance with the collective agreements that are applicable at the site of the work and shall include:

a. the base rate of pay;
b. vacation pay;
c. benefits which includes:
   i. welfare contributions;
   ii. Pension contributions;
   iii. union dues;
   iv. training and industry funds contributions; and
   V. other applicable benefits, if any, that can be substantiated by the Contractor.
d. statutory and legislated requirements, assessed and payable under statutory authority, which includes:
   i. Employment Insurance contributions;
   ii. Canada Pension Plan or Quebec Pension Plan contributions;
   iii. Worker's Compensation Board or "Commission de la santé et de la sécurité du travail" premiums;
   iv. Public Liability and Property Damage insurance premiums; and
   v. health tax premiums.

ii. In the case of nonunion labour, all rates claimed shall be in accordance with the terms of the Labour Conditions forming part of this contract and the Contractor must provide satisfactory proof of the rates actually paid.

c. Material, Plant and Equipment Costs

i. The costs of all purchases and rentals must be based on the actual amount paid to the suppliers by the Contractor or subcontractor and said costs are to include all applicable Discounts.

d. Allowance to the Subcontractor

i. The allowances determined in accordance with SC04 3)(c), shall be considered as full compensation for:

a. supervision, coordination, administration, overhead, margin and the risk of undertaking the work within the stipulated amount; and
b. miscellaneous additional costs related to
i. the purchase or rental of material, plant and equipment;
ii. the purchase of small tools and supplies;
iii. safety and protection measures; and
iv. permits, bonds, insurance, engineering, as built drawings, commissioning, and site office.

3. Price Determination Following Completion of Changes

a. If it is not possible to predetermine, or if there is failure to agree upon the price of a change in the Work, the price of the change shall be equal to the aggregate of:

i. all reasonable and proper amounts actually expended or legally payable by the Contractor in respect of the labour, Plant and Material that fall within one of the classes of expenditure described in paragraph (b) of SC05 3), that are directly attributable to the performance of the Contract;
ii. an allowance for profit and all other expenditures or costs, including overhead, general administration costs, financing and interest charges, in an amount that is determined in accordance with SC04 3)(c); and
Iii. interest on the amounts determined under subparagraphs (a)(i) and (a)(ii) of SC05 3) calculated in accordance with GC5.11, "Interest on Settled Claims";

b. The cost of labour, Plant and Material referred to in subparagraph a)(i) of SC05 3) shall be limited to the following categories of expenditure:

i. payments to Subcontractors and Suppliers;
ii. wages, salaries bonuses and, if applicable, travel and lodging expenses of employees of the Contractor located at the site of the Work and that portion of wages, salaries, bonuses and, if applicable, travel and lodging expenses of personnel of the Contractor generally employed at the head office or at a general office of the Contractor provided they are actually and properly engaged on the Work under the Contract;
iii. assessments payable under any statutory authority relating to workers' compensation, employment insurance, pension plan or holidays with pay, provincial health or insurance plans, environmental reviews, and Applicable Taxes collection costs;
iv. rent that is paid for Plant, or an amount equivalent to the said rent if the Plant is owned by the Contractor, that is necessary for and used in the performance of the Work, if the rent or the equivalent amount is reasonable and use of that Plant has been approved by Canada;
v. payments for maintaining and operating Plant necessary for and used in the performance of the Work, and payments for effecting repairs thereto that, in the opinion of Canada, are necessary for the proper performance of the Contract, other than payments for any repairs to the Plant arising out of defects existing before its allocation to the Work;
vi. payments for Material that is necessary for and incorporated in the Work, or that is necessary for and consumed in the performance of the Contract;

vii. payments for preparation, delivery, handling, erection, installation, inspection, protection and removal of the Plant and Material necessary for and used in the performance of the Contract; and

viii. any other payments made by the Contractor with the approval Canada that are necessary for the performance of the Contract in accordance with the Contract Documents.

4. Price Determination - Variations in Tendered Quantities

a. Except as provided in paragraphs (b), (c), (d) and (e) of SC05 4), if it appears that the final quantity of labour, Plant and Material under a price per unit item shall exceed or be less than the estimated tendered quantity, the Contractor shall perform the Work or supply the Plant and Material required to complete the item and payment shall be made for the actual Work performed or Plant and Material supplied at the price per unit set out in the Contract.

b. If the final quantity of the price per unit item exceeds the estimated tendered quantity by more than 15 percent, either party to the Contract may make a written request to the other party to negotiate an amended price per unit for that portion of the item which exceeds 115 percent of the estimated tendered quantity, and to facilitate approval of any amended price per unit, the Contractor shall, on request, provide Canada with:

i. detailed records of the actual cost to the Contractor of performing or supplying the tendered quantity for the price per unit item up to the time the negotiation was requested; and

Ii. the estimated unit cost of labour, Plant and Material required for the portion of the item that is in excess of 115 percent of the tendered quantity.

c. If agreement is not reached as contemplated in (b) of SC05 4), the price per unit shall be determined in accordance with SC05 3)

d. If it appears that the final quantity of labour, Plant and Material under a price per unit item shall be less than 85 percent of the estimated tendered quantity, either party to the Contract may make a written request to the other party to negotiate a change to the price per unit for the item if:

i. there is a demonstrable difference between the unit cost to the Contractor of performing or supplying the estimated tendered quantity and the unit cost to the Contractor for performing or supplying the final quantity; and

ii. the difference in unit cost is due solely to the decrease in quantity and not to any other cause.

e. For the purposes of the negotiation referred to in paragraph (d) of SC05 4):

i. the onus of establishing, justifying and quantifying a proposed change lies with the party making the request for negotiation; and

Ii. in no event shall the total price for an item that has been amended as a result of a reduction in quantity pursuant to paragraph (d) of SC05 4) exceed the amount that would have been payable to the Contractor had 85 percent of the tendered quantity actually been performed or supplied.

SC06 INCREASE IN CONTRACT SECURITY

1. The Contractor shall, within 14 days after the date that Canada issues a contract amendment, pursuant to SC06, obtain and deliver to Canada revised Contract Security to include the increase in contract costs of the optional services. The additional contract security shall be provided in accordance with GC9 - Contract Security.

2. It is a condition precedent to the release of the first progress payment for the additional Work that the Contractor has provided the increased Contract Security as specified herein.

SC07 ACCOUNTS AND AUDIT

1. The Contractor must keep proper accounts and records of the cost of performing the Work and of all expenditures or commitments made by the Contractor in connection with the Work, including all invoices, receipts and vouchers. The Contractor must retain records, including bills of lading and other evidence of transportation or delivery, for all deliveries made under the Contract.
2. If the Contract includes payment for time spent by the Contractor, its employees, representatives, agents or subcontractors performing the Work, the Contractor must keep a record of the actual time spent each day by each individual performing any part of the Work.

3. Unless Canada has consented in writing to its disposal, the Contractor must retain all the information described in this section for six (6) years after it receives the final payment under the Contract, or until the settlement of all outstanding claims and disputes, whichever is later. During this time, the Contractor must make this information available for audit, inspection and examination by the representatives of Canada, to may make copies and take extracts. The Contractor must provide all reasonably required facilities for any audit and inspection and must furnish all the information as the representatives of Canada may from time to time require to perform a complete audit of the Contract.

4. The amount claimed under the contract, calculated in accordance with the Basis of Payment provision in the Contract, is subject to government audit both before and after payment is made. If an audit is performed after payment, the Contractor agrees to repay any overpayment immediately on demand by Canada. Canada may hold back, deduct and set off any credits owing and unpaid under this section from any money that Canada owes to the Contractor at any time (including under other contracts). If Canada does not choose to exercise this right at any given time, Canada does not lose this right.

SC08 REPLACEMENT OF SPECIFIC INDIVIDUALS

1. If specific individuals are identified in the Contract to perform the Work, the Contractor must provide the services of those individuals unless the Contractor is unable to do so for reasons beyond its control.

2. If the Contractor is unable to provide the services of any specific individual identified in the Contract, it must provide a replacement with the same level of qualifications and experience as the individual who is being replaced. The replacement must meet the criteria used in the selection of the Contractor and be acceptable to Canada. The Contractor must, as soon as possible, give notice to the Contracting Officer of the reason for replacing the individual and provide:
   a. the name, qualifications and experience of the proposed replacement; and
   b. proof that the proposed replacement has the required security clearance granted by Canada, if applicable.

3. The Contractor must not, in any event, allow performance of the Work by unauthorized replacement persons. The Departmental Representative may order that a replacement stop performing the Work. In such a case, the Contractor must immediately comply with the order and secure a further replacement in accordance with subsection 2. The fact that the Departmental Representative does not order that a replacement stop performing the Work does not relieve the Contractor from its responsibility to meet the requirements of the Contract.

SC09 SEPARATE CONTRACTS WITH OTHER CONTRACTORS

1. Canada reserves the right to award separate contracts for work in connection with Postal Station "B" Envelope Rehabilitation and Base Building Upgrade Project to other contractors. Where in the opinion of Canada, it is necessary for Canada to award separate contracts to other contractors, the Construction Manager shall:
   a. coordinate and cooperate with the work of other contractors;
   b. coordinate and schedule the Work with the work of other contractors and connect as specified or shown in the Contract Documents;
   c. participate with other contractors and the Departmental Representative in reviewing their construction schedules when directed to do so;
   d. coordinate and perform the Work with care and diligence so as to ensure that Canada and other contractors will be in a position to proceed according to schedule with the delivery, installation and testing of their work; and
   e. allow other contractors or workers, together with their plant, equipment and Material, access to the Site and the opportunity to use their plant and equipment.

`

2. When separate contracts are awarded for other parts of Postal Station "B" Envelope Rehabilitation and Base Building Upgrade Project, Canada shall:
   a. Ensure that insurance coverage is provided to the same requirements as are called for SC02 to the extent applicable. Such insurance shall be coordinated with the insurance coverage of the Construction Manager as it affects the Work; and
   b. take all precautions reasonably possible to avoid labour or other disputes.
   c. Ensure the separate contractors are required to adhere to the Construction Manager's Health & Safety policies and procedures when performing work at the location of the project under the Construction Manager's control as Constructor on the project.

3. The Construction Manager shall give the Departmental Representative prompt written notice of any defect in, or any conflict occasioned by, the work of Other contractors and prior to proceeding with any Work that is affected by or depends upon for its proper execution such work of other contractors. In the absence of such written report, the Construction Manager shall have no claim against Canada by reason of the conflict or defective work of the other contractors.

4. Notwithstanding the foregoing, it is understood and agreed that the Construction Manager shall be the "constructor" for the Project within the meaning of the applicable Health and Safety legislation, and shall perform or have performed, in addition to any other obligations it may have pursuant to the application legislation, all of the obligations of a "constructor" set out in the legislation for the Work. It is further understood and agreed that Canada appoints and the Construction Manager agrees to be

appointed as the constructor to fully control, coordinate, oversee and be responsible for all other contractors.

5. If there is a change in the scope of the Work required for the planning and performance of this coordination and connection, there might be a Change in the Work.

6. If the Construction Manager has caused damage, delay, impact, or interference to the work of other contractors, the Construction Manager agrees upon due notice to settle with the other contractors in accordance with GC5.8 (6). If one or more of the other contractors makes a claim against Canada on account of damage, delay, impact, or interference alleged to have been so sustained, Canada shall notify the Construction Manager and may require the Construction Manager to defend the action at the Construction Manager's expense and not as a Cost of the Work and without an adjustment in the Contract Fee. The Construction Manager shall satisfy a final order or judgment against Canada and pay the costs incurred by Canada arising from such action and not as a Cost of the Work and without an adjustment in the Contract Fee.

SC10 PRICE ESCALATION CLAUSE BASED ON CPI

1. The Contractor's quoted Firm Hourly rate rates (inclusive of overhead and profit) will be adjusted annually upon notification from the Contractor prior to the anniversary date of the contract commencing in 2015. The adjustment will be determined by the amount established based upon the average percentage change in the monthly change of the Consumer Price Index for Canada. All-items (Not Seasonally Adjusted), published in Statistics Canada Catalogue no.62-001-XPB, Table 5, for the 12-month period ending prior to the start of the 2nd year of the contract.

Example:

In Year 2 of a contract that started February 1, 2014, the Year 2 rates would be increase by .9% based upon the following information:

	% Change in Monthly CPI
January 2014	0.5
February 2014	1.2
March 2014	1.0
April 2014	0.4
May 2014	0.7
June 2014	1.2
July 2014	1.3
August 2014	1.1
September 2014	1.1
October 2014	0.7
November 2014	0.9
December 2014	1.2
Average % Change	11.3/12 = .9%

The Year 3 rates would be adjusted using the same calculation but with the January 2015-December 2015 12-month period and the Year 2 rates as the base. The pattern would follow for calculating the rates for each of the subsequent years of the contract.

2. To gain access to the CPI adjustment, the Contractor is required to submit a request in writing to the Contracting Authority, no later than 1 month prior to the anniversary date of the contract in each calendar year, Authorization of the rate adjustments is subject to the approval of the Contracting Authority. If the contractor fails to request a CPI adjustment by the anniversary date of the contract, it should be noted that any adjustment requested at a later date is not retroactive.
3. The CPI may be viewed at the following Statistics Canada Internet address: http://www.statcan.gc.ca/pub/62-001-x/2013009/t040-eng.htm”

APPENDIX A

BID AND ACCEPTANCE FORM (BA) (4 pages)

BA01 IDENTIFICATION

Construction Management Services
Postal Station "B" Envelope Rehabilitation and Base Building Upgrade
59 Sparks St., Ottawa, Ontario

Solicitation Number: EP775-150701/B

Project Number: R.037973.270

BA02 BUSINESS NAME AND ADDRESS OF BIDDER

Name: _____

In the case of a Joint Venture, also provide the name of each member of the Joint Venture _____

_____

Address: _____

_____

Contact Name: _____

Telephone: _____ Fax:_____ PBN: _____

BA03 THE OFFER

1) 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 taxes
(to be expressed in numbers)

The **TOTAL BID AMOUNT** represents the **sum of items *(A)* + *(B)* below**, all excluding applicable taxes:

A) SERVICES AND CONSTRUCTION

(a) Pre-construction Services
(Refer to Terms of Reference, section 4.4 and section 4.3 monthly fixed fee breakdown chart, MF#1)

A fixed monthly fee (Item 2A of Annex B) of $ _____x 5 month* = $_____;

(b) Pre-construction, Construction and Post-Construction Services
(Refer to Terms of Reference, section 4.4, 4.5,4.6 and section 4.3 (monthly fixed fee breakdown chart, MF#2)

A fixed monthly fee (Item 2A of Annex B) of $ _____x 26 months * =
$_____;

(c) Post- construction Services
(Refer to Term of Reference, section 4.6 and section 4.3 monthly fixed fee breakdown chart, MF#3)

A fixed monthly fee (Item 2A of Annex B) of $ _____x 9 months* =
$_____;

(d) Estimated construction cost $27,970,000.00

(e) Percentage Fee on Construction (Item 2B of Annex B) of _____% x $ 27,970,000.00 =

$ _____;

(f) Bonding and Insurance (Refer to Item 4a, Annex B): $ _____;

(g) Cash Allowance for Permits and Site Office (Refer to item 4b and 4c, Annex B) : $ 600,000.00;

B) Firm Hourly Rates** Hourly Rates to be based on the Bidder's hourly rate for the Bidder's Personnel,(inclusive of payroll costs, overhead and profit) for Additional Personnel (Item 2D) of Annex B. Payment for any additional services or personnel will be based on the hourly rate and paid on the basis of actual hours worked. See table below:

Category of Personnel	Quantity (hours) (A)	Firm hourly Rate (B)	Extended Price (AxB)
Senior Project Manager	2,000	$	$
Intermediate Project Manager	2,000	$	$
Commissioning Manager	2,000	$	$
Senior Mech & Elec Coordinator	2,000	$	$
Intermediate Mech & Elec Coordinator	2,000	$	$
Senior Superintendent	2,000	$	$
Assistant Superintendent	2,000	$	$
Chief Estimator	2,000	$	$
Intermediate Estimator	2,000	$	$
Chief Scheduler	2,000	$	$
Intermediate Scheduler	2,000	$	$
Quality Control Field Staff	2,000	$	$
Site Safety Officer	2,000	$	$
Administrative Support	2,000	$	
Total Extended Prices			

* Number of months is based on an estimated award date. The total months shall be adjusted to reflect a completion date of March 2018 actual months.

**The quantities and categories of personnel identified in (B) above are for evaluation purposes only and shall not be interpreted by the Bidder to be a commitment by Canada to request the services of any of the personnel for any quantity of weeks whatsoever.

1. Canada may accept or reject any of the above hourly rates. Canada reserves the right to negotiate these hourly rates.

2. Any errors in the addition or multiplication of the amounts in A) and B) above will be corrected by Canada to obtain the Total Bid Amount. In the case of error in the extension or addition of unit prices, the unit price will govern.

3. In order to ensure that fair and competitive hourly rates are received for each of the category of personnel the following requirements must be adhered to:

   a) the Bidder must provide an hourly rate for each category of personnel,
   b) the hourly rates must reflect the level of experience for each of the listed category of personnel. For example, if an hourly rate for personnel at the intermediate level exceeds the hourly rate for personnel at the senior levle in the same category both hourly rates will be deemed not to reflect the appropriate level of experience;
   c) the hourly rate for any given listed category of personnel cannot be $0.00 or nil value.

Failure to comply with a or b or c above may render the bid non-responsive.

4. The Bidder's fixed monthly fee, submitted in response to this RFP, shall apply for any delays or extensions of any services in any phase that would cumulatively affect the total duration of the phase by up to 4 months. The fixed monthly fee would be subject to negotiation for any phase which is delayed or extended beyond 4 months.

BA04 BID VALIDITY PERIOD

The bid shall not be withdrawn for a period of 120 days following the date of solicitation closing.

BA05 ACCEPTANCE AND CONTRACT

Upon acceptance of the Contractor's offer by Canada, a binding Contract shall be formed between Canada and the Contractor. The documents forming the Contract shall be the contract documents identified in Contract Documents.

The **Contract Value** will be determined in accordance with amounts bid for items **BA03 1. A) Services and Construction**. Section B) is for evaluation purposes only.

BA06 CONSTRUCTION TIME

The Contractor shall perform the services and achieve Substantial Completion of the Work by no later than December 2017 and completion by March 2018. (Note: These are the dates assuming full scope of work will be implemented).

BA07 BID SECURITY

The Bidder is enclosing bid security with its bid in accordance with GI06 - Bid Security Requirements of General Instructions to Bidders.

BA08 SIGNATURE

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

_____ _____
Signature Date

APPENDIX B

CLIENT REFERENCE FORM FOR REPRESENTATIVE PROJECT

CLIENT REFERENCE FORM FOR REPRESENTATIVE PROJECT No. 1 (1 page)

Client Letter of Reference

The project that is presented by the Bidder shall demonstrate the following requirements:

This hereby confirms that the following contractor _____,

executed the work for the following project _____,

as constructor, under the following contracting method _____.
(Construction Management / General Contractor)

Project Details:

Project Location: _____

Project size (M2): _____

_____ _____
Initial Contract Value (including HST) Final Contract Value (including HST)

_____

_____
Explain any discrepancy between initial and final contract value.

_____ _____
Original Planned Completion Date Actual Certificate of Completion Date

_____

_____
Explain any discrepancy between planned and actual completion date.

I hereby certify the information provided in this client reference form to be true and factual.

_____ _____
Client Name Title Signature

_____ _____
Company Name Telephone Date

CLIENT REFERENCE FORM FOR REPRESENTATIVE PROJECT No. 2 (1 page)

Client Letter of Reference

The project that is presented by the Bidder shall demonstrate the following requirements:

This hereby confirms that the following contractor _____,

executed the work for the following project _____,

as constructor, under the following contracting method

_____.
(Construction Management / General Contractor)

Project Details:

Project Location: _____

Project size (M2): _____

_____ _____
Initial Contract Value (including HST) Final Contract Value (including HST)

_____

_____
Explain any discrepancy between initial and final contract value.

_____ _____
Original Planned Completion Date Actual Certificate of Completion Date

_____

_____
Explain any discrepancy between planned and actual completion date.

I hereby certify the information provided in this client reference form to be true and factual.

_____ _____
Client Name Title Signature

_____ _____

Company Name Telephone Date

APPENDIX C

SECURITY REQUIREMENT - DOCUMENT SAFEGUARING

Bidder's Proposed Site (s) or premises Requiring Safeguard Measures (refer to SC03 Security Requirement):

(**In the case of Joint Ventrues each entity must meet the required Document Safeguarding Security Requirement)**

Project Title:

Name of Proponent:

Address:

_____
Street Number / Street Name, Unit / Suite / Apartment Number

_____
City, Province, Territory

_____
Postal Code

Address:
_____

Street Number / Street Name, Unit / Suite / Apartment Number

_____
City, Province, Territory

_____

Postal Code

ANNEX A

TERMS of REFERENCE

(Electronic attachment to this document)

ANNEX B

BASIS OF PAYMENT

1. The Basis of Payment of the contract for Construction Services shall be comprised of the following:
   - The Contractor's Fee; and
   - Reimbursement of Construction Costs; and
   - Allowable disbursements

2. Contractor's Fee
   The Contractor's Fee will be paid monthly in arrears for the term of the contract. The Contractor's fee is based on the aggregate of the following:

A. Fixed Monthly Fees

The fixed monthly fees will be paid in equal monthly installments in arrears over the Term of the Contract. The fixed monthly fees will constitute reimbursement for Services provided by the Contractor's Staff as specified in detail in the Terms of Reference. All services specified in the Terms of Reference are to be included in the Fixed Monthly fee portion of the contract.

The fixed monthly fees will include:

i. All overhead, administration, mark-up and profit for the Contractor's operations, including, but not limited, to standard office expenses such as any photocopying, computer and software costs, Internet, all telephone and fax, cellular telephones, depreciation, rent and maintenance of office facilities, furniture, office equipment and supplies, taxi charges and parking. (Note: Site office costs are included under allowablle disbursement);

ii. The actual cost of all personnel employed or contracted by the Contractor to deliver the services specified in the Terms of Reference, and includes all payroll costs such as salary, statutory holidays, vacations with pay, unemployment insurance premiums and worker's compensation contributions where applicable, pension plan contributions, sick time allowance, medical/dental insurance premiums and any other benefits; Note: Do not include contracted personnel of sub-trades that will perform the construction;

iii. The salaries, benefits or other compensation for the Contractor's officers, directors, principals and support staff;

iv. Travel and accommodation costs related to the Work, for the duration of the Contract, of the Contractor's personnel;

v. All other costs which may be considered disbursements unless specifically listed;

vi. Any part of the Contractor's capital expenses, including interest on the Contractor's capital employed for the Work, unless otherwise expressly provided herein;

vii. All field personnel such as superintendents, health and safety officers, assistant superintendents, etc.

B. **Percent Construction Fee**

The percent construction fee includes:

i. The Contractor's percentage mark-up for overhead, profit and general administration on the Construction Cost;
ii. All costs that have not been identified for reimbursement under Annex B: Basis of Payment, Item 2 A) Fixed Monthly Fee, Item 2 D) Additional Personnel, Item 3 Construction Costs and Item 4 Allowable Disbursements shall be included in the Percent Construction Fee.
iii. The percent construction fee will be paid in arrears for each progress claim submitted in accordance with GC5 - Terms of Payment, during the Term of the Contract. The value of the percent construction fee for the payment period will be based on the construction cost of the work actually incurred during that period.

C. **Site Labour Costs**

The Contractor's Services will not include Trade Work. The Contractor shall not use its own forces or the forces of a non-arms length entity to provide Trade Work unless the Contractor has been specifically authorized to do so by Canada.

However, the Contractor will be reimbursed for the labour expended by the Contractor's carpenters and general site labourers for any physical construction work related to Division 1 which received prior approval from the Departmental Representative. Site labour costs that have been authorized by the Departmental Representative will be paid monthly in arrears.

Notwithstanding the above, Canada may require that the Contractor competitively procure any or all of the construction work, including work that may be completed by the Contractor's own labourers.

D. **Additional Personnel**

The Contractor shall include in the Fixed Monthly Fees sufficient personnel to complete the Work within the time frame stipulated in BA06 - Construction Time.

However, should Canada determine that, for the purposes of schedule acceleration, additional personnel is required, Canada will have the right to request that the Contractor provide such additional personnel for the performance of the Work or any part or parts thereof.

For additional personnel requested by Canada, the Contractor will be reimbursed in accordance with the firm hourly rate rates (including payroll costs, overhead and profit) quoted in the Bid and Acceptance form for the identified categories of personnel or in accordance with rates which have been negotiated and mutually agreed to between Canada and the Contractor for personnel that were not pre-identified in the Bid and Acceptance Form. Such costs will be payable monthly in arrears.

3. **Construction Costs**

A. Determination of Construction Cost will be in accordance with SC04. Construction Costs will be reimbursed in accordance with GC5 - Terms of Payment.

Construction Costs will include:

i. The actual, reasonable and direct costs of the Contractor's subcontracts;

ii. Commissioning including third party independent commissioning agent;

iii. The actual, reasonable and direct costs incurred by the Contractor in performing the Work, as follows:

a. Materials incorporated into the Work, including costs of transportation;

b. Materials, products, supplies, equipment, temporary services and facilities, including transportation and maintenance thereof, which are consumed in the performance of the Work, and cost less salvage value on such items used, but not consumed, which remain the property of the Contractor;

c. Tools, machinery and equipment, exclusive of hand tools, used in the performance of the Work, whether rented by the Contractor or others, including installation, minor repairs and replacements, dismantling, removal, transportation and delivery costs thereof;

d. Site engineering, as-built drawings, maintenance manuals and all other documents required to be provided prior to certification of Substantial Performance, as well as commissioning activities;

e. Independent inspection and testing services other than those described in the construction documents;

f. Temporary services, O & M Manuals, as-builts, engineering drawings and rental costs of site trailers;

g. Site washrooms other than those furnished by Canada;

h. Health and Safety sundries for visitors (hard hats, boots, gloves, goggles, masks, etc.);

i. Bilingual Site signage;

j. Utility costs, as applicable;

k. The cost of safety measures and requirements;

l. Cleaning materials supplies, hand tools and consumables;

m. Site photos;

n. Printing of drawings and Specification; (Other printing shall be in the fixed monthly fee)

o. Removal and disposal of waste products and debris.

p. Site security provisions including security personnel, protection of materials and equipment, the procurement of private security services and construction related security

B. Any costs incurred by the Contractor due to failure on the part of the Contractor to exercise reasonable care and diligence in the Contractor's attention to the Work shall be borne by the Contractor.

4. Allowable Disbursements

In addition to the Contractor's Fee, Canada will reimburse at actual cost, without any administrative cost or mark-up for overhead or profit, the following disbursements supported by invoices/receipts:

a. The cost of the Contractor's insurance (as defined under SC02 -Insurance Terms) and bonding;

b. Fees, levies, permits, costs and charges levied by authorities having jurisdiction at the Site;

c. The construction, maintenance, operation, and removal of a site field office,including, but not limited to standard office expenses such as any photocopying, computer costs, Internet, all telephone and fax, cellular telephones, depreciation, rent and maintenance of office facilities, furniture, office equipment and supplies, taxi charges, parking, communication equipment, advertising and publications, long distance phone, bottled water, courier, stamps, software, office supplies and petty cash items;

Travel, if requested in writing by Canada, would be reimbursed in accordance with the National Joint Council Travel Directives without any administrative cost or mark-up for overhead or profit.

ANNEX C

SECURITY REQUIREMENTS CHECKLIST

(Electronic attachment to this document)

ANNEX “D”

CERTIFICATE OF INSURANCE

(Electronic attachment to this document)

ANNEX “E”

VOLUNTARY CERTIFICATION TO SUPPORT THE USE OF APPRENTICES

VOLUNTARY CERTIFICATION TO SUPPORT THE USE OF APPRENTICES

Note; The contractor will be asked to fill out a report every six months or at project completion.

Name: _____

Signature: _____

Company Name: _____

Company Legal Name: _____

Solicitation Number: _____

Number of company employees: _____

Number of apprentices planned to be working on this contract: _____

Trades of those apprentices:

_____
_____
_____
_____
_____
_____
_____
_____

ATTACHMENT 2

(Electronic attachment to this document)

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Terms of Reference

Postal Station B Envelope Rehabilitation & Base Building Upgrade

Recap PPB PWGSC

08/07/2015

Terms of Reference as part of a Request for Proposal for Construction Management services for the Postal Station B Envelope Rehabilitation and Base Building Upgrade.

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APPENDICES

ATTACHMENTS UNDER SEPARATE COVER – FORMING AN INTEGRAL PART OF THIS TOR

Attachment 1 – *Prime Consultant Request for Proposal* (available for viewing on Buy and Sell under Solicitation # EP775-142668/A

Attachment 2 – *Envelope Rehabilitation & Base Building Upgrade, Postal Station B, 47-59 Sparks Street*, Watson MacEwen Teramura Architects, Jun 2013, *PWGSC Project No. R.037973.001*

ATTACHMENT UNDER SEPARATE COVER – PROVIDED FOR INFORMATION PURPOSES IN THE LANGUAGE PRODUCED (available on CD upon request)

Attachment 3 – *Structural Seismic Assessment of Postal Station "B" Building*, Dessau, August 2014, *PWGSC Project No. R. 037973.001*

Attachment 4 – *Building Condition Report (Updated),* Halsall Associates Ltd. for Watson MacEwen Teramura Architects, Mar 2013, *PWGSC Project No. R.037973.001*

Attachment 5 – *Designated Substances Report*, PWGSC Environmental Services Directorate, June 4, 2014

TERMINOLOGY

The following terms are used in this document. Note that the definitions specified in the prequalification document Part 3.2 Definitions apply to this RFP.

Arm's Length - A transaction in which the buyers and sellers of a product act independently and have no relationship to each other. The concept of an arm's length transaction is to ensure that both parties in the deal are acting in their own self interest and are not subject to any pressure or duress from the other party.

Asbestos Containing Material (ACM) - Means any material found to contain asbestos that is at or above the limit defined by provincial standards, as determined by the standard Polarized Light Microscopy (PLM) method for the analysis of bulk samples.

Building Components and Connectivity (BCC) - Including Information Technology (IT), Multi-Media (MM), Integrated Security Systems (ISS), furniture, built-in furniture and equipment.

Canada Post Corporation (CPC) - CPC is one of the primary users of PSB and is the crown corporation which functions as the country's primary postal operator. In 1981, the Canada Post Corporation Act came into force creating the crown corporation from a government department.

Client/User - The Privy Council Office (PCO) and Canada Post Corporation are the primary facility occupants.

Contractor and Construction Manager– means the person contracting with Canada to provide or furnish all labour, Material and Plant and construction management services for the execution of the Work under the Contract, and includes the Contractor's superintendent as designated in writing to Canada.

Cost Specialist - The firm in contract with PWGSC responsible for providing independent cost (planning, estimating and control), advisory and quality assurance services.

Designated Substance Report (DSR) – Is required under the Ontario Occupational Health and Safety Act in order to identify designated substances that may be present within the project areas. The DSR will be supplied by the Departmental Representative.

Environmental Consultant - The firm separately contracted by PWGSC engaged to provide environmental services.

Federal Heritage Buildings Review Office (FHBRO) - The primary objective of Parks Canada's FHBRO is to assist federal government departments in the protection of their heritage buildings, in accordance with the Treasury Board Policy on Management of Real Property.

Federal Sustainable Development Strategy (FSDS) - The document that sets out the sustainable development strategy objectives for the Federal Government of Canada on a three year cycle. Departments that must respond to the FSDS, including PWGSC, state their own objectives in response to the FSDA in the annual Report on Plans and Priorities (RPP) and their actual performance in the annual Departmental Performance Report (DPR).

Geotechnical Consultant - The firm separately contracted by PWGSC engaged to provide geotechnical services.

Green Globes - A points-based rating system used to assess the environmental performance of buildings.

Heritage Conservation Directorate (HCD) - PWGSC's Centre of Expertise for Heritage Conservation, that provides expert advice and quality assurance for key architectural, conservation, engineering and landscape architecture professional disciplines. For work on federal heritage buildings, HCD takes a lead design advisory role and assembles a team of professionals from with PWGSC to provide expert advice throughout the project. Members of the professional design advisory team come from National Capital Area Operations (NCA Ops) and APPS (PTSM) National Centre of Expertise for Urban Design and Landscape Architecture and cover specific disciplines such as functional programming, interior fit-up, master planning, mechanical, electrical and geotechnical.

Leadership in Energy and Environmental Design (LEED) – Is a voluntary, 3rd party certified, green building rating system that evaluates the environmental performance of whole buildings during the design, construction and operational stages of the building's life cycle.

Life Cycle Analysis (LCA) – a scientific method for measuring the environmental footprint of materials, products and services over their entire lifetime [Ref: Athena Sustainable Materials Institute, http://www.athenasmi.org/]

Life Cycle Cost (LCC) – measures, in present-value terms, the sum of all relevant costs associated with owning and operating a building or building system over a specified time period [Ref: ASTM E917-05 Standard Practice for Measuring Life-Cycle Costs of Buildings and Building Systems, available at http://www.astm.org/Standard/standards-and-publications.html]

National Master Specification (NMS) – A master construction specification available in both official languages, divided up into forty-eight (48) divisions and used as a template for this project (http://www.tpsgc-pwgsc.gc.ca/biens-property/ddn-nms/index-eng.html) .

Parliamentary Precinct Branch (PPB) – PPB is the branch of PWGSC responsible for all the buildings on Parliament Hill and the Sparks Street Mall in Ottawa. It manages day-to-day activities, as well as long-term maintenance and renovations of approximately

143,000 square metres of space.

Postal Station B (PSB) - The eight (8) storey Classified Heritage Building, of steel-frame and masonry construction, located at 47-59 Sparks Street, Ottawa, Ontario that is the subject of this project.

Prime Consultant (PC) – The consultant retained by PWGSC to provide detailed design and construction documents for this project.

Privy Council Office (PCO) - PCO is one of the primary users of PSB providing essential advice and support to the Prime Minister and Cabinet. The main roles of the PCO include provision of non-partisan policy advice and information, facilitation of the efficient and effective functioning of Cabinet, and ensuring that Canadians are served by a quality public service.

Project Management Support Services (PMSS) – Project management consultants hired under a separate contract by PWGSC to support all project management activities related to this project.

Project Team - The combined private and government sector team responsible for delivering the project including the PM Team, Consultant, Construction Manager, representatives from PWGSC, PCO and other government organizations.

Security Services Consultant - The firm separately contracted by PWGSC engaged to provide security-related services, including security design, threat and risk assessment and security support services to PCO.

Time Specialist - The firm in contract with PWGSC responsible for providing independent scheduling (planning, monitoring and control), advisory and quality assurance services.

Value Engineering (VE) - A creative, organized effort, which analyzes the requirements of a project for the purpose of achieving the essential functions at the lowest total costs (capital, staffing, energy, maintenance) over the life of the project or system. Through a group investigation, using experienced, multi-disciplinary teams, value and economy are improved through the study of alternate design concepts, materials, and methods without compromising the functional and value objectives of the client.

DESCRIPTION OF PROJECT

1.1 SCOPE OF CONTRACT

Public Works and Government Services Canada (PWGSC) is rehabilitating the Postal Station B Building located at 47-59 Sparks Street on the southeast corner of Sparks and Elgin Streets in downtown Ottawa.

The services of a Construction Manager will be engaged in order to ensure the Project is delivered on schedule, within the construction estimate, and to the level of quality required for a building of this stature.

In general, the scope of this contract for Construction Management includes Services and Construction.

Services are defined as consisting of Pre-Construction Services, Construction Services, Building Components and Connectivity (BCC) and Post-construction Services. Services are described in sections RS4.1 to 4.6.

Construction is defined as the work required to deliver a complete project in a partially occupied building. Construction shall include major works, to rehabilitate the building envelope and base building systems of the Postal Station B Building as described in this RFP. This work shall be undertaken both outside and inside a partially occupied facility. Construction will be implemented one floor at a time as the floor occupants will need to be moved to a designated swing space. Other floors will remain occupied during construction on the designated floor. The ground floor which is occupied by the Canada Post Corporation (CPC) will remain fully occupied throughout the project.

With respect to Services and Construction related to BCC, it should be noted that the majority of the existing BCC Building Components are owned by the Privy Council Office (PCO), the main building tenant, and it is planned that these will be largely reused by PCO. Prior to the CM assuming control of a floor for construction, PCO will be fully responsible for the removal, moving and temporary storage of all existing Building Components owned by them. PCO will also be fully responsible for the purchase and installation of any new Building Components where required. After completion of construction work on each floor, the CM will turn over the space to allow PCO's contractors to install the required Building Components. The CM will be responsible for coordinating with PCO and PWGSC to ensure that PCO activities related to Building Components owned by PCO are properly coordinated and scheduled with the CM's activities.

In the case of BCC Building Connectivity, the CM will be fully responsible for the removal, moving and temporary storage of existing Building Connectivity components designated by PCO for reuse, as well as the purchase and installation of any new Building Connectivity components. Refer to Section 1.3.3.19 for additional information on BCC.

1.2 PROJECT INFORMATION

Location of the Project	47-59 Sparks Street Ottawa, ON, Canada
PWGSC Project Number	R.035163
Client	PWGSC, Parliamentary Precinct Branch
Departmental Representative	Senior Project Manager, Yvan Desmarais
Contracting Authority	Real Property Contracting, Suzette Searchwell

1.3 PROJECT DESCRIPTION

1.3.1 BACKGROUND INFORMATION

The Postal Station B Building is a “Classified” Federal Heritage Building (designated by FHBRO in 1986) that requires major rehabilitation. Currently, it serves a dual purpose by continuing to function as a postal facility on the ground floor, while providing secret and top secret office accommodations to the Privy Council Office (PCO) in the remainder of the building. The newly rehabilitated building will continue to serve this dual purpose for the foreseeable future.

The building has strong historical and architectural significance. Constructed in 1938-39 as Ottawa’s central post office along with offices for the Post Office Ministry, it was the only building constructed by the Federal government in accordance with the Greber Master Plan for the area, which envisioned Elgin Street being lined with consistently designed civic and federal buildings. It is also part of the Confederation Square National Historic Site.

The Parliamentary Precinct Branch (PPB) has identified the need for a comprehensive rehabilitation of the Postal Station B building envelope and base building systems.

The following provides a summary profile of Postal Station B:

Location:	59 Sparks Street, Ottawa, Ontario, Canada
Number of Stories:	8-storey plus full basement with 2-storey mechanical penthouse.
Inside Gross Area:	6,035.7 m²
Site Area:	971.2 m²
Current Occupancy:	Privy Council Office (PCO) and Canada Post Corporation (CPC)
Construction Date:	1938-1939
Architect:	W.E. Noffke
Custodian:	Public Works and Government Services Canada
Asset Type:	Class B heritage office building with ground floor retail.

FHBRO Designation:	"Classified" (1986)
Pedestrian Access:	Access to post office at two doors on Elgin St. and Elgin/Sparks streets. Access to post office and offices on Sparks St. Above-grade pedestrian link to the Langevin Block.
Loading:	Shared asphalt service lane at rear (north).
Parking:	None
Vertical Transportation:	2 passenger elevators and 1 service/passenger elevator.
Construction:	Steel and concrete frame with concrete slab floors and basement walls. Limestone cladding with brick and block west wall.
Major Renovations:	• 1975: Major retrofit including passenger elevator modernization, mechanical system upgrade, installation of basement sprinklers and re-construction of exterior walls; • 1990-1995: Upgrades to the base building for accessibility compliance and a major retrofit of the base building elements; • 1997: Electrical system upgrade.

Apart from the removal of the rooftop skylights, the exterior of the building remains relatively unchanged. The interior of the building has been significantly altered with the exception of the post office, the main entrance vestibules, the elevators and stairwells which have preserved original materials and finishes. A summary of the interventions of building repair and renovations along with recent reports is provided in Appendix A. Existing reports which may be of interest to the CM are provided as attachments under separate cover.

1.3.2 OVERVIEW

The project scope of work includes the following: envelope conservation, interior demolition and resinstatement (including asbestos abatement), heating system replacement, plumbing system upgrade, HVAC upgrade, sprinkler upgrade, electrical system upgrade, control system upgrade, seismic upgrade, and security system upgrades (as part of the Building Connectivity scope of work).

The scope of work on the interior of the building includes upgrades of base building systems on a floor by floor basis, with no changes to the tenant functional program. Other than for the abatement of ACM and upgrade of base building systems, the design and construction work shall be planned to minimize any disturbance to interior architecture to the extent possible.

Although the majority of the work will be confined to the boundaries of the Postal Station B site, some limited intervention may required on the adjacent Hope Building and Langevin sites (e.g. seismic upgrading).

A more detailed description of the project scope is provided in Section PD 1.3.3 Program of Works. The Program of Works described herein will be reviewed and further developed by the Prime Consultant during the Schematic Design and Design

Development Stages of their mandate.

1.3.3 PROGRAM OF WORKS

1.3.3.1 Long Term Planning

The current occupancy level of Postal Station B is 168 people. Based on building code egress limitations, it is understood that the occupancy level could be increased to a maximum of 280 people. At present, there will be no change in the function of the building and the tenants who occupy the space.

1.3.3.2 Abatement and Demolition (AD)

PWGSC has engaged the services of an Environmental Consultant (EC) to complete a full-building Designated Substances Report (DSR) which will be made available to the Prime Consultant and Construction Manager for this project. This full-building DSR will include previous DSRs produced for specific projects completed in the past. Additional exploratory openings may be required to be made by the CM to confirm the existence of designated substances at the beginning of the project. The information from the DSR and these exploratory openings will be used by the Consultant and Environmental Consultant to develop the early tender packages such as abatement and selective demolition.

1.3.3.3.1 Abatement

Hazardous substances, such as asbestos, will be detailed in the Designated Substance Survey. The EC will be required to plan, design and develop tender packages in connection with the abatement. This will include the development of a program to remove hazardous substances during demolition as well as the field review related to abatement. The CM is required to provide input to the tendering strategy for the AD work in collaboration with the EC and Prime Consultant.

1.3.3.2.2 Demolition

The Prime Consultant will be responsible for: the demolition scope; for coordination with the EC for the purpose of developing their design and construction documents; and to ensure the delivery of coordinated AD tender packages. The Prime Consultant will take the lead to ensure the issuances are ready for the Construction Manager. A high level of co-operation, co-ordination and integration with the EC and Prime Consultant is required from the CM.

Demolition will follow a construction, renovation, demolition (CRD) waste management plan. The CM is responsible for implementing measures to maintain structural safety and building integrity during construction, including all requirements specified by the Prime Consultant and their structural engineer. As well, during this stage, the CM will install the temporary services designed by the Prime Consultant.

The Prime Consultant will be responsible for specifying requirements for building and heritage protection. Careful protection and on-going monitoring of the building elements

that will remain is required. Heritage protection requirements including vibration monitoring shall be specified in the Division 1 specification for implementation of the CM during construction. As well, guidelines shall be required regarding the protection of character-defining elements for any AD that happens. The FHBRO will need to be consulted on any demolition or removal of character-defining elements. Demolition involving character-defining elements (materials, assemblies, spaces) requires planning, documentation and storage. Salvaging guidelines shall be required. A Heritage Elements Inventory, Heritage Recording and Heritage Materials Database will be prepared by PWGSC and provided to the Prime Consultant, as the basis for managing heritage building elements throughout the project.

1.3.3.3 Temporary Work

The Prime Consultant, in consultation with the CM, will be required to identify and design temporary architectural, structural, mechanical, communication, electrical and fire protection requirements related to the abatement and demolition tender packages and for the transitional periods between tender packages. This aspect of the design program is critical as the provision of services must be maintained throughout the duration of the project in the occupied space. The CM will be responsible for implementing the temporary services program to ensure services are operational for the start of business each day. The temporary work includes:

i. Temporary heat and ventilation of the interior;
ii. Heritage protection measures;
iii. Mechanical portion of temporary fire protection systems;
iv. Mechanical ancillary systems required to maintain electrical systems supporting the generator and other life-safety equipment;
v. Temporary structural supports if required; and
vi. Temporary electrical requirements related to the construction site including scaffolding enclosures and interior work (while existing electrical systems are removed) such as:
    a. Power, lighting, security and fire protection;
    b. Emergency power to maintain heat, lighting and fire protection and supply to exterior services; and
    c. Lightning protection as required.

Fire protection during construction shall be governed by:

i. Treasury Board Fire Protection Standard (http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316&section=text) coordinated and confirmed by the Departmental Representative responsible for the Fire Protection; and
ii. National Fire Code and other applicable standards, regulations and Acts.

Fully coordinated and continuous follow-up and review for implementation compliance of this particular aspect of temporary work cannot be understated. The provision of this work will be critical to the successful completion of the project. The Prime Consultant will be taking a leading and proactive role in this matter throughout the entire design period; the CM will ensure that fire protection is maintained throughout the implementation period. This aspect will be particularly critical during the period of abatement and demolition work.

1.3.3.4 Interior Architectural

The rehabilitation of the building will include the following:

i. Removal of T-bar ceiling;
ii. Removal of Asbestos Containing Materials (ACM) and plaster ceilings;
iii. Removal of existing carpets;
iv. Fireproofing of existing steel structure;
v. Painting of all walls; and
vi. Installation of new acoustical ceiling tile and carpet.

Note that it is intended to retain as much of the interior finish on all interior walls as possible.

1.3.3.5 Building Envelope Conservation

The rehabilitation of the building will include the following:

i. Full repairs and rehabilitation of the copper roof including: repair of standing seams and batten edges, re-clad parapet walls, replace all flashing, insert deviators to direct water away from masonry walls, replace gutter system, repair any flat roof deficiencies, replace all anti-pigeon systems;
ii. Masonry re-pointing and repairs. The extent of masonry re-pointing and repairs will be reviewed and updated by the Prime Consultant.;
iii. Repair and restoration of character defining elements;
iv. Full restoration of windows. PC to review feasibility of restoration in-situ and off-site and provide an options report with recommendation for implementation; and
v. Restoration of vents, hardware, copper grills and the clock.

All of the elements that make up the building envelope are character-defining elements of the building. One of the project objectives is to retain as much original material as possible. The windows, although suffering from various pathologies, are largely intact and good candidates for preservation, which involves cleaning and refinishing the windows, as described in the report *Postal Station B Envelope and Mechanical System Investigation Report, DFS Architecture & Design, Mar 2011.*

The upper, office floors of the interior have been altered significantly over time, and are not considered character-defining. It should be noted, however, that the interior finishes in the post office and lobby spaces on each floor are character-defining.

1.3.3.6 Heating System Replacement

The rehabilitation of the building will include the following:

i. Replacement of the complete piping, valve and mechanical system for the entire building; and
ii. Replacement of the existing steam radiators with new hot water radiators and the installation of a new steam-to-hot water conversion station.

1.3.3.7 HVAC Upgrade

The rehabilitation of the building will include the following:

i. Upgrading of the HVAC system to increase the air flow rate based on an occupancy level of 250-280 people (to be validated), including new supply of cooling to all LAN rooms and review of the air intake location and elevation;
ii. Refurbishment of the central air handling unit including installation of a multiple fan array, and/or replacement of the entire unit, based on value engineering and life cycle cost analysis; and

iii. Replacement of Variable Air Volume (VAV) units and the air distribution ductwork.

1.3.3.8 Electrical Upgrade

The rehabilitation of the building will include the following:

i. Upgrading of the fire alarm system;
ii. Review of the capacity of the sub feed service from the Langevin Building and upgrading as required to support the increased design occupancy level of 250 people, taking into consideration the upstream 750-kVA transformer capacity which feeds both the Langevin and Postal Station B buildings;
iii. Replacement of the electrical distribution equipment and floor distribution system, including modification of the lighting system including provision for a modern control system, permitting day-light harvesting and energy savings, dimming or individual control of the light fixtures and interface with the building control system; and
iv. Review of the requirement to provide dedicated transfer switches for the emergency power system, and upgrading as required.

1.3.3.9 Control System Upgrade

The rehabilitation of the building will include the following:

i. The installation of a new Building Automation System (BAS) which includes local Direct Digital Control (DDC) type controllers and a new Central Management System, or selected upgrades to the BAS, as determined from the Value Engineering and Life Cycle Costing exercise described in PD1.3.3.16.

1.3.3.10 Plumbing System Upgrade

The rehabilitation of the building will include the following:

i. Replacement of all below-ground sanitary and storm drainage piping and above-ground sanitary and storm drainage including vertical chases and sump-pumps, as identified in the Watson MacEwen Teramura 2013 report (*Envelope Rehabilitation & Base Building Upgrade, Postal Station B, 47-59 Sparks Street, Watson MacEwen Teramura Architects, Jun 2013);*
ii. Replacement of domestic water piping distribution system and modification of the main water entry to meet current code requirements;
iii. Replacement of all existing plumbing fixtures (excluding Women's Washrooms in common areas); and
iv. Localized repairs to the foundation wall and drainage system exposed as a result of the plumbing system upgrades described above.

1.3.3.11 Sprinkler System Upgrade

The rehabilitation of the building will include the following:

i. Installation of sprinklers on each floor, standpipes in stairwells and new fire protection pumps.; and
ii. Installation of Siamese connections.

1.3.3.12 Structural/Seismic

The rehabilitation of the building will include the following:

i. Evaluation of existing deficiencies in the connection of masonry to the structure and restoration of the integrity of this connection in conjunction with the building envelope conservation work;
ii. Rehabilitation of the steel beams and columns at the penthouse level in conjunction with the building envelope conservation work. The scope of structural intervention, as identified by DFS in their 2011 report (Postal Station B *Envelope and Mechanical System Investigation Report, DFS Architecture & Design, Mar 2011)* includes: "the repairs of the corroded column and beams in the West staircase between the 6th and 7th floor levels and the rehabilitation of the corroded lintels above the penthouse windows and doors and along the North elevation at ground level. Furthermore new ties will be properly inserted during the rehabilitation of all corners of the penthouse so as to secure the envelope to the back-up walls."
iii. Repairs to corroded steel members exposed in conjunction with the envelope conservation work and the interior abatement and demolition work;
iv. Repairs to corroded steel beams in the basement mechanical room; and
v. Seismic upgrading to a minimum of 60% of the current NBCC 2010 seismic requirements. Intent is to achieve the maximum level that is reasonably practical within the project constraints, with a minimum of 60% reliability level.

1.3.3.14 Functional Program

There will be no changes to the functional program for the building.

1.3.3.15 Accessibility

Public Works and Government Services Canada is committed to making its facilities accessible to persons with disabilities. The Treasury Board Accessibility Standard for Real Property establishes minimum requirements for the accessibility of Crown-owned and leased real property (http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12044&section=text#cha3).

The rehabilitation of the building will include the following:
i. The Prime Consultant is to review the accessibility of the washrooms to meet Treasury Board requirements, provide recommendations to PWGSC, and implement an upgrade option as approved by PWGSC DR.

1.3.3.16 Heritage

The *Treasury Board Guide to the Management of Real Property* (http://www.tbs-sct.gc.ca/rpm-gbi/doc/gmrp-ggbi/gmrp-ggbi06-eng.asp) places protection of the heritage character of federal buildings on an equal footing with other considerations related to real property management and it is within this policy that departmental obligations and responsibilities are defined.

Postal Station B is a 'Classified' federal heritage building, and as such, all work must be done in accordance with the *Standards and Guidelines for the Conservation of Historic Places in Canada*, (http://www.historicplaces.ca/media/18072/81468-parks-s+g-eng-web2.pdf) and the project must be submitted to the FHBRO for review. The FHBRO will undertake their review based on the S&G, the Heritage Character Statement for the building, and the Conservation Approach developed by the Project Team.

Heritage Character Statement

The following Heritage Character Statement was developed by FHBRO (http://www.pc.gc.ca/apps/dfhd/page_fhbro_eng.aspx?id=2549) to explain the reasons for the designation and to specify what it is about this building that makes it significant (the heritage character). It is a key reference document for anyone involved in planning interventions to federal heritage buildings and is used by FHBRO in their review of interventions.

Postal Station B, Ottawa, was built in 1938-39 to designs by W.E. Noffke, architect, of Ottawa. In 1984, the Historic Sites and Monuments Board identified this along with the other buildings around Confederation Square as of national historical and architectural importance. The building belongs to Public Works Canada. See FHBRO Building Report 85-14.

Reason for Designation

In June, 1986, Postal Station B was designated Classified because it is a significant and creative work of architecture and because it makes an important contribution to the character of Confederation Square and the Sparks Street Mall.

In Postal Station B, W.E. Noffke, a distinguished Ottawa architect of the period, found an elegant solution to a demanding symbolic program. The government of the day recognized this building as its major contribution to the enclosure of the newly-created Confederation Square. Its cornice heights and, to a degree, its bay rhythms were established by the adjoining Langevin Block; the roof was imposed by a political preference for the Chateau Style, or at least for large copper roofs. Noffke integrated these givens in a composition of Classical regularity with the honed-down surface treatment typical of the Art Deco sensibility. The building is an entirely convincing example of good architectural manners.

Postal Station B was intended to be the springing of a consistent façade to Elgin Street south to Laurier Avenue. The Lord Elgin Hotel is a direct response to this aim; the Lorne Building and the British High Commission are less direct responses to the same intention. Postal Station B also works well as the gateway to the Sparks Street Mall.

Character Defining Elements

The whole of the visible façades and roofs of the building, including windows and doors, architectural metals and fittings, and, of course, the lions which guard its doors, are essential to its heritage character. It is unlikely that any of these elements can be altered without seriously diminishing the whole.

The public interiors of the building were originally finished with a suitable richness of material and ornament. The qualities of this space have been eroded over the years by successive small changes. It would be appropriate for this process now to reverse itself. The architectural and social values of this building would be best preserved if it were to remain a post office.

Heritage Material Database and Heritage Material Management Protocol

As part of the stewardship role of PWGSC, architectural components being considered for salvage or disposal must be carefully considered to ensure that the heritage value is respected. The Government of Canada has established a legal and policy framework for the protection of heritage buildings, sites and moveable heritage assets in its care. In addition to the *Treasury Board Guide to the Management of Real Property* (http://www.tbs-sct.gc.ca/rpm-gbi/doc/gmrp-ggbi/gmrp-ggbi06-eng.asp), the following documents affect how salvaged items are to be assessed and managed: *Treasury Board Policy on Management of Materiel* (http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=12062); and *Guide to the Management of Movable Heritage Assets* (http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=13872&section=text).

Heritage Material Database:
The *Heritage Material Database* identifies the heritage character defining elements; their description, location and quantity; heritage and material values, and includes a photographic heritage recording of each element. The database includes recommended salvage/disposal/protect/reinstate requirements for each component based on the project requirements including design intent, implementation strategy and conservation approach. Further detail will be provided in the *Heritage Material Management Protocol* for items selected for salvage or disposal including: who will remove it, storage requirements for long term or short term, outdoor or indoor storage, de-accessioning protocols to museums and other third parties; treatment of sensitive items and disposal procedures.

A *Heritage Material Database* has been prepared by PWGSC and will be made available to the Prime Consultant for use on the project. (*Postal Station B Heritage Material Database, Heritage Conservation Directorate, February 2015*). This database will be continually updated and maintained during the design and construction phases of the project by the Prime Consultant with monthly update reports to PWGSC.

Further investigations and inspections may be required to verify the heritage materials and their condition in obscured areas of the building (for example behind drop ceilings and under raised floors). The Prime Consultant would prepare an inspection and investigation plan for the CM to provide access to verify existing conditions. Access for some investigations will only be possible once a floor has been vacated for construction.

Heritage Material Management Protocol (HMMP):

A HMMP will be prepared by the Prime Consultant for the project. This document details the protocol for the CM to follow during construction for heritage materials. The HMMP is a document which is an appendix to the construction specification sections containing the historic – protective measures. The HMMP includes:

a. the initial material actions,
b. the various steps and types of cataloguing: the purpose of this is to provide guidance to the CM for the appropriate cataloguing of heritage

materials that are disassembled from their current location, including those that will be reinstalled or permanently stored;

c. the material handling during removal: the purpose is the provide guidance for the appropriate handling of all heritage material during the removal from their location;
d. the protection, including protection in-situ, protection removal to undertake work, and crating protection;
e. transportation procedures;
f. temporary storage;
g. permanent storage;
h. unanticipated heritage element discovery protocols;
i. unanticipated damage to heritage elements during construction protocols;
j. sample heritage material condition report; and
k. sample crating tag and heritage material I.D. tag.

1.3.3.17 Value Engineering and Life Cycle Costing

Value engineering and life cycle costing are considered an integral component of this project, in view of optimizing the design process and the selection of materials and building systems to achieve the best value for the Crown. The CM must collaborate and provide constructability and schedule impact input to the Prime Consultant for value engineering and life cycle costing.

Value engineering should be a total review of all components (equipments, systems, etc.), their complexity, utility, material specifications and LCC. The goal is to simplify, standardize and improve without compromising quality, use, life and budget. Value engineering should include the following but not be limited to these:

i. The requirements of the functional program;
ii. The design;
iii. Maintenance of the finished product (component, equipment, building, etc.)
iv. Sustainability;
v. Efficiency (energy usage, durability);
vi. Constructability (including the project constraints);
vii. Schedule impact;
viii. Systems integration; and
ix. Heritage implications.

LCC should be used in all cases where options are presented, as to equipment type, operating reliability, costs, choice of construction methods and life of equipment. *ASTM Standard E917 Standard Practice for Measuring Life-Cycle Costs of Buildings and Building Systems* is considered a reference document to follow for LCC for this project. The LCC process must include at least the following but not be limited to these:

i. Use present value for all costs based on 30 year life before renovations;
ii. Maintenance and operating costs;
iii. Replacement cost for major components (equipment);
iv. Potential savings based on quality of materials used;
v. Potential savings due to constructability;
vi. Schedule impact on cost; and
vii. Method of construction cost impact.

The following selected building systems will be investigated as part of the Prime

Consultant's mandate:

i. Roofing Repairs versus Replacement: The scope of work is currently based on undertaking localized repairs of the roofing as described in Section PD 1.3.3.5. The Prime Consultant is to perform VE/LCC to determine the optimum option, considering that replacement of the entire roofing would provide an opportunity to incorporate roofing insulation resulting in reduced energy costs.

ii. Steam-to-Hot Water Converter: The building is currently serviced with steam radiators. The project includes for the replacement of the heating system for the entire building, including replacement of existing steam radiators with new hot water radiators. This will require the installation of a new steam-to-hot-water conversion station. In addition, this VE/LCC exercise needs to take into account a future PWGSC requirement to change over from steam to low-temperature hot water supply to buildings in the NCA including Postal Station B (*Guidelines for Hot Water System for Buildings Connected to Central Heating Plants in NCA, PWGSC, Jul 2011*). The efficiency of the conversion stations selected will have an impact on energy costs and overall life cycle costs, which are to be evaluated as part of the VE/LCC exercise.

iii. Air Handling Unit Replacement: The current program includes for the refurbishment of the existing AHU in-situ given space constraints in the mechanical room. This would require phased implementation over a series of weekends to maintain business continuity. The Prime Consultant will also be reviewing the feasibility of replacing the existing AHU as an option.

iv. Lighting Approach: Review options for optimizing the lighting system design with the objective of reducing energy, user-friendly control, maintenance and operating costs.

v. Building Automation System: The cost estimate currently includes for the installation of a new Building Automation System (BAS) which includes local Direct Digital Control (DDC) type controllers and a new Central Management System. However, the existing BAS has been recently upgraded and in addition the BAS services other buildings in Block 1. The Prime Consultant will include an investigation and report on the best value to PWGSC on the extent of replacement or modification to the BAS.

vi. Sequencing of Construction Work: PCO will vacate a minimum of one floor at a time using a designated floor as swing space and CPC space on the ground floor will remain fully occupied. Work on occupied floors and on the CPC ground floor will need to be performed during off hours. The Prime Consultant in consultation with the CM will apply value engineering to optimize the sequencing of construction activities with the objective of reducing the overall construction schedule.

vii. Operating Costs: Operating costs must be kept to a minimum and reflect the projected operating costs in the cost plan, as provided by PWGSC. This is to be achieved by compliance with the energy budget and selection of equipment and finishes that require minimum operating personnel and easy maintenance. The implications of operating and maintenance costs on the selection of equipment and finishes are to be reviewed.

viii. In addition to the items identified above, the Prime Consultant with input from the CM will propose an additional five (5) opportunities for the application of value engineering and life cycle costing with justification for approval by PWGSC.

1.3.3.18 Environmental/Sustainable Development

1.3.3.18.1 Principals and Guidelines for Sustainable Development

Sustainable Development objectives must be addressed throughout the evolution of the project. Sustainable Development is defined in broad terms as a strategy that routinely and consistently includes the consideration of the environmental, economic and societal impact of every decision made for the project. The following are some of the principles that will be incorporated into the design:

i. Integrated Strategic Assessment;
ii. Integrated Design Process;
iii. Energy Efficiency;
iv. Environmental Impact;
v. Waste Management;
vi. Life Cycle Management; and
vii. Sustainability Performance Assessment.

Sustainable development guidelines include:

i. Energy efficiency and conservation including HVAC and mechanical systems;
ii. Greenhouse gas emissions reduction;
iii. Practical water management and conservation;
iv. Pollution prevention;
v. Product selection and resource conservation;
vi. Recycling and reusing material where feasible;
vii. Using durable building material and assemblies;
viii. Using building products with recycled content where feasible;
ix. Implementing a Construction, Renovation and Demolition (CRD) waste management plan;
x. Indoor environmental quality (thermal, air, and lighting quality and control); and
xi. Environmentally friendly maintenance procedures and products (e.g. low Volatile Organic Compounds (VOC).

As well as the *Treasury Board Policy on Management of Real Property*, other guidance documentation outlining sustainable design principles to be included for federal real property projects include:

i. *The Environmentally Responsible Construction and Renovation Handbook* (http://www.tpsgc-pwgsc.gc.ca/biens-property/gd-env-cnstrctn/index-eng.html);
ii. *The Environmentally Responsible Green Office at a Glance Handbook* (http://www.tpsgc-pwgsc.gc.ca/biens-property/env/page-1-eng.html);
iii. *Strategic Framework for Sustainability in Buildings*; and
iv. *Green Building Implementation Guide*.

This project requires a solid waste management program which must be implemented for all construction phases - this is the responsibility of the Environmental Consultant retained by PWGSC. The Prime Consultant will coordinate all requirements and the scope of the demolition program with the EC, who will prepare the Consolidated Waste Inventory and Reduction Plan, which is an element of the solid waste management program. The Prime Consultant will review a draft of the Consolidated Waste Inventory and Reduction Plan prior to being finalized and confirm in writing that the scope of the Consolidated Waste Inventory and Reduction Plan is reflective of the planned

construction work. The EC will also be responsible for performing waste management audits during construction to verify the degree to which recycling objectives are being achieved and recommendations for improvements if objectives are not being met.

The team approach is crucial to sustainable design projects. It encompasses a methodology that is focused on a collaborative process involving input from all team members early in the project. To this end, the Prime Consultant shall lead the integrated design process to provide a holistic approach to the rehabilitation design. With due consideration of the project scope, the intent should be to focus on the design, construction and operation of building systems, and the occupancy of the building over the complete life cycle, in a multi-disciplinary approach that clearly defines the functional, environmental and economic goals and objectives of the project. In doing so the following should be accomplished:

i. Establishment of an inter-disciplinary team including PWGSC and the Client/User;
ii. Establishment of the priorities of the various performance issues;
iii. Energy simulation on design options and objective information on system performance;
iv. Provision of subject specialists to provide consultation;
v. Use of performance assessment tools such as LEED;
vi. Use of a design facilitator to initiate and stimulate discussions; and
vii. Use of team workshops.

1.3.3.18.2 Environmental Performance

This project provides the opportunity to incorporate innovative, sustainable and environmentally responsive design into the rehabilitation. PWGSC policy requires that rehabilitation projects of Crown-owned buildings meet an industry recognized level of high environmental performance (Leadership in Energy and Environmental Design (LEED) Silver, Green Globes for Design, or equivalent standard).

The Prime Consultant will apply for and obtain, on behalf of PWGSC, certification for the project under an industry-recognized rating system. The Prime Consultant will provide guidance to PWGSC as to which rating system would be most appropriate, and realistically achievable, for the project. The Prime Consultant will perform an initial assessment early in the design stage that will inform PWGSC which rating system (e.g LEED, Green Globes, etc.) and which level of rating the project will be able to achieve keeping in mind the minimum standards set forth in the Federal Sustainable Development Strategy. For a major renovation project such as this, the minimum level of performance is LEED NC Silver or 3 Green Globes for Design. The Prime Consultant will be responsible for all tasks, including preparation of documentation, required for certification and will balance the requirements of the rating systems' prerequisites and credits with other project requirements. For more information visit the Canada Green Building Council web site: http://www.cagbc.org and Green Globes for Design at http://www.greenglobes.com/home.asp The CM will support the Prime Consultant in the environmental certification process by advising on the sourcing, availability and on-site verification of materials. Refer to section RS4.5.12 for additional information.

1.3.3.19 Building Components and Connectivity (BCC)

General

Building components means building fixtures, furnishings and equipment. Building connectivity means the physical, electronic and other systems – namely Information Technology, Multi-Media and Integrated Security Systems (IT/MM/ISS) - that connect buildings and the workstations in them.

The scope of work on the interior of the building includes the abatement of ACM and upgrade of base building systems on a floor by floor basis, with no changes to the tenant functional program. Other than for the abatement of ACM and upgrade of base building systems, the design and construction work shall be planned to minimize any disturbance to interior walls and character-defining elements. The intent is that after completion of the construction work, the tenant space will be returned to its original layout, generally using the original Building Components and Connectivity components where reusable. However, new Connectivity components will be required for the upgrades to the Integrated Security Systems (ISS) included as part of the project.

Building Components

The majority of Building Components are owned by PCO, the main building tenant, and it is planned that these will be largely reused by PCO. PCO will be fully responsible for the purchase and installation of any new Building Components where required. The CM will be responsible for coordinating with PCO and PWGSC to ensure that PCO activities related to Building Components are properly coordinated and scheduled with the CM's activities.

Design and Construction Documents
The Prime Consultant shall prepare architectural drawings for each floor and shall include for all Building Components located within the space in sufficient detail to ensure a fully coordinated and integrated design including architectural, structural, electrical and mechanical disciplines.

Construction
PCO is responsible for the supply and installation of all Building Components owned by PCO. Prior to construction work commencing within the designated space and prior to the Construction Manager (CM) becoming Constructor under the Occupational Health and Safety Act, PCO's own forces will remove and store elsewhere all reusable Building Components (as defined below) which are owned by PCO together with other reusable equipment (as defined below) which are owned by PCO. After completion of construction work by the CM on each floor, PCO's own forces will install these Building Components back into their designated space, as well as any new Building Components purchased by PCO. PCO are responsible for planning and executing this work with all costs to PCO account.

"**Building Components**" are defined as:

i. commercially available furniture;
ii. case goods;
iii. purpose-built furniture and shelving;

iv. soft seating;
v. chairs;
vi. task lighting;
vii. **heritage furniture**;
viii. **art and artifacts**;
ix. maintenance equipment;
x. food service equipment;
xi. security equipment;
xii. health and safety equipment;
xiii. material handling equipment; and
xiv. equipment such as computers, photocopiers, printers, scanners, digital radios in support of the delivery of common services (i.e., security posts, printing services, building management).

"**Other Equipment**" (not included in the building components definition) is defined as:
i. office equipment related to administrative functions such as: computers, printers, fax machines, television sets, VCRs, converters, phone sets or radios; and
ii. office accessories such as: garbage cans, supplies, plants, decorative drapes and rugs.

Connectivity

Design and Construction Documents

A Security Services Consultant will be retained by PWGSC on PCO's behalf to complete the Integrated Security System (ISS) design for the project and to act as an interface between PCO and the Prime Consultant to ensure full coordination of the security design requirements with the Prime Consultant design deliverables.

The Prime Consultant's architectural drawings for each floor shall include for all Connectivity Components located within the space in sufficient detail to ensure a fully coordinated and integrated design, which support a fully coordinated set of construction documents, including architectural, structural, electrical and mechanical disciplines. All pathways, conduit runs, recessed terminal boxes and junction boxes shall form part of the Consultant drawings and will be fully coordinated with all disciplines and with the Security Services Consultant, to achieve the required degree of separation and to prevent interferences with other building services.

Construction
The CM will be fully responsible for the removal, moving and temporary storage of existing Connectivity components designated by PCO for reuse. All non-reusable Connectivity components will be removed from the site by the CM under the waste management process.

The CM will also be responsible for the reinstatement of reused Connectivity components, as well as the supply, installation and commissioning of new ISS components required as part of the security systems upgrade.

"Connectivity" is defined as:
i. infrastructure fit-up;

ii. cabling;
iii. Integrated Security System (ISS);
iv. CATV;
v. network;
vi. telephony;
vii. vote chimes;
viii. multimedia;
ix. external media (broadcast);
x. digital radio;
xi. exterior cameras and communications Centre;
xii. initial operation and maintenance requirements;
xiii. fire alarm monitoring system; and

"Connectivity" does not include the following:

i. operation and maintenance requirements subsequent to transfer of assets; and
ii. base building renovation and construction activities (such as pathways, cable trays, conduit, etc.).

PD 1.3.3.20 Exclusions

The current project definition does not include the following:

i. Rehabilitation of Women's Washrooms;
ii. Blast hardening of the building including windows;
iii. Vertical transportation;
iv. Foundation repair and waterproofing (except localized intervention required as a result of localized exposure for access to services); and
v. Landscaping (except localized landscaping required to reinstate areas disturbed during construction).

1.3.4 CONSTRAINTS AND CHALLENGES

1.3.4.1 Site

i. The building is situated on a site with no parking spots and a very narrow alley leading to a small loading bay;
ii. Pedestrian and vehicular traffic on Sparks Street and Elgin Street cannot be obstructed by the CM;
iii. The close proximity of the site to the National War Memorial requires that exterior interventions to Postal B by the CM are respectful of this site and in particular, Remembrance Day ceremonies, Canada Day and the various other events occurring on Sparks Street;
iv. Highly visible project and location with many stakeholders: PWGSC, Canada Post Corporation, Privy Council Office, RCMP, City of Ottawa, FHBRO and the general public;
v. The site is next to the Langevin Block which is a secure building.; and
vi. Protection of heritage fabric must be ensured by the CM.

1.3.4.2 Seismic Upgrading

i. A detailed seismic assessment of the building was completed in 2014 (*Structural Seismic Assessment of Postal Station "B" Building, Dessau, July 2014)* to verify the seismic capacity of the building and compliance to the seismic requirements of the National Building Code of Canada and the PWGSC Seismic Policy. Seismic upgrading of the building will be required to meet PWGSC Policy Requirements will be designed by the Prime Consultant, and will need to be implemented by the CM on a floor by floor basis in a partially occupied building.

1.3.4.3 Abatement and Demolition (AD)

i. Abatement and Demolition construction work to be tendered by the CM in advance of other construction documents as required to maintain schedule;
ii. Abatement and Demolition work will be performed one floor at a time as the floor occupants will need to be moved to a designated swing space for the duration of the AD work and the base building fit up. Other floors will remain fully occupied during this time.
iii. Mobilization and demobilization of the AD contractor will be required on each floor, and the AD contractor shall allow for a lag between the completion of AD work on a floor and the start of AD work on the subsequent floor to be abated;
iv. Perform abatement work in a partially occupied building on a floor by floor basis while balance of building remains occupied ensuring that all health and safety requirements are met. This will require the development and implementation of rigorous mitigation measures AD contractor under the oversight of the CM to ensure that areas where Abatement and Demolition construction work is occurring are well sealed, to prevent migration of dust and ACM into occupied spaces and into existing LAN rooms where equipment will remain; and
v. All asbestos abatement work is to be completed during evenings and/or on weekends, including removal of asbestos-containing materials for off-site disposal.

1.3.4.4 Building Security Requirements

i. The CM shall ensure that all CM personnel and subcontractors, requiring building access have the correct security clearance; and
ii. The floor sequencing strategy is to be developed by the Prime Consultant in coordination with CM input, in concert with PCO and in consideration of their Top Secret Space Accommodation Strategy.

1.3.4.5 Implementation

i. Ensure day-to-day operations are not affected by execution of work by the CM;
ii. PCO offices will be vacated one floor at a time using a designated floor as swing space and the CPC space on the ground floor will remain fully occupied.;
iii. All interior work (excluding noise and or odour generating activity, and asbestos abatement work) is to be performed by the CM on a floor by floor basis during normal working hours from 7 am to 6 pm on weekdays and non-holidays. Disruptive work (including noise and odour generating activity, and asbestos abatement), and all work on the Ground Floor must be performed during off-hours (6 pm to 7 am) and/or on weekends.

iv. For exterior work, the building will be occupied as described above and accordingly a limited amount of work will be permitted by the CM under the constraint that it is not disruptive to the balance of the occupied space;
v. The CM is to expect a significant program of off-hours work to meet the constraint of mitigating impacts to tenants while meeting the project schedule.
vi. Sound readings must be taken by the CM on the floors above and below the working floor to mitigate impacts to tenants;
vii. Restricted access to the building, given its location, layout and security requirements;
viii. Site office space for CM to be accommodated by the use of limited space in the basement, the provision of an on-site trailer by the CM in the hoarded area, and on the floor under construction;
ix. Use of passenger elevators is not permitted by the CM. Restricted use of freight elevator by the CM for material handling and personnel usage; heavy and bulky material deliveries are to be coordinated during off-hours;
x. Shared use of loading dock for material deliveries with building tenants during working hours. Heavy and bulky material deliveries are to be coordinated by the CM during off-hours.
xi. Restricted use of washrooms by the CM. Only the washrooms on the floor under construction are available for use by the CM as well as portable facilities as provided by the CM;
xii. Limited lay-down area for CM;
xiii. Heating, cooling and ventilation requirements of the occupants must be maintained by the CM throughout the duration of construction with no disruptions;
xiv. Space is limited and the option for installation of a new Air Handling Unit (AHU) may not be possible, requiring the refurbishing of the existing unit in place. Therefore phased implementation by the CM over a series of weekends may be required to maintain business continuity;
xv. Mechanical room in basement requires expansion to accommodate new converters therefore alternative space is required for PCO file storage in the basement level;
xvi. CM is to coordinate with PWGSC and users to ensure advance communication to users in the building to inform them of upcoming construction activities;
xvii. Completion of all exterior work by CM including window rehabilitation suitably in advance of July 1 2017 sesquicentennial celebrations; and
xviii. Vehicular and pedestrian traffic and circulation around the building must be maintained by CM. Construction traffic operations must cease during peak traffic times on Monday to Friday from 5:00 am to 9:30 am and from 3:30 pm to 7:00 pm to ensure public safety and less constrictive traffic flow. Construction traffic will be allowed at all other times in accordance with Municipal noise bylaws and the Authority's requirements. No deliveries will be allowed on Sparks Street after 11:00 am during the summer.

1.3.4.6 Heritage Conservation

i. The building is designated "Classified", the highest level of designation by the federal government, and as such, all work must be done in accordance with the *Standards and Guidelines for the Conservation of Historic Places in Canada*, and guided by the Heritage Character Statement with the intention of protecting the identified heritage character-defining elements. Areas of high heritage value

include the exterior facades, the space occupied by Canada Post and the lobby areas.

ii. All proposed interventions as part of the project will be submitted by the Prime Consultant to the FHBRO for review at various stages of the project, typically during schematic design, design development and at the construction document stage.

iii. CM is to ensure protection of heritage materials by adhering to the Heritage Material Management Protocol developed by the Prime Consultant.

1.3.5 ESTIMATED CONSTRUCTION COST

The total estimated construction budget (Class D estimate) for the Postal Station B rehabilitation is $27,970,000 (including BCC Connectivity and Security Upgrades), as broken down in the table below. This amount excludes HST, contingency, risk allowance, professional fees, Construction Management costs and Disbursements (including Bonding and Insurance, Permits, and Site Office Costs).

Construction and Building Components & Connectivity Estimates	Current $000
Construction	
Envelope Rehabilitation	
Exterior Facade, Roof, Windows	3,831
Base Building Rehabilitation	
Interior Architectural (includes ACM Abatement)	6,749
Sprinkler System Upgrade	1,221
Electrical Systems Upgrade	1,841
Heating System Replacement	2,510
Plumbing System Upgrade	669
HVAC Upgrade	4,518
Control Systems Upgrade	837
Seismic Upgrade	2,887
Subtotal Construction Estimate (excluding contingency)	25,063
PCO-Owned Building Components and Connectivity (BCC)	
BCC Connectivity (IT/MM/ISS)[1] (excluding Security Upgrades)	1,001
Security Upgrades[1]	1,906
Subtotal BCC Estimate (excluding contingency)[1]	2,907
TOTAL CONSTRUCTION ESTIMATE (excluding contingency)	**27,970**
BCC Components[2]	825

NOTES:

(1) **BCC Connectivity** and **Security Upgrades** are included in the CM contract. CM is fully responsible for the removal, moving and temporary storage of existing BCC Connectivity components designated by PCO for reuse. The CM is also responsible for the reinstatement of reused Connectivity components, as well as the supply, installation and commissioning of new Integrated Security System (ISS) components required as part of the security systems upgrade. Refer to Section 1.3.3.19 for additional information.

(2) **BCC Components** are excluded from the CM contract. PCO is fully responsible for the removal and reinstatement of existing BCC Components, and the supply and installation of any new BCC Components. Refer to Section 1.3.3.19 for additional information.

1.3.6 SCHEDULE

The schedule below highlights key estimated milestone dates associated with the Postal Station B Rehabilitation project and reflects an early tender and award of the abatement and demolition. Design and construction Work will need to be sequenced and overlapped in order to meet schedule.

Key milestones are as follows:

Stage	Completion Date
Full Project Approval (PA) and Expenditure Authority (EA)	Jan 2014
Prime Consultant Contract Award	Jun 2015
Construction Manager Appointment	Sep 2015
Design and Construction Documents complete	Oct 2016
Start of Construction	Feb 2016
Completion of Exterior Work*	July 1 2017
Substantial Performance	Dec 2017
Total completion and turn over	Mar 2018

**Exterior work must be completed and all scaffolding removed suitably in advance of preparation for July 1, 2017 celebrations*

The Construction Manager must work closely with PWGSC, the Client/Users and the Prime Consultant to meet or optimize the durations set out in this schedule.

1.3.7 IMPLEMENTATION STRATEGY

1.3.7.1 Implementation Strategy

Because of the requirement for careful construction sequencing to minimize disturbance to occupants and with a wide range of trades working in a secure environment, the

Construction Manager (CM) will need to execute construction with well planned, progressive release of work packages.

Interior system upgrades and abatement of ACMs will be implemented by the CM on a floor by floor using a designated floor as swing space. Rehabilitation of the building envelope including masonry, windows and roofing, will be implemented by the CM from the exterior using scaffolding erected along the building facades. This exterior work is to be coordinated by the CM to occur at the same time as the interior work on the floor which is under construction, as much as possible.

Construction must start as soon as possible. Immediately after the completion of the Schematic Design by the Prime Consultant, the CM will work closely with the Prime Consultant (PC) and Environmental Consultant (EC) to establish the AD program as well as the temporary services requirements. This includes any requirements to isolate or close off mechanical and electrical services to ensure that the space is safe for demolition and abatement. It is expected that the scope of the first abatement and demolition package will cover work that is not dependent on the final design. This will allow for construction work to start as early as possible. The remaining AD tender packages can then be released by the CM on a floor-by-floor basis during design development of the base building so that the AD work continues with no delays.

A phased design process is required and the construction documents will be produced iteratively by the PC. While design development is taking place, certain aspects of the base building design will be accelerated so that construction documents can be produced for those areas that do not require the design to be fully completed such as the building envelope. Consequently, the construction documents for the foregoing work will be developed tender ready to allow construction to continue.

While the construction documents are being developed iteratively, the PC will sequentially release to the CM a minimum of nine (9) primary construction documents issuances, for CM tender, to optimize the construction schedule. A proposed sequence for the release of tender-ready construction documents is shown below but will be reviewed and updated by the CM in consultation with the PC. Note that the PC will be responsible for preparing tender-ready construction documents, while the CM will be responsible for assembling and issuing targeted tender packages based on these construction documents.

Multiple additional secondary work packages will be required as determined by the CM in consultation with the PC to best meet project phasing requirements. It should be assumed that a minimum of twenty (20) additional construction document work packages will be required in total.

i. Abatement and Demolition;
ii. Structural/Seismic;
iii. HVAC System;
iv. Heating System;
v. Electrical System;
vi. Interior Architectural;
vii. Domestic Water and Fire Protection;
viii. Control System; and
ix. Building Envelope.

During the design phase, the CM must work closely and in a cooperative manner with the Prime Consultant so that the CM has all the information to provide accurate and complete advice on CM activities such as, but not limited to the following:

i. Construction costs;
ii. Material delivery;
iii. Project schedules;
iv. Constructability;
v. Suitability and availability of materials and components; and
vi. Sustainable design, construction, heritage, and operational principles and practices.

A detailed sequence of construction activities must be developed by the CM as part of the design development process. This sequence of construction activities will consider the constraints and challenges identified in Section 1.3.4.

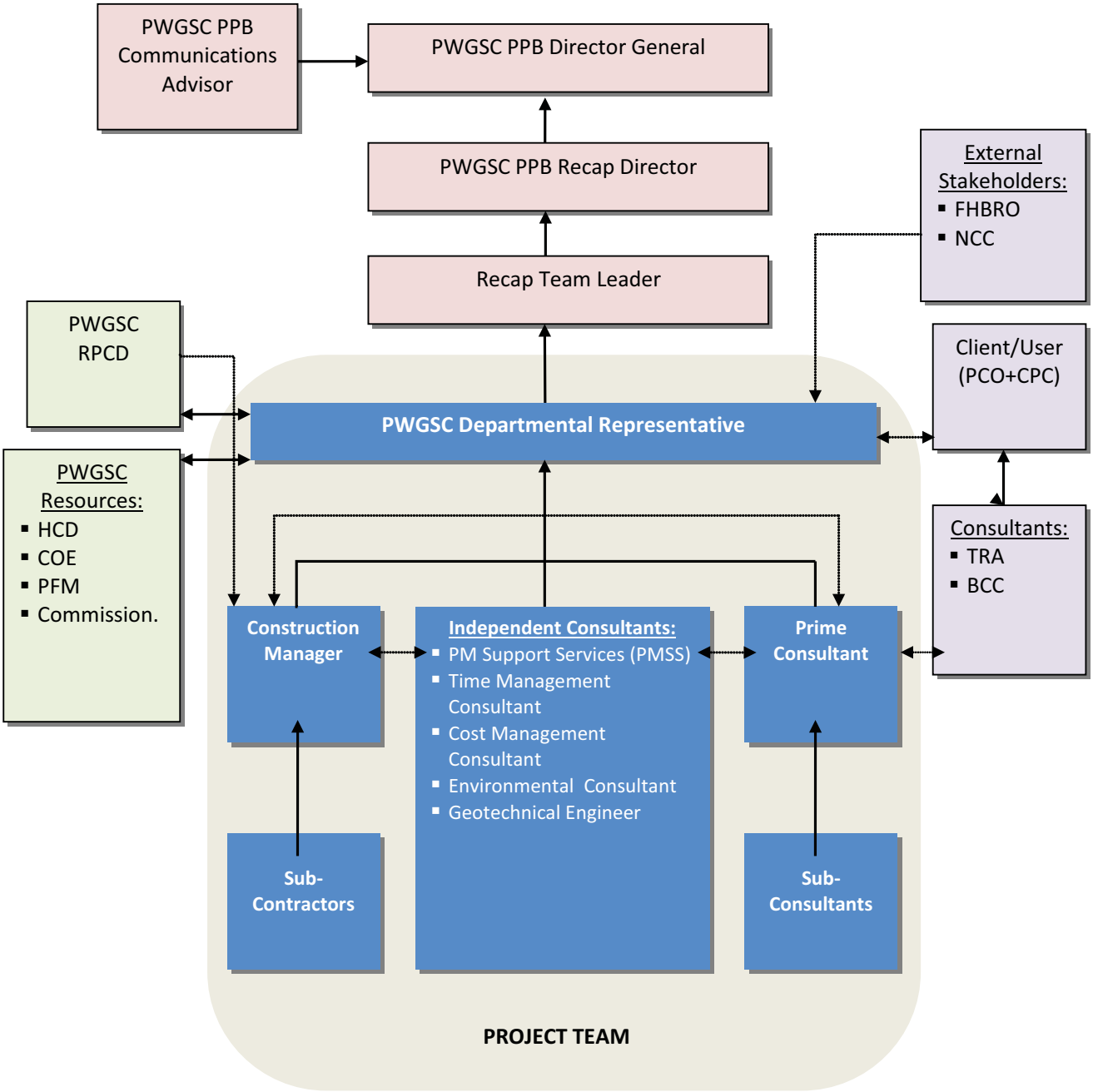
2. ROLES AND RESPONSIBILITIES

2.1 PWGSC

This project is to be managed and implemented in a collaborative manner. All members of the Project Team are required to work cooperatively at every stage of the design and construction process. Under the leadership of the PWGSC Departmental Representative, all team members are responsible for establishing and maintaining a professional and cordial relationship.

The Project Team refers to the key representatives involved in coordinating and delivering this project. The PWGSC Departmental Representative leads the Project Team, with membership representing those responsible for project implementation.

The following chart identifies the organizational relationships. Solid lines indicate functional reporting relationships. Dotted lines indicate project communication relationships. Note that not all Authorities Having Jurisdiction are indicated. Note that the chart below is included for illustrative purposes only and does not supersede information provided in Section 2.


PWGSC PPB Communications Advisor
PWGSC PPB Director General
PWGSC PPB Recap Director
Recap Team Leader
External Stakeholders:
FHBRO
NCC
PWGSC RPCD
Client/User (PCO+CPC)
PWGSC Departmental Representative
PWGSC Resources:
HCD
COE
PFM
Commission.
Consultants:
TRA
BCC
Construction Manager
Independent Consultants:
PM Support Services (PMSS)
Time Management Consultant
Cost Management Consultant
Environmental Consultant
Geotechnical Engineer
Prime Consultant
Sub-Contractors
Sub-Consultants
PROJECT TEAM

2.1.1 ROLES OF THE PWGSC PROJECT TEAM AND THE CLIENT/USER

2.1.1.1 PWGSC Departmental Representative

The PWGSC Departmental Representative (DR) is responsible for managing the CM's Contract. The DR will assign Project Managers to oversee portions of the Project and this Contract. The Prime Consultant reports to the PWGSC DR.

The PWGSC DR:

- Is directly engaged with the Project and is responsible for its progress.
- Liaises with the Privy Council Office, Canada Post and PWGSC, obtains their requirements, and conveys these requirements to the Prime Consultant and to the Construction Manager, as required.
- Is the technical authority for the Construction Manager's contract. Is the official conduit for the exchange of information between the Construction Manager, PWGSC, the Privy Council Office, Canada Post, the Environmental Consultant and the Prime Consultant.
- Coordinates the approvals of all design and Contract Documents and conveys approval or disapproval to the Prime Consultant.

2.1.1.2 PWGSC Contracting Authority

The PWGSC Contracting Authority (Real Property Contracting Directorate) is responsible for the establishment of the Construction Management agreement, its administration including Contract Amendments, and any contractual issues related to it. The PWGSC Contracting Authority will at times attend and participate in Construction Management Meetings.

2.1.1.3 PWGSC Technical Resources

The Professional & Technical Services Directorate (P&TS), as well as the Heritage Conservation Directorate (HCD) and Quality Assurance Team, are members of the PWGSC Technical Resources Team. The PWGSC Technical Resources Team provides expert advice and quality assurance for key architectural, conservation, engineering, and interior design professional disciplines including design reviews to ensure technical requirements are suitably defined and incorporated through all phases of planning, design, and implementation. The PWGSC Technical Resources Team will review the documents from the standpoint of assuring that the project requirements are met. Compliance with the current edition of the National Building Code of Canada and other regulations will remain fully the responsibility of the Prime Consultant. The PWGSC Technical Resources Team will participate regularly in design phases and will review Construction Documents. During construction, the technical resources may attend Construction Management meetings and field review on an ad hoc basis to advise the PWGSC Departmental Representative.

2.1.1.4 PWGSC Commissioning Manager

The PWGSC Commissioning Manager represents the Client/Users, Departmental Representative, and Property Manager's interests and maintains overall responsibility for

representing PWGSC in the commissioning process. The PWGSC Commissioning Manager is responsible for overseeing all commissioning activities during the development, design, implementation, and post construction stages of the project, assuring that all program issues are addressed. Responsibilities include the review and input into the approval of commissioning schedule, approval of commissioning reports, and certification of final completion and input to the evaluation report. The Commissioning Manager will review O&M reports, commissioning specifications, training, and performance verification procedures at all stages of the project and will ensure all O&M aspects are addressed.

Throughout the project, the Construction Manager will work closely with the PWGSC Commissioning Manager. Reporting to the PWGSC DR, the Commissioning Manager will review and approve all documentation at all stages of the project delivery and will monitor all commissioning activities, including the accuracy of reported results and manuals produced by the Prime Consultant and Construction Manager. CM and CM commissioning agent responsibilities are defined in section 4.5.16

2.1.1.5 Project Management Consultants Engaged by PWGSC

PWGSC has engaged the services of third party project management support services in the following areas of expertise:

- Project Management
- Project Scheduling
- Project Cost Control

These consultants report directly to PWGSC. In the case of the Schedule and Cost consultants, they are required to provide a third party challenge function and advisory services to PWGSC at the individual project level. The Project Management Support Services (PMSS) consultant will be directly involved in the day-to-day management of this project.

2.1.1.6 PWGSC Senior Communications advisor

The Senior Communications Advisor is the PWGSC representative responsible for all communications requirements and activities including contact with the media and the public.

2.1.1.7 PWGSC Property and Facilities Manager

The PWGSC Property and Facilities Manager (PFM) is responsible for building operations and management. The Property Manager is present on the Project Team to ensure facility management requirements are identified and incorporated into the project. The PFM will play a very active project role during project commissioning and turn over.

2.2 CLIENT DEPARTMENT

The Privy Council Office (PCO) and Canada Post, as PWGSC's clients, have the role of providing the following:

- Schematic, design development and construction documents review and approval

- Quality reviews and acceptance on selected systems relative to client functional program

PCO will be responsible for all Building Components and Connectivity (BCC) owned by them. This includes the removal, storage and reinstatement of existing BCC to be retained, as well the acquisition, design and installation of any new BCC required by PCO. It is noted that the majority of BCC are owned by PCO and it is planned that these will be largely reused by PCO. More detailed information on BCC for this project can be found in Section 1.3.3.19.

The PCO will assign an on-site manager/ representative/project officer for connectivity, multimedia and integrated security systems as the Technical Specialist, inspecting and certifying work as it progresses.

2.3 OTHER GOVERNMENT DEPARTMENTS

There may be numerous representatives of Other Government Departments (OGD's) involved in the Project such as the Federal Heritage Buildings Review Office (FHBRO), City of Ottawa, and National Capital Commission (NCC), among others. OGD Representatives and PWGSC may require separate meetings with the Construction Manager to review specific issues. OGD's Representatives will:

- Be responsible for functional issues on the project related to their respective organizations.
- Have input to functional and operational design requirements.
- Provide assurance that:
    - The OGD program requirements are thoroughly understood by all
    - The functional and operational requirements are met
    - OGD approvals, as required, are signed off

2.4 PRIME CONSULTANT

A Prime Consultant will be retained by PWGSC to prepare detailed design and construction documents for this Project. The team includes the prime consultant, sub consultants, and specialists with extensive relevant experience capable of providing all of the required professional services for the Project.

The Prime Consultant and its team are responsible for, but not necessarily limited to:

- Completing the design for the Work and for coordinating and directing the work of sub consultants and specialists.
- Preparing and assembling the construction documents for sequential tendering by the Construction Manager.
- Preparing Cost Estimates during Schematic Design and Design Development stages (CM is responsible for Cost Estimates from Construction Documents Stage to project completion).
- Providing input into the Risk Plan.
- Providing construction administration services during construction.
- Providing construction administration services related to the preparation and estimation of changes, verification of progress billings and recommendation to the Departmental Representative of acceptance of the Work.

- Cooperating with the Construction Manager, the Privy Council Office, Canada Post and PWGSC. Participate in actions to ensure that the Project remains on track should budget overruns or delays occur.
- Providing general field review services for quality control and responding to Site conditions/issues.
- Providing full-time Resident Site Services during construction.
- Defining commissioning procedures and confirming that performance requirements have been met; verifying operating manuals, and ensure that record drawings are provided and are accurate; participate and provide updates in coordination meetings organized by the Construction Manager. Refer to section 4.5.16 for CM commissioning responsibilities.
- Providing warranty period services.

Refer to the *Prime Consultant Project Brief* document, available to bidders through the link provided in this RFP, for a full description of consultant services.

2.5 PROVINCIAL, MUNICIPAL AND OTHER AUTHORITIES HAVING JURISDICTION

Although the Federal Government is not formally subject to jurisdictions at other levels of government, voluntary compliance with the requirements of these other Authorities is a requirement unless otherwise directed by the Departmental Representative. Codes, regulations, by-laws and decisions of authorities identified herein as having jurisdiction shall be observed.

- In areas of conflict between authorities, the Federal authority prevails.
- In areas of conflict between codes, standards and regulations, where possible the most rigid requirements shall be adhered to.
- The Construction Manager shall identify other jurisdictions appropriate to the project.

2.6 PROVINCIAL ACTS, REGULATIONS, STANDARDS AND INSPECTIONS

The Federal government does not defer to provincial and municipal authorities, except for specific regulations, standards, and inspections noted below. Unless directed otherwise by the Departmental Representative, the Construction Manager shall:

- Adhere to all applicable provincial Construction Health and Safety Acts and regulations in addition to the related Canada Occupational Safety and Health Regulations
- Adhere to the requirements of the Province of Ontario for:
    - Employment Standards
    - Construction Safety
    - Designated Substance Management
    - Workers Compensation
- Adhere to the requirements of the governing authority for:
    - Building Discharges into the air, water and ground

  - Disposal of Designated Substances including Asbestos
- Adhere to Municipal By-laws, Regulations, Standards and Inspections
- Obtain and pay for all permits and approvals necessary for the work, including, but not limited to, Building, Electrical, and Plumbing Permits. The Prime Consultant will be responsible for applying for permit including preparing all supporting documentation.
- Resolve all Building Permit related issues, with support from the Prime Consultant as may be required.
- Provide fire safety equipment and access for fire-fighting services, as required by the city.
- If required, apply for an Occupancy Permit and co-ordinate the resolution of all outstanding issues related to obtaining the permit.
- Provide Municipal authorities with access to the site as required and arrange for inspections of the construction work by the City or governing utility officials.
- Adhere to any other required authorities as directed by Departmental Representative in spirit of voluntary compliance.

2.7 CONSTRUCTION MANAGER

The Construction Manager leads the construction team, which comprises of its own workforce and all construction sub-trades retained by the Construction Manager. Note that the Prime Consultant will be responsible for preparing tender-ready construction documents, while the Construction Manager will be responsible for assembling and issuing targeted tender packages based on these construction documents.
Tendering and award of the multiple construction trade packages is the responsibility of the Construction Manager.

The Construction Manager acts as Constructor in charge of a single integrated construction site. Construction site health & safety rules are established and enforced by the Construction Manager. All individuals working on site, including Project Team members, must respect these health & safety rules and will be required to follow a site induction before being permitted access to site.

The Construction Manager formally reports to the Departmental Representative in all matters. The Construction Manager will also form part of an integrated design team and will participate in design meetings, provide constructability advice, and provide recommendations for construction phasing and tender package sequencing.

The Construction Manager shall be contracted directly with PWGSC to provide the Services and Work described in this Request for Proposal (RFP). The Construction Manager will coordinate and cooperate with all members of the Project team.

The Construction Manager is responsible to:

- Provide all necessary personnel to perform the Services and duties for the Project, either by assignment of Construction Manager qualified staff or by engagement of services contracted directly to the Construction Manager.
- Ensure continuity of key personnel and maintain a dedicated working team in accordance with their proposal for the life of this project.

- Have an in-depth understanding of the project requirements, including scope, budget, and schedule objectives and all their obligations as described in this RFP.
- Work constructively to ensure a collaborative and cooperative team approach with knowledgeable and timely input and contribution by all Project Team members.
- In cooperation with the Prime Consultant, ensure at all times the design solution and construction is maintained within the accepted cost objectives of the project.
- In cooperation with the Prime Consultant, ensure at all times the design solution and construction can, and is, undertaken within the fixed schedule objectives of the project.
- Organize ongoing coordination meetings and interference meetings with team members.
- Perform the services described in Section 4.

2.8 ENVIRONMENTAL CONSULTANT

PWGSC will retain an Environmental Consultant, separate from the Prime Consultant, for all services related to the design and monitoring of all abatement work, and for the development and management of the Construction, Renovation and Demolition (CRD) Waste Management Program. The Environmental Consultant is responsible for:

- Designing the abatement tender packages related to demolition.
- Air monitoring and testing during construction.
- Development and management of the Waste Management Program, which includes the following elements: Waste Audits, Waste Reduction Workplan, Cost/Renevnue Analysis Workplan, Waste Source Separation Program and Waste Diversion Report. This also includes training of CM employees and subcontractors on the CRD Waste Management Program.

In cooperation with the Environmental Consultant, the Construction Manager shall ensure at all times the design solution and construction can, and is, undertaken within the fixed schedule and cost objectives of the project. The CM shall coordinate and cooperate with the Environmental Consultant throughout all stages of the Project.

2.9 GEOTECHNICAL CONSULTANT

PWGSC may retain the services of a Geotechnical Consultant, separate from the Prime Consultant, should the Prime Consultant identify a requirement for additional geotechnical services to support their design. The Geotechnical Consultant would report directly to the PWGSC Departmental Representative.

3. PROJECT ADMINISTRATION

3.1 SUBMISSIONS TO PWGSC

Provide three (3) paper copies in a size/format suitable for easy reading/understanding of the information being conveyed, plus one (1) electronic copy in unprotected native format and one (1) electronic copy in portable document format (*.pdf), unless otherwise specified.

3.2 ELECTRONIC COMMUNICATIONS

All Team participants including PWGSC, Consultants and Construction Manager must be able to communicate electronically by e-mail.

Acceptable software is:

For written reports and studies:	MS Word (*.doc)
For Spreadsheets and budgets:	MS Excel (*.xls)
For Presentations:	MS Power Point (*.ppt)
For Schedules:	MS Project
For Drawings:	AutoCAD (*.dwg)
For Specifications:	MS Word
For Web	Adobe PDF, HTML, Macromedia Flash

3.3 LINES OF COMMUNICATION

Distribute all correspondence related to this project as directed by the Departmental Representative. Do not correspond directly with the Privy Council Office, Canada Post or others unless directed by the Departmental Representative. Develop a communication protocol to be approved by the DR and incorporate into the Project delivery.

All communications must carry the Contract name/number, PWGSC Project title and PWGSC Project number. The date format will be yy-mm-dd.

3.4 MEDIA RELATIONS

Ensure that no personnel from either the Construction Manager's firm, or from the Construction Manager's Subcontractors, communicate with the media unless requested to do so by the Departmental Representative. If contacted by reporters, or others, refer the inquiring party to the Departmental Representative immediately. Do not publish, or agree to have published, information on this Project or this Contract without the prior written approval of the Departmental Representative.

4.0 CONSTRUCTION MANAGEMENT REQUIRED SERVICES

4.1 GENERAL REQUIREMENTS

The Construction Manager as an expert in matters of construction will provide strategic advisory services to Public Works and Government Services Canada (PWGSC) and the Prime Consultant throughout the implementation of the Work.

In addition to the Required Services outlined in this section, the requirements as outlined in Section 3. Project Administration, are to be included herein as Required Services.

4.2 PROJECT RESPONSE TIME

It is a requirement of this project that the key personnel of the Construction Manager (all site superintendents and project managers) are personally available to attend meetings or respond to inquiries promptly. During the project, the Construction Manager's Key Personnel shall be:

1) Available to attend meetings and respond to inquiries within one working day notice
2) Able to respond to emergencies within one (1) hour, including those occurring during off-hours and on weekends/holidays.

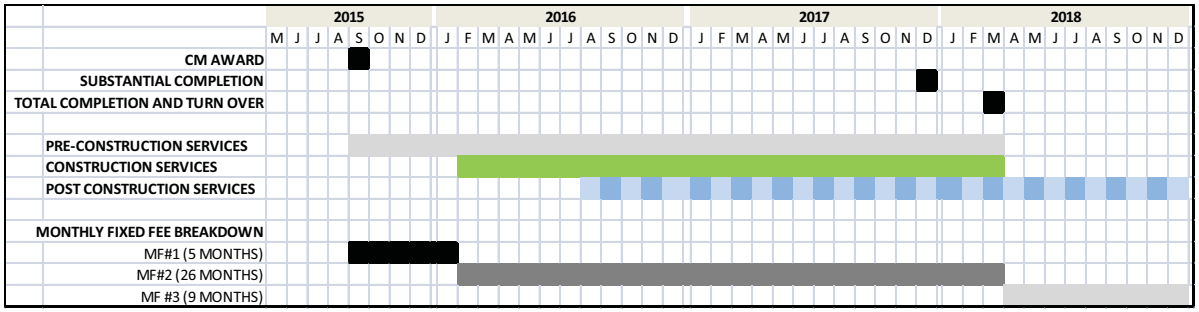
4.3 SUMMARY OF SERVICES

PWGSC will contract with the Construction Manager to deliver the following services including, but not limited to those listed in the table below. Project Management Services are required throughout all phases of the contract including Pre-Construction Services, Construction and Post Construction Services.

Project Management Services	General Contractor Services
Advisory and support services	Function as Constructor including coordinating and directing Subcontractors retained by the Construction Manager, ensuring the continuous safety management and protection of the Site and the general public near the Site,
Project Administration	Subcontract construction Work using competitive bidding processes, with prequalification when warranted, as outlined in these Terms of Reference.
Work Packaging	Pre-purchase key materials as needed

Cost Management	
Time Management (Scheduling)	
Risk Management	
Scope Control and Management	
Quality Control & Quality Assurance	
Commissioning (3rd party)	
Site logistics coordination	
Mechanical & electrical interference coordination drawings	
Building Components and Connectivity (BCC) owned by PCO – refer to section 1.3.3.19	

The chart below shows the expected phasing of the Services provided by the CM, as well as the associated Monthly Fixed Fee breakdown.



4.4 PRE CONSTRUCTION SERVICES

Pre Construction Services as described in this section are required from the Construction Manager throughout all phases of the contract including as part of Construction Services (Section 4.5) and Post Construction Services (Section 4.6).

4.4.1 COST SERVICES

Cost control requirements are a major driver for the Postal Station B rehabilitation project. Planning and controlling cost is a continuous interactive and iterative process involving planning, action, measurement, evaluations and revision.

Construction Manager shall provide a Cost Estimator who is fully conversant with all aspects of construction cost estimating as well as the use of Cost Analysis, Risk Analysis, Life Cycle Costing and Value Engineering/Management techniques including the CIQS Elemental Format estimating (as used by the Prime Consultants cost consultant) and Trade Format estimating; and be comfortable in reconciling estimates presented in differing formats. The Construction Manager's Cost Estimator must be completely conversant with local construction economy and market conditions.

The Prime Consultant's Cost Estimator is responsible for costing and cost control services during the Schematic Design and Design Development stages. The Construction Manager shall provide costing and cost control services from the onset of the Construction Documents stage through to the completion of the Project as detailed below.

1) Complete and update estimates for each construction document package submission at 66%, 99% and 100%. Reconcile estimates with the final estimate prepared at Design Development by the Prime Consultant , and report in writing any significant variances.
2) Submit a Class A estimate for each tender package issue and consolidate within overall construction estimate.
3) Submit monthly cost reports.
4) Establish a cost control program in accordance with PWGSC requirements. Prepare and keep an updated projected cash flow for the Project, based upon reconciled estimates. Cost control program is to include Earned Value Management following the Project Management Institute's (PMI) methodology.
5) Within the limits of the Estimated Construction Cost, establish estimates for Work packages, as well as make and document assumptions for Work not yet defined. Submit to the Departmental Representative for review. Update and refine the estimates for the approval of the Departmental Representative. The intent is to ensure that at all times during the Project, a comprehensive construction estimate is in place which includes all aspects of the Project, even those which are not fully developed and/or which have not yet been assigned to any specific Work package.
6) Co-operate and coordinate all budget and estimating information with PWGSC's Cost Specialist retained by Departmental Representative as an independent, third party Professional Quantity Surveyor, and respond to questions by the Cost Specialist.
7) Reconcile estimates with estimates from PWGSC's Cost Specialist, to the approval of the Departmental Representative.
8) Discuss with the Departmental Representative and the PWGSC's Cost Specialist such matters as inflation, trade settlements, market conditions, risk contingencies and the like. Such discussions shall be considered to form part of the cost estimating process. Document allowances arising as part of the cost estimates.
9) Review all information provided and visit the Work as required throughout the course of Project in order to become knowledgeable and familiar with the Site conditions, Site access, on-Site progress, etc. Analyze local labour and material supply conditions, local bidding practices and competition, in order to establish pricing levels. A written monthly report detailing this reconnaissance activity is required.
10) Inform the Departmental Representative and Prime Consultant in writing immediately of any project specific issues arising. Recommend actions to ensure the Project remains within the estimated Construction Cost.
11) Incorporate into cost estimating process and cost estimates a broad range of cost techniques, especially the following:

a) Risk Analysis: All construction estimates (except the final pretender estimate) shall include and identify design, estimating, inflation escalation and currency exchange risk allowances as are deemed necessary in light of the current information available.

b) Life Cycle Costing: Advise the Prime Consultant of the life cycle cost information for alternative materials, methods and systems. Use all available information to ensure that the Project Estimated Construction Cost (upon which design and construction decisions will be made) is respected.

c) Cash Flow: Provide and maintain an accurate monthly cash flow for the Work, based upon the Project Schedule and the current estimate at each stage. The Construction Manager shall have the ability to forecast project expenditures to end of each fiscal year. The Construction Manager shall implement an effective system to ensure the yearly forecasts (and variances) are as accurate as possible. Accurate yearly expenditures forecasting is a key component to the cost services deliverables. The cash flow expenditures shall be detailed and broken down with key line items as agreed with the Departmental Representative for a monthly review. Refer to 4.4.1.1 for the allowable variances in forecasting project expenditures. CM to apply Earned Value Management in cash flow reporting following PMI EVM methodology.

In addition to the cost estimating and cost control services related to Class-level estimates described above, the CM will also be responsible, through the appropriate allocation of resources, for providing cost control services for changes made during construction. This includes negotiating with the CM's subcontractors for change requests and managing cost changes to maintain the budget.

4.4.1.1 Costing Services Deliverables

The Construction Manager shall:

1) Complete and update estimates for each construction document package submission at 66%, 99% and 100%. Reconcile estimates with the final estimate prepared at Design Development by the Prime Consultant, and report in writing any significant variances.

2) Complete Class A estimates for each tender package issue and consolidate within overall construction estimate.

3) Prepare a draft cost report and submit to the Departmental Representative for review and acceptance within 6 weeks of contract award to establish the content and format of the monthly reports going forward. Revise as required incorporating comments of the Departmental Representative. The draft report will include the initial breakdown of the construction budget identifying a budget for each Work package with a breakdown by Division, the Construction Management fees and a single separate line for the construction contingency. A second draft report broken down by Division will also be provided for review and acceptance of PWGSC. The draft reports shall incorporate a system of Earned Value Management using the cost estimate established at the 66% construction documents stage as the baseline for future reporting on costing.

4) Submit a monthly report outlining the costing activities during the previous month,

highlighting any areas of concern and new information received etc., along with forecast and proposed construction estimate revisions and changes to construction contingencies. Include, as separate cost categories, the Construction Manager's fixed fee and percentage fee. Include an explanation of variance between the actual cost and forecasted cost. The monthly report shall conform to the format approved by the Departmental Representative.

5) Each monthly report shall be based on the previous report and will provide the Departmental Representative with up to date information on all aspects of the construction estimate and the Construction Manager's fees. Indicate all costs committed and expended to date. Identify for each Work package broken down by Division, the original estimate amount, the contract amount, the contingency, the breakdown and total of approved Expenditure Authorities (EA), estimated amounts on Supplemental Instructions (SI) (refer to section 4.5.5), the revised contract amount, the total additional cost forecasted and the cost to complete the Project. Total additional cost forecasted shall include all SIs and all EAs in process and approved. The Construction Manager shall be prepared to sequence work with PWGSC funding approval. No acceptance or approval by PWGSC, whether expressed or implied shall be deemed to relieve the Construction Manager of its professional or technical responsibility for the Construction Manager's estimates and monthly reports. Neither does acceptance of an estimate by PWGSC in any way abrogate the Construction Manager's responsibility to maintain the Estimated Construction Cost throughout the life of the Project and to recommend corrective action should the lowest acceptable bid, for any Work package, differ significantly from the approved estimate.

6) The monthly costing report from the Construction Manager will contain as a minimum:

   a) Narrative including inclusions and exclusions.
   b) Elemental or other format Estimate Summary.
   c) Estimate Back-up Detail.
   d) Basis for escalation, inflation and contingency calculations.
   e) Detailed measurement and pricing.
   f) Outline description of estimate basis.
   g) Description of information obtained and used in the estimate.
   h) Listing of notable exclusions; listing of items/issues carrying significant risk;
   i) Reconciliation against last submission.
   j) Cash Flow updates.
   k) An exception section including sufficient description and cost detail to clearly identify:

      i) Scope Change: Identifying the nature, reason and total cost impact of all identified and potential Project scope changes affecting the Estimated Construction Cost.
      ii) Cost overruns and under runs: Identifying the nature, the reason and the total cost impact of all identified and potential cost variations.
      iii) Options enabling a return to the Estimated Construction Cost: Identifying the nature and potential cost effects of all identified options proposed to return the Project within Estimated Construction Cost.
      iv) Contingency management report

l) Cost of forecasted final subcontract amounts
m) Summary identifying committed & uncommitted funding
n) List of change notices for each subcontract
o) List of change orders for each subcontract
p) Earned Value Management reporting in numeric and graphic format
q) Any other relevant information

4.4.1.2 Forecasting of Expenditures

When submitting monthly reports, accurate forecasting shall be of prime importance. Accuracy, predictability and stability of the forecast, both multiyear as well as monthly within the current year, cannot be overstated. From April 1 to November 30 of each fiscal year, the Construction Manager is to forecast yearly expenditures within 20 % of actual total expenditures calculated end of March of the same fiscal year. On December 1 of each year, the Construction Manager is to forecast current year expenditures to end of fiscal year within 5 % of actual expenditures calculated end of March of the fiscal year. The calculations of the variance shall start 4 months from Contract award to allow the Construction Manager to mobilize and understand the details of the project scope.

4.4.2 TIME SERVICES

Schedule requirements are another major driver for the Postal Station B rehabilitation project. Planning and scheduling is a continuous interactive and iterative process involving planning, action, measurement, evaluations and revision.

The Construction Manager shall employ an experienced Scheduler fully conversant with all aspects of project planning, scheduling and construction sequencing. The scheduling resource must use the latest version of Microsoft Project software. The scheduling resource in collaboration with the CM's Project Manager and Superintendant will play a major role in the development and monitoring of the Construction schedule. The Construction Manager shall provide scheduling services from award of the Contract, through construction and commissioning, including the warranty period. PWGSC will retain an independent, third party planning and scheduling consultant (referred herein as the Time Specialist) to assess all Schedules and to develop a Client Master Schedule trending analysis. Co-operate and coordinate all planning and scheduling information with PWGSC's Time Specialist and respond to questions by the Time Specialist. Update the Project Schedule as required reflecting PWGSC's Time Specialist comments.

The Construction Manager shall:

1) Prepare, monitor, update and maintain the overall Project Schedule for the duration of the Project. A master schedule is required within 6 weeks from Contract award for review and acceptance.

2) Following consultation with the Project Team, incorporate the sequence and timing of the required basic program decisions, including design time, documentation, bid calls, bid evaluations, subcontract awards and on-Site construction activities and commissioning into the Schedule. The Construction Manager shall also revise, monitor, update and submit the Project Schedule by end of each month for review.

3) Finalize the Project Schedule for the approval of the DR and estimate the

manpower requirements for each Work package. Break down the Schedule into individual networks and tasks for each package of Work in the Project. Indicate the sequence and timing for the construction operations and the milestone completion dates for the Work packages.

4) Identify items or processes where long lead times are required and that could jeopardize the Project. Pre-purchase items (material, machinery, equipment, supplies) and implement procurement methodologies to ensure timely delivery to meet the Schedule and cash flow requirements. Assess the risk to the Project Schedule for late deliveries.

5) Provide cost loading on the schedule and operate a system of earned value management following PMI methodology. The baseline for tracking and reporting on the schedule progress shall be established based on the 66% construction documents.

4.4.2.1 Time Services Deliverables

The Construction Manager shall:

1) Prepare, revise, monitor and update a detailed schedule in accordance with the Scheduling Specification, provided herein as Attachment 2.

2) Respond to comments from the Departmental Representative or the PWGSC Time Specialist and update the Schedule accordingly.

3) Upon review and acceptance of the Schedule, monitor changes to the Schedule bi-weekly or more often when required, and submit written monthly reports to the DR on deviations from the baseline schedule including analysis of the root causes with a mitigation strategy to maintain the project schedule.

4.4.3 RISK MANAGEMENT SERVICES

The Construction Manager shall provide support to the Departmental Representative in identifying risks throughout the Project life cycle, providing input and assessment of the Project risk plan. Provide the Departmental Representative written comment on the Project risk plan at each stage of the Project. The Construction Manager shall:

1) Prepare and maintain a construction-specific risk registry.

2) Review, comment and advise on the PWGSC risk management plan using the CM risk registry.

3) Participate in six risk management sessions organized by the Departmental Representative on an anticipated twice annual basis. All Construction Manager Project Managers and site superintendent(s) shall participate in each of the risk sessions. Allow a half day for each risk session.

4) Advise on project risks specific to the project and recommend mitigation options to the Departmental Representative.

5) Identify and implement methodologies aimed at mitigating and minimizing the impact of construction activities on ongoing PCO, CPC and PWGSC operations.

6) Identify risks that are no longer relevant.

7) Implement a claims avoidance program.

4.4.3.1Risk Management Services Deliverables

The Construction Manager shall provide a narrative update of Project risks in each monthly report.

4.4.4 QUALITY CONTROL & QUALITY ASSURANCE

4.4.4.1 Definitions

Quality Assurance (QA) is a set of activities whose purpose is to demonstrate that an entity meets all quality requirements. This is done by adopting a standard set of processes and QA techniques like review, training, facilitation etc. It can be termed as defect prevention.

Quality control is set of activities whose purpose is to ensure that all quality requirements are being met. This is defect detection, and is done by testing. Quality Control is mainly an inspection function. Quality assurance is an audit function.

4.4.4.2 Quality Control and Quality Assurance Services

The primary responsibility for construction quality control remains with the Construction Manager. The Work must meet the design and operational intent and criteria. The Construction Manager's continuous adherence to quality management of the entire construction process throughout all aspects of construction is of the utmost importance. The significance of this issue cannot be overstated.

The Construction Manager shall:

1) Develop a Quality Management System to ensure that the specified quality standards for the Project are achieved.
2) Apply rigorous quality assurance reviews during the design focusing on constructability, and rigorous quality assurance reviews during construction phases, including participation in reviews of the systems, components, construction tools and techniques of the proposed design.
3) Be responsible for ensuring that the Construction Manager's Subcontractors adhere to:
    a) Best industry practices and standards following the requirements of the Construction Documents.
    b) Professional conduct in all phases of the project, employing best practices for budget, schedule, quality, and scope management.
    c) Respecting the building's high heritage value and protecting all heritage zones and character-defining elements during all construction phases.
4) Work cooperatively to:
    a) Adopt good project delivery processes such as Risk Management and advising on methods to obtain best value,
    b) Ensure that all Health, Security and Sustainable Development issues are properly adhered to.

5) Actively document non-compliance. Monitor and follow-up on the Work. Do not rely solely upon the Prime Consultant to document non-compliance with the design, but rather take a leading role in managing the Subcontractors and their Work, establishing a quality management database to ensure all construction issues, observations and reports are recorded and closed out, completely and correctly, to the approval of the Departmental Representative.
6) Establish, monitor, update and report on a quality management database specific to this Project. Inputs to the database will come from PWGSC, the Privy Council Office, the Prime Consultant team, the Construction Manager's team daily Site observations, etc. Output from the database will go to Subcontractors and suppliers, as required, the Prime Consultant and the Departmental Representative. All quality issues are to be addressed promptly, to ensure the pace of construction is maintained without the need for rework of the Work.
7) Develop a Quality Incident Protocol for incidents arising from any inspection that indicates a project deficiency.
8) The Construction Manager shall provide a Quality Control Officer who is responsible for:
    a) Day-to-day execution of the Quality Plan – architectural, mechanical, electrical and structural components and systems;
    b) Working with Subcontractors to explain the nature of the Quality Plan and their role in it and ensuring quality workmanship on Site;
    c) Maintaining quality records on Site including:
        i) Inspections and tests reports;
        ii) Non-conformance reports; and
        iii) Corrective actions reports and sign offs.
        iv) Facilitating quality inspections by the Departmental Representative, and the Prime Consultant;
    d) Reporting to the Contractor's project manager on the quality process for the Project.

4.4.4.3 Quality Control and Quality Assurance Deliverables

The Construction Manager shall prepare and submit to the Departmental Representative (within five (5) weeks of award of contract) a Quality Control and Quality Assurance Plan including, but not limited to:

1) Description of the processes and techniques that should be used and when they should apply.
2) Identification and definition of key activities and deliverables.
3) Description of internal controls.
4) Methodologies and procedures to be utilized to deliver a high quality facility.
5) Frequency of QC/QA checks.
6) Deliverable verification plan.

The Construction Manager shall provide on a monthly basis an updated quality log indicating what was inspected and when, what was determined to be of insufficient quality, whose responsibility it is to repair, when the re-inspection will take place and verification the work is done.

4.4.5 CONSTRUCTION MANAGER'S HEALTH AND SAFETY PLANNING AND IMPLEMENTATION

4.4.5.1 Construction Manager's Responsibilities

The Construction Manager shall assume the role of "Constructor" as defined in the Occupational Health and Safety Act and Regulations for Construction Projects (Revised Statutes of Ontario, 1990 Chapter O.1, as amended) and be fully responsible for ensuring compliance with OSHA for all aspects of Project's construction.

1) Further, the Construction Manager shall comply with and enforce the requirements of:
   a) The National Building Code of Canada 2010 (NBC), Part 8 Safety Measures at Construction and Demolition Sites and Provincial Regulations for Construction Projects.; and
   b) The Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, as well as, labelling and the provision of Material Safety Data Sheets (MSDS) acceptable to Human Resources and Skills Development Canada Labour Program.
      i) Ensure that all designated hazardous materials are properly treated, handled and stored;
      ii) Ensure that workers' exposure to fumes is within acceptable health and safety limits;
      iii) Ensure that temporary ventilation or protection, as required for products utilized, is properly provided;
      iv) Ensure that construction dust is controlled such that workers and occupants are not adversely impacted by dust from construction activities within the building or on the site;
      v) Ensure that shop-drawing submissions include Manufacturers Standard Data (MSD) Sheets.
2) In addition the Construction Manager shall:
   a) Provide a traffic control plan including loading/unloading zones, road restrictions, etc.
   b) Provide a hoarding plan that meets PCO, CPC and NCC requirements. PCO requirements include the following: minimum height of hoarding is 12 feet from the nearest access point, all access points to hoarding to be secured with padlocks, provision of guard hut with heating and air conditioning.
   c) Provide a pedestrian traffic plan including building access/egress, exterior scaffolding, etc.

d) Ensure the full health and safety protection afforded under the Canada Labour Code to all visitors to the site, including workers, staff, contractors and the general public.

e) Implement a safety program on site.

f) Provide appropriate safeguards to ensure safe protection and security of materials and holdings on the site.

g) Provide the Services of Site Safety Officers, who will visit and document Site conditions daily, throughout the implementation of the Project.

h) Provide site specific occupational health and safety orientation sessions to all workers and visitors.

i) Give precedence to safety and health of public and Site personnel and protection of environment over cost and Schedule considerations for Work.

j) Perform Site-specific safety hazard assessment related to the Project activities.

k) Develop and implement a Site-specific safety plan for all aspects of this Project. The Site-specific safety plan shall be based on a preliminary and ongoing hazard assessment of the Project to be performed. Update the Site-specific safety plan as Site conditions or hazards change. Inform all persons on the Site in the change of conditions or hazards. Resubmit the updated plan to the Departmental Representative immediately.

l) Develop an On-site Contingency and Emergency Response Plan that must address standard operating procedures to be implemented during emergency situations.

m) Be responsible for health and safety of persons on site, safety of property on Site and for protection of persons adjacent to Site and environment to extent that they may be affected by conduct of Work.

n) Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with Site-specific Health and Safety Plan.

o) Shall respond to any unforeseen or peculiar safety-related factor, hazard, or condition that becomes evident during performance of the Project, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction. Advise Departmental Representative verbally and in writing.

p) Ensure applicable items, articles, notices and orders are posted in conspicuous location on Site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

q) Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative. Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified. Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

r) Use powder actuated devices only after receipt of written permission from Departmental Representative. Blasting or other use of explosives is not permitted without prior receipt of written instruction by Departmental Representative.

s) Maintain on Site sufficient personal protective equipment to equip a minimum of ten (10) PWGSC visitors, including hard hats and safety glasses. As well, provide 5 pairs of construction boots in typical sizes.

Departmental Representative will review Construction Manager's Site-specific Health and Safety Plan and provide comments to Construction Manager within five days after receipt of plan.

The Construction Manager shall revise the plan as appropriate and resubmit plan to Departmental Representative within three days after receipt of comments from Departmental Representative. The Departmental Representative 's review of Construction Manager 's final Health and Safety plan should not be construed as approval and does not reduce the Construction Manager's overall responsibility for construction Health and Safety.

4.4.5.2 HEALTH & SAFETY Deliverables

The Construction Manager shall submit to the DR the following documents:

1) Traffic control plan and updates as necessary;
2) Hoarding plan and updates as necessary;
3) Pedestrian traffic plan and updates as necessary;
4) Site specific Health and Safety plan and updates as necessary;
5) Copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
6) Contingency and emergency response plans and updates as necessary.
7) Copies of incident and accident reports
8) Material Safety Data Sheets (MSDS)
9) File Notice of Project with Provincial authorities prior to commencement of Work.

4.4.6 REPORTING AND PROJECT SITE DOCUMENTS

4.4.6.1 Monthly Report

The Construction Manager shall prepare and submit, at the start of the project, a sample of the Construction Management Monthly Report structure for review by the DR. Resubmit, as may be required for approval and acceptance. The structure of the report

shall be used for all subsequent project stages.

The monthly report will accompany each application for Progress Payment. The Progress Payment will not be accepted unless the monthly report is attached. This report will provide a system for documentation and project monitoring and reporting through each stage of project delivery, for review and acceptance by the Departmental Representative.

The Construction Management Monthly Report will include;

1) Invoicing Summary
    a) The billing section should be broken down by tender package and then itemized by trade.
    b) Identify all expenditures to date (including all change orders) in a form that compares the original budgets for each trade with the expected costs, including contingencies
2) Cost Section – Refer to Section 4.4.1
3) Time Section – Refer to section 4.4.2
4) Risk Section – Refer to Section 4.4.3
5) Quality – Refer to section 4.4.4
6) Health and Safety Section – Refer to Section 4.4.5.
7) Copy of the daily logbook and daily photographs, certified as true copies, as a separate report or volume. For each day worked, provide individual daily log that will include all activities on the Site. Document and verify quantities of materials received and record Work progress through daily photographs and narrative reports. Record the following:
    a) Weather conditions, particularly unusual weather relative to Work in progress,
    b) Materials and equipment deliveries,
    c) Daily activities and major Work done through all shifts of Work,
    d) Start, stop or completion of activities through all shifts of Work,
    e) Presence of inspection and testing firms, tests taken, results, etc.,
    f) Unusual Site conditions experienced,
    g) Significant developments, remarks, email or other correspondence, etc.
    h) Reports, instructions from appropriate authorities response actions,
    i) Strength on-Site by each Subcontractor and the Contractor;
    j) Safety inspections and reports; and
    k) If work is based on unit prices, measure and record the quantities for verification of monthly progress claims and the Final Certificate of Measurement.

4.4.6.2 Decision Log

The Construction Manager shall maintain a separate decision log indexed for preconstruction and construction, for the entire duration of the Contract, recording participants, date and place of all decisions affecting scope, Schedule, cost and quality. These records are to be made available to Departmental Representative at all times.

4.4.6.3 Site Documents

The Construction Manager shall maintain at the Project Site, on a daily basis, records of all necessary contracts, samples, purchases, materials, equipment, maintenance and operating manuals and instructions, and other Work related documents, including revisions thereof. These site documents are to be made available to Departmental Representative at all times.

4.4.7 PROJECT ADMINISTRATION

4.4.7.1 Acceptance of Deliverables

While PWGSC acknowledges the Construction Manager's obligations to meet project requirements, the project delivery process entitles PWGSC to review all work. PWGSC reserves the right to reject undesirable or unsatisfactory work. The Construction Manager must obtain Departmental Representative's acceptance of all required deliverables for the Project.

Acceptance indicates that based on a general review of work for specific issues, the work is considered to comply with governmental and departmental objectives, policies and practices and those overall project objectives appear to be satisfied.

Acceptance does not relieve the Construction Manager of responsibility for the work and compliance with the contract. Acceptance does not prohibit rejection of work, which is determined to be unsatisfactory at later stages of review.

It is noted that given the project will be implemented one floor at a time, acceptance of work as described above will generally be implemented on a sequential basis at the time of substantial completion of each completed floor. Exceptionally, acceptance of work for some aspects of the exterior work such as masonry and roofing work may be implemented on a different basis.

4.4.7.2 Project Procedures Manual

The Construction Manager shall develop a Project Procedures Manual in consultation with the Departmental Representative, within 8 weeks of contract award, for the execution of key Project activities. The Manual will provide a clear description of procedures, roles, responsibilities, levels of authority and the information systems for the execution of the Project, including details of the processes and sample formats.

The manual will include the process and methods to:

1) Maintain Project records
2) Implement a quality assurance program;
3) Prepare, update, monitor and maintain the Master Schedule;
4) Update, monitor and maintain the Cost Plan, Expenditures, Change Orders and Cash Flow, including changes in construction contingency
5) Manage communications between Project Delivery Team participants based upon the documented roles, responsibilities and authority of Team members, and maintain a listing of meetings, frequency, type, etc.
6) Manage correspondence, reports and performance records.

7) Distribute correspondence electronically and by facsimile;
8) Process Shop Drawings
9) Document the process for reviews and approvals of Tender Package Contracts and change orders;
10) Include an issue and decision log (Refer to 4.12) during the construction of the entire project, recording participants, date and place of all decisions affecting schedule, budget, scope, or quality.
11) Update the Heritage Materials Database prepared by the PWGSC, and implement the Heritage Materials Management Protocols (prepared by the Prime Consultant) when moving, storing, or protecting identified heritage elements.
12) Update the CM risk registry.

4.4.8 CONSTRUCTION ADVICE

Act as an advisor to the Project Team throughout the life of the Project.

The Construction Manager shall:

1) Acquaint PWGSC and other members of the design team with the labour conditions and supply issues applicable for the duration of the Project;
2) Assist in providing liaison and coordination among government authorities, utilities and other authorities having jurisdiction;
3) Provide advice on separation of Work packages and sequencing of design work to effectively meet schedule and cost objectives; and
4) Provide design input and constructability reviews, as well as input to value engineering and life cycle costing work lead by the Prime Consultant.

4.4.9 DESIGN MEETINGS

Meetings with PWGSC, the Construction Manager, the Prime Consultant and Client will normally be held in downtown Ottawa. The Departmental Representative will arrange meetings every two weeks throughout the design.

All aspects of the design, design coordination, cost, Schedule, quality, constructability, scope separation for Work packages, scope changes, etc. are to be discussed.

Other ad hoc meetings and when necessary workshops to discuss detailed requirements will be required in the progress of the Project such as meetings between the Prime Consultant, the Construction Manager on constructability and construction implementation plan, Subcontractors, PWGSC / Privy Council Office, Canada Post, technical team members, City of Ottawa, NCC, or other Authorities having jurisdiction. Decisions taken at these other ad hoc meetings and workshops must be ratified at the next design meeting. These meetings are for the accurate exchange of information.

The Prime Consultant shall be responsible for preparing minutes of meetings and forwarding minutes to all attendees.

The Construction Manager shall attend all service-related and design meetings and respond to minutes as required prior to the next meeting.

4.4.10 REVIEW OF DESIGN AND CONSTRUCTION DOCUMENTS

The Construction Manager shall:

1) Review and provide comment on all design and construction document submissions released to the Construction Manager. The review shall focus on constructability, coordination between all design disciplines, schedule impacts and costing. Documents are to be reviewed at Schematic design and updates, design development (66 %, 99 % and 100 %) and each construction documents package (66 % and 99 %, and 100% tender ready).
2) Take all reasonable measures to identify errors and omissions and to promptly advise the Departmental Representative of the same.
3) Provide advice to the Prime Consultants and the Departmental Representative, including the provision of expertise for constructability, bid-ability, scheduling, cost control and coordination, as well as construction phasing, site security and site safety. Recommend alternative solutions whenever design details adversely affect construction feasibility or schedules.
4) Provide suggestions and/or alternatives for cost reductions or acceleration of the Project Schedule. Provide input to Prime Consultant in regards to value engineering and life cycle costing for options being considered, including review of the Value Engineering and Life Cycle Costing Report prepared by the Prime Consultant at the Schematic Design phase;
5) Refer all questions for the interpretation of the documents prepared by the Prime Consultant to the Prime Consultant. In the event of continuing interpretation difficulties, refer the issue with all required background material to the Departmental Representative for resolution; the Departmental Representative's interpretation shall be deemed final and conclusive.
6) Participate in value engineering workshops facilitated by the Prime Consultant during design and provide advice and recommendations for the systems being proposed as to their ease of installation, cost, availability, suitability, robustness, constructability, etc. and make suggestions for potential alternatives. There are three (3) value engineering sessions planned for this project at the following stages: Schematic Design, Design Development and Construction Documents.
7) Make recommendations to the Prime Consultant and Departmental Representative regarding the phased issuance of drawings and specifications to facilitate phased construction of the Work taking into consideration such factors as available funding, time of performance, economies and provision of temporary facilities.

4.4.10.1 Review of design and Construction Documents Deliverable

Review and return one marked-up set of documents with detailed, written comments relating to the reports, drawings, details, specifications, etc. to the Departmental Representative with a copy to the Consultant within ten (10) working days of each design and construction document submission.

4.4.11 CONSTRUCTION IMPLEMENTATION PLAN

4.4.11.1 Scope

The purpose of this implementation plan is to document the constraints and requirements that will be imposed on the Work so that approval from the stakeholders is received. Once approval is received, the constraints and requirements will be outlined in the construction documents mainly in Division 1 of the Construction Specification. It is important for the Construction Manager and its sub trades to be aware of the constraints and requirements that have a cost and schedule impact. Those constraints and requirements deal with various subjects such as environmental control inside the building, commissioning, scheduling restrictions, sequence of work, construction safety, hours of work, delivery of equipment/materials and waste disposal, scaffold, temporary services, noise, welding, security, shutdown of services, storage, parking, and access to site, fire watch, site plan showing limits of construction and staging areas, etc.

Input for this plan is required from all stakeholders. The Construction Manager shall take a lead in developing this plan.

Once the plan is approved by the Departmental Representative, the Construction Manager and the Consultant will be required to work together to incorporate those requirements into the construction documents mainly in Division 1 of the construction specification. The Consultant will be responsible to develop Division 1 common to all trades. The Construction Manager shall be responsible to review the common Division 1 to ensure all the requirements and constraints outlined in the construction implementation plan have been captured. The Construction Manager shall be responsible to develop the Division1 construction specification (i.e Front-End Document for Bidders) specific to each tender package that may include other requirements from the Construction Manager's perspective.

4.4.11.2 Deliverables

Submit a construction implementation plan, within 12 weeks of contract award, so that the Division 1 specification is developed prior to tendering any tender packages. This implementation plan shall be updated as required to coincide with other tender packages. The Consultant will update Division 1 if required as the project progresses.

4.4.12 TENDERING THE WORK

4.4.12.1 Context

While the Contract for the delivery of construction management services for the Postal Station B Rehabilitation is between the Department and the Construction Manager, it is understood that the Construction Manager will deliver the construction services called for in this Terms of Reference through subcontractors.

It is most important that the selection processes used by the CM to retain subcontractors are fair, open and transparent and that all qualified subcontractors have the opportunity to be considered for the construction Work. PWGSC believes that competitive bidding and open tendering processes will yield the best value for subcontracted Work.

4.4.12.2 Scope

1) In subcontracting for the construction the Construction Manager shall:

   a) In consultation with the Consultant, prepare tender and contract documents that clearly set out the full requirements for material and services (i.e. 100% tender ready documents). Exceptions may be considered on a case-by-case basis to meet schedule requirements subject to PWGSC DR approval;

      i) When warranted, using standard construction industry documents, such as CCDC 11 - 1996 (R2006) Contractor's Qualification Statement, ensure that subcontractors in trades that are essential to the successful delivery of the Work, are pre-qualified prior to being invited to submit tenders. Basis for prequalification to be submitted to DR prior to solicitation of tenders.;
      ii) Submit a recommendation award to Departmental Representative for approval prior to contract award.

   b) Enter into contracts with qualified subcontractors who submit the lowest-priced compliant tenders. Note where appropriate, time and materials contracts are acceptable subject to Departmental Representative approval. Entry into subcontracts on a time and material basis is dependent on following the process outlined in this section and where an upset limit has been established. Upset limits do not preclude proper reporting procedures required by the Departmental Representative. A site-based inventory control system must be set up and managed by the CM to ensure time and material usage does not exceed upset limits. In the event that an upset limit needs to be increased, the CM shall seek appropriate approval from the DR prior to exceeding the upset limit.;

   c) Manage subcontractors and ensure they provide the required services in a manner consistent with the terms and conditions of this Contract and achieve timely delivery of quality services at the lowest cost;

   d) Establish quality and performance requirements and monitor subcontractor performance, including quality of deliverables, adherence to schedules and costs;

   e) Provide for dispute resolution, initiation of subcontract amendments and payments; and

2) The Construction Manager shall obtain open, fair and competitive bids for the subcontracts required for each portion of the Work in accordance with the following requirements:

   (a) Subcontracts estimated at less than $25,000 including Harmonized Sales Tax, may be single-sourced to qualified suppliers only upon the written approval of the Departmental Representative.

   (b) For subcontracts estimated at less than $100,000, including Harmonized Sales Tax, and upon the written approval of the Departmental Representative, the Construction Manager may invite on a rotating basis a minimum of 3 qualified suppliers from the CM's prequalified lists to submit bids. It is recommended the Construction Manager will notify in writing subcontractors who are unsuccessful.

   (c) For subcontracts estimated at less than $100,000, including Harmonized Sales Tax, the Construction Manager, upon the written agreement of the

Departmental Representative, may set aside the requirement to solicit a minimum of three bids if it has demonstrated to the satisfaction of the Departmental Representative, that less than three firms are capable of performing the Work.

(d) For subcontracts estimated at $100,000 or more, including harmonized sales tax, advertise publicly through MERX ™ Private, in accordance with the following open bidding procedures:

i) The public advertisement shall include, at a minimum, a description of the nature of the Work to be performed, information regarding any technical requirements, financial guarantees or other documentation to be provided with the bid, the completion date for the Work, the address of the bid closing location and the final date and time for receiving bids, the identification of a contact point for obtaining bid documents and from which further information may be obtained, the date, time and place of the public opening of the bids.

ii) The minimum time period (in calendar days) for receipt of tenders shall vary based on the estimated value of subcontracts (including HST) according to the schedule below. Reduced tendering periods may be considered on a case-by-case subject to written approval from PWGSC DR.

$100,000 to $1,000,000	10 days
$1,000,001 to $2,000,000	15 days
Over $2,000,001 to $8,000,000	21 days
Over $8,000,000	40 days

iii) Tender documentation shall include all of the public advertisement information, as well as identification of the bid validity period, the criteria for awarding the contract including any factors other than price to be considered in the evaluation of bids, the type of procurement (i.e. 1 or 2 stage process), the terms of payment and any other terms or conditions.

iv) During the solicitation the Construction Manager shall reply promptly to any request for bid documents or any reasonable request for relevant information made by a supplier participating in the tender. Information provided in response to questions during the tender period must be provided to all bidders.

3) The receipt and opening of bids and the awarding of contracts must be consistent with the following:

a) Bids must be opened in Ottawa in the presence of at least one representative of the Construction Manager, and a representative of Canada, all of whom will act as witnesses to the opening by verifying and signing the Record of Bids received.

b) Contracts shall be awarded in accordance with the requirements specified in the notices and bid documentation, and must be submitted by a supplier that complies with the terms and conditions of the bid documents.

4) The CM shall:

a) Seek pre-approval from the DR for any deviation from the competitive subcontracting process and make the documentation available to PWGSC.

b) Demonstrate to the DR that it has a competitive subcontracting process and a prequalification process, reflecting best industry practices.

5) The CM shall analyze the bids received and recommend awards to the DR through a trade contract award recommendation. The format of the trade contract award recommendation is the responsibility of the CM, however, at a minimum; the recommendation must include copies of the following documents:

a) Prequalification Phase (if applicable) – copies of prequalification documents such as CCDC 11 - 1996 (R2006) Contractor's Qualification Statement or equivalent, the list of contractors submitting applications for prequalification and the results of the evaluation of prequalification submissions

b) Tender Phase: copies of all bids received, verification (e.g. a time stamp) that bids were received on time prior to the time scheduled for bid closing, a copy of the Record of the bid opening, properly witnessed, a copy of the MERX TM notice, or invitation to tender if the Work is valued at under $100,000, a copy of all solicitation documents, a summary of all tenders received with bid amount breakdowns and totals, verification that bid security (if applicable) was provided with the bid, information on any tender qualifications or disqualifications; and identification of the supplier recommended for contract award

6) When the Departmental Representative approves the procurement process and the trade contract award recommendation by the CM, the Construction Manager shall prepare the subcontracts for execution. No award of subcontracts to a Subcontractor can proceed without an approved trade contract award recommendation. It is recommended the Construction Manager will notify in writing subcontractors who are unsuccessful.

7) The Construction Manager, and anyone not at Arm's Length to the Construction Manager, shall be ineligible to submit bids for any construction tenders issued for work tendered as part of the Postal Station B Rehabilitation, Construction Management contract. For further clarity, the Construction Manager will be deemed to have a Conflict of Interest that would prevent it from being eligible to submit bids for any tenders issued in connection with the Project. This does not limit the Construction Manager's ability to use its own forces when permitted by the Departmental Representative.

8) Canada reserves the right to require the Construction Manager to enter into subcontracts for the supply of services or materials with Subcontractors that have been prequalified by Canada for any component of the Work. Any such subcontract shall form part of the Cost of the Work.

4.5 CONSTRUCTION SERVICES

The following services are rendered in support of construction (the Work).

4.5.1 GENERAL

The Pre-construction Services in Sections 4.4.1 to 4.4.13 are to be provided concurrently with the Construction Services described herein.

4.5.2 CONSTRUCTION MEETINGS

The Construction Manager will chair construction meetings every two (2) weeks. The meeting participants to include Construction Management staff, PWGSC Departmental Representative, Client Representative, and Consultants. Key trade contractors and PWGSC Technical Resources may be invited on an as-needed basis to meetings.

The Construction Manager shall:

1) Arrange and coordinate all regular construction meetings (every 2 weeks) on site throughout the duration of the project:
2) Prepare and distribute minutes within two (2) working days of the meeting.
3) Endeavour to hold all meetings as Green Meetings (i.e. Electronic copies of documents where possible or double sided hard copies)
4) Establish a list of standing agenda items, including (as a minimum):
    a) Schedule and progress,
    b) Cost issues and changes,
    c) Risk and quality issues,
    d) Quality,
    e) Scope of work
    f) Site safety,
    g) Sustainable development
    h) Commissioning (separate meetings)
    i) Lessons Learned
5) Hold separate subtrade construction and commissioning meetings with Subcontractors, PWGSC, the Privy Council Office, Canada Post and the Prime Consultant. Prepare and distribute meeting minutes within two (2) working days, with copies to the Departmental Representative and the Prime Consultant.

4.5.3 INTERFERENCE DRAWINGS & ADDITIONAL MEETINGS

The Construction Manager will take the lead and manage the interference drawings process. The Construction Manager will be responsible to engage a dedicated Interference Drawing Specialist resource to produce 3 dimensional AutoCAD interference drawings covering all disciplines with input from all stakeholders. The Interference Drawing Specialist cost will be part of the fixed fee. CM is to ensure that mechanical and electrical trades carry their own dedicated interference specialist. The Prime Consultant will provide drawings in Autocad format to the CM to facilitate the preparation of interference drawings.

Participation and level of effort by the trades is to be included in the respective tender packages. Allow also for nine (9) meetings (3 hrs maximum each). This allowance is based on one (1) interference meeting per floor. In attendance: PCO technical specialists, Consultants, Mechanical & Electrical, Controls and other trades as required.

The Construction Manager shall:

1) Arrange and coordinate all the interference drawings meetings on site throughout the duration of the Project:
2) Prepare and distribute minutes within two (2) working days of the meeting.
3) Manage and be responsible for the Interference Drawings Specialist performance and all required deliverables.

4.5.4 CONSTRUCTION MONITORING

Maintain competent full-time supervisory staff on Site during implementation of the Work to monitor and provide general direction to all those associated with the Work for all work shifts as required; and quality management and field engineering staff as required. Identify unacceptable Work early to avoid delays that might arise as a result of required corrections of deficient Work. Ensure that comprehensive quality management processes are followed daily. Ensure that adequate back-up personnel are available.

Monitor progress on site and ensure coordination of trades.

1) Establish on-Site organization and lines of authority in order to carry out the overall plans of the Construction Manager and PWGSC;
2) Schedule and conduct progress meetings at which Subcontractors, PWGSC, Prime Consultant and Construction Manager can discuss jointly such matters as procedures, progress, problems, risks, costs and scheduling;
3) Provide daily monitoring of the Schedule as the Work proceeds;
4) Complete the Work according to the accepted construction documents, Project Schedule and Project Estimated Construction Cost;
5) As part of a comprehensive quality management process, provide daily inspection of all aspects of the Work, documenting matters for action or follow-up by Subcontractors, or referral to the Prime Consultant. Ensure the Work is constructed as specified. Use photographs to document issues and their correction;
6) Review the adequacy of the Subcontractors personnel and equipment and availability of material and supplies to meet the Schedule. Implement remedial action when requirements of a subcontract or the Project Schedule are not being met;
7) Prepare and maintain a decision log recording all decisions affecting Schedule, construction estimates, scope, or quality, including dates, place, and participants. These records are to be made available to PWGSC at all times;
8) Monitor and document all health and safety matters daily.
9) Ensure that the protocols identified in the Heritage Material Management Protocol (HMMP) for the cataloguing, material handling, protection, transportation and storage of heritage materials are implemented by the CM and all Subcontractors. The HMMP is to be included as an appendix to the construction specifications containing the historic – protective measures.

4.5.5 SUBCONTRACTOR'S CHANGES (NOTICES AND ORDERS)

When a change to a subcontract is contemplated, the Prime Consultant (PC), or as appropriate, the Environmental Consultant (EC), shall prepare and issue a Supplemental Instruction (SI). This can be the result of a consultant-driven change to the construction documents or a CM/subcontractor-initiated Request for Information (RFI). In the case of a consultant-driven change, the PC, or as appropriate, the EC, shall prepare an indicative cost estimate (Class D) and submit to the Construction Manager (CM) for review. The Class D estimate shall itemize all labor, material, plant and equipment costs associated with the change. In the case of a CM/subcontractor-driven RFI, no indicative estimate from the PC, or as appropriate, the EC, is required.

Upon receipt of an SI, the CM will promptly review and validate the SI and supporting estimate (if applicable), prior to forwarding to their subcontractors to obtain a quotation. While the subcontractors are preparing their quotation, the CM will also prepare a Class A estimate which will be used as the basis to evaluate subcontractor quotations.

It is the responsibility of the CM to ensure that all prices included in the Subcontractor's breakdown, including the costs and mark-ups of subcontractors, are fair and reasonable and in accordance with contract documents. The CM must provide written confirmation, in the form of Expenditure Authorization (EA) letter, to the PWGSC DR declaring that the quotation is fair and reasonable and on this basis recommends the EA for approval. The EA letter shall include: a detailed description of the change; the applicable EA driver category; a breakdown of all labor, material, plant and equipment, rates, and mark-ups; subcontractor contract change; contingency budget drawdown/cash flow. Note that project-specific EA driver categories (e.g. Client Request, Site Conditions, Consultant Request) will be established by PWGSC at project initiation and must be adhered to by the CM for the duration of the project.

The DR will review the EA letter provided by the CM. The DR may request further breakdown and clarification of costs, until such time that the DR is satisfied with the information provided and that the quotation is indeed fair and reasonable. Upon written approval of the EA letter, a Change Order will be prepared and issued by the CM to the Subcontractor, with a copy to the PC, or as appropriate the EC, and the DR.

Under normal circumstances, the PWGSC DR will review and approve an EA within 48 hours, and/or advise accordingly. No work is to proceed without prior written approval from the DR. The CM shall ensure that Supplemental Instructions are prioritized and processed in an expeditious manner in view of maintaining the project schedule.

A detailed log of the cost of forecasted final subcontract amounts, changes in construction contingency that may result, change notices and change orders is to be maintained by the CM for all subcontracts, at all times throughout the Project. A copy of this log is to be included in the monthly report.

4.5.6 CONSTRUCTION WORK

The Construction Manager shall:

1) Be responsible for the development, coordination and management of all Work and services included in Division 01.
2) Ensure the provision of all necessary equipment to the Project and all other resources required to perform all services.

3) Procure, coordinate, administer and manage all construction Work and contracts.
4) Prepare and execute contracts with the successful Subtrades so as to:
    a) Coordinate and manage the respective contracts in an integrated manner to avoid any conflicts between the Work of any of the Construction Manager's subtrades and/or the Construction Manager's own forces.
    b) Coordinate, manage and ensure completion of all the Work of each Subtrade tender package in strict adherence to the accepted drawings and specifications of each tender package, including all addenda and authorized change orders.
    c) Deliver the Work packages by the agreed upon completion dates
    d) Develop and implement a procedure for review, certification, processing and payment of Subtrades in accordance with the terms and conditions of the Construction Management Contract.
    e) Schedule and conduct progress meetings at which Subtrades, PWGSC and the Construction Manager can jointly discuss such matters as procedures, progress, problems, risks and scheduling.
    f) Provide timely response to correct issues, as they occur.

4.5.7 QUALITY CONTROL & QUALITY ASSURANCE

This is supplemental to Section 4.5.4 and outlines additional QC/QA services to be provided during the Construction Phase.

The Construction Manager shall:

1) Ensure that quality assurance measures are implemented.
2) Arrange for testing services as required, which may include concrete testing, compaction testing.

Carry out Work using qualified licensed workers or apprentices in accordance with Provincial Act respecting manpower vocational training and qualification.

Permit employees registered in Provincial apprenticeship program to perform specific tasks only if under direct supervision of qualified licensed workers.

Determine permitted activities and tasks by apprentices, based on level of training attended and demonstration of ability to perform specific duties.

4.5.8 AS-BUILT DRAWINGS

The Construction Manager is to collect and turn over to the Prime Consultant at the end of each completed subcontract a marked-up set of drawings and specifications for completion of as-builts by the Prime Consultant. As-built documents shall clearly indicate all deviations from the Issued for Construction documents, including identifying all changes by Change Order number.

4.5.9 SHOP DRAWINGS

The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept. This review does not constitute

approval by the Departmental Representative of the detail design inherent in shop drawings, responsibility for which shall remain with Contractor or Subcontractor submitting same, and such review shall not relieve Contractor or Subcontractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of Contract Documents. Shop drawings shall be stamped: “Reviewed”, or “Revise and Resubmit”, as appropriate, by the Construction and by the Prime Consultant before return to the subcontractor.

The Construction Manager shall:

1) Produce and manage a shop drawing log with a complete list of all shop drawings, samples and mock-ups required by the tender documents. Log to track all dates associated with each submission, review and return in keeping with the construction schedule.
2) Prioritize the preparation and submission of shop drawings to ensure schedule is maintained.
3) Submit for the Departmental Representative’s review, three (3) copies of each shop drawing.
4) Review, discuss, record problems and identify agreed remedial action.
5) Monitor and record the progress of shop drawing review. Record parties designated for action and follow up.
6) On completion of project, forward reviewed/as-commissioned shop drawings to the Departmental Representative.
7) Verify that shop drawings include the project number and are recorded in sequence.
8) Do not commence manufacture or order materials before shop drawings are reviewed.

4.5.10 PERMITS AND APPROVALS

Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Provide inspection certificates as evidence that work conforms to requirements of Authority having jurisdiction. The Construction Manager will be responsible for coordinating, paying for and obtaining all permits and approvals from local and statutory authorities and shall:

1) Liaise with local and statutory authorities with respect to hoarding, traffic restrictions, services and associated diversions and/or connections.
2) Inform PWGSC of their requirements to inform any statutory body via applications or orders.
3) Ensure that all applications are filed and executed successfully.
4) Verify that all necessary approvals have been obtained.

4.5.11 SITE REVIEWS

The Construction Manager shall:

1) Arrange with the Departmental Representative for the issuance of necessary forms respecting interim and final completion of the work;
2) Prepare lists of incomplete and deficient items;
3) Schedule completion of these items with the Subtrades and distribute all lists as appropriate;
4) Distribute interim and final completion certificates.

4.5.12 SUSTAINABILITY AND ENVIRONMENTAL

On behalf of PWGSC, the Prime Consultant will pursue certification for the project under an industry recognized sustainability and environmental performance rating system (LEED Silver, Green Globes for Design, or equivalent standard). The Consultant will provide guidance to PWGSC as to which rating system would be most appropriate, and realistically achievable, for the project. The Consultant will perform an initial assessment early in the design stage that will inform PWGSC which rating system (e.g LEED, Green Globes, etc.) and which level of rating the project will be able to achieve keeping in mind the minimum standards set forth in the Federal Sustainable Development Strategy. Minimum standards for a major renovation project such this is LEED NC Silver or 3 Green Globes for Design. The Consultant will be responsible for all tasks, including preparation of documentation, required for certification and will balance the requirements of the rating systems' prerequisites and credits with other project requirements.

The Construction Manager will provide:

1) Advice on the source and availability of regional materials and materials with recycled content, including on-Site verification of same;
2) Provide information required by the Environmental Consultant to develop the Waste Management Program for the Work and to monitor its implementation;
3) Site verification related to the use of acceptable materials, compiling and verifying MSDS sheets and WHMIS information;
4) Monitoring and testing for indoor air quality during construction;
5) Coordination with all subcontractors to ensure compliance with contract requirements for sustainability and environmental requirements; and
6) The CM shall continue to be available to support the Prime Consultant in the environmental performance certification process until the certification process is complete, up to a period of 1 year following substantial completion.

4.5.13 WASTE MANAGEMENT

The Construction Manager shall:

1) Obtain from the Environmental Consultant the draft Waste Audit plan (including inventory) and draft Waste Reduction Workplan for the project. Review the documents and provide comments to the Environmental Consultant as to the completeness and practicality of the plan.

2) Prepare and provide to the Environmental Consultant written monthly reports on waste reduction efforts including quantities of materials reused, recycled or disposed of (based on tonnage), with supporting documentation (i.e. waybills, receipts, invoices, waste tracking forms).
3) Review the findings of the Waste Audits conducted by the Environmental Consultant. The audits will indicate the degree to which recycling objectives are being achieved and will provide recommendations for improvements if objectives are not being met.

4.5.14 GENERAL REQUIREMENTS

The Construction Manager is to provide for the management of all services normally included in Division 1 of the National Master Specification (http://www.tpsgc-pwgsc.gc.ca/biens-property/ddn-nms/index-eng.html). This Work is to be defined as all those items that are necessary for the smooth and safe operation and co-ordination of the site.

Services to be provided mainly in relation to requirements of Division 1 of the National Master Specifications: site organization and safety as per "prime contractor' and "constructor" duties defined in the Ontario OHSA; provision of temporary services and site facilities, site security, traffic management, management of the waste and recycling program for the site; protection, hoardings, cranes and lifts as required; system maintenance, and other miscellaneous Works related to managing a construction Site adjacent to other Government buildings.

4.5.15 PROJECT SITE OFFICE

The CM is responsible for establishing his site presence for the project. There will be some limited space available within the Postal Station B building for the CM to use as a Site office for the Project. This includes approximately 400 m^2 of space in the basement area. Additional accommodations for Site Office may be required as determined by the CM. The CM is responsible for ensuring that there is sufficient space and services for the CM's staff as well as provision for the Prime Consultants Resident Site Supervision personnel. Costs for the fit-up and operation of the Site Office will be reimbursed as a disbursement.

4.5.16 COMMISSIONING

The Construction Manager's Commissioning Agent will be directing a commissioning process, or program of activities, for all of the Work that is reasonable and practical. This Commissioning Agent shall document and witness all test results. The Construction Manager is to report on the activities of the Commissioning Agent to the Departmental Representative. The actual cost of commissioning agent and trade commissioning is part of the fixed fee.

The PWGSC Departmental Representative, the Construction Manager and Construction Manager's Commissioning Agent, the Subcontractors, the Consultants, the PWGSC Commissioning Manager will form the commissioning team. The commissioning team must work together in a collaborative and open manner to successfully complete the

commissioning process. The Construction Manager and the Construction Manager's Commissioning Agent shall take on a key and leading role in driving the commissioning process to successful completion. Refer to PWGSC Commissioning Manual available at http://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/bi-rp/tech/miseenservice-commissioning/documents/manuel-manual-eng.pdf for requirements and Specifications.

4.5.16.1 Commissioning Plan and Services

Commissioning is an integral part of all phases of the Work. Commissioning and performance verification is a key element of the Project Quality Management Plan and shall be conducted at all stages of the Project. Develop and update a Commissioning Plan throughout the Project, with input and direction from the Prime Consultant. Administer, and manage the implementation of the Commissioning Plan. Commission each phase of the Work and the overall Work and make every effort to reduce the Project Schedule and Estimated Construction Cost.

The Construction Manager and the Construction Manager's Commissioning Agent are responsible for:

1) Ensuring that all required commissioning activities are identified in the Project Schedule and in construction documents;
2) Review the preliminary commissioning plan as well as commissioning specification (Div 1 only) in the attachments under separate cover. The plan is more specific regarding the Construction Manager's commissioning Specialist. This plan will be made project specific by the Prime Consultant during the design and development of the construction documents. CM shall use the project specific plan prepared by the Prime Consultant as the basis for preparing a Final Commissioning Plan for use during construction.
3) Ensuring that information on labelling protocols, maintenance data requirements and protocols are relayed to the sub-contractors and related information sessions with PWGSC are scheduled as required;
4) Confirming that sub-contractors' Work is sufficiently complete to warrant inspection and testing by the Prime Consultant and for scheduling of the required inspections and tests;
5) Developing and implementing a Site quality assurance program: to minimize delays as a result of poor workmanship or sub-contractor error; to reduce deficiencies and call backs during warranty periods; and to reduce long-term risk to PWGSC arising from poor workmanship;
6) Administering and managing independent quality control testing as may be required by PWGSC, the Prime Consultant or the Contractor to confirm the adequacy of a sub-contractor's Work or commissioning reports;
7) Ensuring that all test results, documents, and manuals are provided by sub-contractors, monitoring the Prime Consultant review process, and reporting to PWGSC on the progress of the commissioning effort;
8) Directing sub-contractors to complete, repair, adjust or rebuild portions of the Work that do not meet the verification standards including monitoring deficiencies and ensuring that they are corrected;

9) Ensuring that seasonal commissioning activities are detailed within the Project Schedule and are completed on time with the proper documentation and or follow-up action;
10) Monitoring and inspecting with the Prime Consultant the Work during its warranty period and during seasonal commissioning activities to ensure defects are corrected. The frequency of monitoring and inspection is expected to occur twice during the warranty period at three and eleven months;
11) Ensuring that testing and commissioning of equipment is witnessed and inspected by the Prime Consultant and the required authority;
12) Coordinating the federal, provincial and municipal inspections required for occupancy;
13) Scheduling and following-up on the three and eleven month inspections after the issuance of the Substantial Performance;
14) Undertaking all actions required to close-out subcontracts including final warranty reviews and contract close-outs;
15) Coordinating the training of PWGSC operational staff and the equipment handovers;
16) Monitoring and reporting to PWGSC on the progress of the commissioning process against the plan;
17) Witnessing all testing including testing of all components, systems and integrated systems. This includes, but is not limited to, a complete verification of the controls sequence of all systems in a dynamic operating state;
18) Completing and signing-off of all verification reports and compiling into a comprehensive Commissioning Manual as the Project progresses, including Commissioning Manual updates to include seasonal commissioning activities;
19) Organizing weekly commissioning meetings at a minimum, preparing agenda, chairing meetings, preparing minutes and distributing them;
20) Providing Schedules related to all commissioning activities as well as reporting and monitoring. Present an updated commissioning Schedule at all commissioning meetings. Identify any variances and issues to be addressed at those commissioning meetings;
21) Assisting in the labelling protocols by gathering all forms dealing with product information from various sub-contractors and reviewing and verifying that the information is correct. The physical labelling requirements are the responsibility of the sub-contractors;
22) Confirming that the sub-contractors' Work is sufficiently complete prior to start up so that inspections are carried out. Ensuring deficiencies identified by the Consultants are corrected by the sub-contractors;
23) Gathering all the start-up reports, reviewing format and content against manufacturer's instructions prior to start-up, and ensuring that they reflect the procedures listed in the manufacturer's instructions;

24) Managing the process of developing the testing and performance verification. The Commissioning Agent will prepare verification forms and make them Project specific. All forms will be submitted to the Prime Consultant and PWGSC Commissioning Manager for review and comment. Update the forms as required. During testing the Commissioning Agent will record all results and report any variances to the PWGSC Commissioning Manager and Prime Consultant.

4.5.17 ANTICIPATED SITE SHUTDOWNS

In addition to the usual statutory holidays (Ontario), the Construction Manager will allow for 5 working days per year of site shut down for unanticipated special events to take place in an unencumbered manner. The CM shall incorporate these shutdown requirements in all trade packages with due consideration for timing of holidays.

Specifically for the CM's own site personnel, the CM will also include 50 hours of stop Work per year for unforeseen Project shut downs.

4.5.18 FIRE SAFETY REQUIREMENTS

The Construction Manager shall:

1) Comply with the National Building Code of Canada [2010] (NBC) for fire safety in construction and the National Fire Code of Canada 2010 (NFC) for fire prevention, fire fighting and life safety in building in use.
2) Comply with PWGSC Fire Protection requirements, Fire Commissioner of Canada (FCC) standards:
   a) No. 301: Standard for Construction Operations
   b) No. 302: Standard for Welding and Cutting
   c) No. 374: Fire Protection Standard for General Storage (Indoor and Outdoor)
   d) Available from Fire Protection Engineering Services, Labour Program, HRDC
   e) Retain all fire safety documents and standards on site.
3) Welding and cutting: Before cutting and welding operations commence, issue hot work permits then continuously monitor all welding, soldering, grinding and/or cutting work. Store flammable liquids in approved CSA containers. No open flame shall be used unless permitted and authorized by the Construction Manager.
4) At least 48 hours prior to commencing cutting, welding or soldering procedure, advise the Departmental Representative of the following:
   a) Notice of intent, indicating devices affected, time and duration of isolation or bypass.
   b) Completed welding permit as defined in FC 302.
   c) Return welding permit to Site Superintendent immediately upon completion of procedures for which permit was issued.
5) A firewatcher as described in FC 302 shall be assigned when welding or cutting operations are carried out in areas where combustible materials within 10m may be ignited by conduction or radiation.

6) Where work requires interruption of fire alarms, fire suppression, extinguishing or protection systems:
   a) Provide watchman service as described in FC 301. In general, watchman service is defined as individuals conversant with Fire Emergency Procedures, performing fire picket duty within an unprotected and unoccupied (no workers) area once per hour.
   b) Retain services of manufacturer for fire protection systems on daily basis or as approved by FCC, to isolate and protect all devices relating to:
      i) Bypass and resinstatement of fire alarms, fire suppression, extinguishing or protection systems;
      ii) Modification of fire alarms, fire suppression, extinguishing or protection systems; and/or
      iii) Cutting, welding, soldering or other construction activities, which might activate fire protection systems.
7) Immediately upon completion of work, restore fire protection systems to normal operation and verify that all devices are fully operational.
8) Inform fire alarm system monitoring agency and local Fire Department immediately prior to isolation and immediately upon restoration of normal operation.

4.5.19 HAZARDOUS MATERIALS

Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of Material Safety Data Sheets (MSDS) acceptable to Human Resources Development Canada, Labour Program.

For work in occupied buildings give the Departmental Representative 48 hours notice for work involving designated substances (Ontario Bill 208), hazardous substances, and before painting, caulking, installing carpet or using adhesives.

4.5.20 INTERACTIVE OPERATIONS AND MAINTENANCE (O&M) MANUALS

The Construction Manager is expected to manage the production of the interactive O&M manuals. Managing the process is part of the services but the cost of producing the manuals is part of the construction costs. Given that construction will be phased on a floor-by-floor basis, provision of O&M manuals and training will be required over the course of construction, as completed floors are released for occupancy.

Twelve (12) weeks prior to any scheduled training, submit to the Departmental Representative four (4) CD copies of approved Operations Data and Maintenance Manual in both official languages and one hard copy, compiled as follows:

1) Bind data in vinyl hard cover 3 "D" ring type loose-leaf binders for 212 x 275 mm size paper. Binders must not exceed 75 mm thick or be more than 2/3 full.
2) Enclose title sheet labelled "Operation Data and Maintenance Manual," with project name, date and list of contents. Project name must appear on binder face and spine.

3) Organize contents into applicable sections of work to parallel project specifications breakdown. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets.

4) Include following information plus data specified.

   a) Maintenance instruction for finished surface and materials.
   b) Copy of hardware and paint schedules.
   c) Description: Operation of the equipment and systems defining start-up, shut-down and emergency procedures, and any fixed or adjustable set points that affect the efficiency of the operation. Include nameplate information such as make, size, capacity and serial number.
   d) Maintenance: Use clear drawings, diagrams or manufacturers' literature which specifically apply and detail the following:
      i) Lubrication products and schedules.
      ii) Trouble shooting procedures.
      iii) Adjustment techniques.
      iv) Operational checks.
      v) Suppliers' names, addresses and telephone numbers and components supplied by them must be included in this section. Components must be identified by a description and manufacturers part number.
   e) Guarantees showing:
      i) Name and address of projects.
      ii) Guarantee commencement date (date of Interim Certificate of Completion).
      iii) Duration of guarantee.
      iv) Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
      v) Signature and seal of Guarantor.
      vi) Additional material used in project listed under various Sections showing name of manufacturer and source of supply.
   f) Spare parts: List all recommended spares to be maintained on site to ensure optimum efficiency. List all special tools appropriate to unique application. All parts/tools detailed must be identified as to manufacturer, manufacturer part number and supplier (including address).

   g) Include one complete set of final shop drawings (bound separately) indicating corrections and changes made during fabrication and installation.

5) Format: All as-builts drawings and O & M manuals shall be converted, where necessary, into Portable Document File (PDF) format permit for viewing using the Acrobat reader Software. Documentation storage and retrieval system shall be structured based on a database framework with direct links to the appropriate PDF files. Documents retrieval and viewing shall be executed through a menu driven approach. The Program shall provide multi-level of password entry for access to add new or edit stored data by authorized users

4.5.21 RECORDS

As work progresses, maintain accurate records to show deviations from Contract drawings. Just prior to Departmental Representative's inspection for issuance of the

Certificate of Completion for each completed floor or building system, supply to the Departmental Representative one (1) electronic copy, and three (3) hard copies of the prints with all deviations neatly inked in.

4.5.22 GUARANTEES AND WARRANTIES

Before completion of Work on each completed floor and at the end of the project, collect all manufacturers' guarantees and warranties and deposit with Departmental Representative. Provide copies of all manufacturers' guarantees and warranties in the O&M Manuals.

4.5.23 CONSTRUCTION CLEANING

The Construction Manager will be responsible for construction cleaning throughout the life of the project. Construction cleaning is to be carried out to ensure a safe work environment and to protect site systems and heritage elements from excessive construction dust and debris. As work packages are completed and/or construction areas are completed, perform a final construction cleaning of the entire area, including all interior surfaces, fixtures and equipment to eliminate all construction dust and debris. Include for such cleaning after the installation of PCO-owned BCC by their subcontractors. Advise the Departmental Representative in writing before final cleaning is to proceed. Obtain acceptance of cleaning in writing from Departmental Representative when completed. Cleaning shall be completed prior to application for Certificate of Substantial Performance.

4.5.24 SECURITY CLEARANCES

The CM and all subcontractors are required to comply to the security requirements described in the Security Requirements Checklist (SRCL) and associated Security Classification Guide. It is the responsibility of the CM to provide personnel cleared at the appropriate level of security clearance. CM is required to submit the names and date of birth of personnel a minimum of 48 hours in advance for verification.

The Construction Manager, in collaboration with PWGSC security services, will issue a Building security card. All persons accessing the Site shall wear this security card in plain view at all times. Construction Manager to check all personnel daily at start of work shift for their card. Pass must be returned at end of project or work package.

4.5.25 SITE SECURITY

Construction Manager shall be responsible for security of the construction site under his direct control. Given that the majority of the building will continue to be occupied by PCO and CPC, responsibility for security of the tenant-occupied spaces is out of the CM's scope. Develop a security plan in consultation with the Departmental Representative. Revise plan as required to approval of Departmental Representative. Update plan to meet requirements of Departmental Representative as Project progresses. Be responsible for:

1) Coordination of construction activities and PCO, CPC and PWGSC operations;

2) Access to the Site including sign-in procedures and security clearances;
3) Off-hours security including procedures to “escort”, to “lockup”, evening and weekend surveillance, fire watches, emergency procedures and responses;
4) All safety issues related to the Work or its Site to be performed as required by federal, provincial or municipal regulations;
5) Safeguarding of components to be reused or recycled;
6) Protection of materials, equipment, workmanship and, throughout the implementation of the Project, any PWGSC or the PCO, CPC items installed prior to the building being ready for use; and
7) A Site protocol to be developed and enforced, including:
    a) No CDs, radios or tape machines;
    b) Noise control;
    c) No parking on Site; and
    d) Due regard for the general public’s expectations with respect to behaviour, language and dress in public places (all spaces exterior of the Site are deemed to be public).
8) Engaging private sector security services.

Provide emergency response coordination and for responses to Site problems during non-working hours. In consultation with the Departmental Representative, establish a list of contacts for responses and communication. In the event of any problems, contract Departmental Representative immediately. In case of an emergency where the safety of persons or property is concerned, or Work is endangered by the actions of the subcontractors or other persons, take immediate action. If required, stop Work. In all situations, notify the Departmental Representative. Give immediate written notice to the subcontractor or other person of the hazard.

4.5.26 NOISE, VIBRATION, ODORS AND DELIVERIES

A significant program of off-hours work during evenings and weekends will be required to mitigate the constraints of mitigating impacts to tenants while meeting the project schedule. Carefully plan and schedule all noise generating work, all deliveries and waste removal after hours, to minimize the impact to ongoing operations. Normal working hours are considered to be from 7 am to 6 pm on weekdays and non-holidays. Take steps to minimize noise, vibration and odours, affecting both the Postal Station B building (interior and exterior) and impacting on the neighbouring and adjacent occupancies including buildings, roadways, parks and recreational areas. The CM shall implement a sound monitoring program during construction, which includes taking sound readings on the floors above and below the working floor to ensure that disturbance to tenants is controlled. The Departmental Representative’s decision will be final on whether the Work is causing excessive noise, vibration or odour.

Coordinate with the Prime Consultant during Construction Documents preparation, providing advice and input on documenting contractual requirements in the sub-contractor Tender Document Packages to minimize potential cost and schedule impacts in performing work expected to generate excessive noise, vibration, and odours.

4.5.27 COORDINATION OF CONTRACTORS HIRED DIRECTLY BY PWGSC OR PCO

PWGSC will from time to time require that activities and projects be undertaken by PWGSC's own forces, by PWGSC contractors, or by PCO's contractors, within the construction site. These activities will be subject to the coordination and safety overview of the Construction Manager, as the Constructor. The Construction Manager will grant free access to these areas by PWGSC or their contractors, provided that all safety and security protocols are followed. At the current time, the following projects are envisioned. However, other contracts of varying scale could arise over the course of the contract.

- PCO security commissionaires will require access to the construction space for security monitoring purposes throughout the project.

4.6 POST CONSTRUCTION AND WARRANTY STAGE

Given that construction will be phased on a floor-by-floor basis, the warranty period will be staged by floor over the course of construction, as completed floors are released for occupancy. During the Post Construction and Warranty Stage for each completed floor, the Construction Manager shall:

1) Assemble Record Documents in whole packages per subproject or as directed by the Departmental Representative. Provide copies of Record Documents to PWGSC as directed by the Departmental Representative;
2) Review and comment on the accuracy of warranties and guarantees.
3) Review the Final Commissioning Report and comment on the accuracy and completeness;
4) Coordinate with Subtrades to provide final Record Documents (Operations and Maintenance Manuals, As-built drawings and specifications) as required for each subtrade.
5) Within eleven (11) months of the commencement of the warranty period, arrange for an inspection of the facility to determine all deficiencies to be corrected;
    a) Prepare a deficiency list for review and acceptance by the Departmental Representative.
    b) Provide a schedule indicating when correction of all deficiencies covered under the warranty will be corrected and submit to the Departmental Representative for review and acceptance;
    c) Arrange for and correct all identified deficiencies in accordance with the schedule and advise when all deficiencies have been properly corrected.
    d) Ensure that all warranty deficiencies are properly corrected in a timely manner. The Construction Manager warranty inspection and up to 4 return inspections to be included in the fees.
6) The Construction Manager is to attend all warranty site meetings.
7) The Construction Manager to participate in a half-day lesson's learned workshop and provide an updated lessons learned log.

8) Provide a post-construction evaluation and cost analysis report within one month of the completion of each tendered construction package, include lessons learned, outstanding issues and any Work that was not completed or was deferred to subsequent projects. Submit a sample format for this report for review and acceptance by the Departmental Representative. Amend as required.

APPENDIX A

SUMMARY OF PREVIOUS REPAIRS/RENOVATIONS

Major Renovations/Repairs and Recent Reports

Apart from the removal of the rooftop skylights, the **exterior of the building** remains relatively unchanged. The **interior of the building** has been significantly altered with the exception of the post office, the main entrance vestibules, the elevators and stairwells which have preserved original materials and finishes.

The following is a summary of interventions of building repair and renovations along with recent reports:

1938-1939: Original building construction.

1975: Major renovation including passenger elevator modernization, installation of basement sprinklers, re-construction of the interior portion of exterior walls, and installation of an additional exit stair. Mechanical systems upgrade including replacement of the air handling unit, distribution ductwork, installation of two re-heat boxes and a fan coil unit to serve the Ground Floor.

1985: Existing conventional hard-wired fire alarm system installation.

1990-1995: Major renovation including upgrades to the base building for accessibility compliance and major retrofit of the base building elements. Women's washroom and barrier-free plumbing fixtures replaced.

1991: Direct Digital Control added to the pneumatic control system to enhance operational performance.

1991: An asbestos survey of the complete building was conducted. Report concluded that Asbestos Containing Material (ACM) is present in steam and water pipe insulation, ductwork, AHU housing, some floor tiles, plaster ceilings, some plaster walls and fireproofing on beams. (*Asbestos Survey Parliamentary Precinct Postal Station B*, *T. Harris Partnership, May 1991*)

1991-1993: Entrance doors repairs and refurbishment.

1992: Ground Floor marble floor refinished.

1993-1994: Interior light fixtures retrofit.

1997-2002: New branch circuit panel boards were installed on floors 1, 2, 4 and 6 as part of normal power distribution.

1997: Electrical system upgrade including installation of service sub-feed from Langevin Block and Motor Control Centre. 120/208V branch panels upgraded to 72-circuit panels to provide additional circuit capacity. New modified bitumen rolled roofing system installed on flat roofs.

1998: Investigation report for some of the building piping systems. Investigation of the piping distribution on each floor was not carried out. Report concluded that the original cast iron drainage system was in poor condition, the basement lacks floor drainage and that sanitary piping is in poor condition. (*Postal Station B Piping Investigation*, *Eternal*

Engineering Corp., Sep 1998)

1999: Rear laneway was re-graded and repaved.

2000: Plumbing drainage for women's washroom and all storm drains were upgraded. Installation of new 120/280V equipment.

2001: Emergency power diesel generator replaced.

2002: New fire booster pumps installed.

2005: Several of the 12 step-down, dry-type transformers in the building were replaced as part of normal power distribution.

2006: Modernization of 2 passenger elevators and replacement of the service/passenger elevator.

2006: Asset Management Plan (AMP) and Level II Building Condition Report (BCR) of all building systems. The comprehensive report includes detailed recommendations for repair, maintenance, or replacement of building components. The recommended strategy was to retain and upgrade the asset as per the findings of the BCR. (*Asset Management Plan and Building Condition Report, Postal Station B*, *Corporate Research Group and Halsall Associates Ltd., Jun 2006*)

2006: Demolition and fit-up of second floor including abatement of ACM, and installation of new flooring, ceilings, partition walls, HVAC, plumbing and electrical/fire alarm systems. *(Issued for tender drawings and specifications, PSB 2nd Floor SCIF, Project Number 493798X1, Aug, 2006)*

2008-2009: Level I screening of the masonry facade, performed by HCD. Screening was done from the ground, adjacent buildings, a boom lift and crane basket. Short term repairs and additional investigations were recommended, including repairs to the large carved lintel over the main entrance. First HCD screening report produced in 2005-2006. (Postal *Station B Building Envelope Screening Reports 2008-2009, Heritage Conservation Directorate, Mar 2009*)

2009: A more detailed investigation of the condition of the large carved stone lintel over the main entrance of the building was carried out. Investigation led to the ultimate replacement of steel and re-positioning of the lintel. (*Postal Station B Building Lintel Distress Investigation*, *KIB Consultants Inc., Feb 2009*)

2011: Investigation report completed to examine treatment options for the building envelope and mechanical heating system. No implementation strategy was included with the options. Test openings were conducted to determine the underlying conditions where leaks, staining, or displacement of stone units were observed. (*Postal Station B Envelope and Mechanical System Investigation Report*, *DFS Architecture & Design, Mar 2011*)

2013: Main Entrance Intervention, which began initially as a routine repair of the concrete stairs and escalated into a localized rehabilitation of the foundation footings and structural support beams. *(Postal Station B – Main Entrance Stair Repair, As-Built*

Record 2013, Drawing A1 to A4, Heritage Conservation Directorate. Jul 2013)

2013: Detailed investigation and report on the building envelope and the base building systems, including mechanical and electrical systems. Site investigations included an X-ray analysis of piping for the domestic, sanitary and heating systems. Report proposes design options for replacement and repair, as well as alternative scenarios for implementing the work. In addition, a Gap Analysis was conducted to analyze the interaction of the various recommended repairs and to study the areas and components which had not been studied already. This work included an updated Building Condition Report (BCR) conducted by Halsall Associates Inc. under the same contract. The report also raises concern about the seismic capacity of the building. (*Envelope Rehabilitation and Base Building Upgrade, Postal Station B, 47-59 Sparks Street*, *Watson MacEwen Teramura Architects, Jun 2013*)

2014: A detailed seismic assessment of the building was completed by Dessau to verify the seismic capacity of the building and compliance to the seismic requirements of the National Building Code of Canada and the PWGSC Seismic Policy. (*Structural Seismic Assessment of Postal Station "B" Building, Dessau, August 2014)*

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Contract Number / Numéro du contrat
EP775150701 Rev1
Security Classification / Classification de sécurité UNCLASSIFIED

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: Public Works and Government Services Canada	2. Branch or Directorate / Direction générale ou Direction: PPB
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

Construction Management contract for the Postal Station B Envelope Rehabilitation and Base Building Upgrade project

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 commerciale **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) ☐

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

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets? ☑ No Non ☐ Yes Oui
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 :

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

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: REFER TO ATTACHED SECURITY CLASSIFICATION GUIDE. NOTE: SITE ACCESS ONLY APPLIES TO CM BASE BUILDING SUBCONTRACTORS
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? ☑ No Non ☐ Yes Oui
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?

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

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? ☐ No Non ☑ Yes Oui
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?

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

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? ☑ No Non ☐ Yes Oui
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ?

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? ☑ No Non ☐ Yes Oui
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?

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

Government of Canada | Gouvernement du Canada

Contract Number / Numéro du contrat
EP775150701 Rev1
Security Classification / Classification de sécurité UNCLASSIFIED

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 Internet), 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 récapitulatif.

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	PROTECTED PROTÉGÉ B	PROTECTED PROTÉGÉ 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 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".
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.

12. b) Will the documentation 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).

ANNEX A

SECURITY CLASSIFICATION GUIDE - EP775-15-0701 REV.3						
LEVEL	**ENTITY**	**FSC**	**DSC**	**PERSONNEL**	**IT/MEDIA**	**DESCRIPTION**
Secret	CONSTRUCTION MANAGER	X	X	X		The Construction Manager must hold a Facility Security Clearance (FSC) and Document Safeguarding Capability (DSC) at the Secret level. As well, all Construction Manager personnel must hold a valid Secret clearance. DSC is required at the Construction Manager's office location (off site) and must be obtained prior to contract award. A designated secure room with DSC will be made available at the Postal Station B building for use by the Construction Manager to view and store classified information.
						IT/Media security clearance of the Construction Manager's IT systems will not be required for purpose of the project. However, it is noted that PWGSC will provide one Secret-cleared laptop for the use of the Construction Manager. Use of the laptop by the Construction Manager will be limited to a desginated secure room within the Postal Station B building. The Construction Manager will be responsible for storing this laptop in a DSC approved storage container in the designated secure room in the Postal Station B building. The Construction Manager will be required to follow security protocols prescribed by PWGSC for the use and storage of the laptop.
Secret	SUBCONTRACTORS - SECURITY SYSTEMS	X	X	X		Subcontractors retained directly by the Construction Manager for the installation of security systems will be required to hold a Facility Security Clearance (FSC) and Document Safeguarding Capability (DSC) at the Secret Level. As well, subcontractor personnel must hold a valid Secret clearance.
						IT/Media security clearance of the Security Systems Subcontractors' IT systems will not be required for purpose of the project. However, it is noted that PWGSC will provide one Secret-cleared laptop for the use of the Security Systems Subcontractor. Use of the laptop by the Security Systems Subcontractor will be limited to a desginated secure room within the Postal Station B building. The Security Systems Subcontractor will be responsible for storing this laptop in a DSC approved storage container in the designated secure room in the Postal Station B building. The Security Systems Subcontractor will be required to follow security protocols prescribed by PWGSC for the use and storage of the laptop.
Site Access Clearance*	SUBCONTRACTORS - BASE BUILDING WORK	X		X		All subcontractors retained directly by the Construction Manager for base building construction work will be required to hold a Facility Security Clearance (FSC) at the Secret Level. All subcontractor personnel must hold a valid Site Access Clearance.

* The FSC requirement for a specific subcontractor may be waived if all subcontractor personnel currently hold a valid Site Access.

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

CERTIFICATE OF INSURANCE

Description and Location of Work	Contract No.
Construction Management Services, Postal Station "B" Envelope Rehabilitation and Base Building Upgrade, 59 Sparks Street, Ottawa, Ontario	EP775-150701/B
	Project No. R.037973.270

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
Her Majesty the Queen 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				$		
Wrap-Up General Liability				$ ☐ Per Incident ☐ Per Occurence		Aggregate $
All Risk in Transit Insurance				$		
Environmental Impairment Liability Insurance				$ ☐ Per Incident ☐ Per Occurence		Aggregate $
				$		

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

Envelope Rehabilitation & Base Building Upgrade
Postal Station B, 47-59 Sparks Street

PPB Operations

Project R.037973.001
EN388-113451

Watson MacEwen Teramura Architects

BPA
Hanscomb Limited
KIB Consultants Inc.

3 June 2013 - Final

Postal Station B - Envelope Rehabilitation & Base Building Upgrade

Final Report
3 June 2013

Contents

1.0 Executive Summary

The deteriorated condition of building envelope components as well as the heating system in Postal Station B has been documented in various reports. The present study includes a more detailed assessment of the base building mechanical and electrical systems, and proposes design options for their replacement or repair, as well as alternative scenarios for implementing the work. It also examines building envelope repairs.

The piping for the existing steam heating system is exhibiting signs of widespread corrosion, and incidents of leakage have been well documented.

X-ray analysis of piping was undertaken as a means of confirming expectations concerning the remaining life in domestic, sanitary, and heating piping. The overall results obtained from this pipe scanning investigation further supports conclusions established from previous studies and real-time interventions performed by PWGSC operation and maintenance staff; that the existing heating piping system within the Postal Station B building needs to be replaced as it is past its normal service life, a fact that is further reinforced by the imminent conversion of the district heating system from steam to hot water. Replacement of the heating system piping and radiators is unavoidable.

Replacement of the domestic water and sanitary drains is proposed, but can be limited to the risers and the men's washroom group. New, low flow fixtures would be installed and a backflow preventer would need to be installed on the main water entrance.

The removal of ceilings provides an opportunity to upgrade the fire protection system to include sprinklers in all occupied spaces as well as standpipes. While the project does not necessarily trigger a legal requirement to add this system, it does bring the building into code compliance and it is therefore recommended that this opportunity be taken to improve the performance of the building from a life safety standpoint.

Similarly, the ventilation system is driven by a single air handling unit that is in need of replacement. Numerous possible configurations were considered, but due to the physical limitations of the existing building the most feasible approach is to recondition the existing air handling unit in situ, which will provide another forty years of reliable service.

The new building systems will be controlled by a centralized building automation system, replacing the existing 1970's era pneumatic controls.

The ceilings in the office levels contain significant amounts of friable asbestos. While indoor air quality monitoring by PWGSC does not detect harmful levels of airborne contaminants, the work required to implement the mechanical upgrades will involve disturbing these materials. It is therefore recommended that a full abatement of these materials be undertaken while the spaces are unoccupied.

The electrical services have been upgraded in recent years, although capacity remains limited. The work to the electrical systems will be mainly limited to replacing systems as triggered by the mechanical work. This will be an opportunity to install more energy efficient lighting, for example. New electrical rooms housing transformers and panelboards would be provided on each floor. In addition, a new replacement 600A sub feed from the Langevin Building be provided.

The copper roof should be replaced, as it has reached the end of its service life. The windows are excellent candidates for conservation however.

Assuming minimal disruption to building operations is preferred, the recommended implementation procedure would be to work on a floor-by-floor basis. This assumes that swing space can be provided for the occupants for the duration of the work; in this analysis it is assumed that the seventh floor can be fit up for this purpose. It may, of course, be provided in another building as well.

Eleven weeks would be required for each floor, with the implementation of the work planned to minimize disruption to the occupants of adjacent levels. Conservation of the windows would be done at this time as well.

The overall duration of the phased project would be 37 months, which includes 9 months for plans and specifications. The cost for the recommended option is $25 million.

One area of concern which requires further consideration is the seismic capacity of the building. The replacement of the mechanical systems in itself does not trigger a requirement to seismically upgrade the building; however the Asset Management Plan recommends a seismic evaluation of the building. To perform this analysis additional detail on the construction of the building and the attachment of the cladding to the framing is required. This information can only be obtained through exploratory openings in the walls. A finite element analysis of the building will provide an accurate assessment of the seismic characteristics of the building, which will inform the design of any required upgrades.

2.0 Introduction

Postal Station B, Ottawa, was built in 1938-39 to designs by W.E. Noffke, architect, of Ottawa. In 1984, the Historic Sites and Monuments Board identified this along with the other buildings around Confederation Square as of national historical and architectural importance. Postal Station B forms part of the Confederation Square National Historic Site.

Postal Station B was designated "Classified" by the Federal Heritage Buildings Review Office (FHBRO) in 1986.

Numerous condition assessments have been undertaken in recent years, including Screening Reports by the Heritage Conservation Directorate, detailed investigations into specific issues, such as the doors, and a more comprehensive assessment of the envelope and heating systems by DFS Architects. This report is intended to build upon these previous investigations, and propose strategies for their implementation. Additional investigations into the condition of the base building systems were undertaken, and a concurrent Building Condition Report (BCR) was also undertaken. The findings of this report are coordinated with those of the BCR prepared by Halsall.

Retrofitting base building systems in an occupied, asbestos contaminated building is complex. A further complication is the requirement to convert the building from steam to hat water heating to coordinate with anticipated changes in the district heating system that currently supplies energy to the building. Finally, the systems will be designed to provide optimal, long term performance, and not be compromised by the restrictions caused by the implementation scenarios.

This report breaks down the possible alternative design and implementation options as follows.

The proposed changes to the heating system are driven by both the requirement to convert to hot water heating, and by the deteriorated condition of the steam piping. There are no alternative options for this aspect of the project.

Options for the upgrading of the ventilation system are possible however. These include *Option 1* compartmentalizing the air handling systems, floor by floor; or *Option 2* continuing to use a centralized air handling system.

With a design *Option* selected, alternate *Solutions*, or design configurations are proposed and analyzed. These consider variables such as the locations of the equipment, number of pieces of equipment, and so forth.

Finally, *Implementation Scenarios* are proposed and analyzed. Building on a recommended *Solution*, the *Implementation Scenarios* consider how the construction work would be undertaken. In accordance with the Terms of Reference, these include:

a) All Floors Fully Occupied – PCO Monday to Friday during normal business hours; CPC Monday to Saturday during normal business hours.

b) PCO Floor(s) Partially Occupied + CPC Fully Occupied.

   Occupancy as for a) above, but modified to assume each floor occupied by the PCO can be partially vacated for a limited time, sequentially floor by floor.

c) PCO Floors Unoccupied + CPC Fully Occupied

   Assume PCO vacates the building. CPC fully occupied Monday to Saturday during normal business hours.

In all instances the heritage character of the building is considered, and interventions are limited to areas where changes to character defining elements can be avoided.

3.0 Methodology

3.1 General

The assessment of the base building systems for the purposes of the options analysis was coordinated with surveys required for a Building Condition Report prepared under this contract, but separately, by Halsall. This minimized duplication of efforts and repeated access into secure spaces. The findings of this report are therefore consistent with those contained in the BCR.

As many existing reports have been prepared on the condition of the building envelope, these reports were relied upon to inform this report. A detailed review and summary of these reports follows.

Site investigations were undertaken on several occasions, however, to further confirm the findings on the condition of the heating system. As well, the ventilation, domestic water, sanitary, and electrical systems were not included in the previous studies; therefore these required additional field investigations. Finally, investigations into the available space for mechanical equipment was undertaken.

X-ray analysis of piping was undertaken as a means of confirming expectations concerning the remaining life in domestic, sanitary, and heating piping. Refer to Appendix D for the results obtained from the x-ray scans.

This study required the careful consideration of multiple design options for the HVAC systems, as well as several scenarios for implementing the work vis-à-vis degrees of building occupancy during construction. To narrow the focus and manage the possible permutations, the study works from general *Options* (overall configuration of the HVAC system) to particular *Solutions* (locations of equipment in the building.) Finally, *Implementation Scenarios* are evaluated in terms of their viability and impact on building occupants.

As an independent exercise, a conservation approach was developed based on the Heritage Character Statement and following the *Standards and Guidelines for the Conservation of Historic Places in Canada, 2nd ed*. Design *Solutions* were developed to follow the conservation approach.

3.2 Results of Document Review

Quality Assurance Design Review (QADR) re Postal Station B Envelope Rehabilitation and Base Building Upgrade HCD Project Number: R.051630.001, August 15, 2012

Summary

The terms of reference for the Gap Analysis are defined in this report, which describes a requirement to analyse the interaction of the various repairs recommended in the document it reviews, *Postal Station B Envelope and Mechanical System Investigation Report*, by DFS Architecture & Design. The report also recommends that the implementation of the projects is carried out with due consideration for the character-defining elements of the building.

With respect to the specific interventions discussed in the DFS report, the QADR recommends that an alternative to the proposed radiant ceiling panels be investigated, and that the status of the existing radiators as heritage elements be confirmed. The building envelope intervention is commended for its thoroughness and for recommending a long-term solution.

The remarks concerning the radiant panels suggest that using radiant panels in lieu of perimeter radiators will compromise the heritage values of the building.

The comments pertaining to the design of the mechanical system suggest that the use of radiant ceiling panels tends to lead to user complaints because of thermal comfort issues. The option that utilised perimeter radiation is preferred by the authors of the QADR.

Analysis

The existing office spaces are provided with lay-in-tile ceiling systems, which conceal ventilation equipment added in an earlier HVAC upgrade. It is anticipated that a ceiling such as this will continue to be required in the building; if so, the radiant ceiling panels will sit within this system and be more or less indistinguishable from the ceiling tiles. If one accepts the premise of the lay-in-tile ceiling, the impact of the radiant panels will be minimal.

The existing radiators consist of steam heating elements concealed within cabinets located at the base of the windows. In 1974, both the heating elements and the front panel of the cabinets were replaced. The physical material of the radiators are therefore lacking in heritage significance, however the overall geometry of the cabinet should be considered to be part of the heritage character of the interior.

Postal Station B Envelope and Mechanical System Investigation Report, prepared by DFS Architecture & Design, March 2011, Project # R.035163.003

Summary

This study was commissioned to examine treatment options for the building envelope and heating system, both of which had exhibited signs of distress, which in some cases at least appeared to be related phenomena. The water damage in the wall assembly appear to have been caused by failures in the heating system, as the piping is corroded and visibly leaking in places.

The envelope and heating system are examined separately, with three options proposed for each. The envelope analysis involved a series of test openings to determine the underlying conditions where leaks, staining, or displacement of stone units was observed. The heating system analysis included visual inspection of the piping. No material testing was included.

The recommended option for the building envelope is to restore the windows and decorative metals, repoint and repair the masonry, and dismantle and rebuild portions of the penthouse walls. The intent is to create a long term solution which would address all existing issues, and prevent further deterioration caused by existing deficiencies.

Similarly, the recommendation for the heating system is to replace the existing system, and the proposed solution is hydronic ceiling mounted radiant panels.

Analysis

This study examines two systems in isolation, and its mandate does not appear to have included an implementation strategy. Moreover, with respect to the mechanical systems, its mandate was limited to the repair of the existing heating system, and did not account for the later decision to convert the Cliff Heating Plant from steam to hot water. Therefore the scope of work envisioned by this study is much smaller than that proposed by the current study, which is intended to address ventilation, cooling, and electrical systems as well.

The test openings in the walls revealed, in one location, masonry ties that were not connected to the building structure. However, the report does not discuss the significance of this finding for the building as a whole. While the masonry in general does not exhibit bulging or movement that would suggest that this condition is widespread, this finding does raise questions. This is particularly pertinent to the development of a finite element analysis of the building's seismic performance. To perform this analysis, assumptions concerning connections of the masonry to the structure will need to be made, ideally on the basis of physical evidence.

Postal Station B Bronze Door Repairs Report, prepared by DFS Architecture & Design, March 2011 Project # R.035163.003

Summary

A condition assessment and options analysis for remedial work to the bronze entrances to the building. Currently the doors are corroded and binding on the pavers below them due to oxide jacking. The doors are intact and able to be restored, however this will require removal to a shop to repair joints and remove corrosion.

The options range from temporary stabilization and cleaning to full conservation. It is noted that continued deferral of repairs will lead to higher costs to implement the work which is inevitable.

Analysis

The condition of the monumental bronze doors is consistent with other metal elements on the building; that is, they are complete and excellent candidates for restoration. However, they are deteriorated enough that to delay restoration would be to place them at ever increasing risk.

Postal Station B Building Lintel Distress Investigation, Ottawa, Ontario, prepared by KIB Consultants Inc., February 2009, Project #R.011852.014.

Summary

Following from the investigations required by the 2009 Building Envelope Screening, a more detailed investigation of the condition of the large carved stone lintel over the main entrance of the building was carried out. Exploratory openings revealed that the steel structure supporting the lintel was severely corroded, and oxide jacking was forcing the stone down, causing cracks to form at the corners. Ultimately, the steel was replaced and the lintel's position reinstated correctly. Humid conditions and water leaking was found inside the wall cavity.

Analysis

The corrosion and resultant displacement of the stone is indicative of the forms of concealed damage that could be occurring anywhere in the building wherever water has been entering for prolonged periods.

Postal Station B Building Envelope Screening 2008-2009, prepared by Heritage Conservation Directorate, PWGSC, March 2009, HCD R.011852.014

Summary

The screening is a cyclical Level 1 screening of the entire building envelope, conducted from the ground, adjacent buildings, a boom lift, and a crane basket. It was the second screening performed on the building under the HCD Building Exterior Program.

The investigation found the overall condition of the building envelope to be fair, with the windows exhibiting the most deterioration. The roofs range in condition, with the copper roof on the mansard being in poor condition. Adjacent gutters were also found to be in poor condition.

Short term repairs and additional investigations were recommended, included repairs to the large carved lintel over the main entrance, investigations into the water leaks, and masonry rehabilitation.

Analysis

A Level 1 screening is a visual and tactile examination, which generally includes recommendations for more specific investigations which may include test openings and testing. It is assumed that the 2011 envelope investigation was initiated by the findings of this study. Many of the deficiencies identified in this report may also be found in the previous Level 1 Screening report, as recommended repairs were not implemented.

Postal Station B Condition Assessment, prepared by Corporate Research Group/Halsall Associates Ltd, 2006.

Summary

A detailed condition assessment of all building systems, prepared as part of an Asset Management Plan. The report includes detailed recommendations for the repair, maintenance, or replacement of building components, referred to as "events," along with associated costs. The recommended projects assume a "status quo" scenario, with repairs being implemented as required to maintain the building in its current state, with no major changes to occupancy or building system design. The projected cost for the five year plan is $3.309 million, and the twenty-five year plan is $11.706 million (2006 dollars).

The report finds that various regulatory deficiencies exist, as one would expect in a building of this age, and that the Seismic Priority Index (SPI) is 12.4, indicating a "Medium" priority for further seismic assessment. Various building performance indicators were measured, and a review of indoor air quality, water consumption and quality, and environmental factors did not reveal major concerns. "Minor" amounts of Asbestos Containing Materials (ACMs) were detected.

Analysis

The report suggests that the building is in relatively good condition, albeit with various repairs and maintenance items required. The "Medium" priority for seismic investigations is derived from the National Research Council's *Manual for Screening of Buildings for Seismic Evaluation*, which employs a numerical scoring system to evaluate buildings' vulnerability to seismic loads. The Manual leaves the definition of the priority ranking for the user to determine; therefore, an SPI of 12.4 should be considered within the context of other assets in PWGSC's portfolio. The nature of the occupancy and its importance to Parliament's business continuity should also be taken into consideration.

The report's finding that ACMs do not appear to be a major concern appears to be at odds with the 2011 asbestos mapping exercise, which indicates ACMs in friable materials distributed widely throughout the building. This may simply be the result of the more detailed ACM investigations superseding the BCR on this issue.

Document Review: Overall Summary

The findings of the reviewed documents, prepared between 1991 and 2011, depict a building that has very high heritage value, is largely intact, and in reasonably good condition albeit with a number of specific and significant deficiencies. The windows in particular have been identified repeatedly as an item requiring attention, as well as repointing and repairs to the masonry. The copper roofing is also an area of concern, with replacement recommended. The most recent documentation, specifically the 2011 *Postal Station B Envelope and Mechanical System Investigation Report*, notes that the heating system distribution piping is experiencing widespread corrosion and leaks.

The variations in the life expectancy of certain elements that appear in the various reports may be accounted for by the methodology used for their assessment. The roof, for example, is expected to last until between 2014 (HCD Screening Report) and 2021(Halsall BCR). A significant difference between the two studies is that the HCD Screening Report was done using a boom lift, and the investigators had an opportunity to examine the roof in detail, observing deterioration such as perforations and thinning of the copper material. These pathologies are indicative of the potential remaining life of the roof, but would not be readily detectable from street level or from the flat roof above. Also, it should be noted that the 2006 HCD Level 1 Screening, which also recommended roof replacement, was not among the documents available to the BCR team, possibly because the two studies were being prepared concurrently. For the purposes of this study the more pessimistic assessment of the roof condition will be used.

The existing documentation therefore highlights the following main items as requiring rehabilitation in the short term: roofing, masonry, windows, and the heating system. Each of these deficiencies poses the threat of water entering the building envelope, and failure to address them will lead to accelerated deterioration of the masonry, structural frame, and interiors. An additional concern is the widespread presence of ACMs in ceiling spaces, which will greatly complicate any attempt to work on mechanical and electrical infrastructure in occupied spaces. Furthermore, leaks which leach through ACMs can cause the widespread distribution of these materials through occupied spaces, although there is no indication that this has happened yet in this building.

4.0 Existing Mechanical and Electrical Systems

4.1 Existing Heating Configuration

- Postal Station B currently has no natural gas service. The building is heated by steam that is provided from the Cliff Street Heating Plant. The steam service that enters into Postal Station B from the Langevin Block has an approximate pressure of 40 PSIG. A pressure reducing station within the mechanical room of Postal Station B reduces the steam pressure further to 4-5 PSIG before it is distributed throughout the building at a typical pressure of 3.25 PSIG. There are separate main distribution pipes in the building serving the basement, ground floor and floors 1 through 7. The existing steam service to the building is in good condition as it was replaced in the 1990's. On the other hand the steam distribution system within Postal Station B is showing signs of severe corrosion and decay and there have been numerous incidences of leaks in the system.

- It has been estimated that the existing steam service to the building has a capacity of approximately 3,000 lbs/hr of steam which is approximately equivalent to 2,880 MBH. It has also been estimated that the heating load requirement for the building steam systems is approximately 2,470 MBH (based on total radiator capacity).

- The majority of the steam distribution systems in Postal Station B date back to the original construction of the building in 1938. There have been several retrofit projects to the building over the years with a major renovation to the mechanical systems in 1975 where the building's air handling unit was replaced and some of the distribution ductwork was rerouted. The air handling unit that was installed in 1975 is the same unit that is currently operating in the building. The air handling unit that was installed as part of the 1975 system upgrades is equipped with steam heating coils and a steam humidifier. The building operator has indicated that the steam heating coils are used only in very rare circumstances when the building requires additional heat beyond what the perimeter is able to provide. It was confirmed that the humidifier is never used as it is a direct steam humidifier and the steam from the central plant contains anti corrosive agents, which have a detrimental health impact if inhaled. As part of the 1975 retrofit there were also two reheat boxes and a fan coil unit installed to serve the ground floor.

- Each of these pieces of equipment contains a steam heating coil. At present, the building is primarily heated by the perimeter cast iron steam convectors with the ventilation air being tempered by the steam coils installed in the air handling equipment.

- There is very little design information available for the mechanical systems of the building. In addition there are large portions of the piping distribution network that are concealed behind insulation, walls and ceilings that contain Asbestos Containing Materials (ACMs). The existing steam heating system in the building is original and has been experiencing an increasing incidence of leaks and failures in the piping distribution components.

4.2 Existing Perimeter Radiators

- Based on the information provided in the DFS report and information obtained from the 1975 drawings there are approximately 170 perimeter radiators/convectors that have varying capacities ranging from 5.0 MBH to 6.5 MBH each. The heating capacities for the other mechanical components still fed by the steam system were determined based on the as-built equipment schedule.

4.3 Existing Primary Air System Configuration

- Postal Station B currently has a single air handling system to serve all the floors of the building. Based on the 1975 drawings, this unit currently has a capacity of approximately 45 000 cfm. The unit is composed of a supply and return fan, a steam heating coil, a chilled water cooling coil, and a set of filters. This unit is located in the main basement mechanical room and is primarily used for cooling of the office floors but can also serve to provide heat when required. Fresh-air is obtained from three intake louvers located on the north side of the building. These louvers are located very close to the adjacent building and are in direct path of an egress route. Also two air condensers are located directly below the fresh-air louvers. It is important to note that the existing location of the fresh-air louvers does not meet the requirements of ASHRAE 62.1. The fresh-air is mixed with the return air of building before being conditioned by the AHU. An exhaust duct removes air directly at the unit and discharges this air in the loading dock area.

- Two mechanical shafts are used as paths for the supply and return ductwork from the mechanical room to the office floors. Once on the floors, the distribution system is done with variable-air volume terminal units, which provide constant temperature air while varying the flow for each zone. The supply fan of the AHU is equipped with vanes capable of modulating the flow to the office floors.

- As part of the base building upgrade, the air handling unit would be replaced so as to provide another 40 years of service.

4.4 Existing Electrical Main Service

- The main electrical room is located in the basement level. The room is also shared with the main telecom service includes the main backboard.

- The electrical service for the Postal Station B building is a sub feed from the Langevin Block electrical distribution which is believed installed in 1997. The Langevin Block is supplied from Hydro Ottawa 13.2 kV system, terminating in a transformer vault. The Utility transformer size is not known. A service entrance switchboard is provided with main breaker rated 1600/1200A trip and includes secondary utility metering. Record information indicates the switchboard includes a feeder breaker, sized at 400 A, 347/600V, for the Postal Station B building. There is also a separate feeder from the Langevin Block for the normal power supply to the fire pump.

- Only customers check metering is provided at the main distribution panel in Postal Station B.

- Main secondary switchboard is manufactured by ITE ((1975), and consists of single section with customer metering on top, main breaker compartment and distribution section in the bottom compartment.
    - 800A, 347/600V 3 phase 4 wire
    - 800A -3p main breaker
    - Ampere and volt meters with selector switch.
    - Distribution breakers
        - 225A-3p
        - 3 x 100A-3p
        - 200A-3p
        - 70A-3p
        - ATS breaker
- The main distribution panel has an 800A rating however records indicate a 400A feeder supply from the Langevin Block. Customer metering in the main panel indicated a 200A demand load on day of site visit and the KWHR meter had recorded a 300 kW peak demand.

4.5 Motor Control

- A two section motor control centre is located in the basement mechanical room.
- The MCC is manufactured by Siemens and was installed in 1997.

4.6 Normal Power Distribution

- There are 12 step down dry type transformers (600 to 120/208V) located in the building. The original installation was in 1975 and several of the units were replaced in 2005. Panel boards and step down transformers are not provided on each floor.
- 347/600 Volt distribution
- Panel boards are located floors 1, 2, 4 & 6 and provide branch circuits for lighting and distribution breakers to feed step down transformers (30 kVA) and 120/208V branch panels.
- Panels were upgraded between 1997 and 2002.
- 120/208 Volt distribution
- New branch circuit panel boards are installed (between 1997 and 2002) on floors 1, 2, 4 and 6. Floors 4 and 6 have 72 circuit panel capacity. Generally one panel serves two floors.

4.7 Emergency Power Distribution

- A diesel generator is located in the basement providing emergency power for the Postal Station B building and other loads outside of this building. The generator and distribution was installed in 2002.
- The generator is rated 350 kW/ 437.5 kVA, manufactured by Cummins.
- The generator load is not known at this time and requires further site investigation.
- The generator output supplies an emergency feed to the fire pump transfer switch/controller located in the fire pump room. Note that the normal power supply to the fire pump is a separate feeder from the Langevin Block.
- The generator output supplies a distribution panel (G) which includes:
    - Automatic transfer switch
    - Spare
    - Spare
- The ATS is supplied from the emergency panel G and normal power from the main distribution panel.
- The output from the ATS supplies distribution panel EE-1 which serves the following loads:

- Transformer and panel EE-2 basement
- Distribution panel EE main electrical room
- Langevin Block
- Hope Building

- The normal power for the fire pump service is supplied from the Langevin Block

4.8 Building Fire Alarm System

- The building is provided with an Edwards EST-3 single stage control panel located in the basement electrical room. Field devices are conventional type.
- Recent sprinkler modification include addressable loop and addressable modules.
- Remote annunciator is located at the main lobby.
- Conventional field devices wired Class B.
- Newer circuits (addressable) wired Class A.
- Signal devices are bells.
- Wiring not known.

4.9 Telecommunications

- The main telecommunications backboard is located in the basement main electrical room. This is not an ideal location and modern requirements would require a separate main entrance termination room or main telecom room (MTR).
- On the typical floor the telecommunication room (TR), riser and backboard is shared and part of the floor electrical room. Building occupant IT rooms are installed on a number of floors and interconnect with the TR.

5.0 M&E Base Building Upgrade

5.1 General Mechanical Requirements

5.1.1 Purpose

- The purpose of this section is to provide an overview of the different mechanical and electrical systems that could be implemented at the Postal Station B Building. The report will focus on identifying the main mechanical and electrical systems that are to form part of the project and provide the main reasons for the choices made.
- The project intent is to provide the best HVAC solution to meet PWGSCs requirements stated in the Terms of Reference (TOR). In any case, the selected systems shall be energy efficient, cost-effective, safe, and capable of providing a healthy and comfortable environment while reducing maintenance cost.

5.1.2 Objectives

- The main design objectives for the mechanical systems are the following:
    - 2 space for equipment, including sufficient space for efficient servicing and maintenance.
    - Equipment and means of installation is compatible with the character of the historic place

5.1.3 Criteria for System Selection

- Temperature, humidity, air quality and space pressure requirements (negative or positive)
- The selected system shall have the ability to fulfill all of the design parameters;
- Optimize options for filtration and dehumidification for improved indoor air quality;
- Limit the condensation water in occupant workplace.

5.1.4 Equipment Area

- The equipment area is expressed in percentage (%). It is the ratio of equipment area / gross building area. The mechanical equipment for a building such as the Postal Station B building is relatively large compared to smaller buildings and therefore requires significantly large mechanical room both for operation and maintenance of the equipment.
- Office space is relatively densely occupied space. The mechanical systems have to handle large air quantities required to maintain good indoor air quality and cool the space.

5.1.5 First Cost

- First cost (or capital cost) is the required investment for the construction and does not include maintenance or operating costs. Priority is to reduce the capital cost or first cost by optimizing all equipment selection and system design.

5.1.6 Operating Cost

- Operating cost essentially include energy cost and operating staff. According to ASHRAE (American Society of Heating Refrigerating and Air-conditioning Engineers) approximately 20% of the cost of the building is the first cost, with the other 80% being operation cost when looked at on a life cycle cost analysis perspective.
- Equipment sized, selected and controlled to operate at their point of maximum efficiency in order to reduce operating costs;
- Variable frequency drive (VFD) reduce the electrical consumption from motors;
- Energy conservation methods, such as air side free cooling improve significantly energy efficiency and reduce operating costs.

5.1.7 Maintenance Cost

- Keeping HVAC equipment away from occupant space provide appropriate service work environment, reduce disruption to occupants;
- Reducing the quantity of equipment needed to maintain, repair and eventually replace reduce significantly maintenance costs;
- Reducing the amount of water lines in ceiling space to minimize the possibility of water leakage in occupant workspace;
- Mechanical equipment must be kept clean and filters regularly replaced to ensure adequate performance. When mechanical equipment is installed in occupied space, this routine maintenance work can become difficult to accomplish.
- The impact of an equipment failure must also be considered. The failure of a centralized piece of equipment will impact a larger number of occupants than a small piece of equipment deserving a limited area.

5.1.8 Reliability - Equipment Life Cycle

- The equipment and system selection must take into account the normal service life of equipment and reliability of the installation.

5.1.9 Flexibility - Adapt To Future Changes

- Due to the nature of the project, systems must be easily adaptable to changing tenant needs at minimum cost.

5.1.10 Controllability

- The goal is to provide systems that will have maximum controllability and integration to the Building automation system (BAS), in the concept of an intelligent building. Refer to the section below for the more information on EMCS requirements for this project.

5.1.11 Sound and Vibration

- Location of equipment and acoustical treatment is essential to provide high quality workspace. Typically, keeping the mechanical equipment away from the occupant space will reduce the risk of generated noise that will disturb the working occupant and reduce productivity.

5.1.12 Space Requirements for Equipment Rooms

- The space requirements are often expressed as a percentage of the total building floor area According to ASHRAE (American Society of Heating Refrigerating and Air-conditioning Engineers) the combined mechanical and electrical space requirement of most building is between 6% and 9%.
- The total equipment area presently allowed for the project corresponds to less than 4% of the gross area of the building. Based on the AHSRAE standards, the equipment area is below minimum standards.
- These spaces are required to install the equipment that will treat the building loads.

5.2 Plumbing System

- The following section addresses the base building work required on the Postal Station B plumbing systems. X-ray scans have been completed to obtain a better understanding on the existing condition of the piping and justify the following program of work. The following describes the general plumbing upgrade required as part of the base building program.

5.2.1 Sanitary and Storm Drainage

- Underground Piping
  - Replace all underground piping in the building by new. Underground piping replacement is much easier when site is under construction. For this reason, all underground piping will be replaced by new.
  - New underground piping should be PVC SDR for durability.
  - Slope underground piping at 1:50.
- Above-ground piping

- The drainage system of the men's washroom group would need to be upgraded, while the women's washroom group drainage system is relatively in good shape as it was upgraded in the early 2000. The vertical chases should be replaced as they are original to the building.
- All above ground drainage piping will be cast iron with hubless fittings or DWV copper, depending on application. Foot of risers shall be in cast iron.
- All storm drainage piping shall be thermally insulated. All existing storm drains are to remain as the system was upgraded in the early 2000.

- All above ground levels shall be gravity drained.
- The existing sump pumps would be upgrade to include duplex pumps.

5.2.2 Domestic Water Piping

- The existing main water entry will need to be modified to meet code requirements as it is currently not equipped with the proper back-flow preventer. The water entry is currently common with the fire protection system. A duplex pump system is currently used to feed sprinklers located in the basement and fire-hose cabinets on the office floors.
- Domestic water piping distribution system is to be constructed of copper, type L, hard, to ASTM-088 with thermal insulation.
- The existing domestic water booster pumps would be re-used as they are still in good operating condition. The future replacement of these pumps would not be disruptive to the operation of the building.

5.2.3 Plumbing Fixtures

- All plumbing fixtures would be replaced to suit the following:
- Plumbing fixture controls: flush valves with infra-red proximity sensor, electric type (battery-powered systems will not be accepted) for lavatory, urinals, and water closets.
- Water-closets shall have hands free flush valves that automatically initiate a four (4) liter flush when the user remains inside the sensor range for a period of time. Button shall mechanically let the user initiate flush.
- Water-closets will be wall mounted wherever possible for ease of maintenance.
- Urinals will be wall mounted with recessed flush valves with 0.8 liters per flush.
- Service mop sinks will be floor mounted moulded stone, roll rim, with high undrilled integral back.

5.2.4 Hot Water Heaters

- The two existing domestic hot water tanks are relatively in good condition but would need to be relocated for proper space allocation within the mechanical room.
- Hot water will be made available at every fixture in less than 10 seconds by a properly designed hot water recirculation system.
- Domestic hot water supply temperature shall be generated and stored at a minimum of 60°C and delivered to outlets at 49°C.
- Provide mixing valves where outlet temperature could exceed 49°C.
- Hot water supply to dishwashers shall be at 60°C and boosted to 82°C for final sanitizing.

5.3 Fire Protection System

5.3.1 Standards and Requirement

- The design of the fire protection system of Postal Station B building is based on the following standards:
- NFPA 14 09, Standard for the Installation of Standpipe and Hose Systems.
- NFPA 13 2010, Standard for the Installation of Sprinkler Systems.
- NFPA 20-2010, Standard for the Installation of Stationary Pumps for Fire Protection.
- NFPA 25-2008, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.
- Underwriters Laboratories of Canada (ULC).
- National Building Code (NBC).
- All fire protection systems must be coordinated with fire alarm systems.

5.3.2 Water Flow and Pressure

- There are two systems that determine the required amount of flow for the fire protection water supply; the ceiling sprinklers, and the standpipe system (with hose connections). Each system must have access to the appropriate amount of water as required by the governing codes.

Table 5.3.2A - Fire Protection System Flow Rates

Systems	Flow rate (L/s)
Ceiling sprinklers (Ordinary Hazard)	14.2
Standpipes	31.5
Total:	45.7

- The required system pressure is based on the system that uses the highest pressure to operate. In this case, the standpipe system is the most demanding, requiring 689 kPa at the two furthest hose connection locations.

Table 5.3.2B - Fire Protection Required Pressures

Systems	Pressure (kPa)
Ceiling sprinklers (Ordinary Hazard)	138
Standpipes	689

- Pressure losses in the pipes and the distance to the furthest standpipe connections were calculated using approximate pump locations. A total distance of 75m was used (40m horizontally and 35m vertically).

Table 5.3.2C - Fire Protection Total System Pressure

Components	Pressure Loss (kPa)
Friction and fittings	32
Loss due to height	343
Most demanding pressure (standpipe)	689
Total:	1064

- The existing fire protection pumps are capable of providing 500 gpm (31.5 L/s) at a pressure of 110 psi (758 kPa) and are located in the basement. The pumps are unable to meet the requirements of the new building design. During the site investigation, it was noted that one of the existing fire pumps is leaking and will need to be replaced. If the base building upgrade does not take place, the pumps will still need to be replaced.

- The new pump configuration would use a duplex pump layout complete with two horizontal split case base mount pumps, fire pump controller, automatic transfer switch, jokey pump with controller, and all components required as per NFPA 20. The fire pumps will need to be connected to emergency power.

5.3.3 Siamese Connections

- Siamese connections are to be installed for the use by the authority having jurisdiction. The fire department connection (Siamese) is to be installed on an exterior building wall not more than 45 m from a fire hydrant.

5.3.4 Standpipes

- Standpipes shall be installed in the stairwells in accordance with National Building Code. These standpipes are hose connections installed on every intermediate landing of each exit stair. Existing fire hose cabinets will be removed since they are not required when a building has sprinkler coverage.

5.3.5 Occupancy Protection – Sprinklers

- Light Hazard:
    - Most of the complex will be equipped with a sprinkler system capable of protecting light hazard occupancy. The sprinklers will be spaced so that each sprinkler is capable of protecting 20.8m2 of floor area. Semi-recessed sprinklers are to be installed in all areas where the piping is concealed. In all exposed areas, ordinary upright sprinklers are to be installed.
- Ordinary Hazard:
    - Storage and mechanical rooms are to be protected using a sprinkler design capable of protecting an ordinary hazard. The sprinklers shall be spaced to protect an area of 12m2. Semi-recessed sprinklers are to be installed in all areas where the piping is concealed. In all exposed areas, ordinary upright sprinklers are to be installed.

Table 5.3.5 – Sprinkler Layout Requirements

Hazard	Max. Spacing (m)	Min. Spacing (m)	Max distance from wall (m)	Min. Spacing from wall (m)
Light	4.6	1.8	2.3	0.1
Ordinary	3.7	1.8	1.8	0.1

5.3.6 Wet Pipe Sprinkler System:

- All areas of the building except location with risk of freezing or sensitive equipment will be designed using a wet pipe system. The piping will be schedule 40 black steel with mechanical joints. The piping is to be full of water at all times.

- The pipe size, sprinkler layout and risers shall be designed by a professional fire protection engineer using hydraulic calculations. All system to be designed in accordance to NFPA 13.

5.3.7 Sprinkler Zones

- The floor space is mostly light hazard protection with the addition of ordinary protection as described above. Each floor of the building is to become a separate zone as referenced in NFPA 13. For every zone, a zone control valve is required. These valves as well as the risers are to be located in an accessible area for ease of maintenance and drainage.

- Refer to Appendix A for a typical sprinkler layout on an office floor

5.4 Primary Services – Chilled Water and Hot Water Production

5.4.1 Purpose

- Currently, the Postal Station B building is supplied with steam and chilled water by the Cliff Central Heating and Cooling Plant. The intention is to keep the building connected to the central heating plant.

- PWGSC has determined that the conversion of the Central Heating Plants district systems from steam to low temperature water has many advantages for efficient operation and for future integration of renewable and waste energy resources. The general approach is to eliminate the need for primary steam within the buildings (for perimeter heating, air handling units, process loads and humidification) so that there is, preferably, a single interface where steam is converted to hot water or other hydronic medium. For buildings undergoing a major renovation, the maximum building system supply water temperature should not exceed 60°C, while the return temperature should be as low as possible with a maximum of 40°C, although 35°C or lower would be preferable.

5.4.2 Design Analysis of Building Loads

- Any building has basic heat gains and losses which are not dependant on the type of air-conditioning system used. Heat losses or gains must be calculated in relation with the building envelope and exterior condition.

- It is a well-known fact that any building consumes enormous amount of energy to provide a suitable environment for people and processes inside the building. It is also admitted that much of this energy is often needlessly wasted. To evaluate the possibilities of energy conservation it is important to understand how the building needs and uses energy to keep desired internal environment.

- In the case of the Postal Station B buildings, the loads are a function of the following variables:
    - Outside air temperature.
    - Inside air temperature.
    - Outdoor air ventilation rate.
    - Solar radiation.
    - Lighting level.

- People occupancy.
- Miscellaneous internal processes.
- The estimated interior loads (heat gains) and heat losses during occupied period are as follows:
  - Loads independent of exterior temperature

Description	MBH	kW
Lighting	277	81.1
Electrical motors for air-conditioning	21	6.2
Occupancy (with 80% diversity)	125	36.6
Equipment	242	70.9
Solar radiation	187	54.8

  - Loads dependent of exterior temperature

Description	Exterior T°: -29°C		Exterior T°: 32°C	
	MBH	kW	MBH	kW
Transmission of heat and air infiltration through building enclosure	1,722	504	180	52.7
Minimum outside air	503	148	235	68.8

- Estimated peak load conditions for the building are as follows:
  - Cooling: 1,269 MBH (105 tons)
  - Heating: 2,225 MBH (552 kW)

5.5 Air Handling and Distribution Systems

5.5.1 General Requirements

- The project intent is to provide the best HVAC solution to meet the building's requirements. The design shall be capable of meeting the requirements of ASHRAE 55, monitor and control systems to ensure that conditions are effectively met and maintained. In any case, the selected systems shall be energy efficient, cost-effective, safe, and capable of providing a healthy and comfortable environment while reducing maintenance cost.
- Objectives
  - The main design objectives for the air handling and distribution systems are the following:
    - Optimizing investment, considering energy costs use and maintenance costs. Systems have to be efficient, dependable, available for installation according to

the construction schedule, and easily integrated to the architectural and structural systems of the building.

- Optimization of energy efficiency.
- Optimizing comfort of occupant and indoor air quality.
- Conformity to all applicable codes and regulations.
- Use minimum space for equipment, including sufficient space for efficient servicing and maintenance.
- Design systems to be compatible with the character of the historic place.

5.5.2 Primary-Air Handling System

- When considering the ventilation strategies of the Postal Station B building, it is important to pay attention to the main differences between the various possible systems. In any case, the comfort requirements, air quality and space temperature control will be achieved by employing the latest air conditioning technology. At the same time there is also pressure for lowering operating cost imposed by rising energy prices, which in turn pushes the reduction of primary energy consumption.
- The current occupancy level of the Postal Station B building is 168 people, as provided by PWGSC. Following discussions with PWGSC-COE, it was deemed that an occupancy level of approximately 250 people will be used to calculate fresh-air requirements. PWGSC has requested that a minimum of 10 L/s of fresh air be provided for each occupant.

5.6 Chemical, Biological, and Radioactive (CBR) requirements

- PWGSC has requested that CBR requirements be investigated as part of the base building upgrade study. No criteria have been specified as to the level of protection required for the Postal Station B building. Therefore, the following section describes the various level of protection offered, and the implication on the building and mechanical systems.

5.6.1 Design Criteria

- The purpose of this section is to summarize the design criteria to protect the Postal Station B Building, in particular the security area, against airborne chemical, biological, and radiological (CBR) agents.

5.6.2 Description of Protective Measures

- This section includes a description of protective measures, filtration system types and arrangements, protective area overpressure, and collective protection system design and equipment applicable to the Postal Station B building, and guiding principles based on the type and level of threats.

5.6.3 Reference to USDD

- This section of the report is based on the document UFC 4-024-01, published by the US Department of Defense on June 10th 2008, entitled Security Engineering: Procedures for Designing Airborne Chemical, Biological and Radiological Protection for Buildings.

5.6.4 Background

- Airborne delivery tactics involve the introduction of a CBR agent into an occupied building by an aggressor directly inserting the agent into the building's outside air intake for the ventilation system, releasing the agent at a standoff distance upwind of the building, or releasing an agent inside the building.

- The current location of the fresh-air intake for the main air-handling system is located on west face elevation of the Postal Station B building, approximately 4m above grade, but are accessible via a series of access stairs. These intake louvers are located directly located above 2 condensing units currently serving the adjacent Hope building. It is also important to note that these intake louvers are located approximately 3 meters away from the Hope building and are in direct route of an emergency egress route of the Hope building.

- In order to protect the Postal Station B building, measures such as locating air intakes either on the roof of the building or at a minimum distance of 10 meters off the ground level must be implemented.

- In order to adequately design the ventilation systems as well as architectural requirements for the area to be protected, the level of required protection must be identified. UFC 4-024-01 range the levels of protection from very low to high, depending on the value of potential target assets and the design basis threat. The design basis threat is defined as "the threat (aggressors, delivery tactics, and associated weapons, tools, or explosives) against which assets within the building must be protected and upon which the security engineering design of the building is based".

5.6.5 Design Criteria

- To adequately design the system for the area to be protected for sheltering in place in case of an event, the threat type must be identified. The threat type is a combination of the agent type and the delivery tactic and can be described as follows.
  - Agent Types:
    - Toxic Industrial Chemicals and Materials are liquids, particulates, and gases produced for commercial and industrial applications. They are generally of lower toxicity than military chemical agents but are available throughout the world.
    - Biological agents (toxins and pathogens such as viruses) are small particles. Effective delivery of these agents as aerosols generally requires a particle size ranging from 1 to 5 microns. Pathogens are some of the smallest agents, with a particle size of 0.005 to 5 microns, and therefore will affect filter requirements. Pathogens act more like a gas than a particle and travel in droplet nuclei or in clumps, whereas toxins may be in liquid or crystalline form.
    - Radiological agents. The physical form of a radioactive threat could be liquid, particulate, or vapor.
    - Military chemical agents can be liquid, gas, or aerosol at standard conditions. Most of the toxic military chemical agents are liquids, which evaporate at differing rates to produce vapor.
  - Delivery Tactics:
    - External release from a point or line source, such as an aircraft (aerial release) or aerosol upwind of a facility (standoff release), or by direct insertion into an outside air intake. The simplest way to protect against an external release is to shut down the HVAC system. In addition, filtration systems can be placed on the outside air intakes or in the air-handing unit to remove CBR agents and enable pressurization of the area to be protected.
    - Internal release via a direct release within the building, insertion into the internal ventilation system, or mail or supplies delivery. The simplest way to respond to an internal release is to shut down the HVAC system to limit dispersion of CBR agents. Central air-handling filtration systems that are designed to remove specific CBR agents from recirculated air can help limit distribution of the CBR agent within the building through the HVAC system. However, such filtration systems do not protect the immediate area where the internal release occurred or possibly even the adjacent area, and contaminated air in return air ducts or plenums may be spread to other parts of the facility
- In order to protect an area or a building against CBR agent release, pressurization requirement of the space in conjunction with the level of protection required must be identified.
  - Class of pressurization:
    - Class III – No pressurization

- Class II – Filtration with slight pressurization Class II provides a slight overpressure capability of 5 to 12 Pa (0.02 to 0.05 in wg) to resist a short duration event of minutes to hours (depending on the event). For class II pressurization, it is desirable to have a double-entry door such as a vestibule entrance or revolving door that acts as an airlock to maintain the slight overpressure of the protective area.
- Class I – Filtration with pressurization provides an overpressure capability to resist a long-duration event that could last for weeks and corresponds to a low likelihood that an event will compromise the asset. Protective area overpressure must be at least 75 Pa (0.30 in wg).

o Level of Protection:
- Very Low level of protection does not provide any overpressurization and no special filtration. HVAC system will operate in 100% recirculation (no outside air) or will shut down in case of an event.
- Low level of protection will provide slight overpressurization and hepa filtration on outside air.
- Medium level of protection will provide Class I or Class II overpressurization with hepa filtration and carbon adsorbers on outside air. Type of adsorber will depend on the type of agent against which the area must be protected.
- High level of protection will provide Class I or Class II overpressurization with hepa filtration and carbon adsorbers on all air supply. Type of adsorber will depend on the type of agent against which the area must be protected

- The design criteria can be summarized in a matrix that combines the level, agent types and delivery tactics:

Level of protection	Agent Type	Class of pressurization
Very Low	Industrial Chemicals	Class III
Low	Industrial Chemicals Biological and Radiological	Class II
Medium	Industrial Chemicals Biological and Radiological Military chemical Agents	Class II or Class I With filtration on outside air
High	Industrial Chemicals Biological and Radiological Military chemical Agents	Class II or Class I With filtration on all supply air

Note that each design basis threat level includes all of the lower levels.

5.6.6 Detecting an event

- For protection against imperceptible agents, the only practical protective measures are those that are always in place, such as filtering outside air on a continuous basis.
- Theoretically, automatic detectors can be used to initiate protective actions such as shutting down ventilation systems, closing outside air intakes, or turning on filtration systems. However, automated responses to an attack or accidental release are not typically feasible due to limitations in detector technology. As an example, biological agents are imperceptible and there are currently no detection devices that can determine their presence in the air in real time.
- Warning signs of a hazard involving seeing, smelling and hearing something out of the ordinary, such as the hiss of a rapid release from a pressurized cylinder can be considered to initiate the protective measures.

5.6.7 Design Approach

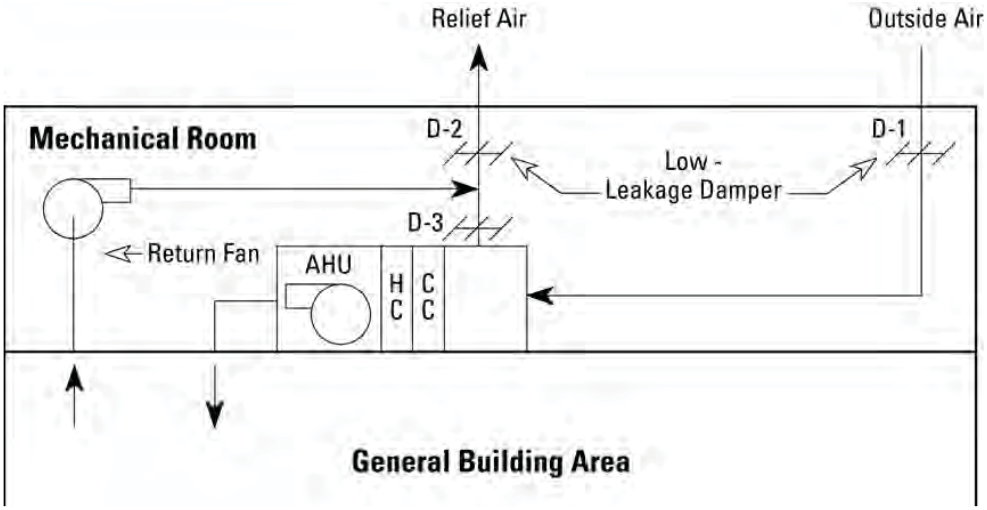

Figure 1 Very Low level of protection

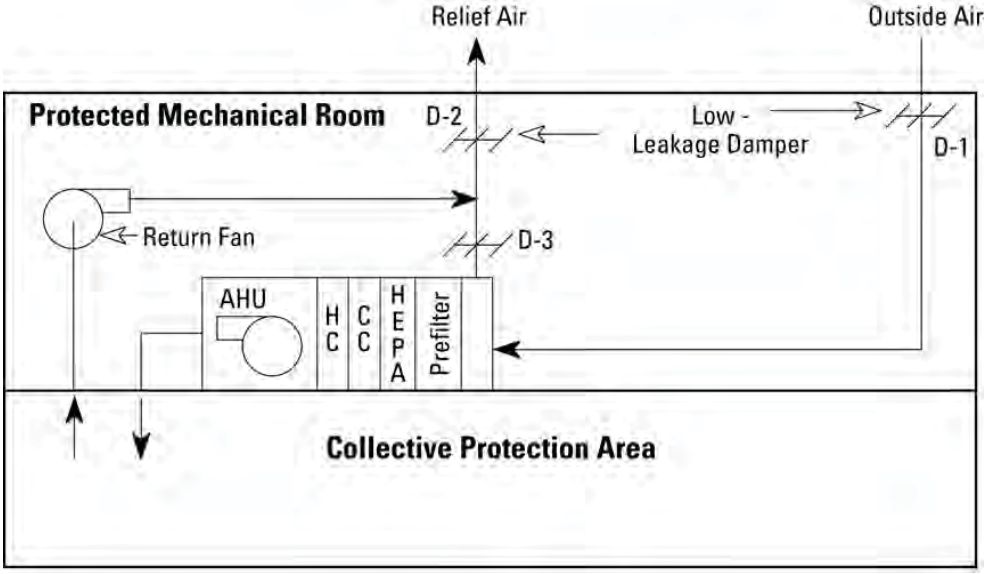

Figure 2 Low Level of Protection

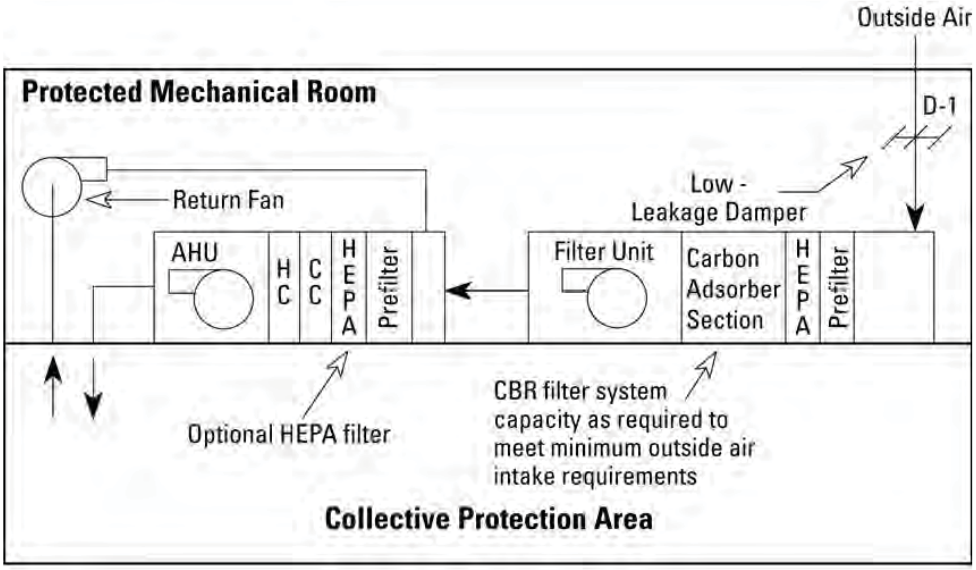

Figure 3 Medium Level of protection

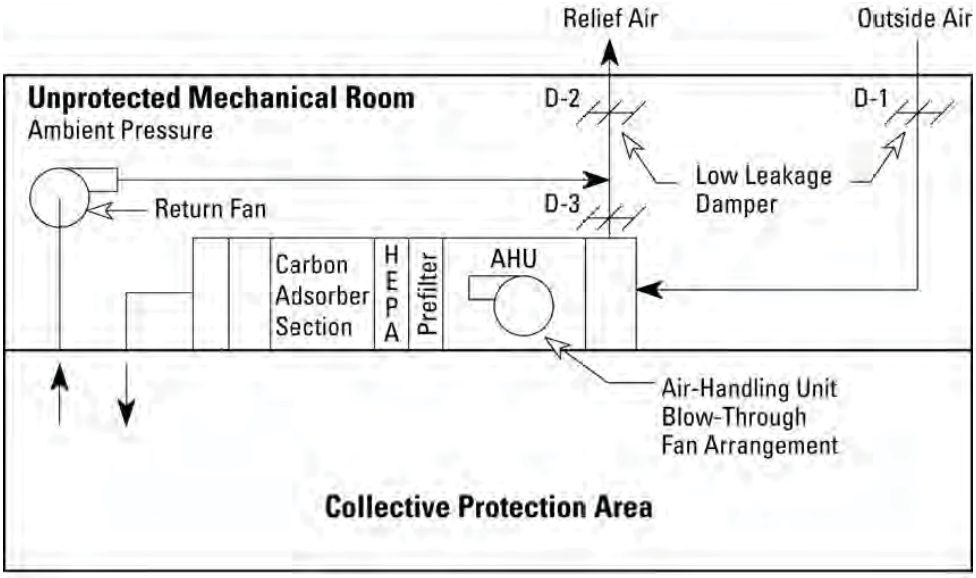

Figure 4 High Level of Protection

5.6.8 Recommendation

A more thorough investigation involving threat and risk assessments is required prior to making a recommendation. This assessment would identify the level of protection required for the building

5.7 Building Automation System (BAS)

5.7.1 Design Principles

- The BAS will include the following:
  - Building controllers of various types distributed strategically throughout the building;
  - Field devices to measure equipment and environmental conditions and control system components;
  - A network architecture connecting the different BAS components to allow communication and data sharing between devices;
  - A centralized management system to manage system data and allow users to interface to the BAS;
  - Programs and software to optimize control strategies and energy efficiency.
  - A Graphical User Interface (GUI) installed on all BAS operator interfaces. GUI will be intuitive, real-time based and will enable the end-users to fully customize control systems.
  - The system will provide alarming and monitoring for all control points. Parameters configuration, system adjustment and verification will be easily achievable from any connection point in the building, through the use of any operator interface.

5.7.2 Building Controllers

- All controllers will be Direct Digital Control (DDC) type, fully programmable, microprocessor based complete with real-time clocks, internal memory, input/output modules, communication interfaces and power supplies.
- Controllers will be located in proximity of systems being controlled. The controller's installation will include all memory, data, software, field devices and accessories required to perform all operations associated with the regulation of its related equipment:
  - Master Control Units (MCU) will be distributed in mechanical rooms near main equipment and systems being controlled.
  - Terminal Control Units (TCU) will be installed directly on terminal equipment or in ceiling space in proximity of the equipment for local control.
  - Network Management Controllers (NMC) will be placed strategically in electrical or mechanical rooms to integrate control units (MCU, TCU) and other third party controllers to ensure communication on the BAS primary network.
- BAS will be of distributed type. Each controller will be equipped with the necessary hardware/software to control its associated system on a standalone basis, independently of failure of other control units or communication links.

- All control points associated with an electro-mechanical system will reside on a single control unit to maintain system operation reliability in standalone mode.
- NMCs will communicate with each other and their associated control units (MCU, TCU) to supervise control actions and optimize control strategies.
- All controllers will communicate using the BACnet protocol and will be BTL Listed by the BACnet Testing Laboratories.

5.7.3 Centralized Management System

- The centralized management system will include a Local Command Center, laptops for maintenance, a notification system, a server and all the software required for system data management and user interaction.
- The Local Command Center will be located in the operator's office in basement and will include an operator workstation (OWS), a printer and a standalone UPS.
- Maintenance laptops will be supplied with the necessary Ethernet and RS-485 ports to interface with BAS networks and building controllers. Ethernet access points will be provided at least in each mechanical room for on-site maintenance.
- A server will be installed as part of the centralized management system. The server will allow archiving of trends, histories, reports, operator activities, alarm management and include a database for system recovery.
- The system will manage all alarming activities and report alarms to operation staff through a notification system. Notifications will be broadcasted through email and will be accessible from a web-enabled device such as a PDA.
- Access to system from OWS and laptops will be web-based.

5.7.4 Network Architecture

- The BAS communication will take place at two levels:
  - Ethernet TCP/IP primary network will interconnect the Central Management System, Network Management Controllers (NMCs) and integrators to provide BAS high-level control and system management.
  - Secondary network to interconnect system controllers and local control devices (MCU, TCU) to NMCs.
- For the secondary network, the connection of controllers will be done using a daisy chain line topology, in accordance with the BACnet MS/TP protocol.
- The primary Ethernet TCP/IP network will be a dedicated IT infrastructure which will include all the necessary networking equipment: cabling, routers, switches, UPS, etc.
- Integration with other systems (e.g. lighting) will be made through dedicated bridges and gateways.

5.7.5 Integration

- Integration of other systems and third party controllers will be achieved through BACnet TCP/IP or using integration controllers provided that they comply with one of the following communication protocol: ASHRAE BACnet, Echelon Lonworks or Modbus.
- Lighting System:
  - Lighting systems will be adjusted by their own integrated controls. However, the BAS will be able to modify schedules and activate specific lighting zones.
  - Integration of lighting systems will allow operators to control and supervise occupancy status and schedules form a single system.
- Power Monitoring, Emergency Power:
  - Integration of equipments associated with these systems will provide all the information (status, alarms, measurements, faults) required to allow proper supervision of systems as part of regular building maintenance activities.

5.7.6 Control Strategies – Interior Space

- General Office Floors (Typical)
  - For the Postal Station B building, the choice between the ventilation options has no impact on the control of local and terminal equipment. Control strategies for typical office floor areas remain independent of the choice of options.
- Perimeter Heating
  - The main objective of perimeter space control is to regulate building skin losses. As a result, perimeter control strategies will be primarily based on outdoor conditions. In heating mode, building envelope control methods will be used to overcome building skin losses.
  - To prevent heat loss through the building's envelope, the system will always be operational during heating season. Night setback strategies can be used by reducing the perimeter space temperature setpoint and optimizing only building envelope heating.
  - Building envelope control will be achieved by evaluating the interior facade temperature and the outdoor air temperature (OAT) in order to supply enough heat to the interior perimeter to overcome building skin losses. A 3-point linear curve based on the OAT would be use as the primary basis for perimeter equipment adjustment. The interior temperature sensor would then be use to fine tune perimeter space conditions.
- Perimeter Variable Air Volume System with terminal reheat.
  - Perimeter spaces will be served by VAV units. The air is supplied from the primary AHU at a determined temperature required to meet the interior cooling demand. Terminal reheat coils are used to adjust supply air temperature locally in these spaces.
  - VAV with terminal reheat will be paired with their adjacent radiators. In heating mode, perimeter heating will be adjusted to overcome building skin losses. Additional heat, if required, will be provided to heat the minimum flow of the VAV during occupancy.
  - During occupancy, the VAV is set to minimum flow (30%) and the airflow is modulated in accordance with the cooling demand. After occupied hours, the VAV is closed and heating is provided, if required, by the perimeter radiators.
- Interior – Open Space Offices
  - Zones are served by VAV terminal units which operate in cooling mode only.
  - In occupied mode, the zone VAV is set to minimum flow (30%) and the airflow is modulated to maintain the zone's temperature setpoint.
  - Temperature setpoints will be controlled by building operators through the centralized management system via operator workstations.
- Closed Offices

- Closed offices are served by a VAV terminal unit which operates in cooling mode only. For closed offices on the perimeter, these spaces may include radiator control and VAV reheat.
- Occupancy status of the office is determined by the system schedule but can also be done at the office thermostat as an energy savings measure. An occupancy switch on the thermostat allows the user to force his system in occupied mode.
- During operation, the VAV is set at minimum flow (30%) and modulates the airflow to maintain the office temperature setpoint. In closed offices, setpoint can be adjusted by the user. Building operators have control over the setpoint span.

- Meeting Rooms
  - Meeting rooms are served by a VAV terminal unit and a transfer fan or a fan powered VAV. The VAV is used to provide cooling while the transfer fan is used to increase air-change and maintain indoor air quality.
  - The system operates according to occupancy status. During occupied mode, the transfer fan is turned on and the VAV modulates airflow to maintain the space temperature.
  - Occupancy status in meeting rooms is determined by CO_2 sensor located within the room.

- Exhaust Systems
  - Exhaust systems will include a dedicated washroom exhaust (constant flow) and a general exhaust system (variable) connecting each floor. Both systems will operate according to the occupancy schedule.
  - Floor exhaust systems are connected to a common exhaust system. A motorized damper will be installed upstream of the main exhaust duct to modulate exhaust airflows in accordance with floor pressure.
- Fresh Air Regulation
  - Typical Office Floors
    - In occupied mode, fresh air supplied to each floor will be set to minimum, as per ASHRAE 62.1 standard.
    - CO_2 room sensors will be installed strategically on floors and re-adjust fresh air rates to maintain CO_2 levels less than 1,200 ppm.
  - Public Spaces
    - Ventilation systems serving public spaces will be equipped with return air or space CO_2 sensors to re-adjust fresh air rates and maintain ambient levels below 1,200 ppm.
- Pressurization
  - Building pressurization will be controlled using airflow tracking methods. Airflow sensors will be installed on supply fans and return systems to coordinate building air intake and exhaust volumes.
  - An outside pressure station will be installed and provide an outdoor pressure reference. Each floor will be equipped with a differential pressure sensor, which will be connected to the building reference, and provide floor pressure monitoring.
  - Floor pressurization will be customizable to eliminate building pressure problems and offset stack effects.

5.7.7 Control Strategies – Mechanical Equipment

- Ventilation– Centralized VAV system:
  - A central AHU is used to supply multiple floors. The main riser supplies the VAV networks. The system is started in accordance with the occupancy schedule.
  - Fresh air rates are regulated at the AHU according to all floor requirements via CO_2 monitoring points installed on each floor.
  - The supply fan speed (via its VFD) is controlled to maintain proper pressurization in the VAV networks.

- Individual floor pressure is controlled by a return damper which controls airflow back to main return riser. The AHU uses real fan tracking to optimize the return fan speed and maintain proper floor pressures. Exhaust airflow are adjusted to maintain proper building pressurization.

- Heating and Cooling Systems:
  - The current heating and cooling system arrangement uses the Cliff CHCP to provide primary chilled water and steam.
  - The Cliff CHCP provides regulated steam and chilled water inside the building. The BAS controls valves on heat exchangers and circulation pumps to regulate the building's hot water loop. The BAS would control 2-way control valves on the primary CHW to maintain the cooling loop temperatures and pressures.

5.7.8 Energy Management Strategies

- The central AHU will incorporate economizer control to take advantage of free-cooling when outdoor conditions permit.
- Night setback strategies will include shutting down the central AHU during unoccupied hours and using solely perimeter heating equipment to control the building envelope. Temperatures inside the space will be lowered during heating season. During the cooling season, all equipment will be shutdown.
- Optimized start-up algorithms will be implemented to start the AHU in time and pre-heat (or-pre-cool) the building in preparation for occupancy. During the cooling season, the system will allow the use of purging strategies in early mornings to take advantage of low outdoor ambient temperatures.

5.7.9 Energy Monitoring

- Monitoring Systems
- Energy monitoring devices will be installed on main building services. Energy consumption data will be shared to the BAS. Monitored services will include:
  - Domestic water;
  - Chilled water and steam (from Cliff CHCP);
  - Electrical Power.
- All monitoring devices will be microprocessor based and include non-volatile memory for consumption data archiving. All consumption data is compiled in the device itself. Information is then shared to the BAS through open communication protocols such as ASHRAE BACnet, Echelon Lonworks or Modbus.

5.8 Electrical Base Building Upgrade

5.8.1. Main Service

- The main electrical room is full with no available wall space. The separation of the telecom backboard and service entrance into a separate dedicated room would improve the telecom infrastructure in following modern IT standards and create much need space within the room for electrical distribution.

- The electrical service for the Postal Station B building is marginally sized for the current demand load and undersized for the anticipated load growth after the upgrade/ modernization. Existing records indicate a demand of approximately 300A. A service calculation using CEC method and estimated mechanical loads results in a main service demand of 356 kW. The existing feeder in Langevin Building has an over current protective device 400A (80% rated) with a service limit of 320A. The feeder should be increased to 600A sub feed from the Langevin Block secondary distribution. Feeder breaker to be 100% rated with electronic trips. PWGSC should confirm long term planning for electrical upgrades for the Langevin Block distribution which may affect the service to the Postal Station B building and decisions taken on systems upgrades.

- The existing Postal Station B main distribution panel is not a true service entrance type distribution panel with barriers and Hydro Ottawa metering compartment. The existing Postal Station B main panel is a distribution panel with main breaker and metering package. This approach can be retained if there are no long term changes anticipated in servicing or distribution for the Langevin Block. The existing Postal Station B main distribution panel is however at end of useful life and we recommend replacement upgrade as part of this project.

- The Postal Station B new main distribution panel should be equipped with a modern digital metering package with remote monitoring capabilities.

5.8.2 Motor Control

- The existing motor control is in good condition and will remain. Upgrade to include expansion to suit any new mechanical equipment requirements.

5.8.3 Normal Power Distribution

- The electrical distribution system serving the floors is not adequate for modern standards. Some of the equipment is near end of life. As part of the floor modernization and upgrade an electrical room should be provided on each floor. This would include 45 kVA (K13) transformer and 84 circuit panelboard on each floor. This panel would provide branch circuits for receptacle loads, lighting, miscellaneous power and small mechanical loads. All new equipment will include sprinkler proof enclosures.

5.8.4 Emergency Power Distribution

- The diesel generator (basement) and emergency distribution serves Postal Station B and other buildings including Langevin Block and Hope Chambers. As part of the base building upgrades we recommend the system be modified so that there are dedicated transfer switches for the Postal station B building.
- Modification would include the following:
  - The existing emergency power feeds to the Langevin Block and Hope Building should be emergency feeds only. This requires transfer switches be added in the two additional buildings and also remote start signal back to the generator. This requires modifications and upgrades to the distribution in these two buildings.
  - In the Postal Station B to include two transfer switches. The existing ATS would remain for the life safety loads.
    - Life safety loads such as emergency lighting, exist signage, elevators, etc.
    - Non-life safety loads such as critical mechanical, clock system, UPS, tenant loads.
  - The generator output supplies an emergency feed to the fire pump transfer switch/controller located in the fire pump room. Note that the normal power supply to the fire pump is a separate feeder from the Langevin Block. The method of connection in terms of code compliance should be confirmed.

5.8.5 Building Fire Alarm System

- The building fire alarm control panel is relatively new however, the balance of the system remains an older conventional type, and the system should be modified to include voice communication. Any deficiencies will be corrected during the floor upgrades. This will include the addition of voice communication, flow switches and tamper valve supervision on typical floors where sprinklers added.
- Remote annunciator can remain located at the main lobby, however some upgrades required.
- Signal devices to be changed to speaker system.
- Recommend upgrade field devices with new wiring Class A to addressable type and replace wiring Class A.

5.8.6 Telecommunications

- The main telecommunications (MTR) backboard should be relocated to a separate room.
- On the typical floor a new telecommunication room (TR), riser and backboard to be constructed. Building tenant should be consulted to confirm there IT room requirements and how that may be integrated with a new TR on each floor.

5.8.7 Building Lighting

- The building lighting is connected at 347 V and controlled via control relay system.
- As part of each floor modernization and upgrade new lighting and branch wiring is required.
    - Presently there are many emergency battery units in the building. These should be eliminated except where required in rooms such as emergency generator room and main electrical room.
    - New emergency and exit lighting design should consider connection to the emergency power system. Requires further study of the existing emergency power system to confirm available capacities. Alternately emergency lighting may be provided in local battery units and remote leads or central battery inverter system

6.0 Code and Regulatory Analysis

6.1 Code Summary

The existing building is a Group D occupancy, and due to its size and height is classified under the requirements of Article 3.2.2.54 of the National Building Code. This article stipulates a requirement for sprinklers, non-combustible construction, and two hour fire separations.

The office floors are served by two exits, providing an aggregated exit width of 1700 mm, or an exit capacity of 280 persons. This is far in excess of the actual occupant load of the building as it is presently configured.

No changes to building use or occupancy are contemplated in this base building upgrade; therefore no code-related changes to the building are required.

However, due to the nature of the building's construction and relatively low occupant load, the building will remain largely compliant with respect to major life safety considerations. Moreover, proposed work to add sprinklers and standpipes, and to improve fire protection to floor assemblies, will improve the performance of the building significantly.

7.0 Options Analysis

7.1 Results of Inspection and Testing including condition assessment

7.1.1 Architectural

- For architectural components, the recently completed studies referenced above are the primary source of information for this report, as per the terms of reference. Some observations of other conditions are noted below.

- The existing plaster ceilings are made from ACMs in most of the office areas. In addition, the plaster ceiling, which is concealed by a lay-in acoustical tile ceiling, has numerous holes in it, presumably created to implement repairs. This is problematic on a number of levels. The ceiling space between the lay-in tile ceiling and plaster ceiling is a return-air plenum. The holes in the plaster ceiling create unintended pathways for return air, which is likely to be causing inefficiencies in the air distribution, or challenges in controlling air movement. Second, the plaster is the only fire protection for the structural steel framing and deck above; therefore the fire separations and fire-resistance ratings of the structure are compromised. Any work on mechanical systems installed below this ceiling will disturb the ACMs, making the work costly and time consuming. Finally, the presence of fragmented ACM ceilings within a return-air plenum is a possible source of airborne contaminants.

- The plaster ceilings are therefore in need of replacement, which would provide an opportunity to address the ACMs, fire separations, fire resistance ratings, and to create a hygienic return air plenum.

7.2 Proposed Heating Replacement

- As part of this study, a single replacement option has been proposed since we believe it to be the most feasible and economical means of replacing the system.

Option 1 – Replace steam heating system with a new hot water heating system.

- Description:
  - The proposed new heating system for the Postal Station B building would include a converting station located in a new basement mechanical room. Since steam from Cliff CHCP is the primary source for heating, this converting station would include a steam to hot water heat exchanger. The heat exchanger would be sized for the full heating load of the building (approx. 2500 MBH) and would be selected to supply heating water at 60°C with 40°C return water. Circulation pumps would be installed in the basement mechanical room to ensure the distribution of the heating water to the floors.

- Since the existing distribution piping is dispersed within non-accessible walls of the building, these pipes would simply be cut, capped, and abandoned. A single supply riser would be installed in the existing mechanical shaft and branch circuits would serve each floor. A reversed return type distribution would be preferred. The new distribution piping would be installed in the ceiling space of each floor and would supply the new radiators from the floor below. Therefore, the existing gypsum ceiling would need to be removed to allow access to the floor above.
- The existing steam radiators would be replaced with new hot water radiators. The existing cabinets were measured to verify if they could be retained as part of the heritage value of the building. Based on a preliminary selection obtained, it would seem possible to replace the radiator steam element with new hot water heating elements within the same cabinet space.
- For the majority of all floors, the radiators would be supplied from distribution piping located in the floor below. Certain areas, such as the radiators located on the 1st floor directly above the Canada Post Office public area, will need to be supplied from either the 1st floor ceiling space (with boxed in piping, or via individual risers originating from the basement and boxed in on the ground floor. Another alternative would be to feed the 1st floor radiators from the ceiling space of the 1st floor, and install the branch piping of each radiator through the exterior wall. This would involve adding thermal insulation within the wall (surrounding the pipe area) to prevent freezing.
- Refer to Appendix A for the hydraulic diagram of the proposed layout.

- Advantages:
  - Hot-water heating is more flexible than low-pressure steam systems because temperatures can be widely varied.
  - Due to the low working temperatures of the water, the heat from a hot-water heating system is relatively mild, and the air does not become too dry.
  - Hot water heating systems are safer than steam heating systems.
  - Quiet operation and easy zoning.
- Disadvantages:
  - Slower heat response than steam radiators
  - Because the water temperature is lower than steam, the size of the radiator is proportionally larger.
  - There is a risk of the water in the hot water system freezing, although circulating the heating water all night can prevent that.
  - More equipment is associated with the installation of hot water heating system (heat exchanger, pumps, expansion tank, control valves, etc) which requires more maintenance.

7.3 Air Handling Options

- The purpose of this section is to provide an overview of the various ventilation system analysed for the Postal Station B building. This section will focus on identifying the main ventilation systems that are to form part of the project and provide the main reasons for the choices made. The advantages and disadvantages of the various air conditioning systems analysed are compared and evaluated in the following study.

Option 1 –Compartmental Air Handling System

- The following option will consider a configuration where each floor of the Postal Station B building would have a mechanical room with dedicated air handling systems capable of addressing the floor's heating and cooling requirement.

- Since this proposed option is to provide individual air handling systems on each floor, new mechanical rooms would need to be created on each floor. Since each floor will be equipped with its own air handling unit, fresh-air can be directly accessed at each floor by installing a louver in an existing opening (window) or the provision of a new opening.

- With this type of configuration, each tower floor level will be equipped with AHU unit(s) capable of serving the entire heating and cooling demand of the floor. This unit(s) would be located in a new mechanical room located on each floor. Basic elements of the AHU(s) include a finned-tube heating and cooling coil, filters, and fan sections with variable frequency drives. The unit would re-circulate air from the space and fresh-air would be introduced into the air stream before being conditioned by the heating or cooling coil as required.

- The AHU(s) would be designed to meet and serve the heating cooling load of both the interior and perimeter zones of a typical tower floor. The supply air temperature leaving the AHU would be set at 12.8 °C (55°F) and reset to meet the strongest cooling demand on the floor.

- Ventilation air is introduced at the air handling unit such that each zone receives a constant percentage of ventilation air. The air handling unit is to incorporate economizers capable of introducing up to 100% fresh-air in the space to take advantage of free cooling during mild weather and increase indoor air quality. It will also have a heating coil to provide the proper supply air temperature in cold weather.

- Based on preliminary calculations, each floor's air handling system would require the following approximate peak capacities:

  - Minimum fresh-air: 635 L/s
  - Typical floor cooling: 2,475 L/s
  - Typical floor heating: 1,185 L/s

  These values are based on cooling supply air temperatures of 12.8 °C (55°F) and 37.8°C (100°F) heating air temperature.

- Typical Advantages
  - Since each floor would have their own mechanical system, in the event that a unit fails, the other floors of the tower would not be affected.
  - Flexibility is guaranteed during the building life cycle: each unit is provided for only one particular area. So within a floor space, different operating mode requirements such as free-cooling, re-circulation, additional fresh-air can be met.
  - With the principle of compartmental air handling systems, the contamination of one space (floor) by another, as possible with a centralized system, is avoided.
- Typical Disadvantages
  - This type of system treats only a single floor of the building tower. It cannot benefit from the fact that the peak load does not occur simultaneously everywhere in the building. Each piece of equipment must be sized for the maximum load, without diversity factor, increasing the overall installed capacity and capital cost.
  - Because of the large number of units located on each office floor space, the required maintenance cost is higher with this type of system.
  - Smaller equipment typically has a shorter normal service life than larger equipment. Also, since maintenance is harder to perform, routine maintenance can be challenging which reduces the performance of the equipment and reduces its service life.
- The equipment installed in the mechanical rooms on the occupied floor space can generate noise that will disturb the occupant. Controlling mechanical noise transmission to the space is more challenging.
- Higher commissioning cost due to increased number of mechanical equipment
- A larger number of mechanical rooms are required to implement this solution.

Option 2 – Centralized HVAC System

- The following option will consider a configuration where the Postal Station B building would have a centralized mechanical room equipped with air handling systems capable of addressing the building's HVAC requirements (all 7 floors).
- From this centralized mechanical room, distribution ductwork would be installed within the existing ventilation shaft to then be distributed onto each floor. Based on the estimated air flow required on all floors, this shaft would take up approximately 6 m2 of space on each floor, which is the equivalent area of the existing shaft.
- Basic elements of the AHUs include finned-tube cooling and heating coils, filters, and fan sections with variable frequency drives. The unit would re-circulate air from the space and fresh-air would be introduced into the air stream before being conditioned by the cooling or heating coil as required.

- Ventilation air is introduced at the air handling units, operating at variable volume, in order to vary the quantity of fresh-air based on occupancy rate and levels of contaminants in the building. The air handling units are to incorporate economizers, which can introduce up to 100% fresh-air to take advantage of free cooling during mild weather and to increase indoor air quality. They will also have a preheat coil to provide the proper supply air temperature in cold weather.

- The air handling units would serve both interior and perimeter zones. A variable air volume (VAV) system controls temperature in interior and perimeter spaces by varying the quantity of supply air rather than varying the supply temperature. The air quantity is varied to meet the heating or cooling load gained from the exterior, equipment, lights and people loads. All supply ductwork is to be thermally insulated to prevent condensation and increase energy efficiency. Acoustic lining, used as thermal insulation, will not be accepted.

- Heating load will be mostly addressed via hydronic radiators located at the perimeter zones at window sills. Perimeter spaces will also be equipped with supplemental terminal reheat coils located downstream of the VAV boxes, thus allowing the air temperature to be increased locally and meet the space's heating demand. Each perimeter zone would be equipped with individual controls capable of adjusting the hydronic flow through the radiator and heating coil.

    - Estimated Peak Air-Flows:
    - Typical minimum fresh-air: 2 435 L/s
    - Typical cooling air: 21 475 L/s
    - Typical heating air: 15 815 L/s

- Typical Advantages

    - Because the systems serve large portions of the building, it is possible to benefit from the fact that the peak load does not occur simultaneously everywhere in the building. Taking advantage of this diversity factor reduces the size of the equipment, reduces the capital cost and increases energy efficiency.
    - All mechanical equipment is installed in equipment rooms and the number of systems is limited. This provides many maintenance related advantages: regular maintenance can be performed at any time without disrupting the occupant; all work is performed in one place which reduces time and cost required for maintenance and provides the best working environment for the maintenance staff.
    - All equipment being installed in equipment rooms, away from the occupants, provides and easier solution to control noise and vibration.
    - Because all mechanical equipment is installed in equipment rooms and the number of systems is limited, the time required for commissioning is reduced and costs related to the commissioning will therefore be lower.

- Typical Disadvantages

- With a centralized mechanical room, the contamination of the air handling system would affect all the floors.
- Numerous reheat coils are required to implement this option, thus increasing maintenance cost and potential disruption to tenants.

7.4 Recommendation

Two options (1 and 2) have been presented as possible solutions for the primary air distribution for the Postal Station B station. Both of these options present numerous advantages and disadvantages that are unique to each option.

Since both options provide the occupants with the necessary comfort levels and control, the decision to pursue Option 1 or Option 2 is left available for PWGSC to select. Based on discussion with PWGSC-PM and PWGSC-COE, a compartmental HVAC system (Option 1) is not a preferred solution for the Postal Station B system. The higher cost of maintenance and likely higher capital cost would be unfavorable in the long term.

Therefore, as part of this study, Option 2 – Centralized HVAC system - was selected as being the preferred option to move forward with for costing.

With Option 2 being recommended, the next step is to determine potential centralized HVAC solutions to replace the existing system. Numerous scenarios were considered with the purpose of keeping the existing air system operational during the implementation.

7.5 Solutions Considered

Solution 1 – Temporary mechanical room on 7th floor, final mechanical room in basement

- Description of Work:
  - As part of this solution, it is proposed to install a temporary mechanical room on the 7th floor of the building. The major part of 7th floor is currently used for file storage. This would involve removing the existing storage to an offsite facility or to an alternate location within the building. This new mechanical room would be used to install a temporary AHU-1, capable of providing 50% of the peak demand. Once this temporary AHU-1 is installed, the intention would be to connect it to the existing ductwork system installed in the shafts. The AHU-1 would therefore be supplying air in the opposite direction as it currently is provided. Once the temporary AHU-1 is operational, the existing AHU in the basement can be demolished and replaced with an AHU-2 having 50% of the peak demand. Once AHU-2 is operational, AHU-1 can be removed from the 7th floor and relocated to the basement. The existing mechanical room would also be used to install of the heating equipment required for the steam to hot water conversion.
- Implications

- While this room is being constructed and equipment installed, the existing mechanical room would still be capable of distributing air and cooling to the office floors.
- New heating and cooling pipes would need to be installed in the shaft to provide heating water and chilled water to the temporary AHU on the 7th floor. The chilled water pipes will need to be removed once the temporary unit is relocated to the basement mechanical room.
- The existing mechanical room in the basement is not sufficiently large to house two (2) AHU. Additional space is required.

- Technical Difficulties
  - Installing the temporary AHU-1 on the 7th floor and re-using the existing ductwork is not feasible. The existing ductwork is extremely small to accommodate the airflow of AHU-1. The pressure generated by forcing such flow would likely result in a catastrophic failure of the ductwork.
  - This solution is not considered to be viable.

Solution 2 – New mechanical room located on 7th floor

- Description
  - As part of this solution, it is proposed to install a new permanent mechanical room on the 7th floor of the building. The major part of 7th floor is currently used for file storage. This would involve removing the existing storage to an offsite facility or to an alternate location within the building. This new mechanical room would be used to install the new centralized AHU and associated HVAC equipment and will eventually become the main mechanical room of the building. While this room is being constructed and equipment installed, the existing mechanical room would still be capable of distributing air and cooling to the office floors. At each floor, some temporary work at the main mechanical shafts would need to be done to allow for such staging. Thus, a work area would need to be isolated on each floor near the mechanical shaft. The existing supply and return ductwork would be replaced in stages over nights and weekends. In other words, portion of the main shafts would be replaced and re-connected to existing system, thus allowing the existing system to remain operational. The existing mechanical room would be used to install the new heating equipment required for the steam to hot water conversion.
- Implication
  - New heating and cooling pipes would need to be installed in the shaft to provide heating water and chilled water to the new AHU. These piped would take up additional space in the mechanical shaft.
  - The main advantages of this solution is the ease of accessing fresh-air from near windows or the roof, far from typical contaminants found near ground level (combustion emissions, dust, odors), and elevated enough to meet the CBR requirements.
  - The main disadvantage of this option is the loss of rentable space on the 7th floor of the building. However, once work is completed, a portion of the existing mechanical room in the basement could be used for storage.
- Technical Difficulties
  - The staged work required for the replacement of the main mechanical shafts will be time consuming.

- This solution is considered to be viable.

Solution 3 – Use Room B.10 to install 1 of 2 new AHU

- Description
  - Since all existing primary mechanical services are located in the basement of the Postal Station B building, it would be logical to install the new systems and equipment in the same area. As part of this solution, it is proposed to install two (2) AHUs in the basement. However, a new mechanical room would be required as the existing mechanical does not have sufficient space to house a new AHU while the existing remains operational. Even if the existing mechanical room were to be cleared, additional space would be required to house two (2) AHUs and all associated heating equipment. It is proposed to use room B.10 as a future permanent mechanical room. The room is currently being used for file storage. This would involve removing the existing storage to an offsite facility or to an alternate location within the building. This new mechanical room would be used to install the first AHU-1, capable of providing 50% of the peak demand. Once this AHU-1 is installed, the intention would be to connect it to the existing shaft via flexible ductwork. Once the temporary AHU-1 is operational, the existing AHU in the basement can be demolished and replaced with an AHU-2 having 50% of the peak demand. Once both new AHUs are operational, they will both be capable of providing the required peak flow rate. The existing mechanical room would also be used to install of the heating equipment required for the steam to hot water conversion.
- Implication
  - The main disadvantage of this option is the loss of the storage space in the basement. The overall usable area of the basement will be reduced due to an increase in space of mechanical rooms.
- Technical Difficulties
  - The current fresh-air location does not meet the CBR requirement. If meeting the CBR criteria is a required as part of the base building upgrade, an alternate location for fresh air louvers will need to be discussed with PWGSC and FHBRO.
  - The space available in room B.10 is not enough to house the new AHU, hot water heat exchanger and associated heating pumps. As such, the room would need to be increased in size. This would involve a major architectural intervention at the basement level.
  - Room B.10 is located adjacent to the existing mechanical room. However, the only exit stairwell of the basement is located between these two rooms. This means of egress needs to be maintained available during the construction and for the final configuration. Architectural modifications to the basement configuration would likely be required.

Solution 4 – Refurbish Existing Air Handling System

- Description of Work:
  - For buildings with faulty and deteriorating ventilation units, the obvious choice may appear to be replacement. However there are many reasons why the repair or refurbish alternatives should also be explored. Such is the case at for the Postal Station B building. As part of this solution, it is proposed to rebuild the existing air handling unit located in the mechanical room B.12. This solution provides less disruption and more flexibility as works can be scheduled so as not to interfere with tenant's business and carried out overnight or weekends. Refurbishment will likely be a much quicker solution from start to finish than replacement using multiple units, and also gives the choice of separating the necessary works and completing out at different times for much greater programming flexibility. For instance, the return fan can be replaced one weekend, coils on another weekend, casework and other components on another and then a controls upgrade that can integrate with BAS carried out at a later date, with other equipment on site. This solution also provides the opportunity to improve the existing unit specification by including a higher grade of filtration and upgrading fan performance. The performance of the new system can be upgraded to better match actual capacity and airflow requirements. Efficiency and therefore running costs can be improved by a considerable margin. The fans would be replaced with the latest energy efficient fans replacing the current forward curved fans. The new design would include the use of a multiple fan array to move air versus the existing single fan configuration. The modular design of fan array systems allows individual cubes to be navigated through a standard 3-foot door and assembled inside the existing/new air handler cabinet. With conventional single fan and motor systems, a failure of either component shuts down the entire air handling system. When a fan or motor failure occurs in a fan array system, the remaining operating fans can compensate to maintain airflow and static pressure until such time that the failed component(s) can be repaired or replaced. This provides redundancy to the air handling unit, without the use of multiple units. Since the Postal Station B AHU has restricted access, replacement coils can be provided in sections which are then joined on site. New valves and actuators would also be provided. New filter frames would be provided to fit a higher grade filters as required. The end result would include a new air handling unit capable of providing another 40 years of service.

- Implications
  - The main disadvantage of this option is the loss of the storage space B.10 in the basement. The overall usable area of the basement will be reduced due to an increase in space of mechanical rooms.
  - Involves a detailed plan of action to arrange for all necessary repairs to the air handling units. This plan will need to be elaborated with the new air handling unit manufacturers during the design phase. Thus, sole sourcing of the air handling unit will likely be required to ensure proper phasing.

- The awarded mechanical contractor will need to be trained by the air handling manufacturer to ensure proper installation of the air handling unit. A manufacturer representative could be required to supervise the onsite installation of the air handling unit.

- Technical Difficulties

  - Replacing the casing of the existing air handling unit will be the most challenging aspect of the refurbishment. The casing cannot be fully replaced over a single weekend to ensure that the unit is online during normal business hours. Means of temporarily connecting the new casing with the old will need to be designed. This can be as simple as temporarily connecting both casings with the use of plywood.

7.6 Recommended Solution

- Solutions 1 is not considered viable as it would involve major upgrades to the existing ductwork located in the shaft, and require additional mechanical and electrical infrastructure to operate the unit on the 7th floor. Installing this unit temporarily and relocated towards the end of the project would significantly increase the construction costs.

- Solution 2 would involve installing new chilled water piping from the basement level to the seventh floor and reconfiguring the entire ductwork within both mechanical shafts. New electrical distribution from the basement to the 7th floor would also be required to operate the unit. The solutions would also involve a reduction in usable rentable space on the 7th floor which is likely to be considered prime rentable space and would therefore be of more value.

- Solution 3 is not feasible since the room B.10 is not sufficiently sized in its current state to house the new heating conversion equipment and an air handling unit. Implementing solution 3 would require some architectural modifications to the basement layout to increase the size of room B.10, which would add cost to the construction project.

- Solution 4 is the recommended option for providing a new air handling unit. The phased replacement/refurbishment of this unit will allow the system to remain in operation so as to not disturb the tenants comfort.

7.6 Electrical

7.6.1 Main Service

- The electrical service to the Postal Station B building is a sub feed from the Langevin Block electrical distribution. Unless there are planned changes for the Langevin building distribution this sub feed service will remain, however it will be upgraded in capacity with new breaker and sub-feeder (600A).

- Alternate solution is to construct a separate Hydro Vault and service entrance. This would be very expensive and possibly impractical.

- Upgrading the main distribution panel for the Postal Station B building may be accomplished by:
  - Install a new panel in the main electrical room with new upgraded sub-feed service from the Langevin Block. Requires creating additional space in the electrical room. This might be accomplished by relocating the telecom backboard; however the relocation may also require a staged approach over the duration of the renovations.
  - Another possibility to create space within the electrical room is to relocate some of the electrical panelboards to another room in the basement.
  - The work would include operation of both existing and new panels until renovation and upgrade work complete.
  - Reconnection of existing services to remain in a controlled sequenced manner during building quiet hours.
  - Connect new distribution to new service as the floor upgrades progress.

7.6.2 Motor Control

- Add a new section to the existing motor control to suit.
- This could be connected to the existing or if load is too great it can be a separate unit and fed from the new main panel.

7.6.3 Normal Power Distribution

- As each floor is upgraded the new electrical installation will be completed and connected to the new distribution system.
- Non renovated floors will remain on the old distribution until all work completed.

7.6.4 Emergency Power Distribution

- All work to be done during building quiet hours to minimize disruption.
- New work to be install and prepared in parallel to reduce down time.

7.6.5 Building Fire Alarm System

- In an occupied building the existing system must remain operational during the construction process. Minor interruptions can be overcome using fire watch personnel.
- New equipment and installation should be installed in parallel to existing and interconnected. As the new system is completed the old portions can be removed.

7.6.6 Telecommunications

- While not essential to upgrade the telecommunication infrastructure, the building renovations and upgrades present an opportunity to bring this system up to modern standards recognized by the industry and the Federal Government.

8.0 Implementation Strategies

Two options were retained as part of the above analysis for the base building upgrade, and these options were selected based on the best available technical solution. These options are:

- Heating System Replacement: Option 1 – Centralized Heating System
- Primary Air Handling System Replacement: Option 2 – Centralized HVAC System

For Option 2 – Centralized HVAC system, three potential solutions were investigated:

- Solution 1: Temporary mechanical room on 7th floor, final mechanical room in basement
- Solution 2: New mechanical room located on 7th floor
- Solution 3: Use Room B.10 to install 1 of 2 new AHU
- Solution 4: Refurbish existing air handling unit.

Solution 4 was retained as the most favorable solution since it would maintain all mechanical systems within the basement level and minimize the disruption to the existing mechanical shafts.

8.1 Summary of work to be implemented

- Remove asbestos containing plaster ceilings
- Provide new GWB 2 hours fire protection to underside of floors
- Replace carpets
- Paint
- Remove and replace existing suspended ceilings
- Conserve existing steel windows
- Replace copper roof
- Upgrade plumbing infrastructure including drainage piping, domestic water and fixtures;
- Upgrade fire protection system of building by adding a standpipe system and sprinklers throughout the building. This will involve the replacement of the fire-pumps.
- Upgrade heating system by replacing the steam radiators with new hot water radiators on all floors. This work also includes the installation of a steam to hot water conversion station in the basement (B.10) and the installation of a new hot water distribution system.
- Upgrade the HVAC system by refurbishing the existing AHU located in the basement mechanical room (B.12). This work also includes new variable volume air distribution system on all floors.

- The installation of a new Direct Digital Control (DDC) building automation system for mechanical and electrical systems.
- Upgrade electrical service from the Langevin Block electrical distribution.
- Replace main distribution panel in basement electrical room. On each floor upgrade the electrical installation including branch power circuits
- Upgrade the motor control to a new section to the existing motor control to suit the new mechanical installation.
- Upgrade the emergency power distribution by modifying connections for emergency power feeds to the Langevin Block and Hope Building. For the Postal Station B building, modify the system to include for two transfer switches. Modify normal power supply to the fire pump to meet code compliance as required.
- Upgrade building fire alarm system to include voice communication.
- Upgrade the telecommunication infrastructure to meet tenant requirements and modern standards recognized by the industry and the Federal Government.
- Upgrade building lighting and controls as part of the floor renovations.

From the options analyzed, the retained solutions were driven by three possible implementation strategies considered in this study:

- Implementation Option A: All Floors Fully Occupied
- Implementation Option B: PCO Floors Partially Occupied + CPC Fully Occupied
- Implementation Option C: PCO Floors Unoccupied + CPC Fully Occupied

This section will focus on the factors and costs to consider in order to implement the recommended options and solutions within the proposed occupancy strategies. The intention will be to determine a viable base solution and evaluate the impacts and costs of this solution for each implementation strategies.

8.2 Implementation Option A: All Floors Fully Occupied

Sequence of work:

- HVAC Upgrade:
  - In order to commence this work, the existing storage room B.10 will need to be emptied and converted into a mechanical room. This new mechanical room would house the new heating water conversion station and associated pumps and accessories. As such, some space in the existing mechanical room (B.12) would be made available to assist in the refurbishment of the existing AHU.
  - Once the heating conversion station has been installed in room B.12, the refurbishment of the existing AHU would commence. All components of the existing AHU would be replaced including, casing panels, fans, coils, and filter bank. This work would take place during weekends to ensure that service to the floors is not interrupted. Means of temporarily connecting the new casing with the existing would be implemented to ensure that the unit is functional following the weekend work. Chilled water and steam connections will need to be provided to the unit. Temporary fresh-air and exhaust flexible ductwork would also need to be installed to the new AHU. AHU will need to be specified as a built-up unit and assembled onsite.
  - Once the AHU is installed, permanent connections would be completed for the fresh-air, supply and return ductwork.
  - Based on the required CBR requirements, new locations for fresh air louvers will need to be discussed with PWGSC and FHBRO. The modification of the fresh-air intake will likely affect the occupants.
  - The distribution on the floors will need to be completed during evenings and weekends. The air distribution will be re-configured based on the current office layout of the floors. Terminal reheat coils would need to be added to provide supplemental heating in critical areas. This staged construction would likely involve the removal and installation of a single VAV at a time.
  - Once all floor distribution has been completed, the air system can be balanced and commissioned.
- Heating System Upgrade:
  - The installation of the heating conversion station in room B.10 would need to be completed during the spring, summer and fall season when the heating demand is minimized or non-existent.
  - The existing supply shaft would need to be made accessible on each floor to allow the installation of the new heating riser. A hoarded construction area around the shaft will need to be created to prevent access to occupants. The new heating riser would need to be installed during evenings and weekends. At each floor, a 1m pipe spool along with

an isolation valve would be installed directly at the exit of the shaft. This pipe will be the main pipe serving the future radiators of the floor above.

- Demolition work of the existing radiators must be completed during nights and weekends. The mechanical demolition work on the office floors will involve the removal of the existing heating elements and accessories located inside the existing heating cabinets. Any exposed or apparent steam or condensate pipe would be removed; however concealed pipe located in walls or ceiling spaces would be capped and abandoned.
- In provision to the new installation, a portion of the gypsum ceiling located on the floor below each radiator will need to be removed to allow piping access from the floor below. This gypsum ceiling contains asbestos material.
- Demolition work in the basement level can be completed during normal working hours. The demolition work would involve the removal of all the steam and condensate piping, equipment and accessories back to the main steam entry valve (40 psi).
- From the new isolation valve installed from the heating riser, new piping would be installed within the available space between the gypsum and suspended ceiling. This work will involve the removal and re-installment of ceiling tiles to allow access to the ceiling space.
- Core drilling will be required in the slab at each radiator location in order to connect the new heating pipe to the heating element.
- Once all piping on an individual floor has been installed and tested, it must be flushed and cleaned before it can be connected to the main heating system. After flushing has been completed, the heating pipes would be thermally insulated.
- When all floors have been completed, flushing, cleaning, and balancing of the system will be required. This will involve re-accessing all radiators on all floors.
- Upon completion of balancing, the heating system will be commissioned.

• Electrical Upgrade:

  - All work to be done during off hours to minimize disruption

- Window conservation
    - The windows would be removed and restored in a shop, with temporary plywood plugs inserted into the window openings.
- Impact on tenant and office space:
    - Since all work on the floors will be completed evenings and weekends, there shouldn't be any noise disturbances to the tenants. However, dust control and asbestos removal of the ceiling will likely be an issue during construction.
    - When only AHU-1 is in operation, thermal discomfort could be felt on the office floors depending on outside conditions.
    - In order to save time, the suspended ceiling would be completely removed and would remain as such until all work in the ceiling space has been completed.
    - The window restoration will be disruptive to spaces adjacent to the windows, and must be limited to summer months as thermal comfort will be compromised. Lexan windows can be inserted in the plubs, however views and daylight will be severely limited
- Impact on heritage value:
    - The work is limited to mechanical spaces, shafts, and ceiling spaces in office areas. These areas are not considered to be character defining elements in the Heritage Character Statement. Impact on heritage values will therefore be limited. It is possible that in the detailed development of the design minor interventions may be required in public areas that have not been anticipated at this preliminary stage, therefore it is recommended that in the implementation of this project qualified conservation professionals continue to be involved in monitoring the development of the design.

Cost:

Construction		$	13,036,900.00
General Requirements		$	1,173,320.00
Fee		$	426,310.00
Design and Pricing Allowance		$	2,195,480.00
Restrictive Work Hours Premium		$	5,049,600.00
Phasing Premium		$	16,411,210.00
		$	**38,292,820.00**

8.3 Implementation Option B: PCO Floors Partially Occupied + CPC Fully Occupied

Sequence of work:

- HVAC Upgrade:
  - In order to commence this work, the existing storage room B.10 will need to be emptied and converted into a mechanical room. This new mechanical room would house the new heating water conversion station and associated pumps and accessories. As such, some space in the existing mechanical room (B.12) would be made available to assist in the refurbishment of the existing AHU.
  - Once the heating conversion station has been installed in room B.12, the refurbishment of the existing AHU would commence. All components of the existing AHU would be replaced including, casing panels, fans, coils, and filter bank. This work would take place during weekends to ensure that service to the floors is not interrupted. Means of temporarily connecting the new casing with the existing would be implemented to ensure that the unit is functional following the weekend work. Chilled water and steam connections will need to be provided to the unit. Temporary fresh-air and exhaust flexible ductwork would also need to be installed to the new AHU. AHU will need to be specified as a built-up unit and assembled onsite.
  - Once the AHU is installed, permanent connections would be completed for the fresh-air, supply and return ductwork.
  - Based on the required CBR requirements, new locations for fresh air louvers will need to be discussed with PWGSC and FHBRO. The modification of the fresh-air intake will likely affect the occupants.
  - The distribution on the floors can be completed sequentially on the vacated floors. Once the work on one floor has been completed, the work can proceed with the demolition and installation of the new air distribution on another floor. The air distribution will be re-configured based on the current office layout of the floors.
  - Once all floor distribution has been completed, the air system can be balanced and commissioned.
- Heating System Upgrade:

- The implementation of this work must be completed after the HVAC upgrade has been completed since available space needs to be made in the existing mechanical room to house the new heat exchangers and pumps. Also, this work will need to be completed during the spring, summer and fall season when the heating demand is minimized or non-existent.
- Demolition work must be completed on floor at a time. The mechanical demolition work on the office floors will involve the removal of the existing heating elements and accessories located inside the existing heating cabinets. Any exposed or apparent steam or condensate pipe would be removed; however concealed pipe located in walls or ceiling spaces would be capped and abandoned.
- In provision to the new installation, an area of the gypsum ceiling located on the floor below each radiator will need to be removed to allow piping access from the floor below. This gypsum ceiling contains asbestos material.
- Demolition work in the basement level can be completed during normal working hours. The demolition work would involve the removal of all the steam and condensate piping, equipment and accessories back to the main steam entry valve (40 psi).
- The existing supply shaft would need to be made accessible on each floor to allow the installation of the new heating riser. A hoarded construction area around the shaft will need to be created to prevent access to occupants. The new heating riser would need to be installed during evenings and weekends.
- From the heating riser, new piping would be installed within the available space between the gypsum and suspended ceiling. This work will involve the removal and re-instalment of ceiling tiles to allow access to the ceiling space.
- The distribution from the heating riser will need to be completed one floor at a time. The heating water distribution piping of the vacated floor is actually serving the floor above (with the exception of the ground floor)
- For the ground floor CPC area, this work will need to completed evenings and weekends.
- Core drilling will be required in the slab at each radiator location in order to connect the new heating pipe to the heating element.
- Once all piping has been installed and tested, thermal insulation of the piping would be completed.
- When all floors have been completed, flushing, cleaning, and balancing of the system will be required. This will involve accessing all radiators on all floors.
- Upon completion of balancing, the heating system will be commissioned.

• Electrical Upgrade:

  - Work to be done during off hours to minimize disruption.

- Window Conservation:
  - The windows would be removed and restored in a shop, with temporary plywood plugs inserted into the window openings.
- Impact on Tenant and Office Space:
  - Since an entire office floor is vacated, work on the floors can be completed during normal working hours. However, noise generating work such as core drilling will need to be performed during evenings and weekend.
  - When only AHU-1 is in operation, thermal discomfort could be felt on the office floors depending on outside conditions.
  - With this proposed implementation strategy, the heating system replacement will not be completed within one cooling season. Therefore, both the existing steam and new hot water heating system will need to be operational during the winter construction period.
  - The window removal and reinstallation will occur while the floor is vacated, and hence will have no impact on building occupants.
- Impact on Heritage Value:
  - The work is limited to mechanical spaces, shafts, and ceiling spaces in office areas. These areas are not considered to be character defining elements in the Heritage Character Statement. Impact on heritage values will therefore be limited. It is possible that in the detailed development of the design minor interventions may be required in public areas that have not been anticipated at this preliminary stage, therefore it is recommended that in the implementation of this project qualified conservation professionals continue to be involved in monitoring the development of the design.

Cost:

Description	Cost		
Construction		$	13,036,900.00
General Requirements		$	1,173,320.00
Fee		$	426,310.00
Design and Pricing Allowance		$	2,195,480.00
Restrictive Work Hours Premium		$	3,366,400.00
Phasing Premium		$	5,049,600.00
		$	**25,248,010.00**

8.4 Implementation Option C: PCO Floors Unoccupied + CPC Fully Occupied

Sequence of work:

- HVAC Upgrade:
  - Demolition work in the basement mechanical room can commence immediately after PCO floors have been vacated. Temporary ventilation and cooling can be provided to the CPC area via ductless splits or fan-coils.
  - Demolition of the existing air distribution system on the PCO floors can also be completed once the floors are vacated.
  - All demolition work can be completed during normal working hours.
  - With this proposed implementation strategy, the new AHU could be replaced rather than rebuilt.
  - Once all demolition work has been completed, the new equipment and distribution can be installed. The air distribution will be re-configured based on the current office layout of the floors. Terminal reheat coils would need to be added to provide supplemental heating in critical areas.
  - Once all floor distribution has been completed, the air system can be balanced and commissioned.
- Heating System Upgrade:
  - The implementation of this work can be completed in conjunction with the HVAC upgrade.
  - The mechanical demolition work on the office floors will involve the removal of the existing heating elements and accessories located inside the existing heating cabinets. Any exposed or apparent steam or condensate pipe would be removed; however concealed pipe located in walls or ceiling spaces would be capped and abandoned.
  - Demolition work in the basement level can be completed during normal working hours. The demolition work would involve the removal of all the steam and condensate piping, equipment and accessories back to the main steam entry valve (40 psi).
  - Room B.10 would need to be vacated of the current storage in order to install the new heating water conversion station and associated pumps and accessories.
  - The existing supply shaft would need to be made accessible on each floor to allow the installation of the new heating riser.
  - From the heating riser, new piping would be installed within the available space between the gypsum and suspended ceiling. This work will involve the removal and re-installment of ceiling tiles to allow access to the ceiling space.

- For the ground floor CPC area, this work will need to completed evenings and weekends.
- Core drilling will be required in the slab at each radiator location in order to connect the new heating pipe to the heating element.
- Once all piping has been installed and tested, thermal insulation of the piping would be completed.
- When all floors have been completed, flushing, cleaning, and balancing of the system will be required.
- Upon completion of balancing, the heating system will be commissioned.

- Electrical Upgrade:
  - Work can be completed during normal working hours. CPC electrical distribution will need to be kept functional during normal business hours.
- Impact on tenant and office space:
  - None
- Impact on heritage value:
  - The work is limited to mechanical spaces, shafts, and ceiling spaces in office areas. These areas are not considered to be character defining elements in the Heritage Character Statement. Impact on heritage values will therefore be limited. It is possible that in the detailed development of the design minor interventions may be required in public areas that have not been anticipated at this preliminary stage, therefore it is recommended that in the implementation of this project qualified conservation professionals continue to be involved in monitoring the development of the design.

Cost:

Construction		$	12,886,900.00
General Requirements		$	1,159,820.00
Fee		$	421,400.00
Design and Pricing Allowance		$	2,170,220.00
Restrictive Work Hours Premium		$	1,663,830.00
Phasing Premium		$	1,830,220.00
		$	**20,132,390.00**

9.0 Additional Analysis Required

9.1 Additional Structural Assessment

The findings of the building envelope study included the observation that the connection between the stone cladding and the brick backup was "structurally incoherent." That is, masonry ties were present in some of the test openings, but in some instances these ties were not connected to the backup wall or the structural framing. Due to the limitations on the available locations for test openings during the investigation phase of that study, it is impossible to determine how extensive this problem is.

Similarly, the nature of the structural connections of the framing elements is not known. Should a seismic evaluation be undertaken, this information is required, as is the nature of the connections between the stone and brick. To adequately investigate this issue would be intrusive and potentially damaging to the masonry if it was done from the exterior.

Considering its age, it is assumed that seismic loads were not considered in the original structural design of the building. As per the AMP of 2006, the NRC guidelines on preliminary seismic screening resulted in a Seismic Priority Index of 12.4 indicating a 'moderate' requirement for further investigation and a seismic review was recommended for 2006-07. We affirm the need for such evaluation prior to the implementation of any comprehensive upgrade project for the building.

The Postal Station B building main structural system can be simply described as a steel structure with masonry walls infill. The steel structure tends to behave in a ductile manner where it tends to deform under lateral loads. On the other hand, the masonry wall infill tends to behave in a brittle manner where it tends to exhibit small deformation under lateral load. When these two systems are mixed together, the overall behaviour becomes more complex and is typically affected by the existing details such as the stiffness of the steel structure and the gap between the steel frame and the infill walls.

The exterior masonry walls consist of an exterior stone cladding and interior backup brick wythe. The building exterior wall structural capacity is significantly affected by how the exterior stone cladding is tied or keyed in with the interior brick wythe. The extent of the keying or tying between the interior brick backup masonry and the exterior stone cladding is unknown at this stage.

In order to provide enough understanding of the building main structural system, some investigation test openings will be required to identify the nature of the steel frame connections and how the steel structure is integrated with the interior and exterior masonry walls. Some other openings will be required to investigate the tying between the interior wythe and the exterior stone cladding. Sufficient representative test openings will be required to record the as-found details which should be compared with the existing drawings of the building. These openings can be performed from the interior, and will not require destructive removal of limestone cladding.

9.2 Investigation Related to the Condition Assessment

Some areas of the building exhibited deterioration that is considered unique to these areas. The water infiltration to the light steel lintels of the penthouse caused severe corrosion and related jacking of the masonry. The diagonal cracking at the base of the roof gables is considered a unique problem to these

areas. The severe corrosion of the steel lintel supporting the stone decorative lintel of the southeast entrance and the corrosion of the steel work members supporting the concrete landing are unique deterioration problems that are specific to these areas.

However, aside from the known aforementioned areas with unique deterioration and exposure conditions, the condition of the steel structure embedded in the masonry envelope is unknown. While most of the exterior masonry walls exhibits no considerable signs of movement that could be related to steel corrosion or masonry core deterioration, confirmation of the condition of the main walls including the embedded steel frame is required. Some test openings will be required to investigate the performance of the envelope and how it provides a protection to the embedded steel structure. Sufficient representative test openings will be required at various locations of the envelope. Test openings should be expected to be made from the inside or the outside surfaces of the building.

9.3 Dynamic Analysis of the Building

The evaluation of the seismic performance of the building with its mixed structural system is very challenging and complex. The simple equivalent static method of the NBCC-2010 may not be sufficient to accurately achieve such evaluation. This may result in conservative interventions that may not be necessary and may compromise the historic fabric of the building. A more complex mathematical tool (such as finite element method) is recommended for investigating the seismic behavior of the building. A spectral or a more complex ground-motion time-history analysis can be carried out to determine the building performance. A three-dimensional finite element model for the building is typically expensive. However, it will result in a more accurate prediction of the building lateral resistance and typically result in effective less-intrusive interventions with a lower cost. It should be noted that the soils classification is required to undertake this analysis, and if this information is not already known then geotechnical investigations will be required. Also, the interaction with the adjacent building during seismic events should be considered. Information gathering about the nature of the interface with and the seismic adequacy of the adjacent building may be necessary for making a decision about the potential required seismic retrofit interventions.

9.4 Number of Test Openings

For capturing the existing structural details of the steel frame and the interaction between the steel structure and the infill walls, we expect that 8 test openings will be required. These openings are expected to be of about 0.8 x 1.2 m in size.

Also, we expect that 8 test openings will be required for verifying the condition of the building. These openings are expected to be of about 0.8 x 1.2 m in size. It is anticipated that most of these openings will be made in the building envelope from the interior.

9.5 Additional Analysis

In addition to a seismic analysis, it is recommended that Postal Station B be evaluated for other threats such as physical security and blast. These kinds of analysis are typically undertaken by specialists in their respective fields, and are driven by the needs of the building occupants. However, by coordinating these studies there may be opportunities to also synchronize the mitigation measures required by each.

10.0 Conservation Approach

10.1 General

The proposed work entails repairs to the Postal Station B Building to allow for the continued compatible use of the building. This work requires the installation of new mechanical and electrical equipment, piping, and ductwork. The work to install these systems will be concentrated in areas that are not considered to be character defining, and the equipment itself will be replacing modern mechanical and electrical systems in kind. Wherever possible, the routing of these systems will follow existing pathways, minimizing the need for work on the fabric of the building.

The continuing use of the ground floor of the building as a post office is consistent with the Heritage Character Statement's recommendation to maintain this function as a means to preserving the social and architectural values of the building. Similarly, the office occupancies are to remain unchanged.

Other work included in this project is related to the conservation of building envelope components, which are intact and good candidates for this treatment. Structural stabilization of some masonry is required, but this can be carried out in such a manner as to be invisible when complete.

As no changes to Character-Defining Elements are proposed, and no visible changes to the building will be required by the mechanical and electrical work, the *primary* treatment of the building is therefore Preservation; Standards 1 through 9 will apply.

However, the reconstruction of the ceilings in the office areas may provide an opportunity to reinstate the ceilings in a manner more sympathetic to the character of the historic place. While not classed as a character-defining element, the office areas would benefit from less generic treatment. Guidance for this work would be found in Standards 10 through 12.

10.2 Character-Defining Elements

The Heritage Character Statement includes the following description of the character-defining elements:

> *The whole of the visible façades and roofs of the building, including windows and doors, architectural metals and fittings, and, of course, the lions which guard its doors, are essential to its heritage character. It is unlikely that any of these elements can be altered without seriously diminishing the whole.*
>
> *The public interiors of the building were originally finished with a suitable richness of material and ornament. The qualities of this space have been eroded over the years by successive small changes. It would be appropriate for this process now to reverse itself.*

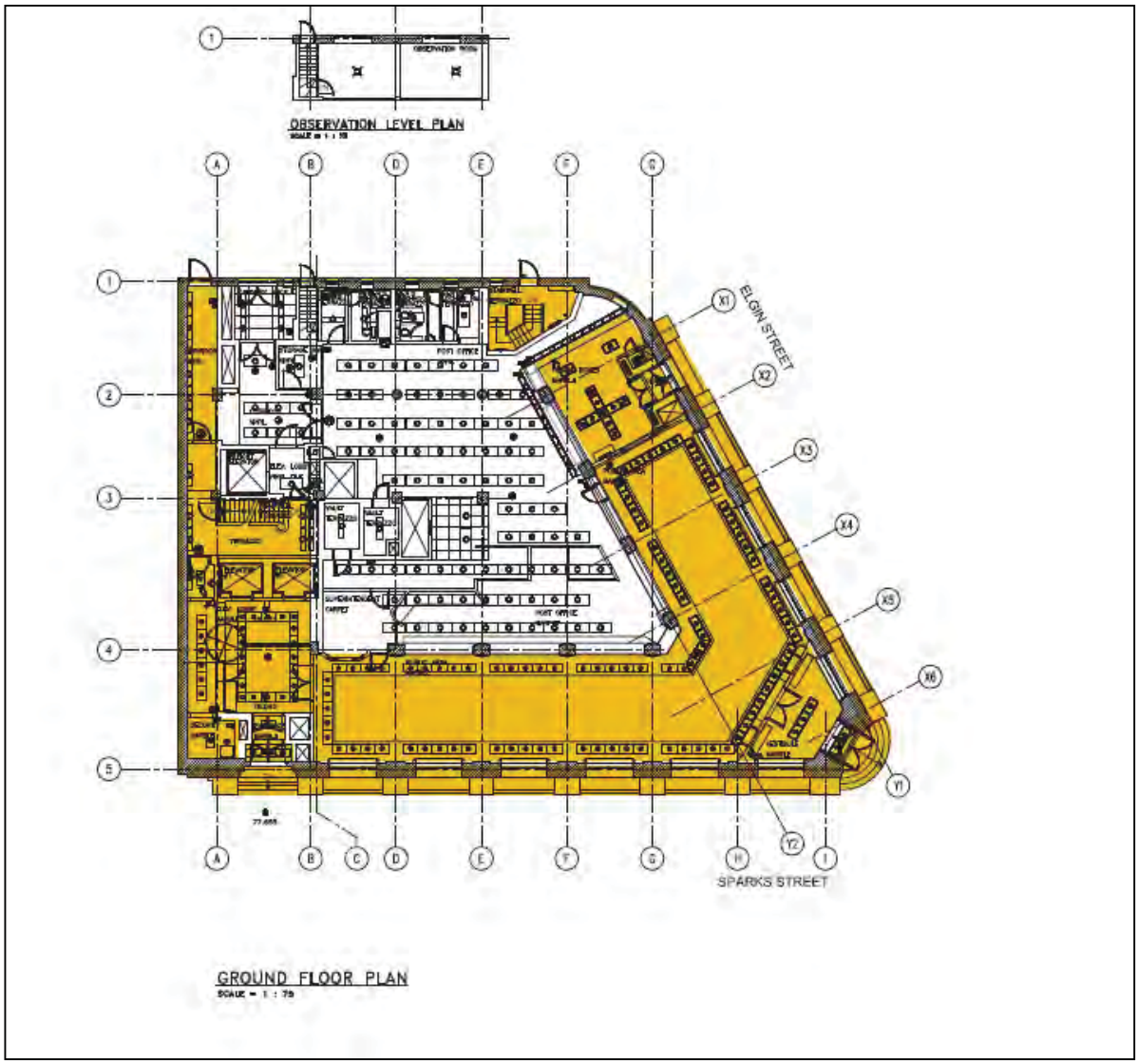

Figure 5 Ground Floor Character Defining Elements indicated in shaded areas. Areas are an interpretation of the Heritage Character Statement which indicates all exteriors and public interiors are considered character-defining.

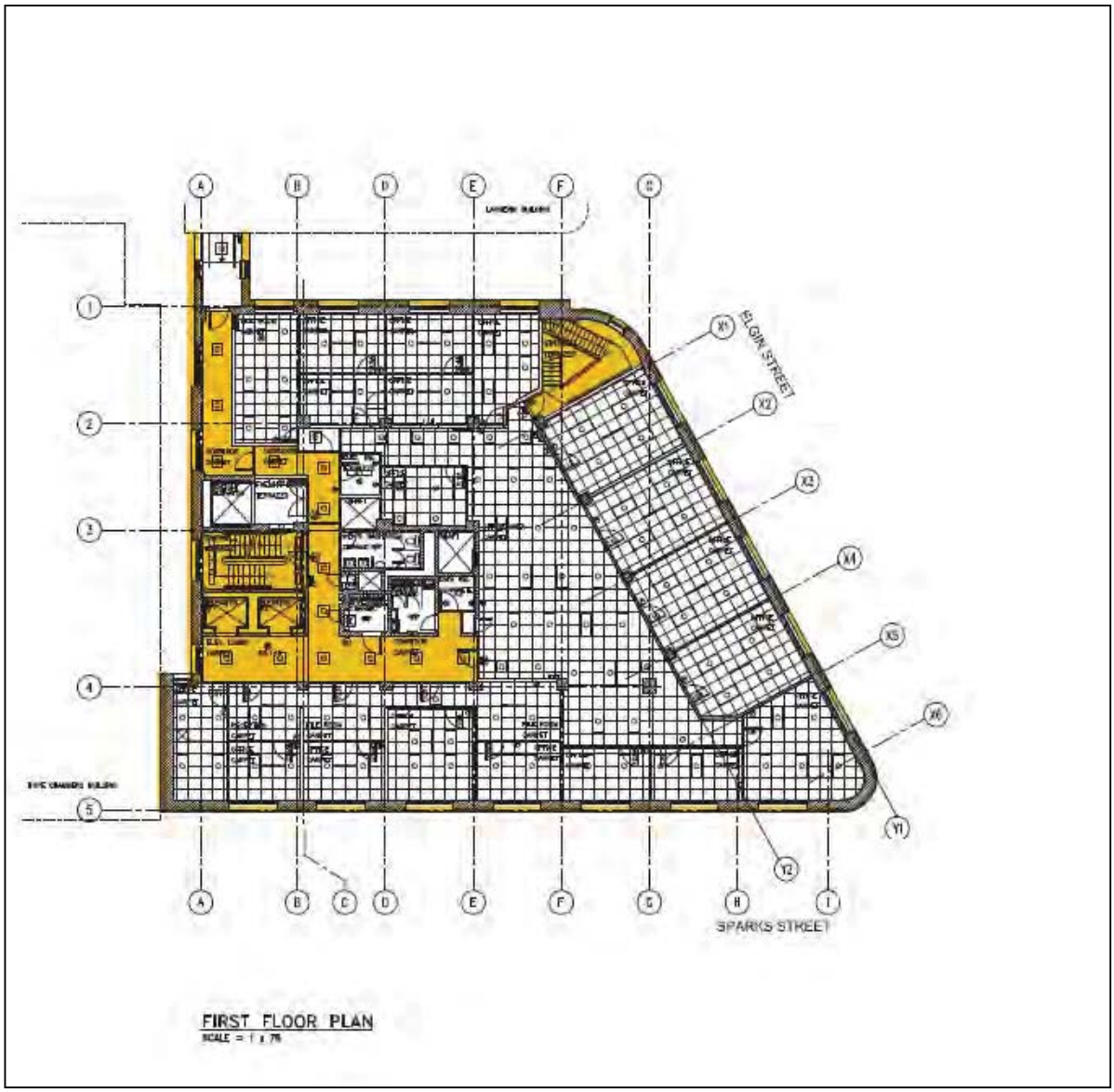

Figure 6 Typical office floor. Character Defining Elements are limited to public areas. Note extensive use of lay-in acoustical tile ceilings in the office areas. Areas are an interpretation of the Heritage Character Statement which indicates all exteriors and public interiors are considered character-defining.

Figure 7 Character Defining Elements on East Elevation. Areas are an interpretation of the Heritage Character Statement which indicates all exteriors and public interiors are considered character-defining.

Figure 8 Character Defining Elements on North Elevation. Areas are an interpretation of the Heritage Character Statement which indicates all exteriors and public interiors are considered character-defining.

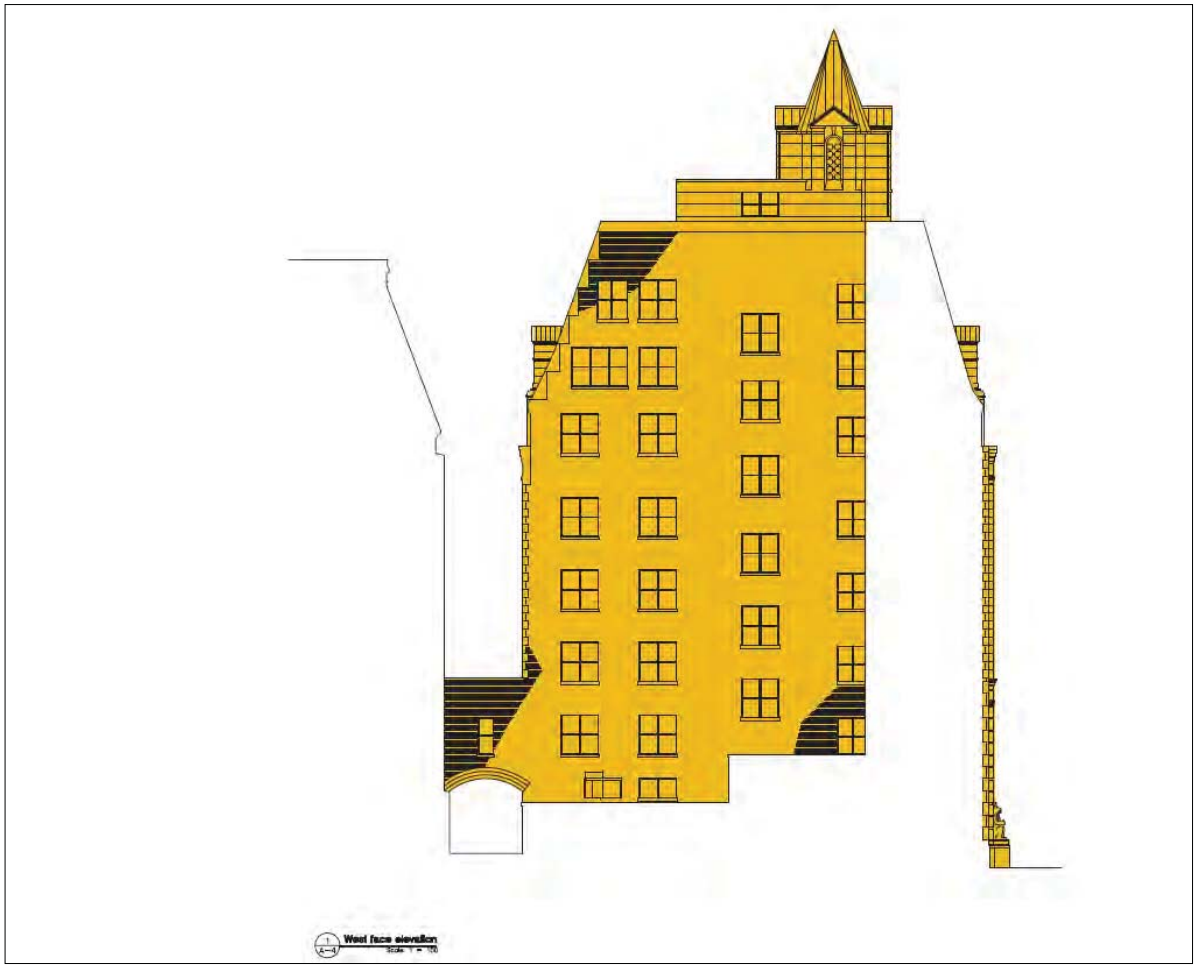

Figure 9 Character Defining Elements on West Elevation. Areas are an interpretation of the Heritage Character Statement which indicates all exteriors and public interiors are considered character-defining.

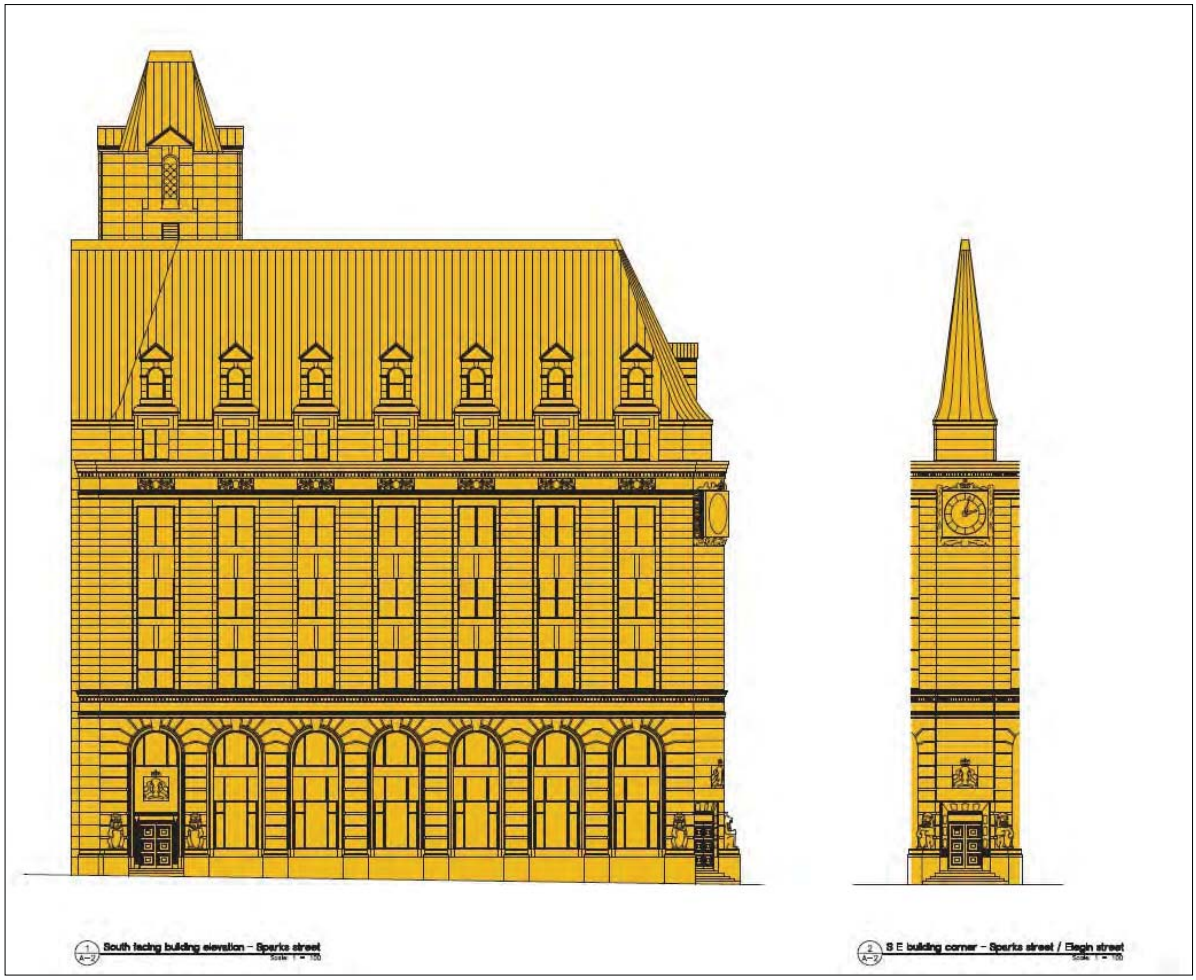

Figure 10 Character Defining Elements on South Elevation. Areas are an interpretation of the Heritage Character Statement which indicates all exteriors and public interiors are considered character-defining.

11. Conservation of Character-Defining Elements

11.1 Building Envelope

The building envelope in its entirety is the chief character defining element of Postal Station B. The proposed approach to their conservation is to retain as much original material as possible, as in Standard 1. The windows, although suffering from various pathologies described in previous reports, are largely intact and good candidates for conservation. The process for removing, cleaning, and refinishing the windows is described in the report *Postal Station B: Detailed Building Envelope and Related Mechanical System Investigation*.

A detailed assessment of the condition of the masonry is included in the above report. The granite and Queenston limestone are generally in good condition, although localized cracking and damage is found. The conservation of these elements should be based on professional assessment of the individual problems and treated with the gentlest means possible, as recommended by Standard 7.

As described above, reports on the condition of the roof vary widely. While it may be feasible to extend the life of the roof by repairing it in situ, roofing, unlike stone, is considered to be a wearing element, subject to cyclical replacement. Replacing the roof while the façade is scaffolded would reduce disruption to the building occupants, and be less costly in the long term. It would also provide the benefit of a fully conserved building envelope at the conclusion of the project, rather than one which still has medium-term durability concerns.

Professional conservation of the main entrance doors is recommended, and a procedure is described in *Postal Station B Bronze Door Repairs Report*, prepared by DFS Architecture & Design in March 2011.

The public areas, i.e. lobbies and corridors, should and can remain outside of the area of work required to upgrade the mechanical and electrical systems.

11.2 Other Elements

The majority of the building interior, that is, the office areas, have been altered significantly over time, and are not considered character defining elements. The original flat plaster ceilings have been covered with a suspended acoustical lay-in tile ceiling system in order to accommodate ventilation ductwork, and to provide a flexible arrangement for laying out office workstations. The typical office floors currently have private offices enclosed by partitions of unknown provenance, with an open work area in the centre. It is anticipate that this arrangement will continue to be a requirement.

The general approach to these areas not discussed in the Heritage Character Statement should follow the recommendations of Standard 3, which calls for minimum intervention. The configuration of the perimeter heating cabinets, for example, should be retained although the conversion of the building from steam to hot water heating will require replacement of the mechanical equipment inside them. The metal front panel of the cabinets themselves is relatively modern, having been replaced in the 1970's mechanical upgrade, however the surrounding architectural finishes remains intact. The application of Standard 3 suggests that the most appropriate approach to installing the mechanical equipment is one in which fewest architectural surfaces are disturbed. This will inform the routing of piping as well as the

replacement of heating elements. It will also influence the design of the new hot water heating system, should the cabinets not have sufficient space to house the new heating elements.

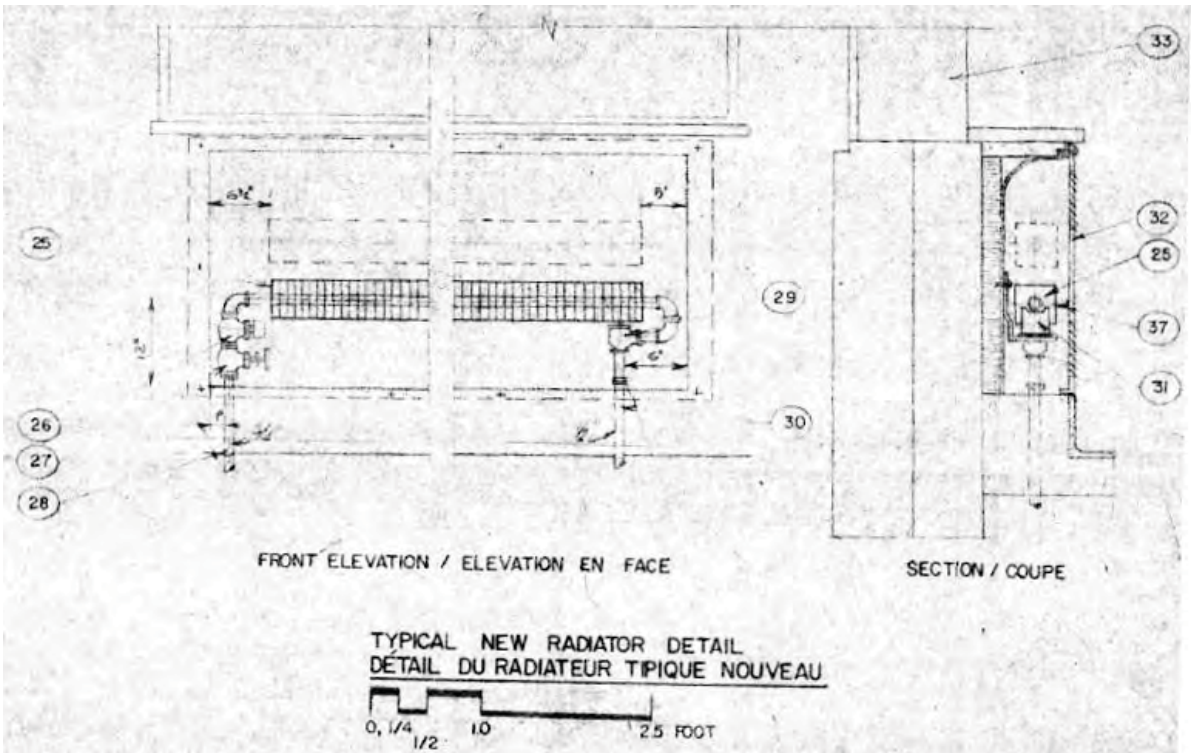

Figure 11 Replacement of radiator cover circa 1970. Existing cover is a replacement for the original panel.

While not an original feature of the building, the ceiling system in the office areas allows for the necessary mechanical systems to be installed without disturbing the finishes in the public corridors, which are considered to be character-defining elements. Furthermore it provides a flexible system for lighting and diffuser placement which allows for reconfiguration of work spaces. However, in the design stage, the possibility of introducing a combination of bulkheads and coffers should be examined, which will allow for the concealment of mechanical systems while reinstating the original ceiling height for much of the office area.

12. Conclusions and Recommendations

The recommended approach to replacing the base building systems consists of the following:

Centralized air distribution system

- Refurbished AHU in existing mechanical room
- Full replacement of heating system
- Upgrades to electrical distribution as described
- Upgrades to domestic water and sanitary systems
- Restoration of windows
- Replacement of copper roof

The preferred implementation scenarios require that the office areas be unoccupied, either for the entirety of construction, or on a floor-by-floor basis. The requirement for full asbestos abatement and disconnection of the heating system make the implementation of this work in a fully occupied space highly problematic.

Postal Station B - Envelope Rehabilitation & Base Building Upgrade

Appendix A: Preliminary Mechanical Drawings and Diagrams
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Appendix B: Report on Interviews with Building Operators
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Appendix C: Implementation Schedule - Recommended Option
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Appendix D: X-Ray Analysis of Existing Piping
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Appendix E: Class D Estimate
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Appendix F: Building Condition Report
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