

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 0A1/Noyau 0A1
Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776

REQUEST FOR PROPOSAL
DEMANDE DE PROPOSITION

**Proposal To: Public Works and Government
Services Canada**

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

**Proposition aux: Travaux Publics et Services
Gouvernementaux Canada**

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

Comments - Commentaires

Title - Sujet East Tunnel Replacement Phase 4	
Solicitation No. - N° de l'invitation EP758-130472/A	Date 2012-12-10
Client Reference No. - N° de référence du client R.056358.007	
GETS Reference No. - N° de référence de SEAG PW-\$\$FE-115-61726	
File No. - N° de dossier fe115.EP758-130472	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2013-01-29	Time Zone Fuseau horaire Eastern Standard Time EST
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Bennett, Adrian	Buyer Id - Id de l'acheteur fe115
Telephone No. - N° de téléphone (819) 956-1793 ()	FAX No. - N° de FAX (819) 956-3160
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Parliament Hill Ottawa, ON K1A 0S5	

Instructions: See Herein

Instructions: Voir aux présentes

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

Issuing Office - Bureau de distribution

Consultant Services Division/Division des services
d'experts-conseils
11 Laurier St./11 Rue Laurier
3C2, Place du Portage
Phase III
Gatineau, Québec K1A 0S5

Delivery Required - Livraison exigée See Herein	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

**THIS PROCUREMENT CONTAINS A SECURITY REQUIREMENT
REQUEST FOR PROPOSAL (RFP)**

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- Description of Services - Additional Services (AS)

SUPPLEMENTARY INSTRUCTIONS TO PROPONENTS (SI)

SI1 INTRODUCTION

1. Public Works and Government Services Canada (PWGSC) intends to retain an individual consulting firm or joint venture to provide the professional services for the project as set out in this Request for Proposal (RFP).
2. This is a single phase selection process. The nature of the requirement and the anticipated limited number of response by the industry leads PWGSC to believe that this approach will not unduly force a large number of firms to expend an overall unreasonable amount of effort in response to PWGSC.
3. Proponents responding to this RFP are requested to submit a full and complete proposal. The proposal will cover not only the qualifications, experience and organization of the proposed Consultant Team, but also the detailed approach to the work, and the pricing and terms offered. A combination of the technical and price of services submissions will constitute the proposal.

SI2 PROPOSAL DOCUMENTS

1. All instructions, general terms, conditions and clauses identified in the RFP by number, date and title, are hereby incorporated by reference into and form part of this solicitation and any resultant contract.

All instructions, general terms, conditions and clauses identified in the RFP by number, date and title, are set out in the Standard Acquisition Clauses and Conditions Manual (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

2. The following are the proposal documents:
 - (a) Supplementary Instructions to Proponents (SI);
R1410T (2012-11-19), General Instructions to Proponents (GI);
Submission Requirements and Evaluation (SRE);
 - (b) the general terms, conditions and clauses, as amended, identified in the Agreement clause;
 - (c) Project Brief;
 - (d) the document entitled "Doing Business";
 - (e) the **Security Requirements Check List (SRCL)**;

-
- (f) any amendment to the solicitation document issued prior to the date set for receipt of proposals; and
- (g) the proposal, Declaration/Certifications Form and Price Proposal Form.
3. Submission of a proposal constitutes acknowledgment that the Proponent has read and agrees to be bound by these documents.

SI3 QUESTIONS OR REQUEST FOR CLARIFICATION

Questions or requests for clarification during the solicitation period must be submitted in writing to the Contracting Authority named on the RFP - Page 1 as early as possible. Enquiries should be received no later than ten (10) working days prior to the closing date identified on the front page of the Request for Proposal. Enquiries received after that date may not be answered prior to the closing date of the solicitation.

SI4 CANADA'S TRADE AGREEMENTS

This procurement is subject to the provisions of the North American Free Trade Agreement (NAFTA), the World Trade Organization - Agreement on Government Procurement (WTO-AGP) and the Agreement on Internal Trade (AIT).

SI5 CODE OF CONDUCT AND CERTIFICATIONS - RELATED DOCUMENTATION

By submitting a bid, the Proponent certifies, for himself and his affiliates, to be in compliance with the Code of Conduct and Certifications clause of the R1410T (2012-11-19) General Instructions to Proponents (GI). The related documentation hereinafter mentioned will help Canada in confirming that the certifications are true. By submitting a bid, the Proponent certifies that it is aware, and that its affiliates are aware, that Canada may request additional information, certifications, consent forms and other evidentiary elements proving identity or eligibility. Canada may also verify the information provided by the Proponent, including the information relating to the acts or convictions specified herein, through independent research, use of any government resources or by contacting third parties. Canada will declare non-responsive any bid in respect of which the information requested is missing or inaccurate, or in respect of which the information contained in the certifications is found to be untrue, in any respect, by Canada. The Proponent and any of the Proponent's affiliates, will also be required to remain free and clear of any acts or convictions specified herein during the period of any contract arising from this bid solicitation.

Proponents who are incorporated, including those bidding as a joint venture, must provide with their bid or promptly thereafter a complete list of names of all individuals who are currently directors of the Proponent. Proponents bidding as sole proprietorship, including those bidding as a joint venture, must provide the name of the owner with their bid or promptly thereafter. Proponents bidding as societies, firms, partnerships or associations of persons do not need to provide lists of names. If the required names have not been received by the time the evaluation of bids is completed, Canada will

inform the Proponent of a time frame within which to provide the information. Failure to comply will render the bid non-responsive. Providing the required names is a mandatory requirement for contract award.

Canada may, at any time, request that a Proponent provide properly completed and Signed Consent Forms (Consent to a Criminal Record Verification form-PWGSC-TPSGC 229) (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>) for any or all individuals aforementioned within the time specified. Failure to provide such Consent Forms within the time period provided will result in the bid being declared non-responsive.

SI6 SECURITY REQUIREMENT

1. This procurement contains a Security Requirement as described in the Supplementary Conditions.
2. Foreign proponents shall contact the Contracting Authority for a specific Security clause before submitting their proposal.

SI7 SUPPLEMENTARY INSURANCE

This procurement contains a Supplementary Insurance Requirement described in the Supplementary Conditions.

SI8 - WEB SITES

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

Employment Equity Act

<http://laws.justice.gc.ca/en/E-5.401/index.html>

Federal Contractors Program (FCP)

<http://www.hrsdc.gc.ca/eng/labour/equality/fcp/index.shtml>

Certificate of Commitment to Implement Employment Equity form LAB 1168

<http://www.servicecanada.gc.ca/cgi-bin/search/eforms/index.cgi?app=profile&form=lab1168&dept=sc&lang=e>

Code of Conduct for Procurement

<http://www.tpsgc-pwgsc.gc.ca/app-acq/cndt-cndct/contexte-context-eng.html>

Consent to a Criminal Record Verification (PWGSC-TPSGC 229 form)

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>

Lobbying Act

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<http://laws.justice.gc.ca/en/L-12.4/?noCookie>

Contracts Canada

<https://buyandsell.gc.ca/>

Supplier Registration Information

<https://srisupplier.contractsCanada.gc.ca>

Consultant Performance Evaluation Report Form

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913-1.pdf>

Canadian economic sanctions

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

National Joint Council (NJC) Travel Directive

<http://www.njc-cnm.gc.ca/directive/travel-voyage/index-eng.php>

TERMS, CONDITIONS AND CLAUSES

AGREEMENT

1. The Consultant understands and agrees that upon acceptance of the offer by Canada, a binding Agreement shall be formed between Canada and the Consultant and the documents forming the Agreement shall be the following:
 - (a) the Front Page and this Agreement clause;
 - (b) the General Terms, Conditions and Clauses, as amended, identified as:
 - R1210D (2012-11-19), General Condition (GC) 1 - General Provisions
 - R1215D (2011-05-16), General Condition (GC) 2 - Administration of the Contract
 - R1220D (2011-05-16), General Condition (GC) 3 - Consultant Services
 - R1225D (2012-07-16), General Condition (GC) 4 - Intellectual Property
 - R1230D (2012-07-16), General Condition (GC) 5 - Terms of Payment
 - R1235D (2011-05-16), General Condition (GC) 6 - Changes
 - R1240D (2011-05-16), General Condition (GC) 7 - Taking the Services Out of the Consultant's Hands, Suspension or Termination
 - R1245D (2012-07-16), General Condition (GC) 8 - Dispute Resolution
 - R1250D (2012-07-16), General Condition (GC) 9 - Indemnification and Insurance
 - (c) Supplementary Conditions
 - (d) Agreement Particulars
 - (e) Project Brief;
 - (f) the document entitled "Doing Business";
 - (e) the Security Requirements Check List (SRCL);**
 - (f) any amendment to the solicitation document incorporated in the Agreement before the date of the Agreement;
 - (g) the proposal, the Declaration/Certifications Form and the Price Proposal Form.

2. The documents identified above by title, number and date are hereby incorporated by reference into and form part of this Agreement, as though expressly set out herein, subject to any other express terms and conditions herein contained.

The documents identified above by title, number and date are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site:
<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>

3. If there is a discrepancy between the wording of any documents that appear on the following list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

-
- (a) any amendment or variation in the Agreement that is made in accordance with the terms and conditions of the Agreement;
 - (b) any amendment to the solicitation document incorporated in the Agreement before the date of the Agreement;
 - (c) this Agreement clause;
 - (d) Supplementary Conditions;
 - (e) General Terms, Conditions and Clauses;
 - (f) Agreement Particulars;
 - (g) Project Brief;
 - (h) the document entitled "Doing Business";
 - (i) the document entitled "**Security Requirement Check List**";
 - (j) the proposal.

SUPPLEMENTARY CONDITIONS (SC)

SC1 SECURITY REQUIREMENTS

1. The Contractor/Offeror must, at all times during the performance of the Contract/Standing Offer, hold a valid Facility Security Clearance at the level of SECRET, with approved Document Safeguarding at the level of CONFIDENTIAL, issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).
2. The Contractor/Offeror personnel requiring access to CLASSIFIED information, assets or sensitive work site(s) must EACH hold a valid personnel security screening at the level of RELIABILITY STATUS or SECRET as required, granted or approved by the CISD, PWGSC. Until the security screening of the Contractor personnel required by this Contract has been completed satisfactorily by the CISD, PWGSC, the Contractor personnel MAY NOT HAVE ACCESS to CLASSIFIED information or assets, and MAY NOT ENTER sites where such information or assets are kept, without an escort.
3. The Contractor MUST NOT utilize its Information Technology systems to electronically process, produce or store any sensitive CLASSIFIED information until CISD/PWGSC has issued written approval. After approval has been granted, these tasks may be performed at the level of CONFIDENTIAL.
4. Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of CISD/PWGSC.
5. The Contractor/Offeror must comply with the provisions of the:
 - (a) Security Requirements Check List and security guide, attached at Appendix E;
 - (b) Industrial Security Manual (Latest Edition).

SC2 LANGUAGE REQUIREMENTS

Use the following in Agreements where the consultant must be capable to provide services in both official languages.

-
1. Communication between Canada and the Consultant shall be in the language of choice of the Consultant Team, which shall be deemed to be the language of the Consultant's proposal.
 2. The Consultant's services during construction tender call (such as addenda preparation, tenderers' briefing meetings, technical answers to questions by bidders) shall be provided expeditiously in both languages, as necessary.
 3. The Consultant's services during construction shall be provided in the language of choice of the Contractor. The successful Contractor will be asked to commit to one or other of Canada's official languages upon award of the Construction Contract and, thereafter construction and contract administration services will be conducted in the language chosen by the Contractor.
 4. Other required services in both of Canada's official languages (such as construction documentation) are described in detail in the Project Brief.
 5. The Consultant Team, including the Prime Consultant, Sub-Consultants and Specialists Consultants shall ensure that the services being provided in either language shall be to a professional standard.

SC3 SUPPLEMENTARY INSURANCE

Supplementary to what is required under GC 9 Indemnification and Insurance, the Consultant shall maintain the following supplementary insurance coverage:

1. Professional Liability shall have a limit of liability of not less than \$ 2,000,000.00 per claim.

AGREEMENT PARTICULARS

The Agreement Particulars will be issued at time of award of contract and will identify the fee to be paid to the Consultant for the services determined in the Price Proposal Form.

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APPENDIX A - TEAM IDENTIFICATION FORMAT

For details on this format, please see SRE in the Request For Proposal.

The prime consultant and other members of the Consultant Team shall be, or eligible to be, licensed, certified or otherwise authorized to provide the necessary professional services to the full extent that may be required by provincial or territorial law.

I. Prime Consultant (Proponent - Civil Engineer):

Firm or Joint Venture Name:
.....
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

Principal in Charge:.....
Project Lead Engineer:.....

II. Key Sub Consultants / Specialists:

Tunneling and Rock Excavation Specialist

Firm Name:
.....
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

Lead Tunneling and Rock Excavation Specialist:
.....

III. Key Sub Consultants / Specialists:

Mechanical Engineer

Firm Name:
.....
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

Lead Mechanical Engineer:.....

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IV. Key Sub Consultants / Specialists:

Structural Engineer

Firm Name:
.....
.....

Key Individuals and provincial professional licensing status and/or professional accreditation:

Lead Structural Engineer:.....

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APPENDIX B - DECLARATION/CERTIFICATIONS FORM

Project Title:

Name of Proponent:

Street Address:

Mailing Address
(if different than street address)

City:

City:

Prov./Terr./State:

Prov./Terr./State:

Postal/ZIP Code:

Postal/ZIP Code:

Telephone Number:()

Fax Number: ()

E-Mail:

Procurement Business Number:

Type of Organization: _____ Sole Proprietorship _____ Partnership _____ Corporation _____ Joint Venture	Size of Organization: Number of Employees _____ Graduate Architects / Professional Engineers _____ Other Professionals _____ Technical Support _____ Other _____
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APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

Federal Contractors Program (FCP) - Certification

Pursuant to GI 12, The Proponent must complete the following certification.

1. The Proponent, or, if the Proponent is a joint venture the member of the joint venture, certifies its status with FCP, as follows:

The Proponent or the member of the joint venture

- (a) () is not subject to the FCP, having a workforce of less than 100 full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada,
- (b) () is not subject to the FCP, being a regulated employer under the Employment Equity Act, S.C. 1995, c.44;
- (c) () is subject to the requirements of the FCP, having a workforce of 100 or more full time or part-time permanent employees, or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC, (having not bid on requirements of \$200,000 or more), in which case a duly signed certificate of commitment is attached;
- (d) () is subject to the FCP, and has a valid certificate number as follows:
_____ (e.g. has not been declared an ineligible contractor by HRSDC).

Please check the appropriate item above. Further information on the FCP is available on the HRSDC Web site.

2. If the Proponent does not fall within the exceptions enumerated in 1. (a) or (b), or does not have a valid certificate number confirming its adherence to the FCP, the Proponent must fax (819-953-8768) a copy of the signed form LAB 1168, Certificate of Commitment to Implement Employment Equity, to the Labour Branch of HRSDC.

APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

Former Public Servant (FPS) - Certification

Contracts with former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts with FPS, proponents must provide the information required below.

Definitions

For the purposes of this clause,

"former public servant" is any former member of a department as defined in the *Financial Administration Act*, R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- (a) an individual;
- (b) an individual who has incorporated;
- (c) a partnership made of former public servants; or
- (d) a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means, a pension or annual allowance paid under the *Public Service Superannuation Act* (PSSA), R.S., 1985, c.P-36, and any increases paid pursuant to the *Supplementary Retirement Benefits Act*, R.S., 1985, c.S-24 as it affects the PSSA. It does not include pensions payable pursuant to the *Canadian Forces Superannuation Act*, R.S., 1985, c.C-17, the *Defence Services Pension Continuation Act*, 1970, c.D-3, the *Royal Canadian Mounted Police Pension Continuation Act*, 1970, c.R-10, and the *Royal Canadian Mounted Police Superannuation Act*, R.S., 1985, c.R-11, the *Members of Parliament Retiring Allowances Act*, R.S., 1985, c.M-5, and that portion of pension payable to the *Canada Pension Plan Act*, R.S., 1985, c.C-8.

Former Public Servant in Receipt of a Pension

As per the above definitions, is the Proponent a FPS in receipt of a pension?

YES () NO ()

If so, the Proponent must provide the following information, for all FPS in receipt of a pension, as applicable:

APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

- (a) name of former public servant;
- (b) date of termination of employment or retirement from the Public Service.

By providing this information, Proponents agree that the successful Proponent's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with Contracting Policy Notice: 2012-2 and the Guidelines on the Proactive Disclosure of Contracts.

Work Force Reduction Program

Is the Proponent a FPS who received a lump sum payment pursuant to the terms of a work force reduction program? YES () NO ()

If so, the Proponent must provide the following information:

- (a) name of former public servant;
- (b) conditions of the lump sum payment incentive;
- (c) date of termination of employment;
- (d) amount of lump sum payment;
- (e) rate of pay on which lump sum payment is based;
- (f) period of lump sum payment including start date, end date and number of weeks;
- (g) number and amount (professional fees) of other contracts subject to the restrictions of a work force reduction program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including the Goods and Services Tax or Harmonized Sales Tax.

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APPENDIX B - DECLARATION/CERTIFICATIONS FORM (CONT'D)

Name of Proponent:

DECLARATION:

I, the undersigned, being a principal of the proponent, hereby certify that the information given on this form and in the attached proposal is accurate to the best of my knowledge. If any proposal is submitted by a partnership or joint venture, then the following is required from each component entity.

..... name signature
..... title	
I have authority to bind the Corporation / Partnership / Sole Proprietorship / Joint Venture	
..... name signature
..... title	
I have authority to bind the Corporation / Partnership / Sole Proprietorship / Joint Venture	
..... name signature
..... title	
I have authority to bind the Corporation / Partnership / Sole Proprietorship / Joint Venture	

During proposal evaluation period, PWGSC contact will be with the following person: _____.

Telephone Number: () _____ Fax Number: () _____

E-mail: _____

This Appendix "B" should be completed and submitted with the proposal, but may be submitted afterwards as follows: if Appendix "B" is not completed and submitted with the proposal, the

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Contracting Authority will so inform the Proponent and provide the Proponent with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the proposal non-responsive.

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APPENDIX C - PRICE PROPOSAL FORM

INSTRUCTIONS: Complete this Price Proposal Form and submit in a **separate sealed envelope** with the Name of Proponent, Name of Project, PWGSC Solicitation Number, and the words "PRICE PROPOSAL FORM" typed on the outside of the envelope. Price Proposals are not to include GST/HST.

PROponents SHALL NOT ALTER THIS FORM

Project Title:

Name of Proponent:

The following will form part of the evaluation process:

REQUIRED SERVICES

- ♦ **Fixed Fee** (R1230D (2012-07-16), GC 5 - Terms of Payment)

SERVICES

FIXED FEE

MAXIMUM FIXED FEES, RS1 - RS10

\$..... (FF)

Payments in respect of the fixed fee arrangement shall be made during performance of the Services, on the basis of the calculations as described below. Payments for RS7, RS8, RS9, RS10 and AS 2 are included in the payments for RS1 to RS6.

RS1 - Analysis of Project Requirements	= FF x 5%
RS2 - Design Concept	= FF x 10%
RS3 - Design Development	= FF x 15%
RS4 - Construction Documents	= FF x 40%
RS5 - Tender Call, Bid Evaluation, and Construction Contract Award	= FF x 5%
RS6 - Construction and Contract Administration	= FF x 25%

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APPENDIX C - PRICE PROPOSAL FORM (CONT'D)

♦ **Time Based Fees** (R1230D (2012-07-16), GC 5 - Terms of Payment)

AS 1 - Resident Site Services During Construction *	ESTIMATED HOURS Column A	HOURLY RATES** Column B	TIME BASED FEE Columns Ax B
Resident Site Representative	3200	\$.....	\$.....
MAXIMUM TIME BASED FEES (TBF)			\$.....

*Payment will be based on actual hours spent. Travel time and/or expenses will not be reimbursed separately.

** All inclusive hourly rate is applicable to both normal working hours and any other shift work as required.

TOTAL COST OF SERVICES FOR PROPOSAL EVALUATION PURPOSES

Total Evaluated Fee (**FF + TBF**) \$.....

Solicitation No. - N° de l'invitation

EP758-130472/A

Amd. No. - N° de la modif.

File No. - N° du dossier

fe115EP758-130472

Buyer ID - Id de l'acheteur

fe115

Client Ref. No. - N° de réf. du client

CCC No./N° CCC - FMS No/ N° VME

R.056358.007

APPENDIX C - PRICE PROPOSAL FORM (CONT'D)

The following will NOT form part of the evaluation process

Canada may accept or reject any of the following fees, disbursements and/or hourly rates.
Canada reserves the right to negotiate on these fees, disbursements and/or hourly rates.

DISBURSEMENTS

At cost without allowance for mark-up or profit, supported by invoices/receipts - see clause R1230D (2012-07-16), GC 5 - Terms of Payment, section GC5.12 Disbursements:

MAXIMUM AMOUNT FOR GC5.12 DISBURSEMENTS

\$25,000.00

Appendix D

Doing Business

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Appendix 'E'	Basic Reference Guide on Converting Construction Drawings into Portable Document Format (PDF), dated May 2005

SECTION 1 INTRODUCTION

This document must be used in conjunction with the Terms of Reference (TOR), as the two documents are complimentary. The TOR describes project-specific requirements while this document deals with information common to all projects. In case of a conflict between the two documents, the requirements of the TOR override this document.



SECTION 2 PWGSC NATIONAL CADD STANDARD

Drawings shall be in accordance with PWGSC National CADD Standards and Canadian Standards Association (CSA) B78.3.

Refer to:

<http://www.tpsgc-pwgsc.gc.ca/cadd-standards/text/index-e.html>

The above link is subject to change. The Consultant shall check with the Project Manager to ensure that the link and related information are current and relevant with regards to PWGSC National CADD Standards.

SECTION 3 GUIDE TO PREPARATION OF CONSTRUCTION DOCUMENTS FOR PWGSC

1 Purpose

This document provides direction in the preparation of construction contract documents (namely specifications, drawings and addenda) for Public Works and Government Services Canada (PWGSC).

Drawings, specifications and addenda must be complete and clear, so that a contractor can prepare a bid without guesswork. Standard practice for the preparation of construction contract documents requires that:

- drawings are the graphic means of showing work to be done, as they depict shape, dimension, location, quantity of materials and relationship between building components.
- specifications are written descriptions of materials and construction processes in relation to quality, colour, pattern, performance and characteristics of materials, installation and quality of work requirements.
- Addenda are changes to the construction contract documents or tendering procedures, issued during the tendering process.

2 Principles of PWGSC Contract Documents

PWGSC's contract documents are based on common public procurement principles. PWGSC does not use Canadian Construction Document Committee (CCDC) documents.

The terms and conditions are prepared and issued by PWGSC as well as other related bidding and contractual documents. For information, the clauses are available on the following web site: <http://sacc.pwgsc.gc.ca/sacc/query-e.jsp>. Any questions should be directed to the Project Manager.

3 Quality Assurance

Consultants are required to undertake their own quality control process and must review, correct and coordinate (between disciplines) their documents before sending them to PWGSC.



SPECIFICATIONS

1 National Master Specification

The National Master Specification (NMS) is a master construction specification available in both official languages, which is divided into 48 Divisions and used for a wide range of construction and/or renovation projects. In preparing project specifications, the Consultant must use the current edition of the NMS in accordance with the "NMS User's Guide".

The Consultant retains overriding responsibility for content and shall edit, amend and supplement the NMS as deemed necessary to produce an appropriate project specification free from conflict and ambiguity.

2 Specification Organization

Narrowscope sections describing single units of work are preferred for more complex work, however, broadscope sections may be more suitable for less complex work. Use either the NMS 1/3 - 2/3 page format or the Construction Specifications Canada full-page format.

Start each Section on a new page and show Project Number, Section Title, Section Number and Page Number on each page. Specification date, project title, and consultant's name are not to be indicated.

3 Terminology

Use the term "Departmental Representative" instead of Engineer, PWGSC, Owner, Consultant or Architect. "Departmental Representative" means the person designated in the Contract, or by written notice to the Contractor, to act as the Departmental Representative for the purposes of the Contract, and includes a person, designated and authorized in writing by the Departmental Representative to the Contractor.

Notations such as: "verify on site", "as instructed", "to match existing", "example", "equal to" or "equivalent to", "to be determined on site by "Departmental Representative", should not be indicated in the specifications as this promotes inaccurate and inflated bids. Specifications must permit bidders to calculate all quantities and bid accurately. If quantities are impossible to identify (i.e. cracks to be repaired) give an estimated quantity for bid purposes (unit prices). Ensure that the terminology used throughout the specifications is consistent and does not contradict the applicable standard construction contract documents.

4 Dimensions

Dimensions are to be in metric only (no dual dimensioning).

5 Standards

As references in the NMS may not be up to date, it is the responsibility of the consultant to ensure that the project specification uses the latest applicable edition of all references quoted. The following is a list of some of the Internet websites which provide the most current publications of standards for reference in the construction specification document.

- CSA standards: <http://www.csa.ca>
- CGSB standards: <http://www.pwgsc.gc.ca/cgsb>



- ANSI standards: <http://www.ansi.org>
- ASTM Standards: <http://www.astm.org>
- ULC standards: <http://www.ulc.ca>
- General reference of standards: <http://www.cssinfo.com>

The NMS website (www.pwgsc.gc.ca/nms) also links to other documents references in the NMS under its "Links" feature.

6 Specifying Materials

The practice of specifying actual brand names, model numbers, etc., is against departmental policy except for special circumstances. The method of specifying materials shall be by using recognized standards such as those produced by Canadian Gas Association (CGA), Canadian General Standards Board (CGSB), Canadian Standards Association (CSA), and Underwriters' Laboratories of Canada (ULC), or by trade associations such as Canadian Roofing Contractors' Association (CRCA) and Terrazzo, Tile, Marble Association of Canada (TTMAC). Canadian standards should be used wherever possible.

If the above method cannot be used and where no standards exist, specify by a non-restrictive, non-trade name "prescription" or "performance" specifications.

In exceptional or justifiable circumstances or if no standards exist and when a suitable non-restrictive, non-trade name "prescription" or "performance" specification cannot be developed, specify by trade name. Include all known materials acceptable for the purpose intended, and in the case of equipment, identify by type and model number.

Acceptable Materials: set up the paragraph format as follows:

Acceptable Materials:

1. ABC Co. Model [_____].
2. DEF Co. Model [_____].
3. GHI Co. Model [_____].

Alternative materials to those specified may be considered during the solicitation period, however, the onus will be on the Consultant to review and evaluate all requests for approval of alternative materials.

The term "Acceptable Manufacturers" should not be used, as this restricts competition and does not ensure the actual material or product will be acceptable. A list of words and phrases that should be avoided is included in the NMS User's Guide.

Sole Sourcing: Sole sourcing for materials and work can be used for proprietary systems (ie. fire alarm systems, EMCS systems). **Substantiation and/or justification will be required.**

Wording for the sole source of work should be in Part 1 as:

"Designated Contractor

- .1 Hire the services of [_____] to do the work of this section."



Wording for the sole source of EMCS systems should be in Part 1 as

“Designated Contractor

- .1 Hire the services of [] or its authorized representative to complete the work of all EMCS sections.”

and in Part 2 as “Materials

- .1 There is an existing [] system presently installed in the building. All materials must be selected to ensure compatibility with the existing [] system.

Wording for the sole source of materials (ie. fire alarm systems) should be in Part 2 as:

“Acceptable materials

- .1 The only acceptable materials are [] .”

Prior to including sole source materials and/or work, the Consultant should contact the Project Manager to obtain the approval for the sole sourcing.

7 Unit Prices

Unit prices are used where the quantity can only be estimated (eg. earth work) and the approval of the Project Manager must be sought in advance of their use.

Use the following wording:

[The work for this section] or [define the specific work if required, e.g. rock excavation] will be paid based on the actual quantities measured on site and the unit prices stated in the Bid and Acceptance Form.

In each applicable NMS section, replace paragraph title "Measurement for Payment" with "Unit Prices”.

Sample of Unit Price Table:

The Unit Price Table designates the Work to which a Unit Price Arrangement applies.

- (a) The Price per Unit and the Estimated Total Price must be entered for each Item listed.
- (b) Work included in each item is as described in the referenced specification section.

Item	Specification Reference	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity	Price per Unit GST/HST extra	Estimated Total Price GST / HST extra
TOTAL ESTIMATED AMOUNT						
Transfer amount to subparagraph 1)(b) of BA03						

8 Cash Allowances

Construction contract documents should be complete and contain all of the requirements for the



contractual work. Cash allowances are to be used only under exceptional circumstances (ie. utility companies, municipalities), where no other method of specifying is appropriate. Obtain approval from the Project Manager in advance to include cash allowances and then use “Section 01 21 00 - Allowances” of the NMS to specify the criteria.

9 Warranties

It is the practice of PWGSC to have a 12 month warranty and to avoid extending warranties for more than 24 months. When necessary to extend beyond the 12 month warranty period provided for in the General Conditions of the contract, use the following wording in Part 1 of the applicable technical sections, under the heading "Extended Warranty":

- "For the work of this Section [____], the 12 month warranty period is extended to 24 months.
- Where the extended warranty is intended to apply to a particular part of a specification section modify the above as follows: "For [____] the 12 month ... [____] months."

Delete all references to manufacturers' guarantees.

10 Scope of Work

No paragraphs noted as “Scope of Work” are to be included.

11 Summary and Section Includes in Part -1 General of Section

Do not use “Summary” and “Section Includes.”

12 Related Sections

In every section of the specification at 1.1 “Related Sections”: coordinate the list of related sections and appendices. Ensure co-ordination among the sections of the specification and ensure not to reference any section or appendices which do not exist.

13 Index

List all the plans and specification sections with correct number of pages, section names and correct drawing titles in the format shown in Appendix A.

14 Regional Guide

The Consultant should contact the Project Manager to obtain the region's requirements for Division 01 or other short form specifications as might be appropriate. For example, it is required in the National Capital Region that regional Section 01 00 10 - General Instructions be used on all projects.

15 Health and Safety

It is required that all project specifications include “Section 01 35 29.06 - Health and Safety Requirements.” Confirm with the Project Manager to determine if there are any instructions to meet regional requirements.

16 Designated Substances Report



Include "Section 01 14 25 - Designated Substances Report"

17 Subsurface Investigation Reports

Subsurface Investigation Report(s) are to be included after Section 31 and the following paragraph should be added to Section 31:

Subsurface investigation report(s)

.1 Subsurface investigation report(s) are included in the specification following this section.

When the Project Manager determines that it is not practical to include the subsurface investigation report(s), alternate instructions will be provided.

Where tender documents are to be issued in both official languages, the subsurface investigation report(s) shall be issued in both languages.

In addition to the provision of the Subsurface Investigation Report, the foundation information required by the National Building Code of Canada 2005 (Division C, Part 2, 2.2.4.6) shall be included on foundation drawings.

18 Experience and Qualifications

Remove experience and qualification requirements from specification sections.

19 Prequalification and Pre-award submissions

Do not include in the specification any mandatory contractor and/or subcontractor prequalification or pre-award submission requirements that could become a contract award condition. If a prequalification process or a pre-award submission is required, contact the Project Manager.

There should be no references to certificates, transcripts or license numbers of a trade or subcontractor being included with the bid.

20 Contracting Issues

Specifications describe the workmanship and quality of the work. Contracting issues should not appear in the specifications. Division 00 of the NMS is not used for PWGSC projects.

Remove all references within the specifications, to the following:

- General Instructions to Bidders
- General Conditions
- CCDC documents
- Priority of documents
- Security clauses
- Terms of payment or holdback
- Tendering process
- Bonding requirements
- Insurance requirements



- Alternative and separate pricing
- Site visit (Mandatory or Optional)
- Release of Lien and deficiency holdbacks

DRAWINGS

1 Title Blocks

Use PWGSC title block for drawings and sketches (including addenda).

2 Dimensions

Dimensions are to be in metric only (no dual dimensioning).

3 Trade Names

Trade names on drawings are not acceptable. Refer to SECTION 3, SPECIFICATIONS, 6.0 Specifying Materials for specifying materials by trade name.

4 Specification Notes

No specification type notes are to appear on any drawing.

5 Terminology

Use the term "Departmental Representative" instead of Engineer, PWGSC, Owner, Consultant or Architect. "Departmental Representative" means the person designated in the Contract, or by written notice to the Contractor, to act as the Departmental Representative for the purposes of the Contract, and includes a person, designated and authorized in writing by the Departmental Representative to the Contractor.

Notations such as: "verify on site", "as instructed", "to match existing", "example", "equal to" or "equivalent to", "to be determined on site by "Departmental Representative", should not be indicated in the specifications as this promotes inaccurate and inflated bids. Specifications must permit bidders to calculate all quantities and bid accurately. If quantities are impossible to identify (i.e. cracks to be repaired) give an estimated quantity for bid purposes (unit prices). Ensure that the terminology used throughout the specifications is consistent and does not contradict the applicable standard construction contract documents.

6 Information to be included

Drawings should show the quantity and configuration of the project, the dimensions and details of how it is constructed. There should be no references to future work and no any information that will be changed by future addenda. The scope of work should be clearly detailed and elements not in contract should be eliminated or kept to an absolute minimum.

7 Drawing Numbers: Number drawings in sets according to the type of drawing and the discipline involved as follows (The requirements of SECTION 2 PWGSC NATIONAL CADD STANDARD will supercede these requirements, where warranted).

During the Design Phase of the project each submission and review must be noted on the Notes block of the drawing title, but at the time of construction document preparation, all revision notes should be removed.

Discipline	Drawing
Demolition	D1, D2, etc.
Architectural	A1, A2, etc.
Civil	C1, C2, etc.
Landscaping	L1, L2, etc.
Mechanical	M1, M2, etc.
Electrical	E1, E2, etc.
Structural	S1, S2, etc.
Interior Design	ID1, ID2, etc.

- 8 Presentation Requirements:** Present drawings in sets comprising the applicable demolition, architectural, structural, mechanical and electrical drawings in that order. All drawings should be of uniform standard size.
- 9 Prints:** Print with black lines on white paper. Blue prints are acceptable for document submissions at 33%, 66% and 99% stages. Confirm with Project Manager the size of prints to be provided for review purposes.
- 10 Binding:** Staple or otherwise bind prints into sets. Where presentations exceed 20 sheets, the drawings for each discipline may be bound separately for convenience and ease of handling.
- 11 Legends:** Provide a legend of symbols, abbreviations, references, etc., on the front sheet of each set of drawings or, in large sets of drawings, immediately after the title sheet and index sheets.
- 12 Schedules:** Where schedules occupy entire sheets, locate them next to the plan sheets or at the back of each set of drawings for convenient reference. See *CGSB 33-GP-7 Architectural Drawing Practices for schedule arrangements*.
- 13 North Points:** On all plans include a north point. Orient all plans in the same direction for easy cross-referencing. Wherever possible, lay out plans so that the north point is at the top of the sheet.
- 14 Drawing Symbols:** Follow generally accepted drawing conventions, understandable by the construction trades, and in accordance with PWGSC publications.

ADDENDA

1 Format

Prepare addenda using the format shown in Appendix B. No signature type information is to appear.

Every page of the addendum (including attachments) must be numbered consecutively. All pages must have the PWGSC project number and the appropriate addendum number. Sketches shall appear in the PWGSC format, stamped and signed.

No Consultant information (name, address, phone #, consultant project # etc.) should appear in the addendum or its attachments (except on sketches).

2 Content

Each item should refer to an existing paragraph of the specification or note/detail on the drawings. The clarification style is not acceptable.

DOCUMENTATION

Translation

When required, all documentation included in the construction contract documents shall be in both official languages.

Ensure that English and French documents are equal in all respects. There can be no statement that one version takes precedence over the other.

Consultant shall provide:

- Per construction document submission, a completed and signed Checklist for the Submission of Construction Documents. See Appendix 'A'.
- Specification: originals printed one side on 216 mm x 280 mm white bond paper.
- Index: as per Appendix 'C'
- Addenda (if required): as per Appendix 'B' (to be issued by PWGSC).
- Drawings: reproducible originals, sealed and signed by the design authority.
- Tender information:
 - Including a description of all units and estimated quantities to be included in unit price table.
 - Including a list of significant trades including costs. PWGSC will then determine which trades, if any, will be tendered through the Bid Depository.
 - Government Electronic Tendering System (MERX): Consultants to provide an electronic true copy of the final documents (specifications and drawings) on one or multiple CD-ROM in Portable Document Format (PDF) without password protection and printing restrictions. The electronic copy of drawings and



specifications is for bidding purposes only and do not require to be signed and sealed. See Appendix 'D' and Appendix 'E'.

PWGSC shall provide:

- General and Special Instructions to Bidders
- Bid and Acceptance Form
- Standard Construction Contract Documents



SECTION 4 CLASSES OF CONSTRUCTION COST ESTIMATES USED BY PWGSC

DESCRIPTION OF THE CLASSES OF ESTIMATES USED BY PWGSC FOR CONSTRUCTION COSTING OF BUILDINGS PROJECTS

Class 'D' (Indicative) Estimate:

Based upon a comprehensive statement of requirements, and an outline of potential solutions, this estimate is to provide an indication of the final project cost, and allow for ranking all the options being considered.

Submit Class D cost estimates in elemental cost analysis format latest edition issued by the Canadian Institute of Quantity Surveyors with cost per m² for current industry statistical data for the appropriate building type and location. Include a summary in the cost estimate, plus full back up, showing items of work, quantities, unit prices, allowances and assumptions.

The level of accuracy of a class D cost estimate shall be such that no more than a 20% contingency allowance is required.

Class 'C' Estimate:

Based on a comprehensive list of requirements and assumptions, including a full description of the preferred schematic design option, construction/design experience, and market conditions. This estimate must be sufficient for making the correct investment decision.

Submit Class C cost estimates in elemental cost analysis format latest edition issued by the Canadian Institute of Quantity Surveyors with cost per m² for current industry statistical data for the appropriate building type and location. Include a summary in the cost estimate, plus full back up, showing items of work, quantities, unit prices, allowances and assumptions.

The level of accuracy of a class C cost estimate shall be such that no more than a 15% contingency allowance is required.

Class 'B' (Substantive) Estimate:

Based on design development drawings and outline specifications, which include the design of all major systems and subsystems, as well as the results of all site/installation investigations. This estimate must provide for the establishment of realistic cost objectives and be sufficient to obtain effective project approval.

Submit Class B cost estimates in elemental cost analysis format latest edition issued by the Canadian Institute of Quantity Surveyors. Include a summary in the cost estimate, plus full back up, showing items of work, quantities, unit prices, allowances and assumptions.



The level of accuracy of a class B cost estimate shall be such that no more than a 10% design contingency allowance is required.

Class 'A' (Pre-Tender) Estimate:

Based on completed construction drawings and specifications prepared prior to calling competitive tenders. This estimate must be sufficient to allow a detailed reconciliation/negotiation with any contractor's tender.

Submit Class A cost estimates in both elemental cost analysis format and trade divisional format latest edition issued by the Canadian Institute of Quantity Surveyors. Include a summary in the cost estimate, plus full back up, showing items of work, quantities, unit prices, allowances and assumptions.

The level of accuracy of a class A cost estimate shall be such that no more than a 5% design contingency allowance is required.

SECTION 5 TIME MANAGEMENT

1 Time Management, Planning, and Control

The Time Management, Planning, and Control Specialist (scheduler) shall provide a Project Planning and Control System (Control System) for Planning, Scheduling, Progress Monitoring and Reporting and a Time Management, Planning, and Control Report (Progress Report). It is required that a fully qualified and experienced Scheduler play a major role in providing services in the development and monitoring of the project schedule.

The scheduler will follow good industry practices for schedule development and maintenance as recognized by the Project Management Institute (PMI).

PWGSC presently utilizes the Primavera Suite software and MicroSoft Project for its current Control Systems and any software used by the consultant should be fully integrated with these, using one of the many commercially available software packages.

1.1 Schedule Design

Project Schedules are used as a guide for execution of the project as well as to communicate to the project team when activities are to happen, based on network techniques using Critical Path Method (CPM).

When building a Control System you must consider:

1. The level of detail required for control and reporting;
2. The reporting cycle- monthly and what is identified in the Terms of Reference, but also includes Exception Reports;
3. That the duration must be in days;
4. What is required for reporting in the Project Teams Communications Plan and
5. The nomenclature and coding structure for naming and reporting requirements of activities, schedules and reports.

1.2 Schedule Development

For purposes of monitoring and reporting of project progress and ease of schedule review it is important to maintain a standard for all schedules and reports starting with the Work Breakdown Structure (WBS), identification of Milestones, naming of activities as well as schedule outputs and paper sizing and orientation.

Work Breakdown Structure

When developing the schedule the consultant needs to use PWGSC standards and practices. Two basic requirements are the National Project Management System (NPMS) and a Work Breakdown Structure (WBS), structured supporting the NPMS (Levels 1-4).

The WBS is as follows:

- Level 1 Project Title (NPMS)
- Level 2 Project Stage (NPMS)
- Level 3 Project Phase (NPMS)
- Level 4 Processes to meet Deliverables/Control Points Milestones (NPMS)
- Level 5 Sub-Processes and Deliverables in support of Level 4
- Level 6 Discrete activities. (Work Package)

Not all the Stages, Phases and Processes in the NPMS will be required on all the projects, however the structure remains the same.

Major and Minor Milestones

The Major Milestones are standard Deliverables and Control Points within NPMS and are required in all schedule development. These Milestones will be used in Management Reporting within PWGSC as well as used for monitoring project progress using Variance Analysis. The Minor milestones are process deliverables (Level 4) or sub-process deliverables (level 5) also used in Variance Analysis.

Each Milestone will also be assigned appropriate coding for Status Reporting and Management Reporting.

Milestones must have zero duration and are used for measuring project progress.

Milestones may also be external constraints such as the completion of an activity, exterior to the project, affecting the project.

Activities

All activities will need to be developed based on Project Objectives, Project Scope , Major and Minor Milestones, meetings with the project team and the scheduler's full understanding of the project and it's processes.



Subdivide the elements down into smaller more manageable pieces that organize and define the total scope of work in Levels 5-6 that can be scheduled, costed, monitored and controlled. This process will develop the Activity List for the project.

Each activity is a discrete element of work and is the responsibility of one person to perform.

Each activity will describe the work to be performed using a verb and noun combination (i.e. Review Design Development Report).

Activities should not have durations longer than 2 update cycles, with exception of activities not yet defined in a "Rolling Wave".

Each activity will be assigned at WBS level 6 and appropriately coded for Status Reporting and Management Reporting.

These elements will become activities, interdependently linked in Project Schedules.

Project Logic

Once the WBS, Milestones and Activity List have been developed the activities and milestones can be linked in a logical manner starting with a Project Start Milestone. Every activity and milestone must be linked in a logical manner using either a Finish to Start (FS), Finish to Finish (FF), Start to Start (SS) or Start to Finish (SF) relationship. There can be no open-ended activities or milestones.

A Finish to Start (FS) is the preferred relationship.

When developing relationships avoid the use of lags and constraints in place of activities and logic.

Activity Duration

The activity duration (in days) is the estimated length of time it will take to accomplish a task.

Consideration needs to be taken in how many resources are needed and are available, to accomplish any activity. (Example: availability of Framers during a "Housing Boom".) Other factors are the type or skill level of the available resources, available hours of work, weather etc.

There will be several types of lists and schedules produced from this process, which will form part of the Progress Report.

Activity List

An Activity List identifies all activities including milestones required to complete the whole project.

Milestone List

A Milestone List identifies all project Major and Minor milestones.

Master Schedule

A Master Schedule is a schedule used for reporting to management at WBS level 4 and 5 that identifies the major activities and milestones derived from the detailed schedule. Cash Flow projections can be assigned at WBS level 5 for monitoring the Spending Plan.

Detailed Project Schedule

A Detailed Project Schedule is a schedule in reasonable detail (down to WBS Level 6 and 7) for progress monitoring and control, this will ensure that the schedule shall be in sufficient detail to ensure adequate planning and control.

1.3 Schedule Review and Approval

Once the scheduler has identified and properly coded all the activities; put them into a logical order and then determined the appropriate durations. The scheduler can then analyze the schedule to see if the milestone dates meet the contractual requirements and then adjust the schedule accordingly by changing durations, resource leveling or changing logic.

When the schedule has been satisfactorily prepared the scheduler can present the detailed schedule to the Project Team for approval and be Baseline. There may be several iterations before the schedule meets with the Project Teams agreement and the contractual requirements.

The final agreed version must be copied and saved as the Baseline to monitor variances for reporting purposes.

1.4 Schedule Monitoring and Control

Once Baseline the schedule can be better monitored, controlled and reports can be produced.



Monitoring is performed by, comparing the baseline activities % complete and milestone dates to the actual and forecast dates to identify the variance and record any potential delays, outstanding issues and concerns and provide options for dealing with any serious planning and scheduling issues in report form.

Analyze and report from early start sequence on all activities due to start, underway, or finished for the complete project.

There will be several reports generated from the analysis of the baseline schedule and will form part of the Time Management Report in the Required Services Sections (RS)

Progress Reports

A Progress Report reflects the progress of each activity to the date of the report, any logic changes, both historic and planned, projections of progress and completion the actual start and finish dates of all activities being monitored.

The Progress Report includes:

A Narrative Report, detailing the work performed to date, comparing work progress to planned, and presenting current forecasts. This report should summarize the progress to date, explaining current and possible deviations and delays and the required actions to resolve delays and problems with respect to the Detail Schedule, and Critical Paths.

Narrative reporting begins with a statement on the general status of the project followed by a summarization of delays, potential problems and project status criticality, any potential delays, outstanding issues and concerns and options for dealing with any serious planning and scheduling issues.

A Variance Report, with supporting schedule documentation, detailing the work performed to date, comparing work progress to planned. This report should summarize the progress to date, explaining all causes of deviations and delays and the required actions to resolve delays and problems with respect to the Detail Schedule, and Critical Paths.

A Criticality Report identifying all activities and milestones with negative, zero and up to five days Total Float used as a first sort for ready identification of the critical, or near critical paths through the entire project.

Included in the Progress Report as attachments are: WBS chart, Activity Lists, Milestone Lists, Master Schedules, Detailed Project Schedule

Exception Report



The Scheduler is to provide continuous monitoring and control, timely identification and early warning of all unforeseen or critical issues that affect or potentially affect the project.

If unforeseen or critical issues arise, the Scheduler will advise the Project Manager and submit proposed alternative solutions in the form of an Exception Report.

An Exception Report will include sufficient description and detail to clearly identify:

1. Scope Change: Identifying the nature, reason and total impact of all identified and potential project scope changes affecting the project.
2. Delays and accelerations: Identifying the nature, the reason and the total impact of all identified and potential duration variations.
3. Options Enabling a Return to the project baseline: Identifying the nature and potential effects of all identified options proposed to return the project within baselined duration.

1.5 Standard Submissions

At each submission or deliverable stage provide a complete and updated Progress Report, the contents of each report will vary with requirements and at each project phase. Typically a Progress Report has:

1. Executive Summary;
2. Narrative Report;
3. Variances Report;
4. Criticality Report;
5. Exception Report (as required)
6. Work Breakdown Structure Chart;
7. Activity List;
8. Milestone List;
9. Master Schedule with Cash Flow Projections;
10. Detail Project Schedule (Network Diagram or Bar Charts);

1.6 Schedule Outputs and Reporting Formats

The sheet sizing and orientation is more a suggestion that a role, changes to the paper format may vary to accommodate the information and column information required.

Progress Reports

Paper Size: Letter

Paper Format: Portrait

Title Format: Project Title; Report Type; Print Date; Data Date; Revision Block

Body Text: Narratives for each report to match other reports generated in the D.S.S.

Variance Report Columns: Activity ID, Activity Name, Planned Finish, Revised Finish, Variance, Activity % Complete,

Criticality Report Columns: Activity ID, Activity Name, Duration, Start, Finish, Activity % Complete, Total Float.

Exception Reports

Paper Size: Letter

Paper Format: Portrait

Title Format: Project Title; Report Type; Print Date; Data Date; Revision

Body Text: Narrative to match other reports generated in the D.S.S.

Paper Size: Letter

Paper Format: Landscape

Title Format: Project Title; Report Type; Print Date; Data Date; Revision

Columns: Activity ID, Activity Name, Duration, Remaining Duration, Start, Finish, Total Float.

Work Breakdown Structure (indent tree):

Paper Size: Letter

Paper Format: Portrait

Columns: WBS Code, WBS Name, Duration, Cost estimate, start and finish dates.

Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block

Activity Lists

Paper Size: Letter

Paper Format: Portrait

Columns: Activity ID, Activity Name, Start, Finish, Predecessor, Successor.

Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block

Sort with Early Start, then Early Finish, then Activity ID and with the WBS.

Milestone Lists

Paper Size: Letter
Paper Format: Portrait
Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block
Columns: Activity ID, Activity Name, Start, Finish.

Sort with Early Start, then Early Finish, then Activity ID and without the WBS.

Master Schedule (Bar Chart)

Paper Size: 11X17
Paper Format: Landscape
Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block
Columns: Activity ID, Activity Name, Duration, Activity % Complete, Start, Finish, Total Float.

Sort with Early Start, then Early Finish, then Activity ID and with the WBS.

Detailed Project Schedules (Bar Chart)

Paper Size: 11X17
Paper Format: Landscape
Footer Format: Project Title; Report Type; Print Date; Data Date; Revision Block
Columns: Activity ID, Activity Name, Duration, Activity % Complete, Start, Finish, Total Float.

Sort with Early Start, then Early Finish, then Activity ID and with the WBS.

APPENDIX 'A' - Checklist for the Submission of Construction Documents to PWGSC

Last updated April 22, 2008

Date:		
Project Title:	Project Location:	
Project Number:	Contract Number:	
Consultant's Name:	PWGSC Project Manager:	
Review Stage:	66%	99%
	100%	

Item	Verified by:	Comments:	Action by:
Specifications:			
1 National Master Specifications			
1a The current edition of the NMS has been used.			
2 Specification Organization			
2a Either the NMS 1/3 - 2/3 page format or the Construction Specifications Canada full page format is used.			
2b Each Section starts on a new page and the Project Number, Section Title, Section Number and Page Number show on each page.			
2c Specification date and consultant's name are not indicated.			
3 Terminology			
3a The term Departmental Representative is used instead of Engineer, PWGSC, Owner, Consultant or Architect.			
3b Notations such as: "verify on site", "as instructed", "to match existing", "example", "equal to", "equivalent to" and "to be determined on site by" are not used.			
4 Dimensions			
4a Dimensions are provided in metric			

only.			
5 Standards			
5a The latest edition of all references quoted is used.			
6 Specifications Materials			
6a The method of specifying materials uses recognized standards. Actual brand names and model numbers are not specified.			
6b Identify if non-restrictive, non-trade name “prescription” or “performance” specifications are used.			
6c Indicate if a list of acceptable materials have been used.			
6d The term “Acceptable Manufacturers” is not used.			
6e Indicate if sole sourcing has been used.			
7 Unit Prices			
7a Unit prices are used only for work that is difficult to estimate.			
8 Cash Allowances			
8a Indicate if cash allowances have been used.			
9 Warranties			
9a Indicate if warranties extend more than a 12 or 24 months period.			
9b Manufacturers guarantees are not indicated.			
10 Scope of Work			
10 No paragraphs noted as “Scope of Work” are included.			
11 Summary and Section Includes			
11a In part 1 of section, paragraphs “Summary” and “Section Includes” are not used.			
12 Related Sections			
12a The list of related sections and appendices are coordinated.			
13 Index			
13a The index shows a complete list of plans and specification sections with the correct number of pages and correct drawing titles and section names.			
14 Regional Guide Specifications			

14a General Instructions is included (Section 01 00 10 in the NCA).			
15 Health and Safety			
15a Section 01 35 29.06 - Health and Safety Requirements is included.			
16 Designated Substances Report			
16 a Section 01 14 25 - Designated Substances Report is included.			
17 Subsurface Investigation Reports			
17a Subsurface Investigation Reports are included in Division 31.			
18 Experience and qualifications			
18a Experience and qualification requirements do not appear in the specification sections			
19 Pre-qualifications			
19a There are no mandatory contractor and/or subcontractor pre-qualification requirements or references to certificates, transcripts or license numbers of a trade or subcontractor being included in the bid.			
20 Contracting Issues			
20a Contracting issues do not appear in the specifications.			
20b Division 00 of the NMS is not used.			
21 Quality Issues			
21a There are no specification clauses with square brackets “[]” or lines “__” indicating that the document is incomplete or missing information.			

Item	Verified by:	Comments:	Action By:
Drawings:			
1 Title Blocks			
1a The PWGSC title block is used.			
2 Dimensions			
2a Dimensions are provided in metric only.			
3 Trade Names			
3a Trade names are not used.			
4 Specification Notes			
4a There is no specification type notes.			
5 Terminology			
5a The term Departmental Representative is used instead of Engineer, PWGSC, Owner, Consultant or Architect.			
5b Notations such as: “verify on site”, “as instructed”, “to match existing”, “example”, “equal to”, “equivalent to” and “to be determined on site by” are not used.			
6 Information to be included			
6a The project quantity and configuration, dimensions and construction details are included.			
6b References to future work and elements not in contract do not appear or are kept to an absolute minimum and clearly marked.			



I confirm that the plans and specifications have been thoroughly reviewed and that the items listed above have been addressed or incorporated. I acknowledge and accept that by signing certifying that all items noted above have been addressed, should it be found during the tendering of these documents or implementation of the project, that the items above were not properly addressed, my firm will be responsible to resolve all related issues at my firm's expense and may receive an unsatisfactory consultant performance evaluation which could have an impact on my firm's ability to obtain work from PWGSC in the future.

Consultant's Representative: _____

Firm name: _____

Signature: _____ Date: _____

APPENDIX 'B' - Sample of Addendum

Last updated April 22, 2008

ADDENDUM No. _____

Project Number: _____

The following changes in the bid documents are effective immediately. This addendum will form part of the contract documents

DRAWINGS

SPEC NOTE: indicate drawing number and title, then list changes or indicate revision number and date, and re-issue drawing with addendum.

1 A1 Architectural

.1

SPECIFICATIONS

SPEC NOTE: indicate section number and title.

1 Section 01 00 10 - General Instructions

SPEC NOTE: list all changes (i.e. delete, add or change) by article or paragraph

.1 Delete article (xx) entirely.

.2 Refer to paragraph (xx.x) and change ...

2 Section 23 05 00 - Common Work Results - Mechanical

.1 Add new article (x) as follows:

APPENDIX 'C' - Sample of Index

Last updated April 22, 2008

Project No: _____

Index
Page 1 of _____

DRAWINGS AND SPECIFICATIONS

DRAWINGS:

SPEC NOTE: List all Drawings by number and title.

- C-1 Civil
- L-1 Landscaping
- A-1 Architectural
- S-1 Structural
- M-1 Mechanical
- E-1 Electrical

SPECIFICATIONS:

SPEC NOTE: List all Divisions, Sections (by number and title) and number of pages.

<u>DIVISION</u>	<u>SECTION</u>	<u>NO. OF PAGES</u>
DIVISION 01	01 00 10 - General Instructions.....XX
	01 14 25 - Designated Substances Report.....XX
	01 35 30 - Health and Safety.....XX
DIVISION 23	23 xx xx	
DIVISION 26	26 xx xx	



APPENDIX 'D'

USER MANUAL ON DIRECTORY STRUCTURE AND NAMING CONVENTION STANDARDS FOR CONSTRUCTION TENDER DOCUMENTS ON CD ROM

Issued by:

Real Property Contracting Directorate

PWGSC

May 2005

Last Updated: June 3, 2008

Version 1.0

PREFACE

The Government of Canada (GoC) has committed to move towards an electronic environment for the majority of the services it offers. This covers the advertisement and distribution of contract opportunities, including construction solicitations. As a result, it is necessary to obtain a copy of construction drawings and specifications (in PDF format *without* password protection) on one or multiple CD-ROM to facilitate for the GoC the transfer of the construction drawings and specifications electronically to the Government Electronic Tendering System (GETS).

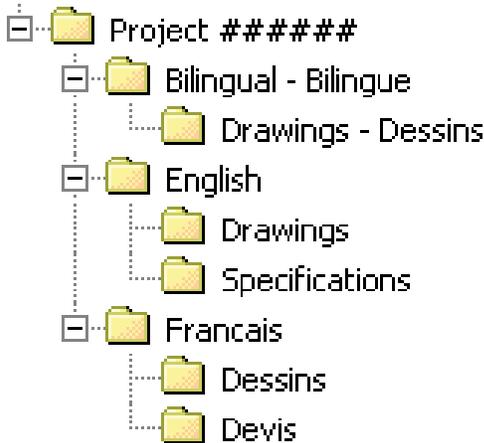
There is therefore a need to adopt a common directory structure and file-naming convention to ensure that the information made available to contractors electronically and in hard (printed) copy is in accordance with the sequence adopted in the real property industries, both for design and construction. This manual defines the standard to be followed by both consultants and print shops at time of formatting and organizing the information, whether drawings and specifications are created by scanning print documents or saved as PDF files from the native software (AutoCAD, NMS Edit, MS-Word, etc...) in which these were created.

It is important to note that the procedure described in this manual is not an indication that consultants are relieved from following the established standards for the production of drawings and specifications. The sole purpose of this manual is to provide a standard for the organization and naming of the electronic files that will be recorded on CD-ROM.

1. DIRECTORY STRUCTURE

1.1 1st, 2nd and 3rd Tier Sub-Folders

Each CD-ROM, whether it is for the original solicitation (tender call) or for an amendment (addendum), must have the applicable elements of the following high-level Directory Structure created:



The following important points are to be noted about the Directory Structure:

- The “*Project #####*” folder is considered the 1st Tier of the Directory Structure where *#####* represents each digit of the Project Number. The Project Number must always be used to name the 1st Tier folder and it is always required. Free text can be added following the Project Number, to include such things as a brief description or the project title;
- The “*Bilingual - Bilingue*”, “*English*” and “*Français*” folders are considered the 2nd Tier of the Directory Structure. The folders of the 2nd Tier **cannot** be given any other names since GETS uses these names for validation purposes. At least one of the “*Bilingual - Bilingue*”, “*English*” and “*Français*” folders is always required, and these must always have one of the applicable sub-folders of the 3rd Tier;
- The “*Drawings - Dessins*”, “*Drawings*”, “*Specifications*”, “*Dessins*” and “*Devis*” folders are considered the 3rd Tier of the Directory Structure. The folders of the 3rd Tier **cannot** be given any other names since GETS also uses these names for validation purposes. There must be always at least one of the applicable 3rd Tier folder in each document.

IMPORTANT: The applicable elements of the Directory Structure (1st, 2nd and 3rd Tier folders) are always required and cannot be modified.

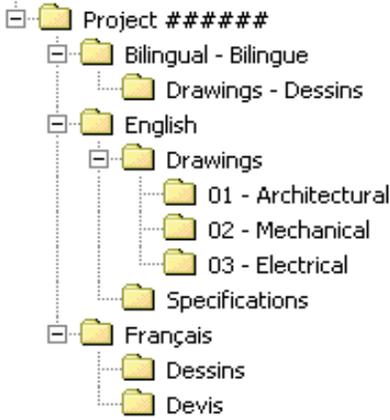
1.2 4th Tier Sub-Folders for Drawings

The “Drawings – Dessins”, “Drawings” and “Dessins” folders must have 4th Tier sub-folders created to reflect the various disciplines of the set of drawings.

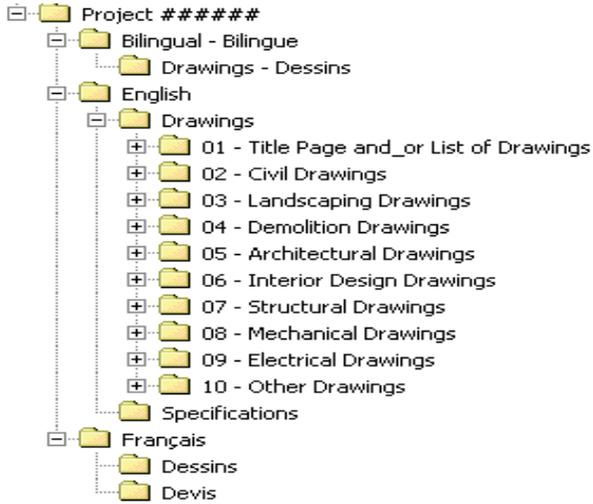
Because the order of appearance of the sub-folders on the screen will also determine the order of printing, it is necessary to start with a number the identification name of the sub-folders in the “Drawings – Dessins”, “Drawings” and “Dessins” folders.

Note: The first sub-folder must be always reserved for the Title Page and/or the List of Drawings unless the first drawing of the set is an actual numbered discipline drawing.

Examples of 4th Tier sub-folders for drawings:



OR



1.2.1 Naming Convention

The 4th Tier sub-folders for drawings must adhere to the following standard naming convention.

For the “*Drawings*” and “*Dessins*” folders:

- Y

Where:

= A two digit number ranging from 01 to 99 (leading zeros must be included)

Y = The title of the folder

Example: 03 – Mechanical

For the “*Drawings - Dessins*” folder:

- Y - Z

Where:

= A two digit number ranging from 01 to 99 (leading zeros must be included)

Y = The English title of the folder

Z = The French title of the folder

Example: 04 - Electrical - Électricité

It should be noted that the numbering of the 4th Tier sub-folders is for sorting purposes only and is not tied to a specific discipline. For example, “*Architectural*” could be numbered 05 for a project where there is four other disciplines before “*Architectural*” in the set of drawings or 01 in another project where it’s the first discipline appearing in the set.

It is essential to ensure that the order of the drawings on the CD-ROM be exactly the same as in the hard copy set. GETS will sort each drawing for both screen display and printing as per the following rules:

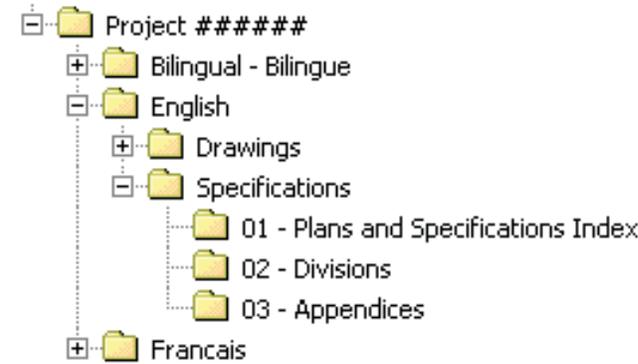
- The alphanumerical sorting is done on an ascending order;
- The alphanumerical order of the sub-folders determines the order of appearance on the screen as well as the order of printing (as an example: all the drawing PDF files in the 01 sub-folder will be printed in alphanumerical order before the drawings in the 02 sub-folder etc...);
- Each drawing PDF file within each sub-folder will also be sorted alphanumerically. This will determine the order of appearance on the screen as well as the order of printing (i.e. Drawing A001 will be printed before Drawing A002, Drawing M02 before Drawing M03, etc...).

1.3 4th Tier Sub-Folders for Specifications

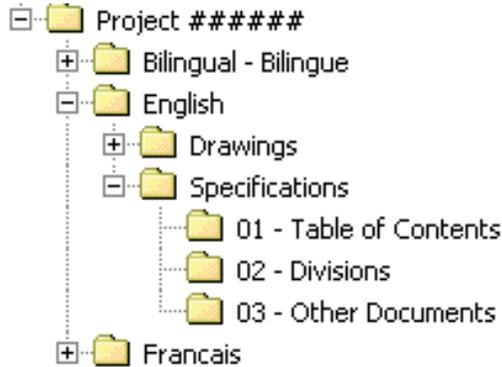
The “*Specifications*” and “*Devis*” folders must have 4th Tier sub-folders created to reflect the various elements of the specifications.

Because the order of appearance of the sub-folders on the screen will also determine the order of printing, it is necessary to start with a number the identification name of the sub-folders in the “*Specifications*” and “*Devis*” folders.

Examples of 4th Tier sub-folders for specifications:



or



1.3.1 Naming Convention

The 4th Tier sub-folders for specifications must adhere to the following standard naming convention.

For the “*Specifications*” and “*Devis*” folders:
- Y



Where:

- ## = A two digit number ranging from 01 to 99 (leading zeros must be included)
- Y = The title of the folder

Example: 02 – Divisions

It should be noted that the numbering of the 4th Tier sub-folders is for sorting purposes only and is not tied to an element of the specifications.

It is essential to ensure that the order of the elements of the specifications on the CD-ROM be exactly the same as in the hard copy. GETS will sort each element of the specifications for both screen display and printing as per the following rules:

- The alphanumerical sorting is done on an ascending order;
- The alphanumerical order of the sub-folders determines the order of appearance on the screen as well as the order of printing (as an example: all the specifications PDF files in the 01 sub-folder will be printed, in alphanumerical order before the PDF files in the 02 sub-folder, etc...);
- Each specifications PDF file within each sub-folder will also be sorted alphanumerically. This will determine the order of appearance on the screen as well as the order of printing (i.e. Division 01 will be printed before Division 02, 01 - Appendix A before 02 - Appendix B, etc...).

2. NAMING CONVENTION FOR PDF FILES

Each drawing, specifications division or other document that are part of the tender documents must be converted in PDF format (without password protection) in accordance with the following standard naming convention and each PDF file must be located in the appropriate sub-folder of the Directory Structure.

2.1 Drawings

Each drawing must be a **separate single page** PDF file. The naming convention of each drawing must be:

X### - Y

Where:

- X = The letter or letters from the drawing title block (“A” for Architectural or “ID” for Interior Design for example) associated with the discipline
- ### = The drawing number from the drawing title block (one to three digits)



Y = The drawing name from the drawing title block (for bilingual drawings, the name in both English and French is to appear)

Example: A001 - First Floor Details

Each drawing that will be located in the appropriate discipline 4th Tier sub-folders must be named with the same letter (“A” for Architectural Drawings for example) and be numbered. The drawing number used to name the PDF file must match as much as possible the drawing number of the actual drawing (the exception being when leading zeros are required).

The following important points about drawings are to be noted:

- The drawing PDF files within each sub-folder are sorted alphanumerically for both displaying and printing. If there are more than 9 drawings in a particular discipline the numbering must use at least two numerical digits (i.e. A01 instead of A1) in order to avoid displaying drawing A10 between A1 and A2. The same rule applies when there are more than 99 drawings per discipline i.e. three digits instead of two must be used for the numbering (for example M003 instead of M03);
- If drawing PDF files are included in the “*Bilingual - Bilingue*” folder, these cannot be included as well in the “*English*” and/or “*Français*” folders;
- If drawings not associated with a particular discipline are not numbered (Title Page or List of Drawings for example), these will be sorted alphabetically. While this does not represent a problem if there is only one drawing in the sub-folder, it could disrupt the order when there are two or more drawings. If the alphabetical order of the drawings name does not represent the order on the hard copy set, the drawings are to be named as per the following standard convention when converted in PDF format to ensure proper display and printing order.

- Y

Where:

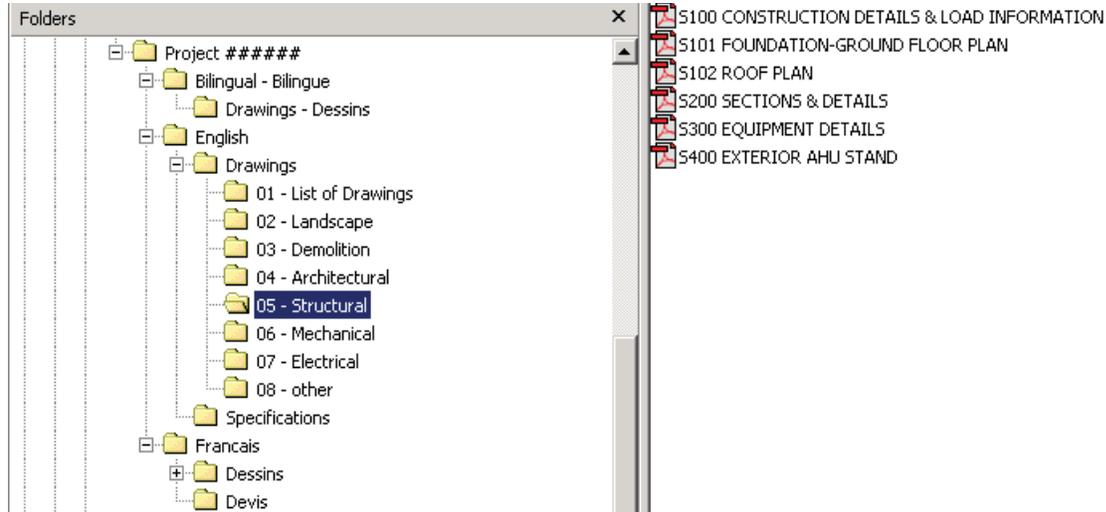
= A two digit number ranging from 01 to 99 (leading zeros must be included)

Y = The name of the drawing

Example: 01 - Title Page
02 - List of Drawings

If numbers are not used in the PDF files name, “*List of Drawings*” will be displayed before “*Title Page*” because “L” comes before “T” in the alphabet.

Example of a 4th Tier Drawings sub-folder's content:



2.2. Specifications

Each Specifications Division must be a separate PDF file and all pages contained in each PDF file must have the same physical size (height, width). The Plans and Specifications Index must also be a separate PDF file. If there are other documents that are part of the Specifications (e.g. Appendix or other) these are to be separate PDF files as well.

2.2.1 Documents other than Specifications Divisions

Because PDF files within the Specifications sub-folders are sorted alphanumerically (in ascending order) for both on screen display and printing order, all files that appear in folders other than the “*Divisions*” sub-folder must be named using a number:

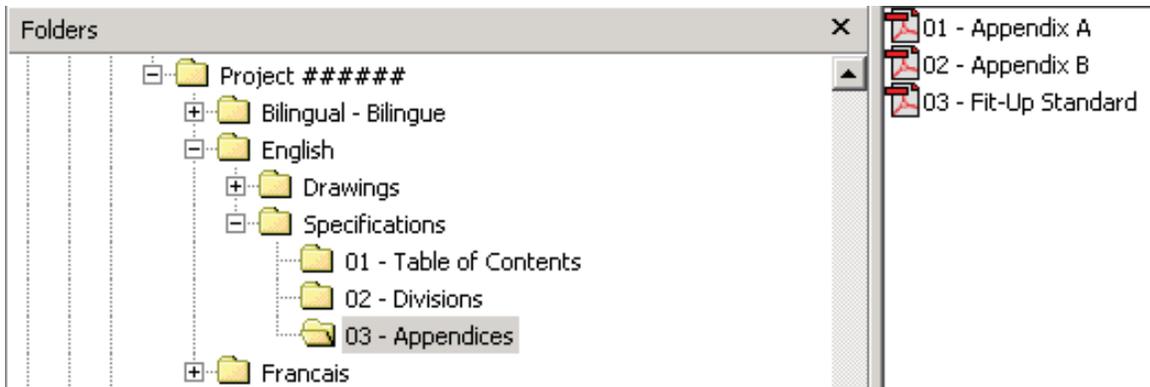
- Y

Where:

= Two digit number ranging from 01 to 99 with leading zeros required
Y = Name of the document

Example: 01 - Plans and Specifications Index

Example of a sub-folder content (sub-folder other than “Divisions”):



2.2.2 Specifications Divisions

The Specifications Divisions must be named as follows:

Division ## - Y

Where:

Division ## = The actual word “Division” followed by a space and a two digit number ranging from 01 to 99 (with leading zeros required)

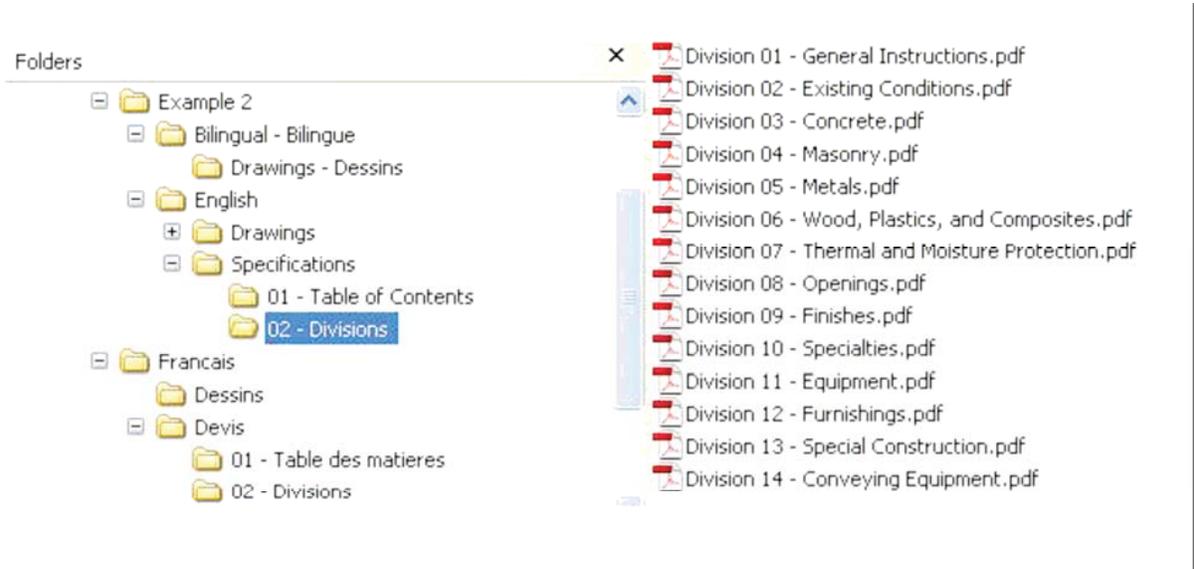
Y = Name of the Specifications Division as per **CSC/CSI MasterFormat™**

Example: Division 05 – Metals

The following important point about specifications is to be noted:

- The Numbering of the Divisions **cannot** be altered from **CSC/CSI MasterFormat™** even if some Divisions are not used in a given project. For example, Division 05 will always remain Division 05 even if Division 04 is not used for a given project.

Example of a “Divisions” sub-folder content:



3. CD-ROM LABEL

Each CD-ROM is to be labeled with the following information:

Project Number / Numéro de projet
Project Title / Titre du projet
 Documents for Tender / Documents pour appel d’offres
 CD X of/de X

Example:

Project 123456 / Projet 123456
 Repair Alexandra Bridge / Réparation du pont Alexandra
 Documents for Tender / Documents pour appel d’offres
 CD 1 of/de 1



APPENDIX 'E'

BASIC REFERENCE GUIDE ON CONVERTING CONSTRUCTION DRAWINGS INTO PORTABLE DOCUMENT FORMAT (PDF)

Issued by:
Real Property Contracting Directorate
PWGSC

May 2005 Last Updated: May 3, 2005

Version 1.0

PREFACE

Portable Document Format (PDF) is the standard format for documents that are posted on the Government Electronic Tendering System (GETS). There is therefore a need to obtain from architectural and engineering consultants an electronic copy of drawings and specifications in PDF for tendering Government of Canada (GoC) construction projects.

In order to have the highest quality in term of resolution and printing, consultants should to the greatest extent possible have the PDF drawing and specification files derived from the native software in which they were created. Scanning is permissible but only in special circumstances, for example when there is no electronic version of a drawing being included in a construction tender package.

The purpose of this document is to provide basic information on the conversion of Computer Aided Design and Drafting (CADD) drawings in PDF. Creating a PDF file from a CADD drawing is a relatively simple process once all the necessary configurations and settings are in place. It actually should not take any longer than it would take to create a plot file or to send a drawing to a printer. The information in this guide is not intended to cover all technical aspects of the conversion, which can be done using various methods, but rather to highlight important points about the process and file settings. The conversion of specifications is not covered in this basic reference guide since it does not require any special configuration or setting.

The information provided in this basic reference guide is not an indication that consultants are relieved from following the established standards for the production of drawings and specifications. The sole purpose of this guide is to provide basic information on the PDF conversion process bearing in mind that additional detailed technical information is available from the various software manufacturers.



1. PRINTER DRIVERS

Adobe Acrobat provides two different printer drivers that are able to convert CADD drawing into PDF format, Acrobat PDF Writer and Acrobat Distiller. Before creating a PDF file from a CADD drawing, a choice must be made as to which one will be used.

Acrobat PDF Writer is a non-PostScript printer driver that works best with documents that don't contain complex graphics

Acrobat Distiller is a PostScript printer driver that works best with documents that contain PostScript fills, Encapsulated PostScript (EPS) graphics, or other complex elements.

It is recommended that Acrobat Distiller be used to create PDF file of architectural and engineering drawings due to their size and complex graphical nature.

2. PRINTER CONFIGURATION

Before converting a CADD drawing to PDF, an Acrobat printer configuration file for the PDF paper size needs to be created. This function can be done in the CADD software rather than using a custom paper size defined for the Acrobat distiller feature. The recommended method is to add a PostScript Adobe plotter in the CADD software and making the necessary setting in terms of media source and size, scale and orientation. The configuration can then be re-used to simplify the conversion process for future files that use the same page size.

As an alternative, although not recommended, a custom-defined size can be created in Acrobat Distiller in the *properties* menu.

3. CREATING PDF FILES

Once the printer configuration has been done in the CADD software, open up Acrobat Distiller and make the necessary settings in the *preferences* and *job options* sub-menu. Ensure that the page size match the sheet size selected in the CADD software to create the file. Particular settings can be saved under different names for future use.

With the Acrobat Distiller application open, ensure the required sheet size is displayed in the *job options* window. Then it is simply a matter of bringing the CADD file into the Acrobat Distiller creation box.

A progress bar will show during the conversion and the newly converted PDF file should open up and be displayed for verification.

4. PDF FILES SETTINGS

4.1 Security

Adobe Acrobat contains security features that can be used to secure the files by restricting any changes to the files. However, since the files will be posted on GETS and will be used for printing copies, the files **must not** be password protected and **must** allow printing.



4.2 Drawing Orientation

The final PDF drawing files must be displayed on the screen in the same direction that the users are intended to view them. This can be achieved by adjusting the setup of the plotter. If the drawing is not oriented properly after the conversion, it can be rotated manually within Adobe Acrobat.

4.3 Font Type

In order to avoid any problems during the conversion and to minimize the potential for font display errors, the fonts used for the production of construction drawings must be *PostScript or True Type fonts*.

4.4 Resolution

Since the PDF files will be used for printing, it is important that a proper resolution be selected. It is recommended to select 600 dots per inch (dpi).

4.5 Scale

When choosing the Plot scale in Adobe, it is important to choose the 1:1 scale to ensure the integrity of the scale from which the drawings were created in the CADD software.

5. SCANNING

Scanning is not recommended and should be done only when the drawing is not available electronically. When scanning a drawing, it is important that it be done in real size (scale 1:1) to ensure that the scale remains intact in subsequent printing. It is recommended that each scanned drawing be opened and verified to ensure that the resolution, scale and border are of an acceptable quality.

6. FINAL CHECKLIST

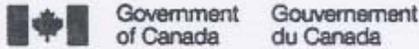
When the drawing file has gone through the PDF conversion, it is recommended to open it and verify the following:

- That the sheet size displayed is what was intended to be created (the size is viewable in the lower left corner of the drawing).
- That the orientation of the sheet is correct.
- That the line types, line weights and fonts match the CADD drawing.
- That the PDF file is in black and white.
- That each drawing is a single PDF file.
- That the PDF file is not password protected and printable.

If all the items are verified, the PDF file is useable

7. ADDITIONAL INFORMATION

For more information about the creation of PostScript and EPS files please refer to the User's Guide of the CADD software being used to produce the drawings. For more information about creating PDF file please refer to the Acrobat Distiller User's Guide and/or visit the Adobe Web site at www.adobe.com.



Contract Number / Numéro du contrat EP758-130472
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 Parliamentary Precinct Branch
3. a) Subcontract Number / Numéro du contrat de sous-traitance	3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant	
4. Brief Description of Work / Brève description du travail Architectural & Engineering Services (A&ES) consultant to design the East Tunnel Replacement Phase 4 (West Block Utilities Tunnel Connection) construction project on Parliament Hill, Ottawa.		
5. a) Will the supplier require access to Controlled Goods? Le fournisseur aura-t-il accès à des marchandises contrôlées?		<input checked="" type="checkbox"/> No / Non <input type="checkbox"/> 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?		<input checked="" type="checkbox"/> No / Non <input type="checkbox"/> 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)		<input type="checkbox"/> No / Non <input checked="" type="checkbox"/> 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.		<input checked="" type="checkbox"/> No / Non <input type="checkbox"/> 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?		<input checked="" type="checkbox"/> No / Non <input type="checkbox"/> 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 <input checked="" type="checkbox"/>	NATO / OTAN <input type="checkbox"/>	Foreign / Étranger <input type="checkbox"/>
7. b) Release restrictions / Restrictions relatives à la diffusion		
No release restrictions Aucune restriction relative à la diffusion <input checked="" type="checkbox"/>	All NATO countries Tous les pays de l'OTAN <input type="checkbox"/>	No release restrictions Aucune restriction relative à la diffusion <input type="checkbox"/>
Not releasable À ne pas diffuser <input type="checkbox"/>		
Restricted to: / Limité à: <input type="checkbox"/> Specify country(ies): / Préciser le(s) pays:	Restricted to: / Limité à: <input type="checkbox"/> Specify country(ies): / Préciser le(s) pays:	Restricted to: / Limité à: <input type="checkbox"/> Specify country(ies): / Préciser le(s) pays:
7. c) Level of Information / Niveau d'information		
PROTECTED A PROTÉGÉ A <input type="checkbox"/>	NATO UNCLASSIFIED NATO NON CLASSIFIÉ <input type="checkbox"/>	PROTECTED A PROTÉGÉ A <input type="checkbox"/>
PROTECTED B PROTÉGÉ B <input type="checkbox"/>	NATO RESTRICTED NATO DIFFUSION RESTREINTE <input type="checkbox"/>	PROTECTED B PROTÉGÉ B <input type="checkbox"/>
PROTECTED C PROTÉGÉ C <input type="checkbox"/>	NATO CONFIDENTIAL NATO CONFIDENTIEL <input type="checkbox"/>	PROTECTED C PROTÉGÉ C <input type="checkbox"/>
CONFIDENTIAL CONFIDENTIEL <input checked="" type="checkbox"/>	NATO SECRET NATO SECRET <input type="checkbox"/>	CONFIDENTIAL CONFIDENTIEL <input type="checkbox"/>
SECRET SECRET <input checked="" type="checkbox"/>	COSMIC TOP SECRET COSMIC TRÈS SECRET <input type="checkbox"/>	SECRET SECRET <input type="checkbox"/>
TOP SECRET TRÈS SECRET <input type="checkbox"/>		TOP SECRET TRÈS SECRET <input type="checkbox"/>
TOP SECRET (SIGINT) TRÈS SECRET (SIGINT) <input type="checkbox"/>		TOP SECRET (SIGINT) TRÈS SECRET (SIGINT) <input type="checkbox"/>



Contract Number / Numéro du contrat EP758-130472
Security Classification / Classification de sécurité UNCLASSIFIED

PART A (continued) / PARTIE A (suite)

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets?
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS? No / Non Yes / Oui
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?
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate? No / Non Yes / Oui

Short Title(s) of material / Titre(s) abrégé(s) du matériel :
Document Number / Numéro du document :

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

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

- | | | | |
|---|---|--|--|
| <input checked="" type="checkbox"/> RELIABILITY STATUS
CÔTE DE FIABILITÉ | <input type="checkbox"/> CONFIDENTIAL
CONFIDENTIEL | <input checked="" type="checkbox"/> SECRET
SECRET | <input type="checkbox"/> TOP SECRET
TRÈS SECRET |
| <input type="checkbox"/> TOP SECRET - SIGINT
TRÈS SECRET - SIGINT | <input type="checkbox"/> NATO CONFIDENTIAL
NATO CONFIDENTIEL | <input type="checkbox"/> NATO SECRET
NATO SECRET | <input type="checkbox"/> COSMIC TOP SECRET
COSMIC TRÈS SECRET |
| <input type="checkbox"/> SITE ACCESS
ACCÈS AUX EMBLEMES | | | |

Please see Security Classification Guide in Annex "A" for details.

Special comments:
Commentaires spéciaux :

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

10. b) May unscreened personnel be used for portions of the work?
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail? No / Non Yes / Oui
If Yes, will unscreened personnel be escorted?
Dans l'affirmative, le personnel en question sera-t-il escorté? No / Non Yes / Oui

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

INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS

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

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

PRODUCTION

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

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

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

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



Contract Number / Numéro du contrat EP758-130472
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	SECRET	TOP SECRET	NATO RESTRICTED	NATO CONFIDENTIAL	NATO SECRET	COSMIC TOP SECRET / COSMIC TRÈS SECRET	PROTECTED / PROTÉGÉ			CONFIDENTIAL	SECRET	TOP SECRET
				CONFIDENTIAL		TRÈS SECRET	NATO DIFFUSION RESTRICTÉE	NATO CONFIDENTIEL			A	B	C	CONFIDENTIEL		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, classifiez 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, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquez qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).

SUBMISSION REQUIREMENTS AND EVALUATION

SRE 1 General Information

SRE 2 Proposal Requirements

SRE 3 Submission Requirements and Evaluation

SRE 4 Price of Services

SRE 5 Total Score

SRE 6 Submission Requirements - Checklist

SUBMISSION REQUIREMENTS AND EVALUATION

SRE 1 GENERAL INFORMATION

1.1 Reference to the Selection Procedure

An 'overview of the selection procedure' can be found in **R1410T** General Instructions to Proponents.

1.2 Calculation of Total Score

For this project the Total Score will be established as follows:

Technical Rating x 90%	=	Technical Score (Points)
<u>Price Rating x 10%</u>	=	<u>Price Score (Points)</u>
Total Score	=	Max. 100 Points

SRE 2 PROPOSAL REQUIREMENTS

2.1 Requirement for Proposal Format

The following proposal format information should be implemented when preparing the proposal.

- Submit one (1) bound original plus five (5) bound copies of the proposal.
- Paper size should be - 216mm x 279mm (8.5" x 11").
- Minimum font size - 11 point Times or equal, with 1.5 line spacing.
- Minimum margins - 20 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 proposals should follow the order established in the Request for Proposal SRE section.

2.2 Specific Requirements for Proposal Format

The maximum number of pages (including text and graphics) to be submitted for the Rated Requirements under SRE 3.2 is forty (40) pages.

The following are not part of the page limitation mentioned above:

- Covering letter
- Consultant Team Identification (Appendix A)
- Declaration/Certification Form (Appendix B)

- Front page of the RFP
- Front page of revision(s) to the RFP
- Price Proposal Form (Appendix C)

Consequence of non-compliance: any pages which extend beyond the above page limitation and any other attachments will be extracted from the proposal and will not be forwarded to the PWGSC Evaluation Board members for evaluation.

SRE 3 SUBMISSION REQUIREMENTS AND EVALUATION

3.1 Mandatory Requirements

Failure to meet all of the following mandatory requirements will render the proposal as non-responsive and no further evaluation will be carried out:

3.1.1 Licensing, Certification or Authorization

The proponent shall be authorized to provide engineering services and must include an engineer licensed, or eligible to be licensed, certified or otherwise authorized to provide the necessary professional services to the full extent that may be required by provincial law in the province of Ontario.

3.1.2 Industrial and Facility Security Requirements

The Proponent must 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), PWGSC, before the closing date of this solicitation. Verifications will be made through CISD to confirm the security clearance status of the Proponent.

3.1.3 Consultant Team Identification

The Consultant team to be identified at this time must include the following:

- **Proponent (Prime Consultant):**
 - Civil Engineer
- **Key Sub-consultants / Specialists:**
 - Tunneling and Rock Excavation Specialist (including expertise in methods of rock excavation, control of vibration, noise, air over pressure, dust and fly rock).
 - Structural Engineer (with experience in designing tunneling and related connecting components).
 - Mechanical Engineer (with experience in heavy industrial grade utilities).

Information required:

- Name of each firm.

- For the Prime Consultant indicate current license and/or how the firm intends to meet the provincial licensing requirements. In the case of a joint venture, identify the existing or proposed legal form of the joint venture (refer to R1410T General Instructions to Proponents, G19 Limitation of Submissions).

An example of an acceptable format (typical) for submission of the team identification information is provided in Appendix A.

3.1.4 Declaration / Certification Form(s)

Proponents must complete, sign and submit the following:

- Declaration / Certification Form found in Appendix B.

3.1.5 Code of Conduct Certifications

Proponents should provide, with their proposal or promptly thereafter, a complete list of names of all individuals who are currently directors of the Proponent. If such a list has not been received by the time the evaluation of proposals is completed, Canada will inform the Proponent of a time frame within which to provide the information. Failure to provide such a list within the required time frame will render the proposal non-responsive. Proponents must always submit the list of directors before contract award.

3.2 Rated Requirements

3.2.1 Achievements of Proponent on Projects

Describe the Proponent's accomplishments, achievements, and experience either as prime Consultant or in a sub-consultant capacity on projects of similar size, scope, and complexity.

Select a **maximum** of three (3) projects constructed within the last fifteen (15) years. Joint venture submissions are not to exceed the maximum number of projects. Only the first three (3) projects listed in sequence will receive consideration. To obtain a higher score on this rated requirement, the proponent should clearly illustrate experience pertinent to:

- Construction of tunnel structures
- Protecting assets of heritage, cultural, and political significance
- Leading external stakeholder approval processes
- Working with a Construction Management project delivery approach
- Working on construction projects that are highly visible, and susceptible to public scrutiny
- Coordination with other consultants involved in adjacent work.

Information to be supplied for each referenced project should include, but not be limited to, the following:

- Project title, project location, name of client entity, year started and year completed.
- Brief project description and intent. Narratives shall include a discussion of design philosophy / approach to meet the intent, design challenges, and resolutions.
- Clearly indicate aspects of these submitted reference projects that are comparable / relevant to the East Tunnel Replacement Phase 4 project in terms of size, scope, and complexity.

- Clearly indicate the services performed on these submitted reference projects.
- Budget control and management: - *i.e.* construction contract award price & final construction cost - explain variation.
- Project schedule control and management - *i.e.* initial project schedule and revised project schedule - explain variation.
- Client references - name, address, phone, and email of client contact at working level - references may be checked.
- Awards received on project.

3.2.2 Achievements of Key Sub-Consultants and Specialists on Projects

Describe the accomplishments, achievements, and experience of the Key Sub-Consultants and Specialists, either as prime Consultant or in a sub-consultant capacity on projects of similar size, scope, and complexity. If the Proponent proposes to provide multi-disciplinary services that might otherwise be performed by a sub-consultant, this should be reflected here.

Select a **maximum** of three (3) projects constructed within the last ten (10) years per **Key Sub Consultant or Specialist identified in section SRE 3.1.3. Consultant Team Identification**. To obtain a higher score on this rated requirement, Key Sub-Consultants and Specialists should clearly illustrate experience pertinent to:

- Relocation of critical utility infrastructure while maintaining continuity of operations
- Construction of underground structures in bedrock
- Protecting assets of heritage, cultural, and political significance
- Designing building security requirements
- Working with a Construction Management project delivery approach
- Working on construction projects that are highly visible, and susceptible to public scrutiny

Information to be supplied for each referenced project should include, but not be limited to, the following:

- Project title, project location, name of client entity, year started and year completed.
- Brief project description and intent. Narratives shall include a discussion of design philosophy / approach to meet the intent, design challenges, and resolutions.
- Clearly indicate aspects of these submitted reference projects that are comparable / relevant to the East Tunnel Replacement Phase 4 project in terms of size, scope, and complexity.
- Clearly indicate the services performed on these submitted reference projects.
- Budget control and management: - *i.e.* construction contract award price & final construction cost - explain variation.
- Project schedule control and management - *i.e.* initial project schedule and revised project schedule - explain variation.
- Client references - name, address, phone, and email of client contact at working level - references may be checked.
- Awards received on project.

3.2.3 Achievements of Key Personnel on Projects

Describe the experience and performance of key personnel from the Proponent Team to be assigned to this project regardless of past association with their current firms. Key Personnel should include the following, if multiple functions are proposed to be performed by one Key Personnel, it should be identified here:

- Principal in Charge
- Project Lead Engineer
- Lead Tunneling and Rock Excavation Specialist
- Lead Structural Engineer
- Lead Mechanical Utilities Engineer

Information that should be supplied for each key personnel includes, but is not limited to, the following:

- Professional accreditations and certifications.
- Accomplishments / achievements / awards.
- Relevant experience, expertise, number of years experience in the industry, and number of years with the current firm.
- Role, responsibility and degree of involvement of individual in past comparable / relevant projects.
- Clearly indicate any previous involvement on the projects referenced in Sections SRE 3.2.1 and SRE 3.2.2, including role and responsibility.

This is the opportunity to emphasize the strengths of the proposed Key Personnel on the team, to recognize their past responsibilities, commitments and achievements.

3.2.4 Understanding of the Project

The proponent should demonstrate understanding of the project goals and objectives, functional/technical requirements, as well as constraints and the issues that will shape the end product.

Information that should be supplied includes, but is not limited to, the following:

- An interpretation of the project's functional and technical requirements.
- A discussion and critical assessment of significant project issues, constraints, challenges, and opportunities.
- Relationship between this project and other major project initiatives (current or planned) on Parliament Hill.
- Broader goals as they relate to sustainable development, site sensitivities, and the principles and guidelines outlined within the Long Term Vision and Plan (2007).
- Preliminary assessment of project schedule, costs, and risks.
- Integration strategy with inter-related projects to be implemented with separate consultant teams but a single Construction Manager.

3.2.5 Scope of Services

The proponent should demonstrate capability to perform the services, to meet project challenges, and to provide a plan of action for delivering the project outlined in the Project Brief of this RFP.

Information that should be supplied includes, but is not limited to, the following:

- Scope of Services - detailed list of anticipated services complete with services synopsis.
- Work Plan - detailed breakdown of work tasks and deliverables.
- Outline of an action plan of the services with implementation strategies and sequence of main activities.
- Project Schedule - proposed major milestone schedule, including conceptual tender and construction schedule.
- Project Cost Control - proposed methodology, including an explanation of how cost control will be applied to maintain the project budget.
- Strategy for Risk Management, including the use of risk techniques applied to construction cost and schedule.

3.2.6 Management of Services

The Proponent should describe how it proposes to:

- Perform the services
- Meet the constraints
- Organize the team and how the team will fit in the existing structure of the firms
- Manage the team to ensure continuing and consistent control as well as production and communication efficiency

The proponent should also identify all Supplementary Sub-Consultant/Specialists required to complete the consultant team.

Supplementary Sub-Consultants/Specialists are **identified in section PD 15 - Consultant Services.**

If the Proponent proposes to provide multi-disciplinary services that might otherwise be performed by a sub-consultant, this should be reflected here.

Information that should be supplied:

- Outline of an action plan of the services with implementation strategies and sequence of main activities.
- Confirm the makeup of the full project team, including the names of the consultant sub-consultants and specialist personnel, and their role on the project.
- Organization chart with position, titles, and names (Consultant Team) showing reporting relationships. Joint Venture business plan, team structure and responsibilities, if applicable.
- Profiles of the key positions (specific assignments and responsibilities).
- Back-up personnel committed for key personnel.
- Communication strategies.

3.2.7 Design Philosophy / Approach / Methodology

The proponent should elaborate on aspects of the project considered to be a major challenge, and describe its design philosophy / approach / methodology. This is the opportunity for the proponent to state the overall design philosophy of its team, as well as its approach for resolving design issues, and in particular, to focus on the unique aspects of the current project.

Information that should be supplied:

- Overall design philosophy / approach / methodology for the project.
- Description of the major project challenges, and how the Proponent Team’s approach will be applied to those particular challenges.
- Detailed approach for addressing each of the items described under section PD 7 - Major Project Issues.

3.3 Evaluation and Rating

3.3.1 Technical Rating

In the first instance, price envelopes will remain sealed and only the technical components of the proposals which are responsive will be reviewed, evaluated and rated by a PWGSC Evaluation Board in accordance with the following to establish Technical Ratings:

Criterion	Weight Factor	Rating	Weighted Rating
Achievements of Proponent	2.0	0 - 10	0 - 20
Achievements of Key Sub-consultants / Specialists	1.5	0 - 10	0 - 15
Achievements of Key Personnel on Projects	2.0	0 - 10	0 - 20
Understanding of the Project	1.0	0 - 10	0 - 10
Scope of Services	1.5	0 - 10	0 - 15
Management of Services	1.0	0 - 10	0 - 10
Design Philosophy / Approach / Methodology	1.0	0 - 10	0 - 10
TOTAL TECHNICAL RATING:	10.0		0 - 100

Generic Evaluation Table

PWGSC Evaluation Board members will evaluate the strengths and weaknesses of the Proponent’s response to the evaluation criteria and will rate each criterion with even numbers (0, 2, 4, 6, 8 or 10) using the generic evaluation table 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	Lacks complete or almost complete understanding of the requirements.	Has some understanding of the requirements but lacks adequate understanding in some areas of the requirements.	Demonstrates a good understanding of the requirements.	Demonstrates a very good understanding of the requirements.	Demonstrates expert understanding of the requirements.
	Weaknesses cannot be corrected	Generally doubtful that weaknesses can be corrected	Weaknesses can be easily corrected	No significant weaknesses	No apparent weaknesses
	Proponent lacks qualifications and experience	Proponent does not have minimum qualifications and experience	Proponent has minimum qualifications and experience	Proponent is qualified and experienced	Proponent 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 covers all components and will likely meet requirements	Team covers all components - some members have worked successfully together	Strong team - has worked successfully together on comparable projects
	Sample projects not related to this project's needs	Sample projects generally not related to this project's needs	Sample projects generally related to this project's needs	Sample projects directly related to this project's needs	Leads in sample projects directly related to this project's needs
	Extremely poor, insufficient to meet performance requirements	Little capability to meet performance requirements	Minimum acceptable capability, should meet minimum performance	Satisfactory capability, should ensure effective results	Superior capability, should ensure very effective results

TO BE CONSIDERED FURTHER, PROPONENTS **MUST** ACHIEVE A MINIMUM TECHNICAL RATING OF FIFTY (50) POINTS OUT OF THE HUNDRED (100) POINTS AVAILABLE AS SPECIFIED ABOVE.

NO FURTHER CONSIDERATION WILL BE GIVEN TO PROPONENTS NOT ACHIEVING THE PASS MARK OF FIFTY (50) POINTS.

SRE 4 PRICE OF SERVICES

All price proposal envelopes corresponding to responsive proposals which have achieved the pass mark of fifty (50) points will be opened upon completion of the technical evaluation. An average price is determined by adding all the price proposals together and dividing the total by the number of price proposals being opened.

All price proposals which are greater than twenty-five percent (25%) above the average price will be set aside and receive no further consideration.

The remaining price proposals are rated as follows:

1. The lowest price proposal receives a Price Rating of 100.
2. The second, third, fourth and fifth lowest prices receive Price Ratings of 80, 60, 40, and 20 respectively. All other price proposals receive a Price Rating of 0.
3. On the rare occasions where two (or more) price proposals are identical, the matching price proposals receive the same rating and the corresponding number of following ratings are skipped.

The Price Rating is multiplied by the applicable percentage to establish the Price Score.

SRE 5 TOTAL SCORE

Total Scores will be established in accordance with the following:

Rating	Possible Range	% of Total Score	Score (Points)
Technical Rating	0 - 100	90	0 - 90
Price Rating	0 - 100	10	0 - 10
Total Score		100	0 - 100

The Proponent receiving the highest Total Score is the first entity that the Evaluation Board will recommend being approached in order to finalize the details of a contractual agreement for the provision of the required services. In the case of a tie, the proponent submitting the lower price for the services will be selected.

SRE 6 SUBMISSION REQUIREMENTS - CHECKLIST

The following list of documents and forms is provided with the intention of assisting the Proponent in ensuring a complete submission. The Proponent ultimately remains responsible for meeting all submission requirements.

Please follow detailed instructions R1410T , General Instructions to Proponents, GI16, Submission of Proposal.

Proponents may choose to introduce their submissions with a cover letter.

- Team Identification - see typical format in Appendix A

- Declaration / Certification - completed and **SIGNED** form(s) provided in Appendix B
- Code of Conduct Certifications - list of directors
- Proposal - one (1) original plus five (5) copies
- Front page of RFP - completed
- Front page(s) of any solicitation amendment - completed

In a separate envelope:

- Price Proposal Form - completed and submitted in a **SEPARATE ENVELOPE**

PROJECT BRIEF

This Project Brief is intended to identify the project requirements to proponents, and to provide the project information needed to submit a proposal. The document is divided into the following sections:

TABLE OF CONTENTS:

Glossary

Description of Project

- PD 1 Project Information
- PD 2 Project Background
- PD 3 Project Outline
- PD 4 Project Requirements
- PD 5 Implementation Strategy
- PD 6 Project Context
- PD 7 Project Stakeholders
- PD 8 Project Objectives
- PD 9 Quality, Standards and Principles
- PD 10 Major Project Issues
- PD 11 Project Constraints & Challenges
- PD 12 Construction Cost Estimate
- PD 13 Preliminary Project Schedule
- PD 14 Existing Documentation
- PD 15 Consultant Services

Description of Services

Project Administration

- PA 1 Project Administration
- PA 2 Project Team Organization
- PA 3 Project Approvals
- PA 4 Authorities Having Jurisdiction
- PA 5 Submissions, Reviews, and Approvals

Required Services

- RS 1 Analysis of Project Requirements
- RS 2 Design Concept
- RS 3 Design Development
- RS 4 Construction Documents
- RS 5 Tender Call, Bid Evaluation & Construction Contract Award
- RS 6 Construction and Contract Administration
- RS 7 Commissioning
- RS 8 Risk Management
- RS 9 Project Time Planning, Scheduling and Control
- RS 10 Estimating and Cost Planning

Additional Services

AS 1 Resident Site Services During Construction
AS 2 Bilingual Documents

Project Brief Attachments

1 - Doing Business

GLOSSARY

A&E	Architectural and Engineering
ACPDR	Advisory Committee on Planning, Design, and Realty
AHJ	Authorities Having Jurisdiction
APR	Analysis of Project Requirements
AS	Additional Services
ASTM	American Society for Testing and Materials
BCIS	Building Cost Information Service
BIM	Building Information Modeling
CBUS	Centre Block Underground Service
CEAA	Canadian Environmental Assessment Act
CHCP	Central Heating and Cooling Plant
CIQS	Canadian Institute of Quantity Surveyors
CM	Construction Manager
CO	Change Orders
COE	Centre of Expertise
CoO	City of Ottawa
CPM	Critical Path Method
CSA	Canadian Standards Association
DC	Design Concept
DD	Design Development
EMCS	Energy Management and Control System
EPA	Effective Project Approval
FCC	Fire Commissioner of Canada
FHBRO	Federal Heritage Building Review Office
GI	General Instructions to Proponents
HoC	House of Commons
HoC-MP	House of Commons Major Projects
HoC-Sec	House of Commons Security
HRSDC	Human Resources and Skills Development Canada
HSC	Heritage Character Statements
HST	Harmonized Sales Tax
HVAC	Heating, Ventilation, and Air Conditioning
IDP	Integrated Design Process
IESNA	Illuminating Engineering Society of North America
IT	Information Technology
ITPMO	Information Technology Project Management Office
KVA	KiloVolt Amperes
LTVP	Long Term Vision and Plan for the Parliamentary Precinct
MCC	Motor Control Centre
MM	Multimedia
NBC	National Building Code
NCC	National Capital Commission
NHS	National Heritage Site
NMS	Network Master Specifications
O&M	Operations and Maintenance
OBC	Ontario Building Code
P&TS	Professional & Technical Services
PA	Project Administration

PD	Description of Project
PMSS/MMS	Preventive Maintenance Support System / Maintenance Management System
PPB	PWGSC Parliamentary Precinct Branch
PV	Performance Verification
PWGSC	Public Works and Government Services Canada
RCMP	Royal Canadian Mounted Police
RFP	Request for Proposal
RPB	PWGSC Real Property Branch
RPCD	Real Property Contracting Directorate
RS	Required Services
RSR	Resident Site Representative
SI	Supplementary Instructions to Proponents
TAB	Testing and Balancing
TSSA	Technical Standards and Safety Authority
UMS	PWGSC Utilities Management Services
UPS	Uninterruptable Power Supply
UUR	Underground Utilities Relocation
VWCPH1	Visitor Welcome Centre, Phase 1
WBS	Work Breakdown Structure

DESCRIPTION OF PROJECT

PD 1 PROJECT INFORMATION

Public Works and Government Services Canada (PWGSC) intends to retain a firm of consulting engineers to act as Prime Consultant, together with a multidisciplinary team of sub-consultants for the provision of the services described in this Project Brief.

- 1.1 PWGSC Project Title:** East Tunnel Replacement – Phase 4
(*West Block Utility Tunnel Connection*)
- 1.2 Location of the Project:** Parliament Hill, Ottawa, Ontario
Immediately to the North of Wellington Street
Near the SW corner of the West Block Building
- 1.3 PWGSC Project Number:** R.056358.007
- 1.4 User Group:** PWGSC Utilities Management Services
- 1.5 Project Team:**
- | | |
|-------------------------|--|
| J. Shannon | Utilities Management Services - Project Leader |
| J. Davies | Cliff CHCP Plant Superintendent |
| R. Rowe | PWGSC Design Manager |
| M. Benoit | PWGSC Project Manager |
| F. Phillips | PWGSC Commissioning Manager |
| PCL Constructors Canada | Construction Manager |

PD 2 PROJECT BACKGROUND

The East Tunnel was built in 1919 as a utilities connection between the Cliff Street Central Heating and Cooling Plant (Cliff CHCP) and the Centre Block of Parliament Hill. Currently, the tunnel services 6 buildings directly, and is part of a larger network loop that serves steam and chilled water to 53 buildings.

The East Tunnel has seen many repairs over the years. The most recent major intervention was undertaken in 1966 and 1967, at which time the facilities were upgraded and the tunnel structure was reinforced. Also at that time, new tunnel branches were also constructed towards the East of Parliament Hill.

The existing East Tunnel's structural shell is currently in a state of disrepair. The tunnel is also relatively small for the number and size of pipes contained within it, which makes it difficult to access for repairs. Although the East Tunnel's existing heating and cooling pipes have been well maintained, their size is insufficient to accommodate future loads for additional buildings.

In recent years, various options for rehabilitating the East Tunnel have been investigated and considered. However, due to rapid deterioration, safety concerns, inherent limitations, and future load requirements, it has ultimately been decided to replace its distribution function.

The East Tunnel Replacement project is being implemented in five phases. Phases 1, 2, and 4 involve constructing new dedicated building connections directly from the existing Kent-Wellington Tunnel. Phases 3 and 5 relate to decommissioning those segments of the East Tunnel that will become redundant once Phases 1, 2, and 4 are completed.

2.1 Project Phases Implemented by Others

Phases 1, 2, 3, and 5 of the East Tunnel Replacement project do not form part of the scope of this Project Brief. These phases will be implemented under a separate sub-project (by others). A short description of these project phases is provided below for context purposes, and is to be treated as information only:

PHASE 1 (outside the scope of this project)

A new vertical shaft and valve chamber (approximately 3.5m in diameter) will be constructed adjacent to the Kent-Wellington Tunnel, to the north of Wellington Street and south of the Supreme Court, at approximately 18m below grade. Approximately 77m of new shallow tunnel (3.0m x 3.0m in cross section) will run horizontally between this new shaft and the Justice Building. A second shallow tunnel, approximately 30m in length, will connect the Justice Building and the Confederation Building.

PHASE 2 (outside the scope of this project)

Approximately 78m of the existing East Tunnel between Cliff CHCP and the Supreme Court will be completely rehabilitated, including deepening of the tunnel structure cross section, addition of a lining and drainage, and replacement of all contained services. This phase will include rehabilitation of tunnel structural elements contained within the Supreme Court mechanical room.

PHASE 3 (outside the scope of this project)

A long segment of the East Tunnel, between the Supreme Court and the Lovers' Lane Ventilation Chamber, will be decommissioned following commissioning of the new services installed during Phase 1 and Phase 2.

PHASE 5 (outside the scope of this project)

A short segment of the East Tunnel, between the Lovers' Lane Ventilation Chamber and the vertical shaft to the Deep Parliamentary Tunnel, will be decommissioned last (once all others phases are completed).

PD 3 PROJECT OUTLINE

The scope of this mandate relates only to the new Phase 4 branch tunnel portion of the East Tunnel Replacement project. This fourth phase is treated as a stand-alone sub-project, with no direct physical linkages to Phases 1, 2, 3, and 5. For the purposes of this Project Brief, the term "project" relates to Phase 4 only.

PHASE 4

The project's main objective is to construct a new deep tunnel connecting the West Block Building to the Kent-Wellington Tunnel for the purposes of feeding heating and cooling utility services (steam and chilled water) as well as channeling cabling infrastructure pathways. This tunnel is to become a new branch of the existing Kent-Wellington Tunnel, which is part the Cliff Heating and Cooling Plant's utility distribution network for the Parliamentary Precinct. The utility services contained in this new tunnel will replace those from the abandoned East Tunnel connection, which previously fed West Block from the North side of the building.

PD 4 PROJECT REQUIREMENTS

This project must be completed, commissioned and fully operational in advance of the West Block Rehabilitation project, scheduled for occupancy in 2017.

Based on feasibility studies, the proposed solution should include the following components:

- A new vertical shaft (immediately to the North of Wellington Street, near the SW corner of the West Block Building) to act as an access point for construction of deep horizontal tunnel segments. This vertical shaft is expected to be approximately 5m in diameter, and 20m deep.
- A new deep horizontal tunnel connection between the new vertical shaft and mechanical rooms situated under the West Block's courtyard infill at Level B2. This tunnel segment is expected to be approximately 4m in diameter, approximately 20m long, and would run at a depth of approximately 10m below grade and under the existing footprint of the West Block Building.
- A new deep horizontal tunnel connection between the new vertical shaft and the Kent-Wellington Tunnel. This tunnel segment is expected to be approximately 4m in diameter, approximately 30m long, and would run at a depth of approximately 20m below grade.
- A new underground valve chamber at the Kent-Wellington Tunnel connection point.
- Provisions for a future utility tunnel connection for the West Terrace Pavilion (a new building planned to be constructed in the future on the west side of the West Block Building).
- Relocation of underground services, shallow utilities, and interferences currently located in the vicinity of the project site area.

Geological conditions around Parliament Hill include shallow bedrock conditions. It is expected that the new tunnel will be constructed almost entirely into fractured sedimentary rock formations.

The new tunnel segments must accommodate the following services:

- Two (2) insulated chilled water lines, approximately 750mm in diameter.
- One (1) insulated high pressure steam line, approximately 400mm in diameter.
- One (1) insulated pumped condensate return, approximately 200mm in diameter.
- One (1) insulated high pressure drip line.
- One (1) compressed air line.
- One (1) domestic water line with hose bibs for maintenance.
- Ventilation systems and controls.
- Low voltage electrical infrastructure, including lighting system.
- Welding outlets throughout the tunnel and at each building entrance.

- Metering systems.
- Fire alarm systems (*i.e.* detection, alarm, and voice communication).
- Security systems (*i.e.* video surveillance, access control, and intruder detection).
- Cable raceways for IT & Telecommunication and security systems.
- Additional space reserved for potential future additional services.

Each component of this new connecting tunnel structure is to deliver a minimum of 75 years service life (National Building Code of Canada), and is to provide heating and cooling service to the West Block Building. Additionally, the design and placement of the new tunnel segments must respect the Parliamentary Precinct's 25 year Long Term Vision and Plan (LTVP), and must include allowances for future connection and additional capacity to serve the planned West Terrace Pavilion building.

Operation and maintenance of the components and the system itself is of prime importance. The tunnels must be waterproofed such that their interiors remain dry over the specified service life. Drainage is nonetheless required for any incidental water. Devices requiring maintenance must be completely accessible. Adequate space must be provided within the tunnels to ensure routine and emergency inspection and maintenance. Ventilation systems must meet or exceed the requirements of ASHRAE 55, ASHRAE 62-1999 and ACGIH threshold limits values. To facilitate maintenance, cable pathways are to be mounted near the ceiling. The tunnel will be classed as a confined space. Escape routes must be provided for personnel working in the tunnel.

A comprehensive Design Intent Brief (see section RS 7.2 for details) is required at the end of the project for ALL systems and related subsystems, in both official languages. The manual will narratively summarize the design intents, design criteria, connected loads and system capacities to all current buildings and assumptions for future buildings, operating strategies, etc., that are connected to the new tunnel elements. The Design Intent Brief will also narrate the interconnection and operation with and impact to the Cliff CHCP and other tunnel networks, such as the Kent/Wellington Tunnel.

PD 5 IMPLEMENTATION STRATEGY

5.1 Construction Management:

The project will be implemented based upon a Construction Management model, which will involve a phased construction approach using multiple tender packages tendered by the Construction Manager (CM). The proponent shall allow for the completion of multiple trades construction documents. No additional fees will be accepted for splitting of trade packages.

A Construction Management firm was retained in summer 2011. The Construction Manager's mandate presently includes Construction Management services for the West Block Rehabilitation project, where construction is well under way.

The Construction Manager will also be performing Construction Management services for the Visitor Welcome Centre Phase 1 project and associated underground utility relocations. Construction activities for both projects are expected to overlap on site (in terms of time and space). Tendering will therefore involve the services of a single Construction Manager, who will act as Constructor in charge of a single integrated construction site (CM at risk).

To expedite project delivery, it is anticipated that construction of this project will also be performed in phases that are closely coordinated with those from the West Block Rehabilitation and Visitor Welcome Centre Phase 1 projects. An Integrated Design Process (IDP) will be used with involvement from the Construction Manager, from the West Block Rehabilitation project team, and with Client/Users common to both projects.

Reporting directly to the Departmental Representative, the Construction Manager will participate in design meetings, provide constructability advice, and provide recommendations for construction phasing and tender package sequencing.

5.2 Geotechnical Services:

Geotechnical services will be performed by a separate entity, retained by PWGSC, and reporting directly to the Departmental Representative. Through the Departmental Representative, the Consultant will be required to coordinate with PWGSC's Geotechnical Services Consultant, to review reports prepared by this consultant, to identify areas where additional geotechnical information may be necessary for design purposes, and to work in collaboration with this consultant during construction phase inspections and site monitoring activities.

5.3 Environmental Assessment:

A project specific Environmental Assessment Report and a project specific Designated Substances Report will be performed by a separate entity, retained by PWGSC, and reporting directly to the Departmental Representative. The Consultant will be required to follow the recommendations of these reports, and to convert these recommendations into specific requirements that will form part of the Construction Documents.

PD 6 PROJECT CONTEXT

6.1 Direct Link to the LTVP:

The LTVP for Parliament Hill was approved by Cabinet in 2007. A key component of the LTVP is the West Block Rehabilitation project. Starting in 2017, the West Block building is planned to be occupied as an interim legislative building during a major rehabilitation of the Centre Block building. The West Block will hold an interim Chamber of Commons until such time as Centre Block is ready to re-accommodate the function.

New utilities connections planned as part of this East Tunnel Replacement Phase 4 project are considered critical for the operations of the West Block building, and are required in advance of its occupancy in 2017 to avoid negative repercussions on the LTVP.

This project is part of the West Block Program. It will therefore be managed with important considerations given to the West Block Rehabilitation project and its other related projects (see section PD 6.2 below for details).

6.2 Links with Other Projects:

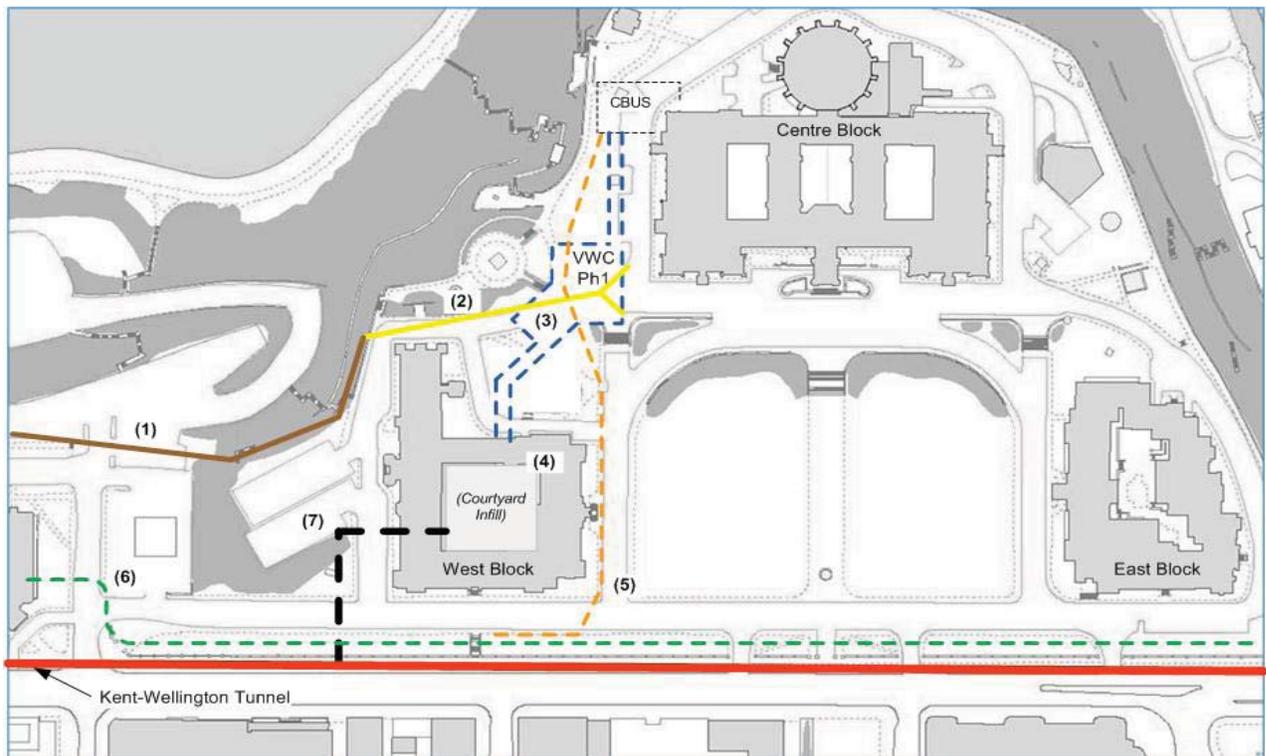
This project has strong linkages to the West Block Rehabilitation project and the Visitor Welcome Centre Phase 1 project (VWCPH1). Both of these inter-related projects will be designed separately but implemented by the same Construction Manager (see section PD 2.2 - Implementation

Strategy for details). A great deal of coordination is required with the Construction Manager and with the West Block Rehabilitation and VWCPH1 project teams.

In particular, it is anticipated that these inter-related projects will seek to extend the utilities provided as part of this project to create a secondary distribution loop for the Centre Block building. The pathway identified for this loop runs from level B2 of the West Block building, through a utility corridor beneath the VWCPH1, and into the Centre Block Underground Services building (CBUS). Sizing and capacity of utilities will need to be closely coordinated with these inter-related projects during the design stages.

In addition to these two projects, other inter-related projects with lesser linkages include:

- Underground Utilities Relocation project, adjacent to the West Block Building.
- Perimeter Security project for Parliament Hill, north of Wellington Street.
- East Tunnel Replacement project, Phases 3 and 5.



- Legend:**
1. East Tunnel - Phase 3 (Decommissioning)
 2. East Tunnel - Phase 5 (Decommissioning)
 3. West Block Rehabilitation
 4. Visitor Welcome Centre Phase 1
 5. Underground Utility Relocation
 6. Perimeter Security
 7. East Tunnel - Phase 4 (The Project)

Figure 1: Illustration of Site and Location of Inter-related Projects

6.3 Historic Character of Site:

The LTVP is shaped around heritage concerns and provides guidance on buildings, site and landscape concerns in the Parliamentary Precinct.

This project is located within the area identified as Public Grounds of the Parliament Buildings, a classified landscape by the Federal Heritage Building Review Office (FHBRO). It is also a National Historic Site. In addition, the new tunnel must be designed to connect to the West Block building, which is identified by FHBRO as a classified building.

As the grounds are classified, all visible aspects of the project must be carefully designed to respect and protect the heritage character defining elements of the site.

FHBRO has conducted a Formal Intervention Review of the VWCPH1 project on 14 August 2009, in which FHBRO states that the impact on the landscape from servicing the underground facilities must be carefully considered and that all proposed underground projects should be submitted to FHBRO for review prior to proceeding to the design stage.

In support of the heritage recognition, the following core documents have been developed and must be considered when designing the new tunnel segments:

- The Heritage Character Statements (HCS) for the West Block building.
- The Heritage Character Statements (HCS) for the Public Grounds of Parliament Buildings.
- The National Heritage Site (NHS) designation.

In addition to these documents, the Standards and Guidelines for the Conservation of Historic Places in Canada, published by Parks Canada, must be referred to in assessing options. The most current edition of the Standards and Guidelines for the Conservation of Historic Places can be found through links in the following web site: <http://www.pc.gc.ca/eng/progs/lhn-nhs/index.aspx>

PD 7 PROJECT STAKEHOLDERS

Project Stakeholders include representatives from the following organizations:

- | | | |
|-----|---|-----------|
| 1. | House of Commons | (HoC) |
| 1.1 | House of Commons Major Projects | (HoC-MP) |
| 1.2 | Information Technology Project Management Office | (ITPMO) |
| 1.3 | House of Commons Security | (HoC-Sec) |
| 2. | Federal Heritage Buildings Review Office | (FHBRO) |
| 3. | National Capital Commission | (NCC) |
| 4.1 | Advisory Committee on Planning, Design and Realty | (ACPDR) |
| 4. | Public Works and Government Services Canada | (PWGSC) |
| 4.1 | PWGSC Parliamentary Precinct Branch | (PPB) |
| 4.2 | PWGSC Real Property Branch | (RPB) |
| 4.3 | PWGSC Utilities Management Services | (UMS) |

- | | | |
|----|---|---------|
| 5. | Human Resources and Skills Development Canada | (HRSDC) |
| 6. | Inter-related Projects Teams | (IRPTs) |
| 7. | Royal Canadian Mounted Police | (RCMP) |
| 8. | City of Ottawa | (CoO) |

PD 8 PROJECT OBJECTIVES

In concert with the project description and functional requirements, the project is intended to achieve the objectives below. These objectives will be used to measure the overall success of the project, both in terms of delivery of the services and in terms of results.

8.1 Objective One: Planning and Context

Implement this project in a manner that will meet current and future demands and requirements of Utility Management Services, of the LTVP for the Parliamentary Precinct, and of the project's Stakeholders.

8.2 Objective Two: Reliability and Performance

Provide branch connections that will ensure stable and reliable services for the next 75 years and beyond. Achieve engineering principles that meet or exceed today's minimum code requirements.

Provide systems that will enable long term life cycle performance that is both efficient and cost effective. This is to be achieved through:

- Reliable, cost effective operation and maintenance.
- Development that embodies sustainable design and application principles.
- Healthy and safe working environments.
- Systems that can be accessed and easily repaired and or replaced.

8.3 Objective Three: Respect of Heritage Surroundings

Meet the spatial, operational and technological requirements, while respecting the heritage character and values of Parliament Hill.

8.4 Objective Four: Meet West Block Program Scheduling Requirements

Meet the West Block Rehabilitation Project schedule requirements by ensuring that the new utility tunnel connection is fully commissioned ahead of West Block occupancy in 2017.

8.5 Objective Five: Project Delivery

Deliver the project utilizing best practices from the construction industry, while respecting the approved scope, quality, budget, and schedule. This is to be achieved through:

- A cohesive functional partnership and open communication between all members of the Project Team and Stakeholders throughout all phases of the project life.
- Strong collaboration and coordination with inter-related project teams.
- Rigorous quality assurance review during the design and construction phases.

- Timely response to resolve issues as they occur.
- Success in satisfying, and where possible exceeding, the expectations and needs of the User Group and Stakeholders.
- Continuity of key personnel working within a dedicated team for the project life.

PD 9 QUALITY, STANDARDS AND PRINCIPLES

9.1 Design Principles:

PWGSC expects the Consultant to maintain a high standard of architectural and engineering design, based upon recognized contemporary design principles. All design elements, planning, architectural, engineering and landscaping, must be fully coordinated and consistent in adherence to good design principles.

The quality of materials must take into account the total life-cycling of the tunnels. The design must provide durability, flexibility, and capacity for the addition of future loads.

The project is to be implemented in an environmentally responsible manner, providing a healthy and safe work environment that meets or exceeds all codes and supports optimum operations.

9.2 Sustainable Development and Building Practices:

The procedures in “AES Best Practice - Integrated Design Process” (see Section PD 14 - Existing Documentation for reference) provide the Consultant with a framework within which to provide consulting services for the project.

A checklist is included in Table 1 of this best practice. This checklist is provided to emphasize its importance to the projects and the fact that it influences all phases of the work. This checklist is to be used in conjunction with the upcoming sections and considered part of the Consultant's scope of work.

At every milestone submission to PWGSC, the Consultant will be expected to include as part of its deliverables a written update on the project's strategy to address sustainable aspects and issues.

All major project decisions must be scrutinized with respect to how best to achieve PWGSC's high performance goals for Sustainability.

A final wrap up is required at the end of the project in the Design Intent Brief.

9.3 Waste Management:

For all Real Property Services projects where the area exceeds 2,000m², a solid waste management program must be implemented. This requirement exists by regulation in the province of Ontario and by policy for the rest of Canada.

9.4 Code Compliance:

Codes, regulations, by-laws and decisions of “Authorities Having Jurisdiction” shall be observed. In cases of overlap, the most stringent will apply. The Consultant shall identify jurisdictions appropriate to the project.

9.5 Risk Management:

A risk management strategy is an important part of project planning. All Project Team members will assume an integral part of the risk management strategy. Specific services required by the Consultant are outlined in section RS 8 - Risk Management.

9.6 Health and Safety:

Health and Safety - Construction:

PWGSC recognizes its responsibility to ensure the health and safety of all persons on Crown construction projects and the entitlement of both federal employees and private sector workers to the full protection afforded them by occupational health and safety regulations.

In keeping with the responsibility, and in order to enhance health and safety protection for all individuals on federal construction sites, PWGSC will voluntarily comply with the applicable provincial/territorial construction health and safety acts and regulations, in addition to the related Canada Occupational Safety and Health Regulations.

Health and Safety - User:

As a federal facility, provisions identified in the Canada Labour Code must be adhered to. PWGSC recognizes its responsibility to ensure the health and safety of all persons; both working within tunnels for operation and maintenance purposes, or visiting the tunnels to receive a service. To support this responsibility additional mandatory provisions have been identified within the departmental Occupational Health and Safety Policy Suite.

9.7 Commissioning:

Commissioning of the systems will be of the utmost importance due to the critical role of the Kent-Wellington tunnel and connected systems in the continuous operation of the Parliament of Canada.

Full Consultant services are required through post-construction reporting. The Consultant shall be required to prepare a comprehensive Commissioning Plan for the project. The plan must be updated regularly as the project progresses through the design stages.

The Construction Manager will be mandated to perform and document all commissioning activities through its own Commissioning Agent. The Consultant shall assist the Construction Manager and its sub-contractors in the preparation of a detailed commissioning schedule, and shall monitor and report on progress and compliance of all commissioning activities.

Narrative documentation of the systems operation shall be included into a comprehensive Design Intent Brief - Owner’s Manual (refer to section RS 7.2 for details). This Design Intent Brief is to be oriented towards the end user, while also including essential design information for future repairs projects. It is to be updated at all stages of the project, to serve as a guide during design and construction, and must ultimately reflect the as-commissioned works at the completion of the project.

9.8 Heritage Considerations:

The project is to be constructed in a FHBRO Classified Grounds and is connected to FHBRO Classified buildings of cultural significance to all Canadians.

Aspects of the project that are visible on the surface landscape must respect the Heritage Value Statements and Heritage Character Defining Elements described in the Heritage Character Statements developed by FHBRO.

9.9 Security Considerations:

Maintaining security of the tunnel network is of primary importance. The Consultant must ensure that designs consider security of critical infrastructure to support Parliamentary Operations and Cliff Plant Operations is fully secured during construction.

PD 10 MAJOR PROJECT ISSUES

10.1 Kent-Wellington Tunnel Connection in a Congested Area:

Issue: The new valve chamber is to be constructed in a congested area of the Kent-Wellington Tunnel that contains critical services. Any damage to, or interruption of these services during construction could render many critical buildings without heating and cooling.

Strategy to control: The valve chamber design must allow adequate space to run and connect each new branch service without disruption to other services. The piping design shall maximize opportunities for pre-fabrication and assembly to reduce isolation downtime during tie-in. Protective measures shall be designed-in such as to reduce risk of damage to existing systems during construction of the valve chamber and shaft.

10.2 Unknown Geotechnical Conditions:

Issue: Need to establish an appropriate definition of subsurface conditions to support design and construction, to provide a contractual basis for the assignment of construction risk due to unknown ground conditions, and to provide a benchmark against which to assess potential Construction Team claims of changed ground conditions.

Strategy to control: Geotechnical services will be performed by a separate entity, retained by PWGSC, and reporting directly to the Departmental Representative. Through the Departmental Representative, the Consultant will be required to coordinate with PWGSC's Geotechnical Services Consultant, to review reports prepared by this consultant, to identify areas where additional geotechnical information may be necessary for design purposes, and to work in collaboration with this consultant during construction phase inspections and site monitoring activities.

10.3 Limiting Damage to Adjacent Buildings, Grounds, and Underground Services:

Issue: Several of the buildings, grounds, and underground services in the area of construction are highly sensitive due to age, profile, or occupancy. This is the case, in particular, for the West Block Building.

Strategy to control: The excavation method for the new tunnel must consider the effects of vibration on its surroundings. The Consultant is to determine safe vibration criteria, and is to monitor vibrations during construction.

The excavation method for the new tunnel and shaft must consider the effects of loss of ground support on the surroundings. The Consultant is to determine safe temporary support and monitoring strategies during construction.

The project requires engineering specialists in rock mechanics, mining, coring, blasting, blast vibration monitoring, hoe ramming (explosives). The requirement is to develop and implement controls that provide safeguards to protect the health and safety of all people, as well as physical assets of the buildings, grounds, and other above-ground and underground structures and/or services. Excavation methodology must be carefully planned, executed and monitored.

10.4 Management Spatial Conflicts with Underground Utilities:

Issue: Existing utilities (sewers, water mains, gas and electricity lines, IT telecommunications and security conduits, etc.) are in close vicinity to area planned for the new tunnel segments. Conflicts arise over competition for the use of space by underground utility services belonging to a variety of Stakeholders. Not all of the locations and status of utilities are documented, and not all documentation is reliable. A variety of Stakeholders have an interest in these utilities, many of which require to be maintained operational on a continuous basis.

Strategy to control: All current documentation on underground utilities needs to be collected and combined by the Consultant. Site investigations are also required of the Consultant to validate the information and to locate additional existing underground utilities that could cause potential space conflicts.

Detailed discussions are required with the Project Team and with Stakeholders to identify risks, operational constraints, windows opportunities for interruptions, plans for additional future utilities, and opportunities for combining multiple utilities along the same path.

10.5 Cost Control:

Issue: Life cycle costs are to be minimized.

Strategy to control: The combination of construction, operation, and maintenance costs are to be considered for each design option.

10.6 Major Time Issues:

Issue: Schedule to ensure that all commissioning is completed by the end of May 2017. All utility connections must be operational, substantially complete and fully commissioned in advance of the rest of the facility to support completion of the West Block Rehabilitation project.

Strategy to Control: Integrated Design Process is required, involving the West Block Rehabilitation project team, the Construction Manager and Stakeholders, throughout the project development. In addition, monthly schedule updates with highlighted milestone and critical path items are required. All designs must incorporate sequencing for the construction project to ensure common systems are operational before the scheduled completion of the West Block Rehabilitation project.

10.7 Coordination with other Projects:

Issue: The project is to be designed and constructed in close coordination with the West Block Rehabilitation project, the VWCPH1 project, and a number of other inter-related projects (see section PD 6.2 for details).

Strategy to Control: Monthly coordination meetings will be established by the Departmental Representative for interrelated project teams to ensure strategies and designs are developed that complement the LTVP implementation in a coordinated manner. Synergies between projects are to be built upon with a view of offering long term value for the crown.

10.8 Communications Planning:

Issue: Public and Parliamentarians adjacent to project site during construction.

Strategy to Control: Communication strategy to be developed to ensure both parties are aware of project implications throughout the construction process. Consultant team to limit all communication to what is approved by the Departmental Representative.

10.9 Maintaining Security of the Tunnel System:

Issue: Maintaining security of the tunnel network is of primary importance. During construction, the Project Team must ensure stringent measures for controlling access to critical infrastructure supporting Parliamentary Operations and Cliff Plant Operations.

Strategy to Control: To achieve this, all consultants and contractors working on security sensitive aspects of the project must hold the necessary security clearance.

During construction, a security plan with heavy security measures must be developed to support construction of secret and classified infrastructure prior to construction. Hoarding methods around the construction zone and use of additional security officials to be accessed to ensure confidentiality of infrastructure as it is installed.

PD 11 PROJECT CONSTRAINTS AND CHALLENGES

The constraints and challenges of this project include, but are not limited to, the following:

- Completing the connection of the new utility services within the allotted time, such as to meet the tight scheduling requirements of the West Block Program and of the LTVP.
- High visibility of the project site: construction activities on Parliament Hill have a history of attracting a great deal of public and media attention.
- Providing steam and chilled water services such as to meet planned future requirements of all connected buildings: increased requirements for steam and chilled water will be required by the future West Terrace Building, and other proposed underground buildings such as Material Handling Facilities, Vehicle Screening Facilities, and Visitor Welcome Centre.
- Designing with provisions for branch tunnel connection points for services to future buildings.
- Establishing proper construction staging in an area that is already very congested.
- Minimizing the effect of construction on adjacent buildings.

- Respecting the sensitivity of neighbouring buildings and occupants to vibration and noise.
- Approaching the grounds and buildings around the site with an approach that is sensitive to their heritage designations based on the principle of minimal intervention.
- Respecting the Landscape Master Plan for Parliament Hill.
- Managing underground space, including consideration to existing utilities and facilities, whether known or unrecorded, and active or abandoned.
- Respecting special requirements regarding security and use of explosives for rock removal.
- Planning for heterogeneity of urban backfills.
- Planning for varying amounts of bedrock excavated under previous projects dating back to the 1840's and subsequently backfilled.
- Planning for potential contaminated soil.
- Planning for potential items of archaeological significance.
- Planning for half truckload limits due to poor substrate underneath roads.
- Lack of on-site parking.
- Keeping existing cable pathways operational during construction: these pathways exist throughout the existing tunnel system.
- Construction activities are to minimize impacts on:
 - Operations of Parliament.
 - Operations of the Central Heating Plant (including water, electricity and gas supply).
 - Use of buildings, roads, parking lots.
 - The existing East Tunnel.
 - Water, storm and sanitary sewers.
 - Security operations at the Cliff CHCP and at all of the connected buildings.

PD 12 CONSTRUCTION COST ESTIMATE

The class "D" construction cost estimate for Phase 4 is \$7,100,000 (HST excluded), expressed in 2012 dollars.

The construction budget is based on this indicative estimate, escalated to the completion of the project, and broken down as follows:

<i>Civil/Municipal</i>	<i>\$600,000</i>
<i>Structural/Excavation</i>	<i>\$3,000,000</i>
<i>Mechanical</i>	<i>\$1,500,000</i>
<i>Electrical</i>	<i>\$300,000</i>
<i>General / Other</i>	<i>\$600,000</i>
<i>Construction Management Fees</i>	<i>\$500,000</i>
<i>Contingency</i>	<i>\$600,000</i>
TOTAL:	\$7,100,000

The project shall respect the approved construction budget. It is the Consultant's responsibility to help manage the project's scope within the construction budget.

PD 13 PRELIMINARY PROJECT SCHEDULE

The following time allocations shall take into effect immediately after the award of a contract to the successful proponent. Key project activities with corresponding time frames are indicated below:

ACTIVITY	DURATION
RS 1 - Analysis of Project Requirements (APR)	6 weeks
<i>Allowance for APR Stage Reviews</i>	2 weeks
RS 2 - Design Concept (DC)	10 weeks
<i>Allowance for DC Stage Reviews</i>	4 weeks
RS 3 - Design Development (DD)	10 weeks
<i>Allowance for DD Stage Reviews</i>	4 weeks
<i>Allowance for Revised Effective Project Approval Process</i>	12 weeks
RS 4, RS 5, and RS 6 are to account for overlaps in schedule based on the sequential tendering of trade packages using the Construction Management delivery method.	
RS 4 - Preparation of Construction Documents (CD) (multiple packages)	
RS 5 - Phased Tendering by CM (multiple packages)	
RS 6 - Phased Construction (multiple packages)	
RS 4, RS 5, and RS 6 Total Time:	68 weeks
<i>Allowance for CD Stage Reviews</i>	8 weeks
RS 7 - Commissioning and Switch-over (multiple phases)	18 weeks
Final Record Drawings	8 weeks

Warranty Review: 12 months following Certificate of Substantial Performance.

In developing a detailed schedule, the Consultant should ensure that activities are planned concurrently where no interdependencies exist.

Activity durations are preliminary, and the Consultant is responsible for verifying and confirming the feasibility of the above schedule dates as part of its scheduling mandate (see section RS 9 - Project Time Planning, Scheduling and Control for details).

PD 14 EXISTING DOCUMENTATION

14.1 Public Domain:

- Building on Solid Foundation, A new Approach to Implementing the Long Term Vision & Plan. Parliamentary Precinct, Ottawa, 2007. <http://www.parliamenthill.gc.ca/documents/apropos-about/bbs-bsf-eng.pdf>
- Canada's Capital Core Area Sector Plan, National Capital Commission. <http://www.canadascapital.gc.ca/sites/default/files/pubs/Core-Sector-Report-2005.pdf>

14.2 Available for Viewing During Solicitation Period:

During the solicitation period, the existing documentation listed below will be made available to all proponents for reference at the following PWGSC office:

Adrian Bennett (819) 956-1793
Portage 3, Tower C, Level 3C2
11 Laurier Street, Gatineau, Quebec

Existing documentation will be made available for viewing on site only (copies will not be allowed), and with prior arrangement only. Copies of all existing documentation will only be provided to the successful proponent after contract award.

- “East Tunnel Replacement – Feasibility Study”, Genivar, June 2008.
 - For security reasons, only portions of this report can be made available for viewing during the solicitation period.

14.3 Available to the Successful Proponent (following contract award):

- As-built record drawings from the Kent-Wellington Tunnel construction.
- Design Development Report for the West Block Rehabilitation project, Arcop/FGM, Dec 2011.
- “Geotechnical Inventory – East Tunnel Replacement”, Stantech and Jacques Whitford & Associates, December 2009.
- Parliamentary Precinct – Base Utility Drawing Update, PWGSC, 2011.
- Parliamentary Precinct Master Drainage Study, Cumming Cockburn Limited, 1998.
- Watermain Master Plan for the Parliamentary Precinct, Cumming Cockburn Limited, 1998.
- Lessons learned from CBUS Construction.
- “East Tunnel Rehabilitation Parliament Hill”, M.M. Dillon Limited March 1993 (Revised November 1993). Provides information on existing tunnel alignment, subsurface conditions, existing utility system, location of asbestos pipe insulation, and an existing condition assessment.
- “East Tunnel Rehabilitation Parliament Hill - Supplementary Report”, M.M. Dillon Limited, December 2, 1993.
- “Materials Evaluation and Geotechnical Services East Tunnel Remediation”, Golder Associates, March, 1993.
- “Results of Test Blast Program, Centre Block Underground Services Building Project”, Golder VME Ltd., December, 1996.
- Planning Principles for Service Tunnel Concepts on Parliament Hill. J.P. Braaksma & Associates Ltd, Transportation Planners and Engineers, March 1995.
- PWGSC Heritage Conservation Directorate Guidelines for Excavating Near Heritage Structures.

- “Project Commissioning Manual (CP.1)”, Real Property Branch, November, 2006.
- AES Best Practice - Integrated Design Process, PWGSC Internal Document.
- Statement of Heritage Values for the Parliamentary Precinct Draft No.6, Parks Canada (Ontario), July 2000.
- Heritage Character Statements for the West Block building and Parliament Hill Grounds.
- Formal Intervention Review and Commemorative Integrity Statements, FHBRO, August 2009.

14.4 Documentation in Progress (not yet available):

- Construction Documents (partial) for the West Block Rehabilitation project, Arcop/FGM (to be completed in 2012/2013).
- West Sector Area Management Plan (to be completed 2012).

PD 15 CONSULTANT SERVICES

The Consultant team for this project must be capable of providing the following services:

- Civil and Municipal Engineering
- Tunneling Design Engineering
- Rock Mechanics Engineering (*including excavation support*)
- Geotechnical Engineering (*design advisory services*)
- Structural Engineering
- Mechanical and Utilities Engineering (*at a heavy industrial grade*)
- Environmental Technical Services (*including sustainability, contaminated soil, designated substances, and waste management*)
- Electrical Engineering
- Building Code Consulting
- Building Systems Control
- Fire Alarm & Fire Protection Engineering
- Architecture
- Landscape Architecture
- Commissioning
- Time Control
- Cost Control
- Risk Management

DESCRIPTION OF SERVICES

Under the leadership of the Consultant, the interdisciplinary team will be required to deliver integrated and coordinated professional services in accordance with requirements set forth in this Project Brief.

For standards relating to the service provisions herein please refer to the document "Doing Business". The standards in "Doing Business" must be adhered to in conjunction with this scope of services.

PA 1 PROJECT ADMINISTRATION

The following administrative requirements apply during all phases of project delivery:

1.1 PWGSC Project Management

The PWGSC Project Manager assigned to the project is the Departmental Representative directly concerned with the project and responsible for its progress. He or she is the formal liaison between the Consultant team, the PWGSC Project Team, other inter-related project teams, the User Group, the Construction Manager, and external Stakeholders.

The PWGSC Project Manager administers the project and exercises continuing oversight and control over the Consultant's services during all phases of development. Unless directed otherwise by the Departmental Representative (PWGSC Project Manager), the Consultant obtains all Federal requirements and approvals necessary for the work from the Departmental Representative.

1.2 Lines of Communication

Unless otherwise authorized by the Departmental Representative, the Consultant shall direct all official communication through the Departmental Representative only.

The Consultant shall develop a correspondence protocol to be approved by the Departmental Representative and incorporated into the project.

1.3 Media

The Consultant shall not, under any circumstances, respond to requests for project related information or questions from the media. Such inquiries are to be promptly directed to the Departmental Representative who will involve a public relations representative from PWGSC's Communications Branch.

1.4 Security of Information

The Consultant, and any person contracted or employed by the Consultant, shall not discuss issues relating to this project, or any of its inter-related projects outside of the Project Team.

This includes, but is not limited to, site layout, tunnel alignments, security provisions, and utility connections except as they relate to the direct provision of services related to this contract.

1.5 Meetings

As a minimum, the Consultant shall arrange meetings at a frequency of once every two weeks throughout the entire project development period and with all key members of the Consultant team. The Departmental Representative shall be invited to attend these meetings. As required, other PWGSC staff, User Group representatives, and the Construction Manager may be asked to attend.

The Consultant shall record the issues and decisions, and prepare and distribute design meeting minutes within 2 working days of the meeting. The Consultant shall create and maintain a list of outstanding action items and outstanding issues, and include these lists in the distribution of the meeting minutes.

1.6 Project Response Time

It is a requirement of this project that the Consultant's key personnel (including key personnel from specialist sub-consultant disciplines) be personally available to attend meetings in Ottawa and respond to urgent inquiries within two (2) working days of a request from the Departmental Representative for the duration of the project.

1.7 General Project Deliverables

Note: *Due to the security requirements of this project, all sensitive information must be handled in accordance with PWGSC information handling policy. When in doubt, seek direction from the Departmental Representative.*

The Consultant will be required to use PWGSC's Document Management Control System, a web based tool allowing the Project Team access to a repository of project documents.

Where deliverables and submissions include summaries, reports, drawings, plans or schedules, ten (10) hard copies shall be provided plus one (1) copy shall be provided in electronic format unless otherwise specified.

Electronic format shall be without password protection and/or printing restrictions, and shall be compatible with the following formats:

- For written reports, summaries and studies: MS Word 2007 or Lotus WordPro
- For spreadsheets and budgets: MS Excel 2007 or Lotus 1-2-3
- For Presentations: MS PowerPoint 2007 or Lotus Freelance
- For Drawings and/or 3-D Computer Model: AutoCAD 2010 or BIM software to current
- International File Protocol Standard
- For Specifications: MS Word 2007
- For Schedules: MS Project 2007

All submittals are to be fully coordinated between disciplines. Submittals must be completed to a professional level that follows best practices as recommended by the respective professional associations. As a minimum, the submissions shall adhere to the standards outlined in the most current edition of the "Canadian Handbook of Practice for Architects" distributed by the Royal Architectural Institute of Canada and a mandatory reference for architects permitted to provide professional services in the province of Ontario.

All reports identified in this Project Brief must be prepared to demonstrate an understanding of the report's focus. The writing style must be objective and clear. Reports must be organized in a logical manner that is approved by the Departmental Representative prior to interim submissions. Typical report format includes the following sections:

- A cover page, clearly indicating the nature of the report, the date, the PWGSC reference number and who prepared the report.
- A Table of Contents.
- An Executive Summary.
- An Introduction.
- The body of the report is to be structured such that the reader can easily review the document and locate, respond to and/or reference related information contained elsewhere in the report.
- A Conclusion or Synopsis.
- Appendices used for lengthy segments of the report, supplementary and supporting information and / or for separate related documents.

Report content must:

- Ensure that the executive summary is a true condensed version of the report following the identical structure, including only key points and results/recommendations requiring review and/or approval.
- Use a proper numbering system (preferably legal numbering), for ease of reference and cross-reference.
- Use proper grammar, including using complete sentences, in order to ensure clarity, avoid ambiguity and facilitate easy translation. The use of undefined technical terms, industry jargon and cryptic phrases are to be avoided.
- Be written as efficiently as possible, with only essential information included in the body of the report and supporting information in an appendix if needed.
- Ensure all recommendations have been critically analyzed against project goals and objectives, functionality, departmental standards, requirements identified within this RFP.

1.8 Official Languages

This project requires services in both official languages. The Consultant must be able to provide bilingual (English and French) services orally, as and when required. These services must include, but not be limited to presentations, interviews, and meetings. Refer to the section AS 2 - Bilingual Documents of this Request for Proposal document for additional details related to bilingual deliverables.

1.9 Acceptance of Consultant Deliverables

While PWGSC acknowledges that the Consultant carries the professional responsibility and liability for consulting services, the Consultant must obtain written Departmental Representative acceptances for each project stage before proceeding to the next. PWGSC reserves the right to reject undesirable or unsatisfactory work, and any such work must be redone and resubmitted for acceptance at the Consultant's sole expense.

Acceptances indicate that, based on a review of material for both general and specific issues, the material is considered to comply with governmental and departmental objectives and practices, and that overall project objectives should be satisfied. However, the overall design is still the Consultant's responsibility and acceptance does not relieve the Consultant of professional responsibility and liability for the work and compliance with the Agreement.

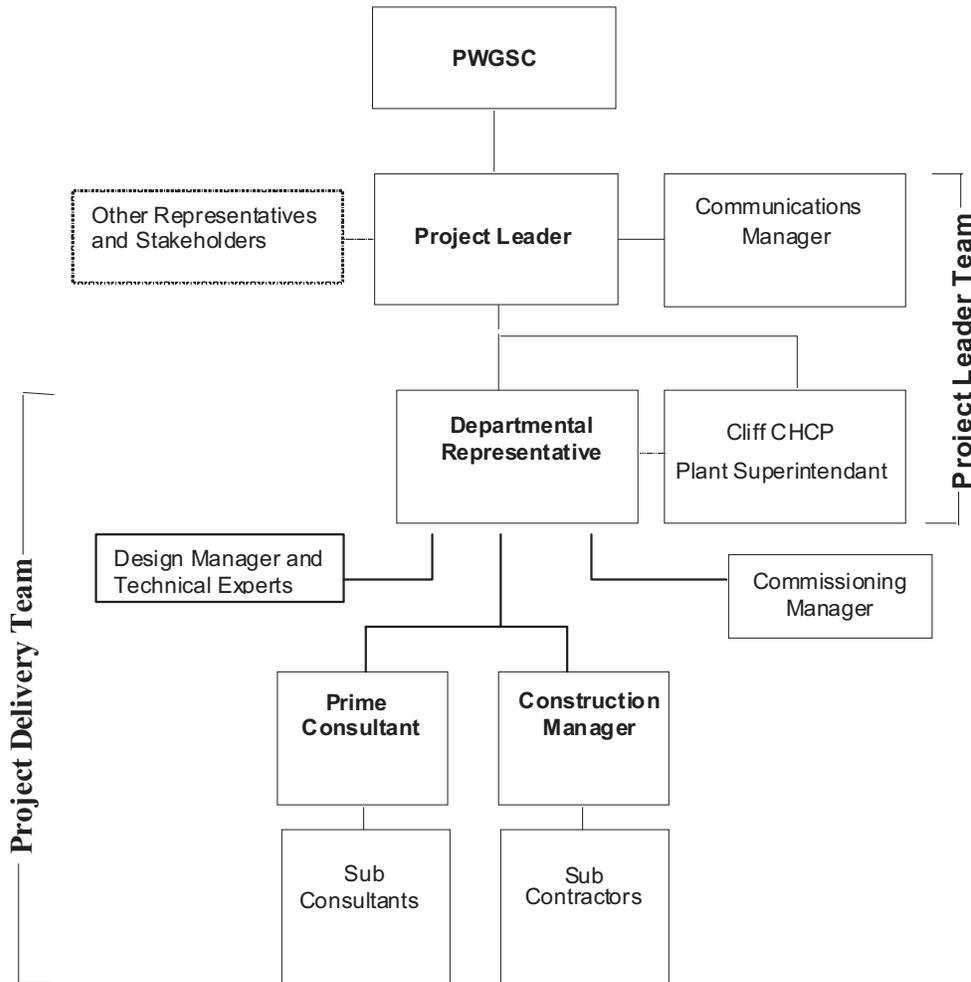
PWGSC acceptances do not prohibit rejection of work that is determined to be unsatisfactory at later stages of review. If progressive design development or technical investigation reveal that earlier acceptances should be withdrawn, the Consultant is responsible for re-designing work and re-submitting for acceptance at the Consultants cost.

In some instances, acceptances by Stakeholders and other agencies and levels of government must be obtained to supplement PWGSC acceptances. The Consultant shall assist the Departmental Representative in securing all such acceptances and adjust all documentation as required by such authorities when securing acceptance.

PA 2 PROJECT TEAM ORGANIZATION

2.1 Project Team Organization Chart

The Project Team refers to all main participants (both internal and external to PWGSC) involved in coordinating and delivering this project. The following chart identifies the organizational and reporting relationships for the Project.



2.2 Project Team Members

2.2.1 Project Leader

The Project Leader is accountable for the expenditure of public funds and the delivery of the project in accordance with terms accepted by the Treasury Board of Canada. The Project Leader reports to PWGSC’s senior management.

2.2.2 Stakeholder Representatives (Stakeholders)

Several stakeholder representatives are actively involved in the project. These representatives will be responsible for liaison between the Project Team and their respective organizations. These representatives will coordinate all functional and operational design requirements and subsequent changes through the Project Leader. The Departmental Representative will convey stakeholder requirements to the Consultant. The Consultant shall not engage in any formal communication directly with Stakeholders, unless so instructed in writing by the Departmental Representative.

Stakeholders will participate in project meetings on a regular basis (design stage and construction stage).

2.2.3 Communications Manager

The Communications Manager is responsible for all official project communication requirements including contact with the media and the public.

The Consultant shall not, under any circumstances, respond to requests for project related information or questions from the media. Such inquiries are to be promptly directed to the Departmental Representative who will involve the Communications Manager.

2.2.4 Departmental Representative

The Departmental Representative is accountable to the Project Leader for delivering the project and for meeting its time, cost, and quality objectives. The Departmental Representative helps coordinate the efforts of all project team members.

The Departmental Representative is also the official liaison for all contracted service entities working on the project. As such, the Consultant formally reports to the Departmental Representative, who remains the Consultant's single point of contact for all project direction.

2.2.5 Cliff CHCP Plant Superintendent

The Cliff CHCP Plant Superintendent is the representative from the User Group assigned to the Project Team. The Plant Superintendent reports to the Project Leader to ensure plant and tunnel system management requirements are identified and incorporated into the project.

The Plant Superintendent will also play an active project role during project commissioning and turn-over.

2.2.6 PWGSC Technical Resources

The PWGSC Design Manager leads a team of internal technical resources, known as Professional & Technical Services (P&TS) together with Heritage Conservation Directorate (HCD), which includes a broad range of professional disciplines. These entities were previously known as Centre of Expertise (COE).

This team's role is to provide strategic guidance, expert advice, and design management services to the PWGSC Project Manager. These services include reviewing the Consultant's deliverables to ensure technical requirements are suitably defined and incorporated through all phases of research, planning, design and implementation. The Design Manager and his P&TS team will participate in regular design phase meetings, sessions, and workshops. P&TS will also perform a detailed review of Construction Documents.

During Construction, the P&TS technical resources may occasionally attend Construction meetings and field reviews on an "as required" basis to advise the Departmental Representative.

2.2.7 PWGSC Commissioning Manager

The PWGSC Commissioning Manager will act as the Commissioning Authority, providing advice and direction to the Consultant through the Departmental Representative, in all matters relating to the commissioning process. As a member of the Project Team, the Commissioning Authority represents the interests of Utilities Management Services and of the Cliff CHCP Plant Superintendent.

The Commissioning Authority:

- Has overall responsibility for representing the User Group's interests during the development, design, implementation, and post construction stages of the project, and ensuring the program issues are addressed.
- Will review all commissioning documentation at all stages of the project delivery, and will monitor all commissioning activities including the accuracy of reported results.

The Consultant, as part of their QA role, will verify and confirm that the commissioning process is respected, based on their Commissioning Plan, and based on PWGSC's commissioning process.

2.2.8 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. 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 (CM at risk). 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 the Integrated Design Team and will participate in design meetings, provide constructability advice, and provide recommendations for construction phasing and tender package sequencing.

PA 3 PROJECT APPROVALS

The overall East Tunnel Replacement project has already received full Effective Project Approval (EPA) from the Treasury Board of Canada (in June 2009). This project approval was granted to proceed with implementation for each of the five project phases.

Phase 4 of the East Tunnel Replacement therefore remains linked to the overall project approval. As the project evolves, construction estimates for Phase 4 will need to be closely monitored by the Project Team to ensure that the total project estimate (sum of the five project phases) does not exceed the funding approvals received at EPA.

Should the Consultant's substantive (Class "B") construction cost estimate exceed current project approvals, PWGSC will make a business decision as to whether to seek Revised EPA, or to reduce the scope of the project. Seeking Revised EPA is a process that normally takes approximately 12 weeks.

The Consultant is to carry time contingencies for PWGSC's potential need to seek Revised EPA. PWGSC will not fund inactive periods while Treasury Board approvals are pending.

PA 4 AUTHORITIES HAVING JURISDICTION

The following are Authorities Having Jurisdiction (AHJ) over the work at the federal level:

Authority	Jurisdiction
National Capital Commission (NCC)	Planning and design approvals site, landscape, hoarding & exterior design.
Federal Heritage Building Review Office (FHBRO)	Preservation of site heritage character.
Human Resources and Skills Development Canada (HRSDC)	Fire prevention engineering services, and health & safety.
House of Commons (HoC)	Communication and security cables.
Environment Canada	Environmental considerations.
Public Works and Government Services Canada (PWGSC)	Design Review. Documentation Standards. Barrier Free Design.
Treasury Board of Canada (TB)	Project and Contract Award Approvals.

Although the Federal Government does not formally recognize jurisdiction at other levels of government, voluntary compliance with the requirement of these other Authorities is required unless otherwise directed by the Departmental Representative. In areas of conflict concerning provincial requirements, federal authority prevails.

Authority	Jurisdiction
Ontario Ministry of Labour	Employment Standards. Construction Safety. Designated Substance Management. Workers Compensation.
Ontario Ministry of the Environment	Environmental Protection Act: 3R Regulations. Building Discharges (into the air, water and soil). Disposal of Designated Substances and Asbestos.
Ontario Ministry of Consumer and Commercial Relations - Elevating Devices Branch	Construction Hoists. Elevators, Escalators and Dumb Waiters.

City of Ottawa	Building and Plumbing Permits and Inspection. Fire Safety, Equipment and access for fire-fighting equipment.
Ontario Hydro	Electrical Permits and Inspection.

The Consultant shall, with the assistance of the Departmental Representative, identify any other AHJs and endeavor to ensure that all design work meets or exceeds all current codes, regulations and standards of these other AHJs.

Note: PWGSC will seek site planning approval from the NCC, and the Construction Manager will seek a construction permit from the City of Ottawa. The Consultant is required to assist in both processes by submitting drawings, preparing visual renderings, and doing presentations to these and other AHJs.

PA 5 SUBMISSIONS, REVIEWS AND APPROVALS

Work in progress is to be reviewed by the Departmental Representative as well as by the following entities:

PWGSC in-house quality review services: PWGSC P&TS

- ◆ Submission Format: reports, drawings, specifications, and presentations as described in sections RS 1, RS 2, and RS 3.
- ◆ Expected Turnaround Time: approximately three (3) weeks.
- ◆ Number of Submissions: three (3) or until approval has been received

PWGSC Design Review Committee: Project Team representatives & User Group

- ◆ Submission Format: reports and presentations as described in sections RS 1, RS 2, and RS 3.
- ◆ Expected Turnaround Time: verbal comments during meeting; written comments approximately three (3) weeks.
- ◆ Number of Submissions: three (3) or until approval has been received

Constructability reviews - Construction Manager:

- ◆ Submission Format: reports, drawings, specifications, and presentations as described in sections RS 1, RS 2, and RS 3.
- ◆ Expected Turnaround Time: verbal comments during meeting; written comments approximately three (3) weeks.
- ◆ Number of Submissions: three (3) or until approval has been received

Stakeholder reviews - National Capital Commission (NCC) Advisory Committee on Planning, Design and Realty (ACPDR) (*this is the authority for site planning, landscape, exterior design and hoarding during construction*):

- ◆ Submission Format: reports and presentations as described in sections RS 1, RS 2, and RS 3.
- ◆ Expected Turnaround Time: verbal comments during meeting; written comments approximately four (4) weeks.

- ♦ Number of Submissions: three (3) or until approval has been received

Stakeholder reviews - FHBRO:

- ♦ Submission Format: reports and presentations as described in sections RS 1, RS 2, and RS 3.
- ♦ Expected Turnaround Time: verbal comments during meeting; written comments approximately four (4) weeks.
- ♦ Number of Submissions: three (3) or until approval has been received

AHJ reviews - HRSDC (Fire Protection):

- ♦ Submission Format: reports, drawings, specifications, and presentations as described in sections RS 1, RS 2, and RS 3.
- ♦ Expected Turnaround Time: five (5) weeks.
- ♦ Number of Submissions: until approval has been received.

Municipal reviews - City of Ottawa:

- ♦ Submission Format: reports, drawings, specifications, and presentations as described in sections RS 1, RS 2, and RS 3.
- ♦ Expected Turnaround Time: according to municipal schedules.
- ♦ Number of Submissions: until permit/approval has been received.

REQUIRED SERVICES

RS 1 ANALYSIS OF PROJECT REQUIREMENTS

RS 1.1 INTENT

The purpose of this stage is to ensure the Consultant has reviewed and understood all project background information, consulted Project Team members, understood requirements from the User Group and from project Stakeholders, integrated all project requirements, and evaluated project constraints and opportunities.

At the end of this stage, the Consultant will be required to submit an integrated “Analysis of Project Requirements Report” to further define project scope, delivery process, schedule, and cost estimates for delivering a cohesive quality project. This approved deliverable will serve as a guide for project delivery in future stages.

RS 1.2 GENERAL

Scope of Services:

- Attend project start-up meeting and subsequent bi-weekly Project Team meetings; record and distribute meeting minutes.
- Participate in a partnering/team building session with the Project Team. Ensure that all Key Personnel from the Consultant Team attend this session.
- Review all available existing documentation related to the project.
- Visit the grounds to become familiar with existing site conditions.
- Visit the West Block Building and other adjacent buildings affected by this project.
- Visit the Kent-Wellington tunnel.
- Verify all site services information, survey existing utility services and structures on site, and compare actual conditions with reference information. Identify all anomalies.
- Identify current pertinent tunnel and building connections, and longer-term requirements.
- Through the Departmental Representative, meet with P&TS and User Group utilities specialists to discuss isolation for ensuring continuity of services to the connected buildings during construction.
- Through the Departmental Representative, meet with various Stakeholders, such as Parliament Hill security representatives from the RCMP and with LTVP planning and integration teams, to discuss and understand their potential requirements.
- Through the Departmental Representative, meet with the Construction Manager to discuss this project's implementation inter-dependencies within the West Block Program.
- Through the Departmental Representative, meet with other project teams working on inter-related projects to discuss preliminary site layout options for the new tunnels. Identify constraints, opportunities, and potential conflicts relative to these other projects.
- Identify all codes, regulations and standards that apply to this project.
- Identify minimum, typical, and best construction practices in the region for steam tunnels.

- Identify minimum, typical, and best practice performance values for steam tunnels in the region in relation to:
 - Embodied energy and emissions.
 - Thermal comfort, air quality and ventilation.
 - Illumination.
 - Minimizing capital costs.
 - Other performance issues.
- Report upon the established project risks, mitigation measures, assumptions with stakeholder advice and endorsement.
- Review and analyze the project schedule and activity durations in section PD 2.4 - Preliminary Project Schedule. Identify critical milestones in project delivery.
- Review the cost plan and budget.
- Identify and verify all Authorities Having Jurisdiction over the project.
- Analyze project requirements, and prepare an "Analysis of Project Requirements Report". Present summary of findings in written, drawn and slideshow formats.

RS 1.3 DELIVERABLES

- Submit a comprehensive "Analysis of Project Requirements Report" to identify the project requirements demonstrating understanding of the scope of work. Revise as required by the Departmental Representative. Resubmit for acceptance. Submittals are required at "Draft", "Final Draft" and "Final Submission" stages.

This report will consolidate the information gathered from the Scope and Activities identified above, and will become the basis for the project Design Intent Brief (to be developed at a later stage). The body of the Analysis of Project Requirements Report shall include, as a minimum, a discussion on the following:

- A narrative description of the project requirements; including objectives, challenges, constraints, opportunities, and potential conflicts with other projects.
 - A summary of the findings from all relevant activities listed in RS 1.2 above.
 - A clear indication of all assumptions made that will require verification during future design stages.
 - An explanation of all key issues identified, which will need to be addressed during future design stages.
 - The existing configuration of tunnels and systems contained therein, including their condition, proposed isolation and decommissioning methodology where applicable, and the identification of designated and hazardous materials.
 - Identification of problems with the operation and performance of the existing tunnel to be avoided with the design of the new tunnel segments.
 - Sustainability performance targets and strategies.
 - A conceptual drawing showing inter-relationships between this project and other existing and future adjacent projects, including assumed requirements for future buildings, shafts, and tunnels.
- In addition, the Analysis of Project Requirements Report shall include the following technical sections:

Regulatory Analysis

Aspects to be included, as a minimum:

- Preliminary summary of AHJs on the project.
- Preliminary summary of relevant codes, regulations, and standards applicable to the project.

Site Analysis

Aspects to be included, as a minimum, are a review and analysis of:

- Site record drawings.
- As-found/record drawings of the other assets in the area of interest including, but not limited to, the existing Kent-Wellington Tunnel, the West Block building, and the relevant systems contained therein and their condition.
- Municipal infrastructure, subsurface and above grade services, including capacities and limitations (*i.e.* storm water drainage, fire protection, domestic water, power, telecommunications, etc.) to support the project requirements.
- Existing site features and restrictions, specifically relating to pedestrian access, vehicular access, deliveries, and security, as well as limitations or implications for the project as a whole.
- West Block Rehabilitation project's Construction Site Management Plan developed by the CM.
- Heritage considerations and restrictions associated with the site.
- Conservation objectives in line with those from other inter-related projects and economic constraints.

Geotechnical Information Review

- Review all of the preliminary geotechnical reports (commissioned separately by PWGSC). Including but not limited to, preliminary geotechnical report, preliminary geotechnical data report and all desktop studies and borehole information as provided by the Departmental Representative.
- Identify potential gaps in these preliminary geotechnical reports.
- Discuss key geotechnical information required for supporting civil and structural design.
- Identify early assumptions related to soil conditions.
- Identify geotechnical risks and include in risk analysis documentation. Examples of risk include, but are not limited to, hard or abrasive rock, solution cavities, depth and degree of weathering, high in-situ stresses, low stress and open joints, gassy grounds, structural fabric of the rock, boulders, contaminated groundwater, soil, man-made obstructions, existing utilities, faults, ground water (flow, level and chemistry) and slope failure.
- Identify known discontinuities in the bedrock due to previous excavations or trenching in the vicinity of the project site.
- Recommend areas for additional geotechnical investigation to support the Design Concept and Design Development stages of this project.

Structural Analysis

- Demonstrate an understanding of the required connections to adjacent tunnels, buildings, utility infrastructure and landscape features.
- Identify potential tunnelling methods.

- Research appropriate vibration and noise limits nationally and internationally for rock excavation and construction near sensitive heritage buildings. Identify vibration constraints.
- Define further areas for geotechnical exploration.

Mechanical Analysis

Report on the capacities of existing mechanical utilities (steam, chilled water) and mechanical systems (HVAC, plumbing), as well as potential opportunities and limitations considering the project requirements. Analyze and report on the following as a minimum:

- Assumptions regarding energy implications, including operating and maintenance costs, life cycle duration, discount rates, fuel cost escalation, inflation rate to be used.
- Analysis of entry points and opportunities or limitations considering the site and existing adjacent buildings.
- Analyze strategies for mechanical system separations of interconnecting buildings including ventilation system and smoke management requirements.
- Report on the fire protection requirements for the project and on possible interfaces with the West Block Building.
- Define the strategy to maintain steam and chilled water services to the buildings connected to the affected existing infrastructure during construction and commissioning.
- Confirm strategy to support plans for a future change-over from steam to hot water as a source of heating from the CHCP.

Electrical Analysis

Report on the existing Electrical systems and potential opportunities and limitations considering the project requirements.

- Advise on condition, loads, and capacities of existing electrical power and lighting in the adjacent Kent-Wellington Tunnel and the West Block building. Identify potential synergies for the project.
- Advise on existing fire alarm, intercom, and security systems (*i.e.* video surveillance, access control, and intruder detection) in the adjacent Kent-Wellington Tunnel and the West Block building. Identify systems, panel locations and other features that may contribute to an integrated approach for the project.
- Gather information from ITPMO relating to requirements for a cabling raceway to accommodate IT telecommunications and security system cables.

Implementation Strategy

Analyze and report on the proposed project implementation strategy. Aspects to be included, as a minimum:

- A discussion on the Construction Management approach for construction, using multiple construction trade packages.
- Impact of other concurrent and future construction projects.
- Underground services that will likely be required to be relocated - these must be identified for relocation well in advance of construction.

Sustainable Development Strategies and Report

Aspects to be included, as a minimum:

- Review potential for environmental impacts and application of the Canadian Environmental Assessment Act (CEAA).
- Establish a policy for the project to minimize environmental impacts consistent with the project objectives and economic constraints.
- Identify sustainable design opportunities, strategies, targets, preliminary budgets (*i.e.* energy, waste, etc.).
- Review the Environmental Assessment Report and the Designated Substances Report (see Section PD 5.3 for details).

Time, Cost and Risk Analysis

Aspects to be included, as a minimum:

- Following review and evaluation of PWGSC's existing cost estimate, prepare a fully updated Class "D" estimate based on the activities associated with this Analysis of Project Requirements stage.
- A first set of deliverables from section RS 9 - Project Time Planning, Scheduling and Control, section RS 10 - Estimating and Cost Planning of this RFP; including detailed critical path and milestone project schedules, including allowance for reviews and approvals for each stage of the project to support the project's planned completion date.
- Identification of integrated design opportunities to accelerate project delivery and ameliorate phasing of construction.
- Identification of potential hazards and conflicts with other inter-related projects.
- Analysis of risk implications and preliminary mitigation strategies for managing risk during subsequent stages.

Rebuttal to PWGSC Design Management Report

- Review, analysis, and written response to all comments provided by the Project Team.

RS 2 DESIGN CONCEPT

Note: The Consultant must obtain written authorization from the Departmental Representative before proceeding from the Analysis of Project Requirements stage to the Design Concept stage.

RS 2.1 INTENT

The purpose of this stage is to translate project requirements into space parameters. This includes recommending three (3) distinctly different options for alignment of the new tunnel structures, for the construction staging area layout, and for construction approach.

Each Design Concept option must include a narrative that supports the viability and functionality potential of the proposed design with sufficient detail to indicate all key requirements have been met. Options explored must also be analyzed and weighed against project objectives, project constraints, and user requirements.

Out of this process, PWGSC will ultimately select a single implementation option / strategy for further elaboration at the Design Development stage.

The Design Concepts are to have an integrated 3-D design approach illustrating coordination between disciplines, systems and testing of interference between systems to demonstrate an integrated design approach.

RS 2.2 GENERAL

Scope of Services:

- Conduct two (2) design workshops with the User Group. Ensure that sub-consultant specialists also attend these workshops as relevant to the workshop topics.
- Attend bi-weekly meetings, record and distribute meeting minutes. Invite sub-consultant specialists as required or relevant to the agenda to address discipline specific discussion items.
- Prepare and evaluate three (3) distinct design concept options for tunnel alignments, for construction staging area layout, and for relevant construction approaches (e.g. excavation, lining systems, etc.).
- Prepare drawings, schematics, and graphics illustrating each design concept option.
- Prepare 3-Dimensional AutoCAD drawings to visually depict conceptual alignment options for the new tunnels, shaft, and valve chamber. Include visual information with respect to site geology, existing underground structures and utilities for the purpose of identifying potential interferences.
- Evaluate each option against project objectives, project constraints, and user requirements, as well as against the design criteria established in the approved Analysis of Project Requirements Report.
- For each option, describe and quantify the risks for both construction cost and schedule.
- For each option, evaluate sustainable design opportunities and strategies. Include life-cycle costs in preliminary budgets, using the Environmental Assessment Report as a starting point (i.e. energy, waste, etc.).
- Prepare a decision log.
- For each option, prepare a Class "C" construction cost estimate, and submit in elemental cost analysis format. The standard of acceptance for this format is the current issue of the elemental cost analysis format issued by the Canadian Institute of Quantity Surveyors. In addition to construction costs, also consider operation and maintenance costs for each option.
- Prepare a "Design Concept Report" describing and comparing each concept option. Present the design in report, drawing and slide show format at each submission.

RS 2.3 DELIVERABLES

The Consultant shall:

Develop Design Concept documents that illustrate the functional relationships of the project elements, as well as the project's scale and character. Provide Coordinated Design Concept drawings for each option at a scale as recommended by each discipline's professional association.

Prepare a Design Concept Report to build on and to supplement the Analysis of Project Requirements Report. The Design Concept Report is to summarize all disciplines and concept options developed by the Consultant. Prepare and submit an integrated report for review and approval by the Departmental Representative. Submittals are required at "Draft", "Final Draft" and "Final Submission" stages. Revise the report as required by the Departmental Representative, and

resubmit for acceptance. Included in this report should be the three options under review as highlighted above. This report should contain sufficient material that a decision can be taken as to how to proceed into the Design Development Stage.

As a minimum, the following is to be included in the Design Concept Report:

- Design Concept sketches, drawings, and 3-D models; scaled for legibility appropriate to a report format.
- A narrative explaining at least three (3) design concept options considered. Each option presented must be viable and have true potential for development.
- For each option, discuss and analyze proposed implementation strategies, impacts on adjacent buildings and structures, impacts on inter-related projects, impacts on the use of adjacent lands, roadways, traffic patterns, above and below ground services, etc.
- For each option, discuss advantages and disadvantages in terms of issues, impacts, sustainability opportunities, life cycle costs, construction schedules, and construction risks.
- Recommendation of a single preferred option for further development, based on supporting background, technical justifications, compliance with project requirements, and adherence to project goals and objectives.
- Executive Summary documenting the scope and methodology of the report, and providing a brief overview of the recommended option.
- A list of other options considered but screened out from further development, explaining why.
- A Preliminary Design Intent Brief.
- For each option, include discipline-specific information as per the following detailed requirements:

Regulatory Analysis

Aspects to be included, as a minimum, for tunnel segments and interlinked existing buildings, are a summary of:

- Preliminary code analysis identifying constraints and issues.
- Preliminary report on life safety considerations during the construction and operation of the new tunnel segments and systems.

Civil/Municipal

- Provide a narrative describing each proposed civil/municipal aspect in sufficient detail for assessment and approval by the Departmental Representative.
- Prepare preliminary conceptual drawings, schematics, and graphics illustrating each design concept option. Incorporate existing AutoCAD layers that show land surface features and contours, building and basement footprints, existing tunnels, duct banks, water, sewer and gas lines, electrical conduits, etc. Include the following:
 - Site location plan drawings showing the existing buildings, site features, and restrictions (*i.e.* landscape features, topographical features, climatic influences, setback requirements, easements, existing buildings and structures, roads, parking, sidewalks, etc.).
 - Conceptual plan view drawings illustrating the trajectory options for the proposed tunnel segments in relation to site layout and proximity of other construction projects.
 - Municipal infrastructure drawings showing existing subsurface and above-grade services, including capacities and limitations (*i.e.* storm water drainage, fire protection, domestic water services, power, telecommunications, etc.).

- Provide plan and profile views to identify all interferences/conflicts with underground services infrastructure either existing or planned.
- Preliminary design of new roadways, paved surfaces, retaining walls, etc., that must be temporarily braced, repaired, or constructed under this project.
- Show route for vehicles past construction site to parking areas. Show all changes to roadways.
- Analyze options for resolving underground services infrastructure conflicts.
- Discuss environmental features including sustainable design strategies (*i.e.* storm water management, landscaping, etc.).
- Develop a set of preliminary ground water control options (min 2) to support the Design Concept Options considered. Demonstrate an options analysis over the 75 year design service life.
- Prepare preliminary drawings and renderings with supporting 3-D models (BIM) to visually depict conceptual alignment options for the new tunnels, shaft, and valve chamber. Include:
 - A site plan showing the tunnel routing options considered.
 - Tunnel depths, orientation, changes in elevation and endpoints.
 - Location of connection points at the Kent-Wellington Tunnel, at the West Block Building, and provision for expansion towards future buildings.
 - Construction staging areas.
 - Visual information with respect to site geology, existing underground structures and utility services for the purpose of identifying potential interferences.
 - Impacts to land use and site infrastructure (*i.e.* roads, landscaping, vehicular traffic circulation, and pedestrian traffic walking patterns, etc.)
 - Show geometry of previous excavations into the bedrock (*e.g.* for basements, steam tunnels, water/sewer lines, etc.). Identify and discuss with the Project Team assumptions made for excavation clearances around the structure.
 - To facilitate interpretation of the model, use different colors / shading for each feature.
 - Provide the Departmental Representative with copies of the BIM and PDF files (electronic and hard copies).

Structural

- Provide a narrative description of each proposed structural system, including systems considered and benefits/disadvantages for each.
- Include explanatory sketches (elevations and sections) for each proposed structural component to illustrate the basic design approach.
- Provide a site plan showing proposed tunnel and shaft outlines, orientation, and accesses.
- Provide design loads for all load cases.
- Discuss excavation/tunnelling options for constructing vertical shaft and horizontal tunnel segments.
- Perform a seismic analysis.
- Conduct preliminary computer modeling of tunnel lining (finite element analyses) for a minimum of two (2) distinct excavation lining options.
- Evaluate the impact (noise, vibration, water infiltration, etc.) of each construction approach on existing adjacent buildings affected by the construction (*e.g.* masonry, asbestos, occupants,

contents, as well as other infrastructure). Identify elements put at risk by the project. Provide a detailed report of the above with recommendations.

- Identify further geotechnical exploration required to support each design concept option. Include a construction and claims risk analysis to support the geotechnical exploration recommendation.

Geotechnical Information Review

- Review all subsequent geotechnical reports (commissioned separately by PWGSC). Including, but not limited to concept geotechnical report, concept stage geotechnical design memoranda as provided by the Departmental Representative.
- Identify potential gaps in these geotechnical reports.
- Discuss key geotechnical information required for supporting civil and structural design for this underground structure for each Design Concept Option.
- Refine assumptions.
- Update geotechnical risks and include in risk analysis documentation.
- Recommend areas for additional geotechnical investigation to support the Design Development of the recommended Design Concept option for future stages of this project.

Architecture and Landscaping

- Provide a narrative of the options considered, with discussion on context of existing site setting, adjacent buildings and tunnels, site interventions.
- Discuss heritage considerations, including heritage site features and structures, as well as opportunities and strategies that limit impact of construction on the heritage fabric.
- Sketch elevations and sections indicating the basic design approach.
- Provide preliminary visual renderings for use in presentations to AHJs, illustrating:
 - Proposed tunnel outlines and orientation.
 - Proposed site interventions.
 - Proposed construction staging areas.
 - Pedestrian views of the site to support each option.
 - Landscape and vegetation plan.
 - Landscape concepts and their integration with the landscape master plan and detailing to support the design as developed as a component of the LTVP.
 - Concept options for physical connection to the West Block Building.

Mechanical

- Provide a mechanical narrative describing the mechanical options in sufficient detail for assessment and approval by the Departmental Representative:
 - Include a description of each specific mechanical system and its function.
 - Discuss interconnections with other facilities or systems and implications for demand loads.
 - Discuss allowances and assumptions made to accommodate the strategy for a future change-over from steam to hot water as a source of heating from the CHCP.
 - Discuss the mechanical ventilation system and smoke management.
 - Discuss fire protection and links to interconnected buildings / tunnels.

- Discuss service strategies, including HVAC, fire protection, building automation, etc.
- Discuss advantages and disadvantages of each option.
- Provide a discussion of recommendations.
- Prepare mechanical drawings to identify existing conditions (*i.e.* location and existing configuration of all mechanical utility services) at entry point into the Kent-Wellington Tunnel.
- Prepare system schematics sufficient to describe each option.
- Perform an analysis of each mechanical scheme to reveal annual energy, operating and maintenance costs. Steam line heat loss is to be based on 100 mm of high density insulation. Chilled water line heat gain is to be based on 50 mm of high density insulation. Maximum design flows and line velocities for both steam and chilled water are to be identified. Accordingly the estimated energy, operating and maintenance costs shall be used in life cycle cost analyses in order to determine the most beneficial mechanical systems alternative. Life cycle cost analyses shall be based on a projected tunnel life of 75 years for all systems.

Electrical

- Provide a narrative electrical design synopsis describing the electrical work in sufficient detail for assessment and approval by the Departmental Representative.
- Explain strategy for each of the following, including connections with existing systems in the Kent-Wellington Tunnel and the West Block Building:
 - Power and lighting distribution.
 - Fire alarm system (*i.e.* detection, alarm, and voice communication)
 - Security system requirements (*i.e.* video surveillance, access control, and intruder detection) at each tunnel/building entrance and access point.
 - Routing for IT telecommunications and security systems cable raceways: indicate where cable raceways will be located and how these raceways will approach and enter each building connected to the tunnel, as well as other tunnel networks.
- Report on Hydro Ottawa requirements from all relevant angles: loop system, conductors, Hydro labour costs, duct bank requirements, etc.
- Provide a list of standard details to be utilized.

Commissioning

- Develop a preliminary O&M budget containing detailed breakdown of various items with the assessment of the systems selection and maintenance service contract costs for the building systems. Itemize building systems within this budget breakdown.
- Establish project specific archives, and define how these archives will be managed, updated, and submitted at the end of the project, to be included in the Consultants' Commissioning Plan after consulting with the PWGSC Commissioning Manager and incorporating all PWGSC commissioning practices and policies.
- Identify spare or specialty equipment, extra material and redundancies needed to operate and maintain all utilities within over their life expectancy.

Implementation Strategy

Aspects to be included, as a minimum, are a review and summary of the following:

- Preliminary phasing implications of this project to ensure continuous operations of all affected buildings within the Parliamentary Precinct.

- Preliminary phasing and continuity implications for the relocation of permanent underground services.
- Preliminary isolation strategy of adjacent buildings and utility reconfiguration.
- Preliminary constructability of the project, including construction process, construction methods, construction staging, land use impact, site access, material storage and construction duration.
- Outline of temporary service requirements including fire protection, lighting and heat.
- Preliminary Discussion on construction documents packaging and implementation sequence plan, including number of tender packages.

Time, Cost and Risk Analysis

Aspects to be included, as a minimum, for each option are:

- Class "C" estimate.
- Updated deliverables from section RS 9 - Project Time Planning, Scheduling and Control, section RS 10 - Estimating and Cost Planning of this RFP.
- Report on any deviations that will affect cost or schedule and recommended corrective measures.
- Updated analysis of risk implications and mitigation strategies for managing risk during subsequent stages.
- Identification of integrated design opportunities to accelerate project delivery and ameliorate integration of building components and phasing of construction.
- Identification of potential hazards and conflicts with other inter-related projects.

Presentations

The Consultant shall deliver presentations at the time of each of their submissions for the Design Concept stage. It is expected that the Project Team will provide feedback to progressively refine the Design Concept options towards the selection of one preferred option that will be further developed in the Design Development stage of the project.

A Dry Run presentation to the Departmental Representative is required in advance of the following audiences at "Draft", "Final Draft" and "Final" submissions:

- User Group representatives.
- PWGSC Senior Management.
- AHJs.

Rebuttal to PWGSC Design Management Report

- Review, analysis, and written response to all comments provided by the Project Team.

Appendices to Report

Appendices to the Design Concept Report shall include, but not be limited to, the following:

- Decision Log tracking all approved major decisions, including those affecting project scope, budget and schedule.
- Preliminary Design Intent Brief.

RS 3 DESIGN DEVELOPMENT

Note: The Consultant must obtain written authorization from the Departmental Representative before proceeding from the Design Concept stage to the Design Development stage.

RS 3.1 INTENT

The Design Development stage will further develop the design options selected from the Design Concept Report.

The Design Development documents consist of drawings and other documents to visually and narratively describe the size and character of the entire project. They are intended to show all elements of the design in sufficient detail to demonstrate operations, functionality, constructability, expandability, and integration between disciplines to produce an accurate Class "B" estimate.

All submissions are to be fully coordinated with all disciplines and have sufficient detail of information to communicate *all* aspects of the project for review by the Project Team and Stakeholders. All major and typical elements must be sized in this stage with the alignment, staging, construction, commissioning, and O&M methods illustrated.

RS 3.2 GENERAL

Scope of Services:

- Conduct two (2) design workshops with the User Group. Ensure that sub-consultant specialists also attend these workshops as relevant to the workshop topics.
- Participate in a Value Engineering work session.
- Attend bi-weekly meetings, record and distribute meeting minutes. Invite sub-consultant specialists as required or relevant to the agenda to address discipline specific discussion items.
- Address concerns identified by the Stakeholders.
- Analyze the constructability of the project and elaborate on construction strategy; including construction methods, construction staging location and land use impact, site access, material storage, and construction duration.
- Further evaluate impact of other inter-related construction projects, whether these are concurrent or planned for future implementation, and highlight areas where additional coordination is required.
- Optimize sustainable design opportunities, strategies, update life-cycle costing.
- Conduct market research to ensure availability and suitability of all proposed materials, equipment and systems.
- Develop criteria and outline specifications for the Waste Management Audit and Workplan.
- Establish a project implementation methodology and checklist to incorporate the recommendations of the Environmental Assessment Report and the Designated Substances Report. Identify recommendations that will be implemented by the Construction Manager (through the construction documents) and identify any remaining recommendations that the Project Team will be required to implement in other ways.
- Prepare a Class "B" cost estimate in elemental cost analysis format. The standard of acceptance for this format is the current issue of the elemental cost analysis format issued by

the Canadian Institute of Quantity Surveyors. In addition to construction costs, also consider operation and maintenance costs.

- Continue to review all applicable statutes, regulations, codes and by-laws in relation to the design of the project.
- Prepare drawings for all aspects of the design.
- Prepare a comprehensive preliminary specification for all construction components.
- Prepare and present 3-D graphics/renderings of key design aspects. These shall be similar to those outlined at Design Concept, but updated and more elaborate to reflect the Design Development.
- Update the decision log, budget, schedule, and risk analysis. Identify any conflicts that will need to be addressed with respect to project scope, quality, schedule and cost.
- Update the Design Intent Brief, which shall include information from each design discipline.
- Inform AHJs of project development.
- Present the design in report, drawings, and slide show format at each "Draft", "Final Draft" and "Final" submission.

RS 3.3 DELIVERABLES

The Consultant is to develop, prepare and present design development documents to demonstrate that all components of the project have been resolved and analyzed to ensure conflicts have been addressed, coordinated and finalized for a well integrated design through a collaborative and comprehensive Design Development stage, performed in a fully integrated and coordinated manner between all disciplines. The submissions must include drawings for the approved option at a scale and level of resolution as recommended by each professional association.

Prepare and submit a Design Development Report to build upon the approved Design Concept from RS 2. The Design Development Report is to summarize systems and components associated with the project in written narrative, drawings, sketches, graphic, and model (3-D BIM computer generated) form. Drawings and other media are to be used to communicate elements of the entire site, including supporting utilities relocation, for all disciplines. All elements and services are to be illustrated in a coordinated fashion with a level of detail necessary to make all design decisions and to substantively estimate the cost of the project. Design Development Report is to follow a similar document layout as earlier reports.

Aspects to be included in the body of the Design Development Report, as a minimum, are:

- Reproductions of the Design Development drawings scaled for legibility appropriate to a report format.
- Computer generated simulations, drawings, renderings and supporting 3-D visualization further developing and refining the design.
- Provide calculations, details, and other engineering information to support design.
- For relevant disciplines provide single line diagrams for all systems.
- Tunnel elevations, sections.
- Outline specifications for all systems and principle components or equipment.
- Substantive (Class "B") cost estimate, and construction schedule.
- Identification of construction activities with long durations, and long-lead delivery items.
- Outline Commissioning Plan describing major commissioning activities for components, systems, and integrated systems testing.

- Design Development presentations.
- Sustainability Report.
- Updated draft of the Design Intent Brief.
- Include discipline-specific information as per the following detailed requirements:

Regulatory Analysis

Aspects to be included, as a minimum, are a detailed analysis of:

- Detailed code analysis identifying constraints and issues.
- Detailed report on life safety considerations during the construction and operation of the new tunnel segments and systems.

Civil/Municipal

Provide a comprehensive report on the Civil/Municipal engineering implications on the project, including approach for relocating existing underground site services, as well as integration aspects associated with the Kent-Wellington Tunnel and the West Block Building.

- Update the 3-D models (BIM) prepared at the Design Concept phase with more detail to reflect the advancement of the design.
- Further develop the conceptual drawings, schematics, and graphics prepared at the Design Concept phase in accordance with the selected options. In addition, drawings should also:
 - Contain locations of manholes (complete with invert elevations), valves, and fire hydrant locations.
 - Show water mains, sanitary and storm drains and existing utility services complete with appurtenances, and if required, relocation of existing services, including all key invert elevations.
 - Identify proposed pipe sizes and slopes for gravity systems, where applicable, and include pipe invert elevations at building foundations.
 - Show typical trench and related details, including profiles of below grade services.
 - Include a Grading and Drainage Plan showing existing and proposed grade elevations, ground water and storm water management.
 - Identify any roadways, paved surfaces, retaining walls, etc. that must be repaired or constructed under this project.
- Identify, by means of Design Summary Sheets, pipe capacity and estimated flows for storm and sanitary sewers. Where contributing to an existing sewer, include analysis of impact on existing systems.
- Provide hydraulic analysis of any relevant alterations to existing water distribution system in the vicinity of the proposed underground building and tunnels to confirm anticipated maximum available fire flow. Calculate and compare site flows to building site fire flow.
- Provide gravity systems to maximum extent possible.
- Confirm strategy for resolving underground services infrastructure conflicts.
- Confirm environmental features including sustainable design strategies (*i.e.* storm water management, landscaping, etc.).
- Further develop ground water control measures, and demonstrate how a 75 year design service life can be achieved.

Structural

Further develop all the themes presented in the Design Concept Report in accordance with the selected options. Provide a comprehensive report on all the selected structural systems, structural materials, lining, and other significant or unusual details proposed. Provide illustrations, drawings and outline specifications to support the concepts. Refer to geotechnical site reports upon which the design is based.

- Provide a detailed narrative report of the above with recommendations.
- Prepare drawings indicating the proposed structural systems, design loads, tunnel foundation, structural materials, expansion joints, waterproofing and other significant details proposed.
- Drawings should indicate all design loads (*e.g.* dead and live loads on all plans with atypical loads marked).
- Elaborate on excavation/tunnelling methods for constructing vertical shaft and horizontal tunnel segments.
- Prepare preliminary excavation drawings for vertical shaft and horizontal tunnel segments.
- Conduct computer modeling (finite element analyses) studies including seismic analysis.
- Identify further geotechnical exploration required to support the Construction Documents stage of the project. Include a construction and claims risk analysis to support the geotechnical exploration recommendation.

Geotechnical Information Review

- Review all subsequent geotechnical reports (commissioned separately by PWGSC). Including, but not limited to, geotechnical report, design development stage geotechnical design memoranda as provided by the Departmental Representative.
- Identify potential gaps in these geotechnical reports.
- Discuss focused geotechnical information required for supporting civil and structural design for this underground structure for the project design.
- Refine assumptions.
- Update geotechnical risks and include in risk analysis documentation.
- Recommend areas for additional geotechnical investigation to support the Construction Document stage of this project.

Construction Vibration and Blasting Impact Management Plan

Based on the selected Design Concept option, prepare a Construction Vibration and Blasting Impact Management Plan which:

- Establishes existing noise and structural conditions.
- States the design objectives.
- States the statutory requirements.
- States the control measures to be used.
- Describes the monitoring and reporting program.
- Describes the procedure for dealing with excess emissions.
- Describes the community liaison process.

Include in the Construction Vibration and Blasting Impact Management Plan the following:

- Divide the project into zones or sections based on the predicted sources and impacts.
- Establish existing noise and structural conditions.
- Document typical background noise level ranges, including any cyclic variations, in those locations identified in the screening process.
- Document existing structural conditions at those locations identified in the screening process, based on site reconnaissance, existing documentation, and interviews with the User Group. This is not intended to produce pre-construction condition surveys, but to document structural conditions and features that have been considered in the development of the Construction Vibration and Blasting Impact Management Plan.
- State the design objectives, based on limiting the effects of construction to acceptable levels on:
 - Buildings and contents (e.g., deteriorated masonry, windows, loose asbestos, building occupants).
 - Rock and soil slopes.
 - Slender structures (towers, chimneys, etc.).
 - Sensitive equipment.
 - Buried infrastructure, the public, natural environment, abandoned boreholes, etc.
- State all relevant recommendations from the Environmental Assessment Report.
- State the federal, provincial and municipal statutory requirements.
- Using a combination of empirical knowledge, numeric modeling, etc., design the control measures to be included in the construction specifications, including but not limited to:
 - Noise levels (e.g. no noise levels in excess of ____ dBA above background).
 - Vibration levels (e.g. PPV less than ____ mm/sec).
 - Acceleration levels (e.g. PPA less than ____ m/sec²).
 - Overpressure (air blast pressure not to exceed ____ Pa).
 - Fly rock (e.g. mats, window protection).
 - Dust control at the surface (e.g. dust collectors on rock drills).
 - Requirements for blast tests and design.
 - Requirements for pre and post construction surveys, inspections and monitoring.
 - Scheduling blasting (e.g. fixed time daily, low occupancy periods, high background noise periods).
 - Insurance requirements.
- Describe the monitoring and reporting program during construction, including but not limited to:
 - Identify parameters to be monitored.
 - Identify monitoring locations (attended and unattended).
 - Identify the monitoring intervals.
 - Recommend monitoring responsibilities.
 - Reporting intervals.
 - Processing of automated monitoring results.
 - Content and format of presenting data.

- Cost: the intent is that the Consultant defines the costs and recommends responsibilities for monitoring and reporting. Describes the procedure for dealing with excess emissions (e.g. noise, vibrations, dust, etc.).
- The intent is to employ performance construction specifications to the greatest extent possible.
- Describe the community liaison process, including but not limited to:
 - Identify contact persons at potentially affected properties.
 - Provide details of procedures for complaints, initial response, investigation, evaluation and corrective measures.
 - Tracking and reporting procedures.
 - Information meetings, communications, warning procedures, etc.
- Describe a program for monitoring and auditing the management plan (lessons learned).

Architecture and Landscaping

- Further develop all the themes presented in the Design Concept Report in accordance with the selected options. Provide a comprehensive report on architectural and landscaping requirements for the proposed project aspects in their entirety.
- Sketch elevations and sections in more detail to reflect the advancement of the design.
- Update visual renderings for use in presentations to AHJs, further refining elements from Design Concept stage renderings.
- Further elaborate on the heritage aspects associated with the design, and on the proposed strategies to limit impact of construction on the heritage fabric.
- For proposed conservation treatments to character-defining elements, demonstrate compliance with Standards and Guidelines for Conservation of Historic Places in Canada.

Mechanical

Further develop all the themes presented in the Design Concept Report in accordance with the selected options. Provide a comprehensive report that includes a narrative for all mechanical systems for the project and design strategies for integration with the Cliff CHCP utilities loop and with the West Block Building. Include at a minimum narratives and illustrations, plans and sections, as well as line diagrams for all systems.

- Provide a detailed description of the mechanical systems and the components of each system.
- Prepare conceptual drawings for steam, chilled water, pumped condensate, high pressure drip, domestic water, compressed air, pipe anchors, guides and expansion joints, drip legs and other services.
- Prepare conceptual drawings to indicate how connections will be made within the Kent-Wellington Tunnel, and the affected existing or future buildings.
- Provide an analysis of selected equipment and pipe sizing with schematics and calculations sufficient to justify the economy of the selected systems.
- Describe the tunnel system's mechanical controls. Provide preliminary EMCS network architecture, mechanical control schematics, and sequence of operation.
- Advise on strategies for interconnections and future expansion.
- Describe allowances made to accommodate the strategy for a future change-over from steam to hot water as a source of heating from the CHCP.

- Produce drawings of tunnel drainage systems to the Cliff CHCP, showing routing and sizing of lines and location of pumping and other equipment where required. Include devices to contain contaminated water (*i.e.* oil, chemicals, and cement slurry during construction).
- Update the energy analysis established at the Design Concept stage.
- Provide information of all internal and external energy loads in sufficient detail to determine the compatibility of the proposal with existing and proposed future services, approved concept and energy budget.

Electrical

Further develop all the themes presented in the Design Concept Report in accordance with the selected options. Provide a comprehensive report on electrical requirements for the proposed project aspects in their entirety. Update the electrical design synopsis for the selected option.

- Produce single line diagrams for lighting, power, security systems, grounding and other systems.
- Provide the following data:
 - Total connected load.
 - Maximum demand and diversity factors.
 - Sizing of standby load.
 - Short-circuit requirements and calculations showing the ratings of equipment used.
- Indicate the proposed location of mechanical equipment.
- Indicate the proposed location of IT telecommunications and security system cabling raceways, including location of entry and exit points into and out of the tunnel.
- Review and report on electrical controls and emergency power requirements for Life and Safety systems (*e.g.* lighting, security, smoke management, fire alarm, etc.)
- Report on possible requirements for temporary power during construction.
- Advise on lighting demands other electrical requirements in view of the project's functions following PWGSC Lighting Guidelines, and IESNA.
- Obtain Hydro Ottawa concurrence on choices.
- Ensure that spare capacity is provided.
- Discuss temporary power and other temporary services required to facilitate construction.
- Draft specification.

Commissioning

The Consultant shall, as a minimum:

- Prepare a Commissioning Plan describing major commissioning activities for mechanical, electrical and integrated system testing.
- Prepare an outline Design Intent Brief, describing major commissioning & decommissioning activities for mechanical, electrical and integrated systems. The Design Intent Brief is to summarize design criteria, design intent, assumptions, operating and control philosophy which integrates controls with central control systems in the Parliamentary Precinct (from Cliff CHCP), and emergency procedures or considerations. Refer to section RS 7.2 for detailed requirements.

- Update the O&M budget containing detailed breakdown of various items with the assessment of the systems selection and maintenance service contract costs for the building systems. Itemize building systems within this budget breakdown.
- Update project archives.
- Confirm spare or specialty equipment, extra material and redundancies needed to operate and maintain all utilities throughout their life expectancy.

Implementation Strategy

Further refine and develop the project implementation strategy to meet project objectives. Aspects to be included, as a minimum, are a review and summary of the following:

- Phasing implications of this project to ensure continuous operations of all affected buildings within the Parliamentary Precinct.
- Phasing and continuity implications for the relocation of permanent underground services.
- Detailed isolation strategy of adjacent buildings and utility reconfiguration.
- Constructability of the project, including construction process, construction methods, construction staging, land use impact, site access, material storage and construction duration.
- Temporary service requirements including fire protection, lighting and heat.
- Description of construction documents packaging and implementation sequence plan, including identification of number of tender packages.
- Lead the development of a procurement strategy, such as prequalification of specialized construction trades.

Time, Cost and Risk Analysis

Aspects to be included, as a minimum, are:

- Class "B" estimate.
- Updated deliverables from section RS 9 - Project Time Planning, Scheduling and Control, section RS 10 - Estimating and Cost Planning of this RFP.
- Report on any deviations that will affect cost or schedule and recommended corrective measures.
- Updated analysis of risk implications and mitigation strategies for managing risk during subsequent stages.
- Identification of opportunities to accelerate project delivery and phasing of construction.

Presentations

The Consultant shall deliver presentations at the time of their submissions for the Design Development stage. It is expected that the Project Team will provide feedback to progressively refine the Design Development such as to achieve a solid platform upon which the Construction Documents can be prepared.

A Dry Run presentation to the Departmental Representative is required in advance of the following audiences at "Draft", "Final Draft" and "Final" submissions:

- User Group representatives.
- PWGSC Senior Management
- AHJs.

Rebuttal to PWGSC Design Management Report

- Review, analysis, and written response to all comments provided by the Project Team.

Appendices to Report

Appendices to the Design Development Report should include, but not be limited to, the following:

- Decision Log tracking all approved major decisions, including those affecting project scope, budget and schedule.
- Updated Design Intent Brief.

RS 4 CONSTRUCTION DOCUMENTS

Note: The Consultant must obtain written authorization from the Departmental Representative before proceeding from the Design Development stage to the Construction Documents stage.

RS 4.1 INTENT

The objective of this stage is to further develop the design documents to prepare coordinated drawings and specifications setting forth in detail the requirements for the tender, construction and final cost estimate of the project. Preparation of Construction Documents is based upon a formally approved final Design Development Submission.

The Construction Documents will be used by the CM for tendering the work to construction sub-trades. The Consultant is required to prepare multiple Construction Document packages to allow for phased construction tendering by trade. Priority shall be given to those packages related to early construction activities, and to specialized packages which involve pre-qualification of construction trades. Tendering sequence will be established by the CM during this stage.

RS 4.2 GENERAL

Activities are similar at all Construction Document submissions. The degree of completeness for deliverables should reflect the advancement progress of each of the submissions listed below. Although each tender package must be prepared separately, the Consultant must ensure congruency between each of the packages:

- The 66% Construction Document submission builds on the Design Development and takes the design process forward into detailed design to produce intermediate construction drawings, details, schedules, and specifications.
- The 99% Construction Document submission is considered a complete set of construction drawings and specifications ready for approval prior to tender call and submission to local authorities for pre-permit purposes.
- The final Construction Document submission incorporates all revisions required to the 99% version and is intended to provide PWGSC with complete set of construction drawings and specifications for tender call.
- Design Intent Brief - Develop project specific systems operation instructions for commissioning purposes. The Design Intent Brief is to be 90% complete, and the maintenance management information is to be included within the Construction Documents.

Services provided must be in accordance with the requirements identified in Project Brief Attachment 1 - "Doing Business". The completeness of Construction Documents will be assessed against established guidelines of good practice in professional standards, coordinated between disciplines.

RS 4.3 SCOPE OF SERVICES

- Confirm format of drawings and specifications in accordance with PWGSC standards.
- Assist in developing, in consultation with the Project Team, a tender package prioritization sequence to support phased construction. Note that the CM will ultimately be responsible for establishing the tendering sequence.
- Clarify special procedures (e.g. phased construction), as required.
- Convert recommendations from the Environmental Assessment Report and the Designated Substances Report into specific requirements and integrate these requirements into the Construction Documents.
- Submit coordinated and integrated drawings and specifications at the identified stages (66%, 99%, and final for review and acceptance. Ensure coordination and integration of all submissions between all disciplines prior to submission.
- Lead coordination and integration of all submissions from specialist sub-consultants.
- Support an Integrated Design Process.
- Update quality management process for the professional interdisciplinary team.
- Provide written response to all review comments, and incorporate these into Construction Documents where required.
- Submit and obtain approval on plans and specifications required by AHJs before tender call.
- Submit updated construction cost estimates and schedules with each submission. Explain variances with respect to previous versions.
- Update the project schedule.
- Prepare a final Class "A" estimate.
- Attend Technical and Production Workshops with the Project Team; prepare and issue meeting minutes. Ensure that sub-consultant specialists also attend these workshops.
- Provide and pay for health and safety training requirements for all members of the Consultant team requiring site access as per the Occupational Health and Safety Act to include, as a minimum, fall protection, hazardous materials, confined space entry, asbestos management, and drilling and blasting. Provide proof of having taken this training.
- Recommend construction tasks, packages, or sub-trades requiring pre-qualification, and recommend "pass/fail" questions.
- Review and provide recommendations for materials and construction process specifications to meet sustainable development objectives.
- Update the Construction Vibration and Blasting Management Plan.
- Update the Design Intent Brief (66%, 99%, and final).

Technical and Production Workshops

- Construction Document submissions will be presented by the Consultant at Technical and Production Workshops in two (2) instances for review and discussion with the Project Team.

- Representatives from the User Group and from Stakeholders may also be asked to attend as arranged by the Departmental Representative.
- The Consultant must ensure that members of its specialist sub-consultant disciplines participate in these technical and production workshops as required or relevant to the agenda.
- The Consultant shall arrange for all necessary data, progress prints, etc., as well as a meeting agenda, to be available to all attendees a minimum of two working days prior to the workshops.
- The Consultant shall prepare minutes of the workshop discussions and distribute copies to all participants.

Progress Reviews

- As the work progresses on the Construction Documents, submit drawings, specifications, schedules, details, pertinent design data, and updated cost, schedule and risk.

Regulatory

In collaboration and coordination with all relevant disciplines prepare the following:

- Final code analysis identifying constraints and issues.
- Final report on life safety considerations during the construction and operation of the new tunnel segments and systems.
- HRSDC review report.
- Regulatory section for the Design Intent Brief.

Civil/Municipal

Coordinate with all relevant disciplines to prepare a complete discipline-specific set of plans, elevations, sections, details, and schedules to describe the project for public tender and permit processes. Ensure the inclusion of, as a minimum, the following:

- Site location plans, including site boundaries, and other construction projects in vicinity.
- Construction staging area requirements.
- Trajectory of tunnel segments, including depths, orientation, changes in elevation and endpoints.
- Existing site topography, site features and restrictions, underground site services infrastructure, and other site interferences.
- Relocation requirements for shallow underground site services infrastructure and other interferences.
- Changes to roadways, sidewalks, paved surfaces, retaining walls etc.
- Traffic circulation drawings for all construction implementation phases, including impact on vehicles and pedestrians during each phase.

Structural

Coordinate with all relevant disciplines to prepare a complete discipline-specific set of plans, elevations, sections, details, and schedules to describe the project for public tender and permit processes. Ensure the inclusion of, as a minimum, the following:

- Tunnel sections, profiles and details.
- Valve chamber details.

- Vertical shaft details.
- Structural lining and waterproofing details.
- Excavation drawings.
- Wall perforation details and interventions at connection point into the Kent-Wellington Tunnel.
- Wall perforation details and interventions at connection point into the West Block building.
- Connection point details for future tunnel expansion.

Geotechnical and Construction Vibration and Blasting Management Plan

- Advise of any additional geotechnical investigation or testing required.
- Update and finalize the Construction Vibration and Blasting Management Plan described in section RS 3.3.

Architecture and Landscaping

Coordinate with all relevant disciplines to prepare a complete discipline-specific set of plans, elevations, sections, details, and schedules to describe the project for public tender and permit processes. Ensure the inclusion of, as a minimum, the following:

- Landscape features including hard and soft surfaces, planting, etc.
- Penetrations into the landscape.
- Landscape rehabilitation.
- Protection measures to ensure the integrity of surrounding historical features.
- Temporary enclosures required for project implementation.
- Details of intervention at connection point into the West Block building.
- Tunnel signage and way-finding systems indicating direction and distance to plant or building.

Mechanical

Coordinate with all relevant disciplines to prepare a complete discipline-specific set of plans, elevations, sections, details, and schedules to describe the project for public tender and permit processes. Ensure the inclusion of, as a minimum, the following:

- Flow diagrams, system layouts, equipment selections and sizes.
- All major piping systems and ventilation equipment sized and shown on drawings, including the location of the existing tunnels and connected buildings.
- Indicate space allowances to accommodate the strategy for a future change-over from steam to hot water as a source of heating from the CHCP.
- Mechanical schedule of components, including all proposed valves with valve type, ratings, and style (flanged vs. welded). Identify steam trap stations.
- Piping anchor and expansion joint location.
- Detailed branch connection configuration.
- EMCS network architecture, mechanical control schematics, sequence of operation for each mechanical system, electrical control schematics, and DCS input/output point schedules.
- Update the tunnel load calculation, energy analysis and energy budget.
- Submit at the stipulated progress submission all calculations for mechanical design and equipment selection. These calculations shall be bound (3-ring binder) and indexed.

Electrical

Coordinate with all relevant disciplines to prepare a complete discipline-specific set of plans, elevations, sections, details, and schedules to describe the project for public tender and permit processes. Ensure the inclusion of, as a minimum, the following:

- Indicate location of electrical equipment and services infrastructure, including interference drawings where appropriate.
- Include housekeeping and welding outlets throughout the tunnel and near the entrance to each building.
- Indicate IT telecommunications and security system cabling raceways, including location of entry and exit points into and out of the tunnel.
- Power distribution details including connections to the Cliff CHCP where applicable, including voltage drop calculations.
- Emergency power distribution details.
- Lighting details, including exit and emergency lighting.
- Fire alarm details.
- Security and alarm system details at all new tunnel access points.
- Mechanical equipment schedule including electrical sub-contractor responsibilities.
- Grounding detail.
- Seismic bracing detailed for all electrical infrastructure.

Specifications

Refer to “Doing Business” for development of project specifications.

- Provide specification sections for all principal construction requirements, elements, equipment, and system components proposed for use.
- Prepare an index listing all specifications sections and numbers.
- Prepare specification paragraphs defining experience and qualifications for all major construction sub-trades.
- Updated drafts of the Design Intent Brief (66%, 99%, and final):
 - For each discipline, provide all design intents, narrative sequence of operation (philosophy), etc.
 - Provide emergency start-up/operations/shut-down procedures, and seasonal switch-over procedures.
 - Provide reduced Single Line Diagrams of all systems. Include maintenance management system nomenclature and steam trap identification for each piece of equipment on the mechanical and electrical drawings.
- Commissioning Specifications:
 - Use NMS as the basis for the project specifications for commissioning. Modify to make specific to this project ensuring a reasonable but prudent approach to quality assurance and documentation, and prepare additional specifications for systems where PWGSC specifications do not exist. Complete design information required in the performance verification report forms.
 - Specify detailed Performance Verification (PV) procedures and expected performance output, PV documents, PV scheduling and reporting requirements.
 - Include in specification all tests to be conducted at manufacturer's plants, on site during construction, installation, commissioning on site and during the operation phase.

- Develop a training package for O&M personnel and include in specification.
- Provide Maintenance Management coding and system nomenclature on tender documents within equipment schedules and on all single line diagrams. Obtain approval of equipment Maintenance Management identification from the PWGSC Commissioning Manager.

Commissioning

Coordinate with all relevant disciplines to prepare a complete Commissioning Plan. Ensure the inclusion of, as a minimum, the following:

- Detailed commissioning specifications are to be submitted at the 66% Construction Documents stage and are to be updated and resubmitted at each subsequent stage of the Construction Documents.
- The Design Intent Brief is to be resubmitted with the 66% Construction Documents, and is to be updated and resubmitted during subsequent stages of the Construction Documents.
- Comprehensive Commissioning Plan for all systems in both official languages.
- Maintenance management system and equipment codes are to be identified for each piece of mechanical and electrical equipment with the 66% Construction Documents. Submit completed maintenance management numbering (with equipment unit counters) for all mechanical and electrical equipment at the 99% Construction Documents. Indicate maintenance management numbering on each PV form.
- Comprehensive Training Plan.

RS 4.4 DELIVERABLES

Deliverables shall be submitted for multiple trade packages.

Interim Submissions (66%, 99%):

Deliverables are similar at both stages. Completeness of the project development should reflect the stage of a submission.

- Complete set of specifications and working drawings.
- Complete Commissioning Plan and Design Intent Brief.
- One copy of supporting data, studies, calculations, etc., for final checking and record.
- Updated construction cost estimates, submitted in trade cost breakdown format. Cost estimates shall have a summary plus full back-up showing items of work, quantities, unit prices and amounts.
- Updated Cost Plan and Construction Schedule.
- Updated construction risk assessment.
- Updated Construction Vibration and Blasting Impact Management Plan.

Final Submission:

This submission incorporates all revisions required by the review of the 99% submission. Provide the following:

- Complete set of originals of the working drawings, in both official languages, and professionally stamped, signed and sealed.

- Complete set of original specifications in both official languages.
- Complete Commissioning Plan and Design Intent Brief in both official languages.
- Complete Construction Vibration and Blasting Impact Management Plan.

RS 5 TENDER CALL, BID EVALUATION, AND CONSTRUCTION CONTRACT AWARD

RS 5.1 INTENT

The object of this stage is to solicit and evaluate bids from qualified construction trade companies, and to award the contracts according to government regulations, including Federal Rules for Bid Depositories.

RS 5.2 SCOPE OF SERVICES

It is anticipated that multiple construction packages will be tendered by the Construction Manager, based on project sequencing requirements, to select the various construction sub-trades.

The Consultant is required to provide support and advice to the Departmental Representative during construction tender stage activities managed by the Construction Manager. While the Construction Manager will be responsible for evaluating bids for each construction tender package, the Consultant may be asked to review and advise on some procurement issues.

The Consultant is required to participate in pre-qualification activities as may be required, including preparing criteria for the procurement of specialized trade companies.

For each construction tender package, the Consultant shall:

- Attend bidders briefing meeting(s). The Departmental Representative is to advise on the timing of the bidders briefing meetings on site.
- During tendering of each package, provide the Departmental Representative with written information and clarifications in response to questions from construction bidders, and as required for bidders to fully interpret the Construction Documents.
- Prepare tender addenda as required, either based on questions arising from bidders briefing meetings or otherwise, in both official languages, for issue to all bidders by the Construction Manager following review and approval by the Departmental Representative.
- Assist the Departmental Representative in evaluating pre-qualification submissions from specialized construction sub-trades.
- Examine and report on any project impacts which may arise due to the issue of tender addenda with respect to construction cost estimates, risk allowances, and to construction schedule.
- Arrange for transportation, handling, display, viewing and return to storage of rock cores at the project site during the job showings. The viewing will be outdoors at a location identified and provided by the Departmental Representative.
- Assist the Departmental Representative in evaluating pre-qualification submissions from specialized construction sub-trades.

RS 5.3 DELIVERABLES

For each construction tender package, the Consultant shall provide:

- Originals of drawings and specifications as well as electronic copies of drawings and specifications signed and stamped with professional seal.
- Addenda as required in both official languages.
- Changes to the tender documents, if re-tendering is necessary.
- Minutes of the “bidders briefing meeting”.
- Summary of information required by Bidders to fully interpret the tender documents.
- Summary of addenda based on questions arising out of the Bidders Briefing Meeting and requests for clarification.
- Summary of cost and schedule impact created by issue of tender documents and addenda.
- Updated construction cost plan in both elemental and trade format, as required.
- Updated detailed critical path and milestone project schedules.
- Revised Construction Documents to bring the cost within the stipulated limits and/or for re-tendering purposes.
- Report upon risk implications and mitigation strategies.
- For each construction tender package submit to the Departmental Representative a single, complete, set of tender documents including all addenda in both official languages.

RS 6 CONSTRUCTION AND CONTRACT ADMINISTRATION

RS 6.1 INTENT

To ensure that construction implementation complies with the Construction Documents, to monitor construction activities for quality and performance, and to identify any necessary changes to the scope of work during construction and commissioning.

The following services are required for each construction phase, and for each tender package.

RS 6.2 SCOPE OF SERVICES

The Consultant scope and activities shall be in collaboration with its relevant specialized sub-consultant disciplines and shall, as a minimum, include the following:

6.2.1 General

- Coordinate all services of specialists and sub-consultants disciplines as applicable, and advise and consult with the Departmental Representative.
- Prepare a communications protocol in consultation with the Departmental Representative, and issue to Project Team.
- Act as interpreter of the requirements in the Construction Documents.

- Review the CM's submittals, and advise the Departmental Representative on their conformity with the Construction Documents.
- Update documentation to reflect changes which occur during construction.

6.2.2 Construction Meetings

- Immediately after award of each construction package, arrange and participate in a construction briefing meeting, organized by the CM, with the successful construction sub-trade, the Construction Manager, and the Departmental Representative. Ensure participation from all pertinent specialist sub-consultant disciplines.
- Participate in bi-weekly construction progress meetings, commencing with the construction briefing meeting. The meetings will be chaired by the Construction Manager, and will typically include the main sub-contractors, the Consultant and its specialist sub-consultant disciplines, the Departmental Representative, and various other PWGSC representatives. The Departmental Representative may invite the User Group and other project Stakeholders to attend any of these meetings as necessary. Minutes of these meetings will be prepared and distributed by the Construction Manager.

6.2.3 Project Schedule

- Monitor the Construction Manager's construction schedule, verify that activity durations are adhered to, and submit a detailed report to the Departmental Representative concerning activities that are at risk of being delayed.
- Keep accurate records of causes of construction delays on site, as well as the actual amount of construction personnel and equipment down time resulting from delays, and submit to Departmental Representative as they occur.
- Prepare and submit to the Project Team a monthly schedule showing detailed scheduling of completion of construction documents by tender package. Milestones to be incorporated the overall project schedule by the CM.
- Make every effort to assist the CM in avoiding delays.
- Verify that the Construction Manager's detailed Commissioning Schedule is updated before the start of the Commissioning Phase of the project. Routinely review this schedule and offer recommendations for improvement throughout the commissioning of the work.

6.2.4 Contract Documents

- Through the Departmental Representative, meet with the Construction Manager and construction sub-trades as required clarifying potential ambiguities in the Construction Documents.
- Within five (5) working days of a written request from the Departmental Representative, render interpretation in writing and graphic form as may be required to answer Construction Manager Requests for Information.
- Within five (5) working days of a written request from the Departmental Representative, render written findings on all claims, disputes and other matters in question between PWGSC and the Construction Manager relating to the execution or performance of the work.
- Render interpretation and findings consistent with the intent of and reasonably inferable from the Contract Documents.

6.2.5 Inspection

- Carry out the review of the work at intervals appropriate to determine if the work is in conformity with the Contract Documents.
- Reject work which does not conform to the Contract Documents and whenever in the Consultant's opinion, it is necessary or advisable for the implementation of the intent of the Contract Documents.
- Request special inspection or testing of work, whether or not such work has been fabricated installed or completed.
- Inspect the work by the team of specialist sub-consultant disciplines.
- Order minor adjustments in the construction work which are consistent with the intent of the Contract Documents, when these do not involve an adjustment in the construction contract prices and or an extension of the construction contract durations.
- Following each site inspection, keep the Departmental Representative informed of and formally report on the progress and quality of the work, including any defects or issues observed during the course of the site review.
- Furnish supplemental instructions to the Construction Manager in accordance with a schedule for such instructions mutually agreed upon with the Departmental Representative and the Construction Manager.

6.2.6 Change Control

- The Consultant does not have authority to change the work or the price of any Contract(s).
- Changes which affect cost or design concept must be approved by the Departmental Representative.
- Upon the Departmental Representative's approval, the Consultant is to review itemized quotations from the CM, analyze proposed amounts and promptly advise the Departmental Representative if the price is fair and reasonable. If it is not fair and reasonable, advise the Departmental Representative and provide assistance in resolving the issue.
- All changes, including those not affecting the cost of the project, must be covered by Change Orders (CO) / Expenditure Authorization / Site Instructions.
- Utilize an existing PWGSC change control process (as utilized by the CM) and software for scope change, site condition change, client driven change, and design driven change.
- Advise the Departmental Representative of all potential changes to scope for the duration of the implementation.
- Provide project delay analysis where appropriate.
- Utilizing the established change control process and software, respond to Requests for Information (RFIs), prepare Site Instructions, verify quantities, evaluate CM quotations, and provide justifications for approval and signature by the Departmental Representative in accordance with the Contract Documents. Include sketches/drawings as required to help illustrate the proposed change. When applicable, advise if the change may be implemented upon contract completion.
- Review the CM's submittals within five (5) working days; prioritize review and processing to ensure the project schedule is maintained.
- Provide cost planning and estimating advice and negotiation support to the Departmental representative during construction.
- Assess/analyze time impact of all proposed changes, advise the Departmental Representative of impact analysis.
- Indicate any changes or material/equipment substitutions on Record Documents.

- When new scope of work is to be issued based on unit prices, keep accurate account of the work, recording dimensions and quantities.

6.2.7 Shop Drawings

- Review and take other appropriate action with reasonable promptness upon such sub-contractor submittals as shop drawings, product data, and samples, for conformance with the general design concept of the work as provided in the Contract Documents.
- Review and comment on the adequacy of the CM's proposed material/equipment substitutions.
- Following the review of shop drawings, forward two copies of reviewed shop drawings to the Departmental Representative.
- Verify that shop drawings include the project number and are recorded in sequence.
- Establish and implement a shop drawing handling/distribution protocol acceptable to the Project Team. Verify the number of copies of shop drawings required.
- Shop drawings shall be stamped: "Checked and Certified Correct for Construction" by the sub-contractors and stamped: "reviewed with comments", "reviewed" or "rejected" by the Consultant before return to the CM through the Departmental Representative.
- Expedite the processing of Shop Drawings.
- All equipment must be CSA approved, or CSA equivalent. In the case of equivalency, provide letters of approval for use in Canada.

6.2.8 Commissioning

- Develop installation/start-up check lists.
- Verify and confirm that the CM complies with and properly implements all activities described in the Commissioning Plan.
- Ensure continued review and witnessing of all activities related to the commissioning process.
- Participate in the processes for systems and integrated systems (life safety compliance) testing, at each stage of occupancy.
- Ensure that the requirements of section RS 7 - Commissioning are delivered.

6.2.9 Inspection and Testing

- Provide the Departmental Representative with specified and recommended list of tests to be undertaken, including on site and factory testing.
- Ensure all testing is detailed within the Commissioning Plan.
- Once contract is awarded, assist Departmental Representative in briefing testing firm on required services, distribution of reports, communication lines, etc.
- Review all test reports and take necessary action with the Construction Manager when work fails to comply with contract.
- Immediately notify the Departmental Representative when tests fail to meet project requirements and when corrective work will affect schedule.
- Assist the Departmental Representative in evaluating testing firm's invoices for services performed.

6.2.10 Construction Vibration and Blasting Impact Management Plan

- Direct the implementation of the Construction Vibration and Blasting Management Plan. The objectives are as follows:
 - Provide ongoing record of construction vibration, noise, blast impact throughout the construction project's duration.
 - Enable the Project Team to audit the project operations to ensure that the design goals are achieved.
 - Provide a convenient method to track environmental performance.
 - Provide the means to address non-compliance with design or environmental quality objectives.
 - Demonstrate a commitment to managing noise and blast impacts.
 - Demonstrate a commitment to ensure improved environmental quality throughout the construction project's duration.

6.2.11 Construction Progress Claims

- Each month the Construction Manager submits a progress claim (request for progress payment) for work and materials as per the requirements of the Construction Documents, determine the amounts owing to the Construction Manager based on the progress of the work and certify payments to the Construction Manager.
- Verify at each progress payment that the CM and its sub-contractors have accurately recorded information on the site as-built set of Contract Documents.
- With respect to communications and security cabling, ITPMO will act as Technical Authority and will inspect and certify payments.
- The claims are made by completing the following forms where applicable:
 - Request for Progress Payment.
 - Cost Breakdown for Unit and/or combined Price Contract.
 - Cost Breakdown for Fixed Price Contract.
 - Statutory Declaration Progress Claim.
- Review and sign designated forms and promptly forward claims to the Departmental Representative for processing.
- Submit with each progress claim:
 - Updated schedule of the progress of the work.
 - Detailed photographs of the progress of the work.

6.2.12 Materials on Site

- The Construction Manager and its sub-contractors may claim for payment of material on site but not yet incorporated in work.
- Material must be stored in a secure place designated by the Departmental Representative.
- The Consultant shall check and verify a detailed list of materials with supplier's invoice showing price of each item which must accompany claim.
- Items shall be listed separately on progress payment forms after the break-down list and total.
- As material is incorporated in the work, the cost of this material must be added to the appropriate breakdown list and removed from the material list.

6.2.13 Acceptance Board

- Inform the Departmental Representative and the PWGSC Commissioning Manager once satisfied that the project is substantially completed. The Consultant, Construction Manager, and major sub-trades representatives shall form part of the Project Acceptance Board and attend all meetings as organized by the Departmental Representative.

6.2.14 Interim Inspection

- The Acceptance Board shall inspect the work and list all unacceptable and incomplete work on a designated form. The Board shall accept work from the sub-contractors subject to the deficiencies and uncompleted work listed and priced.
- The sub-contractors will be required to provide a work plan of actions and schedule to correct all deficiencies.
- The Consultant shall coordinate with the Departmental Representative to monitor, inspect and report on the progress of deficiencies corrections.

6.2.15 Substantial Completion

- The Departmental Representative will formally issue the official Certificate of Substantial Performance forms (formerly called Interim Certificate of Completion) to the Construction Manager.
- It is anticipated that multiple "Partial" Certificates of Substantial Performance will be issued to reflect the phased project implementation approach.
- Prior to the issuance of each Certificate of Substantial Performance, obtain as-built marked-up drawings from the Construction Team. Provide a copy to the Departmental Representative.
- Payment requires completion and signing, by the parties concerned, of the following documents:
 - Certificate of Substantial Performance – PWGSC form 1796.
 - Statutory Declaration – PWGSC form 2835.
 - Other submittals required to support the progress claim are:
 - Workman's Compensation Clearance Certificate.
 - CM's Invoice.
 - Cost Breakdown for Fixed Price Contract.
 - Cost Breakdown for Unit or Combined Price Contract.
 - Certificates or written approval from AHJs.
- Verify that all items are correctly stated and that completed documents and any supporting documents have been furnished to the Departmental Representative for processing.

6.2.16 Occupation

- PWGSC may start operating utilities contained within the tunnel after the date of acceptance by the Acceptance Board. The acceptance date is normally that of the Certificate of Substantial Performance issued to the CM. As of the acceptance date, the CM may cancel the Contract Insurance, and PWGSC assumes responsibility for:
 - Security of the work(s).
 - Fuel and utility charges.
 - Proper operation and use of equipment installed in the project.
 - General maintenance and cleaning of the work(s).

- Maintenance of the site (except any landscaping maintenance covered by the contract).

6.2.17 Take-over

- The official take-over of the project or parts of the project, from the Construction Manager is established by the Project Team. The date of the Certificate of Substantial Performance signifies commencement of the twelve-month warranty period for work completed on the date of each certificate in accordance with the General Conditions of the Contract.
- Provide to the Departmental Representative and to the PWGSC Commissioning Manager with original copy of sub-contractor warranties for all materials and work covered by an extended warranty or guarantee, according to the conditions of the specifications. Verify their completeness and extent of coverage.

6.2.18 Operation and Maintenance Data Manual

- Operation and Maintenance Data Manual: Four (4) sets of each volume produced by sub-contractors in accordance with the project specification and verified for completeness, relevance and format by the Consultant and submitted to Departmental Representative and PWGSC Commissioning Manager prior to interim acceptance or actual start of operation and instruction period, whichever occurs sooner.
- Prior to submission to the PWGSC Commissioning Manager, provide written comment in detail indicating the acceptability of all manuals. The sub-contractors shall retain one (1) copy of each volume for record and use during the instruction period.

6.2.19 Training

- Verify that all training is detailed within the CM's Commissioning Plan as prescribed in the Construction Documents.
- Verify that the CM has provided training sessions to the User Group, as prescribed in the Construction Documents and using the final O&M manuals as reference.
- Consultant to provide training sessions on the subject of design intent and systems operation. Utilize the Design Intent Brief as a basis for training sessions.

6.2.20 Keys

- Verify that all keys and safe combinations are delivered to the Departmental Representative.

6.2.21 Final Inspection

- Inform the Departmental Representative when satisfied that all work under the contract has been completed, including the deficiency items at all agreed completion points.
- The Departmental Representative reconvenes the Acceptance Board which makes a final inspection of the project. If everything is satisfactory the Board issues interim and final acceptance of the project to the CM.

6.2.22 Final Completion

The official take-over of the project is established by the official Certificate of Completion forms (formerly called Final Certificate of Completion). The Departmental Representative will formally issue these forms to the Construction Manager.

- The final payment requires completion and signing, by the parties concerned, of the following documents:
 - Certificate of Completion (Final) – PWGSC form 1797.
 - Statutory Declaration - PWGSC form 2835.
 - Other submittals required to support the progress claim are:
 - CM's Invoice
 - Cost Breakdown for Fixed Price Contract.
 - Cost Breakdown for Unit and/or Combined Price Contract.
 - Workmen's Compensation Clearance Certificate
 - ESA Certificate
 - TSSA Certificates
 - Hydro Certificate(s).
 - Any other applicable certificates (i.e. Building Permits, Occupancy Permits, Notice of Project Closure, etc.)
 - Submission of all project submittals including but not limited to reports, O&M manuals, as-built drawings.
- Verify that all items are correctly stated and that completed documents and any supporting documents have been furnished to the Departmental Representative for processing.

6.2.23 As-Built and Record Drawings and As-Built Specifications

As the project will have multiple tender packages under the CM model for each tender package:

- Check and verify sub-contractor as-built records for completeness and accuracy.
- Through the Departmental Representative, obtain from the sub-contractors all modification/updates to as-built records from Substantial Completion to Final Completion.
- Show deviations in construction from the original Contract Documents including changes resulting from COs or from Site Instructions.
- Indicate MMS numbers for each piece of mechanical and electrical equipment on each drawing.
- Produce Record Documents by performing a final update of the Construction Documents and the Design Intent Brief to reflect actual installed conditions.
- Include a copy of the CM's complete set of final shop drawings in hard copy and electronic format.
- Submit a comprehensive consolidated final package of Record Drawings and As-Built Specifications within twelve (12) weeks of issuance of the Certificate of Completion.

6.2.24 Project Close-Out: for each phase of implementation

- Prepare Certificates of Substantial Performance and Certificates of Completion.
- Collect the written warranties and related documents from the Construction Manager and forward to Departmental Representative for review.
- During the twelve (12) month warranty period, investigate all defects and alleged defects and issue instructions to the Construction Manager.
- Update training plan and complete commissioning processes.
- Prepare and provide to the PWGSC Commissioning Manager and to the Departmental Representative all System Operation Instructions (name plate instructions).

- Finalize systems operation instructions section of the Design Intent Brief and User Group O&M Manual to 100% status, reflecting as-commissioned operation of all building systems.
- Conduct a final warranty review with all applicable consultant team members, Project Team representatives and sub-contractors. Issue instructions to the sub-contractors as may be required. Follow up as required. Complete a narrative report and submit to the Departmental Representative.

RS 6.3 DELIVERABLES

The Consultant shall prepare and consolidate the following information:

- Written reports from site visits including persons involved.
- Monthly written reports on the progress of the work including updated as-built records.
- Provide scheduling reports with updates at the end of each month up to and including the Design Document stage.
- Provide additional detail drawings when required to clarify, interpret or supplement the Construction Documents.
- Written Site Instructions.
- Copies of reviewed shop drawings and of reviewed drawings from furniture/equipment suppliers.
- Certificates of Substantial Performance and Certificates of Completion including respective reviews and acceptances.
- Debrief of Commissioning activities outlining the commissioning process, major activities, and lessons learned from this project.
- Finalize the Design Intent Brief and User Group O&M Manual to reflect as commissioned operation and maintenance of each building system.
- Training summary.
- List of Spare Parts.
- Certified and dated PV results.
- Consultant record drawings and updated specifications based on the as-built marked-up drawings obtained from sub-contractors.
- Other Management Manuals as required.
- Warranty deficiency list.
- Final Warranty Review and Report.
- Post-Construction Evaluation.
- A Waste Diversion Summary indicating the destination (reuse, recycling or landfill) and quantity (by weight or volume) of all waste materials removed from the site.

RS 7 COMMISSIONING

As a member of the Project Team, the PWGSC Commissioning Manager represents the interests of the User Group, and is responsible for overseeing all commissioning activities during the development, implementation and post construction stages of the project.

Throughout this stage, the Consultant will work closely with the PWGSC Commissioning Manager, with the Construction Manager, and with the various sub-contractors to implement commissioning activities and create useful, well integrated drawings, reports and manuals, in compliance with the Contract Documents. The PWGSC Commissioning Manager will review all commissioning deliverables and provide recommendations for acceptance to the Departmental Representative.

7.1 SCOPE OF SERVICES

7.1.1 General:

- Provide complete documentation on the Operation and Maintenance (O&M) requirements for the new equipment and systems.
- Prepare Design Intent Brief with systems operation instructions and Preventative Maintenance Support System (PMSS) / Maintenance Management System (MMS) documentation.

Note: Contents of O&M Manuals and Design Intent Brief shall be in accordance with the PWGSC Project Commissioning Manual current edition.

7.1.2 Design Concept and Design Development Phases:

- Submit an O&M report showing how the design will meet project O&M requirements, including the following subjects:
 - Spare equipment, extra material and redundancies needed to operate and maintain this facility over its life expectancy.
 - System selection based on life cycle cost analysis considering energy, maintenance and operational cost.
 - "Phased" construction program.
- Assist the PWGSC Commissioning Manager in preparation of a preliminary O&M budget. The O&M budget will contain detailed breakdown of various items with the assessment of the systems selection.
- Prepare a draft Design Intent Brief. Submit updated drafts with each design stage submission.
- Prepare a draft of the Commissioning Plan.
- Plan the Performance Verification activities, develop the installation checklists and PV report forms, and prepare a detailed verification schedule.
- Ensure all the review comments are addressed to the satisfaction of the PWGSC Commissioning Manager.

7.1.3 Construction Documents & Tendering Phases:

O&M (General)

- In consultation with the PWGSC Commissioning Manager, continue the assessment which started during the design stage with respect to O&M concerns including redundancies, spare equipment and extra material, preventative maintenance and equipment

identification, and the O&M budget. Ensure all review comments provided by the PWGSC Commissioning Manager are addressed.

- Incorporate design and performance intent in the Construction Documents and identify anticipated performance outputs in PV forms.
- Finalize the Commissioning Plan.

Design Intent Brief

- Provide all design intent, sequence of operation, systems operation instructions, etc.
- Provide emergency start-up/operations/shut-down procedures.
- Provide Single Line Diagrams of all systems.
- Provide PMSS/MMS inventory lists and Valve Schedules
- Provide Service Contract lists
- Provide Shop Drawing lists.

Commissioning Specification

- Use PWGSC disciplinary master specification for commissioning as the basis for the project specifications for commissioning. Complete design information required in the PV report forms.
- Identify Construction Manager and sub-contractor commissioning, PV and testing responsibilities.
- Specify detailed PV procedures and output, documents, scheduling and reporting requirements.
- Identify and include in specification all tests to be conducted at manufacturer's plants, on site during construction, installation, commissioning on site and during the operation phase.
- Develop training package for O&M personnel and include in specification as required.

"PMSS/MMS" Specification

- Use PWGSC Master Specification for the identification of equipment and inventory in conjunction with the PMSS/MMS. Provide PMSS/MMS coding and system nomenclature on tender documents. Coordinate with existing building equipment inventories.

Submission Requirements

- The Commissioning Plan is submitted at the end of the design phase and is updated and resubmitted at the end of each stage of the working documents. The Consultant and the PWGSC Commissioning Manager work together to update the Commissioning Plan.
- The commissioning specifications are submitted at the end of the 66% working drawings stage and are updated and resubmitted at each subsequent stage of the working documents.
- The systems operation instructions section of the Design Intent Brief is submitted at the end of the 66% working drawings stage, and is updated and resubmitted during subsequent stages of the working documents.
- Respond to all Project Team comments in writing at each stage.

7.1.4 Construction Phase:

General

- Once construction contracts are awarded, assist the Departmental Representative in briefing testing firms on required services under the Construction Documents.
- Review sub-contractor commissioning documentation for compliance with the Construction Documents, including PV documentation, procedures and expected output.
- Update the Commissioning Plan and commissioning schedule to ensure testing and verification information is relevant to construction changes to the work. Incorporate relevant data from reviewed shop drawings and installed component data.
- Carry out various checks and tests to determine if the new equipment and systems function in accordance with the contract documents.
- Assist the Departmental Representative in evaluating the testing firm's invoices for services performed.
- Review all maintenance management nomenclature, devices and submissions prepared by the Construction Manager. Verify and confirm that on-site implementation and tagging of maintenance management items complies with Construction Documents.
- Three (3) months before substantial completion, assemble all commissioning documentation, including check lists, PV report forms, PV procedures, instruments to be used, and instrument calibration, and incorporate relevant data from reviewed shop drawings and installed component data. Review for conformity with Construction Documents, and provide comments in writing to the Departmental Representative.
- In consultation with the various sub-contractors, select the commissioning test instruments.
- Review the selected test instruments which are to be calibrated less than 3 months prior to substantial completion.

Manuals

- Review sub-contractor O&M Manuals as construction progresses, and verify for completeness, relevance, and format in accordance with the Construction Documents. Verify that the CM has assembled all certified tests results and incorporated these into the O&M manuals.
- After review and comment by the Consultant, submit all O&M manuals to the PWGSC Commissioning Manager for review and comment. Manuals shall be in accordance with the PWGSC Commissioning Manual, current edition.
- Verify and confirm that O&M manuals have been submitted to the Departmental Representative prior to interim acceptance or actual start of operation and instruction period, whichever occurs sooner.

Training

- Co-operate with the PWGSC Commissioning Manager in making necessary arrangements for site O&M staff familiarization.

7.1.5 Commissioning Phase:

General

- Submit a list of the technical staff required to conduct all performance and verification tests for approval by the PWGSC Commissioning Manager prior to beginning testing and verification.
- Review the Commissioning Plan with the Construction Manager prior to beginning testing and verification.

Manuals

- Review the 100% O&M Manuals and submit comments to the PWGSC Commissioning Manager. Manuals to be in accordance with all modifications to the project.

Spare Parts

- Finalize the delivery of all the spare parts requirements through the project and assist the PWGSC Commissioning Manager in the definition of additional parts not listed in the Construction Documents.

Component, Systems, and Integrated System Performance Verification

- Prior to start of commissioning, verify that each system is completed, safe to operate and ready for start-up. Verify and confirm that all deficiencies are rectified and acknowledge that the installation of components and systems is ready for the commissioning phase.
- Witness all the components, subsystems and systems testing in accordance with the provisions of the Construction Documents, including testing during off-hours or testing off-site. Verify and confirm that work meets the design intent and requirements of ULC and TB Guidelines on Life Safety and Health. The PWGSC Commissioning Manager may witness with the Consultant some or all of the tests.
- Include testing of equipment where such equipment is interconnected and/or impacts base building operations of connected buildings.
- **Note:** Startup and Test and Balancing (TAB) are construction activities and do not form part of the Commissioning Phase.
- Witness final testing and commissioning of all devices.
- Certify and date all PV procedures and test results.
- Report in writing to the Departmental Representative and to the PWGSC Commissioning Manager indicating compliance or anomalies regarding witnessed events. The Consultant is to investigate and recommend in writing any corrective actions to be taken to facilitate compliance with design intent and design criteria.
- Provide solutions during the PV process with respect to the variances from the design parameters.
- Instruct the Construction Manager to correct all the deficiencies identified and recorded during the PV and adjust or alter the systems to achieve the design parameters. Retest as required.
- In consultation with the PWGSC Commissioning Manager, and the Departmental Representative, recommend take-over of the tunnel system, after successful completion of the life safety compliance testing, subject to outstanding deficiencies or deferred tests during the operational phase.

Training

- Review the Construction Manager's training material for compliance with the Commissioning Plan, and verify that the Construction Manager has implemented training sessions for the User Group.

Documentation

- Review all PMSS/MMS nomenclature, devices and submissions prepared by the Construction Manager and by the various sub-contractors. Verify and confirm that on-site implementation and tagging of PMSS/MMS complies with Construction Documents.
- Make recommended revisions to documentation to reflect all changes, modifications, revisions and adjustments as finally set upon completion of commissioning.
- Prior to Interim Inspection, debrief the Departmental Representative and the PWGSC Commissioning Manager on the commissioning process including training, problems; required changes to systems (with costs) which are outside the sub-contractors responsibility, but which are deemed necessary to meet project requirements; commissioning procedures and other information, experiences and suggestions for future projects. Submit a report to the PWGSC Commissioning Manager.

7.1.6 Post-construction (Operational Phase):

- Witness completion of season, including all other related testing and Performance Verification. Review, certify and date reports.
- Update the Design Intent Brief (Owner's Manual) to reflect the as-commissioned works. Reflect all changes, modifications, revisions and adjustments as finally set upon completion of commissioning.
- Monitor environmental and life safety system checks that must be carried out by the CM or by the User Group prior to the expiration of warranties.
- Participate in warranty inspections with the Project Team. Prepare and submit detailed inspection reports within five days of inspection. Two (2) months prior to completion of warranty period, organize and schedule a site visit with Project Team representatives to review outstanding warranty and operational items.
- Identify and monitor all deficiencies to be rectified by the CM prior to the expiration of warranties.
- Submit consolidated and indexed project archives/records (reports, photos, related data and information) to the Project Team.
- Participate in lessons learned workshops with Project Team and User Group representatives.

7.1.7 As-Built, Record Drawings and Specifications, and Final Reports:

- Following take-over, and through the Departmental Representative, obtain an as-built marked-up hard copy of drawings and specifications from the CM.
- Update drawings and specifications to show significant deviations in construction from the original Construction Documents, including changes resulting from COs, clarification drawings, or from Site Instructions.
- As applicable on each drawing, indicate maintenance management numbers for each piece of mechanical, electrical and fire protection equipment.

- Produce Record Drawings in both official languages and final BIM record by incorporating As-Built information into project drawings.
- Produce Record Specifications to reflect as-built information in both official languages.
- Produce Final Design Intent Brief in both official languages.
- Submit a comprehensive and consolidated final package of reproducible Record Drawings and Specifications reflecting the built works for all phases within eight (8) weeks of final acceptance.

7.1.8 Post-construction (Evaluation Phase)

Prepare a final written debriefing report to the Departmental Representative and Commissioning Manager reviewing the Commissioning Process and discussing:

- What component and/or systems, if any, that were not commissioned - and why.
- Lessons Learned.
- A remedial work plan outlining prudent follow-up actions or projects for the Project Team's consideration.
- Other related information.

RS 7.2 DESIGN INTENT BRIEF

7.2.1 Objectives:

- The Design Intent Brief is intended to provide, firstly, a narrative description of the project's conceptual framework and, secondly, a record of, and rationale for decisions made throughout the project. The Design Intent Brief represents the Consultant's point of view. It will be produced initially at the Concept Design phase and subsequently updated and submitted at the end of each subsequent project delivery phase (Design Development, Construction Documents and Contract and Construction Administration).
- This Design Intent Brief will also include systems operation instructions and shall be oriented towards the User Group.
- The Design Intent Brief must be well organized in terms of text and graphics to facilitate future use as a reference document.
- The final version of the Design Intent Brief produced at the end of the Construction and Contract Administration phase will form part of the final submission package including the Record Drawings and CM's Operation and Maintenance (O&M) Manual. Reference may be made in the Design Intent Brief to these other packages.

7.2.2 General:

The Consultant Design Team shall prepare the Design Intent Brief. This design document outlines the design intent of the project and explains the purpose of the tunnel and what the utilities within the tunnel are meant to do.

The Design Intent Brief contains a design description of each tunnel system; including structural, mechanical, electrical, civil, fire protection and other tunnel systems. The Design Intent Brief explains not only *what* a system and/or components do, but *why* the system or the components are being selected and, in general terms, *how* the design and operating concepts of the systems and integrated systems will be accomplished.

The Design Intent Brief differs from the traditional Operations and Maintenance (O&M) Manual in that the O&M Manual identifies the materials and components used in a project without explaining the design intent. The O&M Manual details the materials, components, maintenance of the components, spare parts for the components, operation and performance of the components based on both the manufacturer's stated performance criteria and the actual, operational performance of the final installation. The traditional O&M Manual identifies "what" component or system has been chosen, not "why" it has been chosen.

General requirements for all tunnel systems, including ALL interconnected or ancillary systems shall include, but are not limited to:

- A narrative description of the system or component.
- The purpose of the system or component.
- Options and analysis that were considered (concept stage only).
- The design intent.
- Sustainable features and strategies.
- The design criteria and the applicable code/standard that was used, including load calculations for each discipline.
- The area served by the system or component and, as applicable, all connected or related loads and system capacities.
- Any special features or unique supply items/sources.
- General control strategies, sequences, and reset schedules.
- Seasonal switch-over procedures.
- Emergency procedures during a fire condition, power or equipment failure.
- Reduced simplified plans illustrating system configurations, including single line and plan drawings of each system.
- Interfaces with existing systems.
- All design assumptions.

Also include, as required:

- Anticipated future changes not included in the project.
- Special maintenance issues.
- Requirements for ongoing monitoring for geotechnical conditions or ground behavior.

7.2.3 Production and Delivery:

The format of the Design Intent Brief shall:

- Be professionally presented in a D-ring binder with 216 mm x 280 mm quality bond paper, complete with drawings and/or plans.
- Contain a detailed index and dividers for all sections. The index shall also include a complete detailed reference (sub-index) of the CM's O&M Manuals to describe where other related operations and maintenance information is located.
- Contain a complete listing of names, addresses, telephone, and facsimile numbers of all firms, designers, and related agents who participated in the design and delivery of the project.

Interim Submission Requirements:

- Submit in draft format at the end of Design Concept, Design Development and 66% Construction Documents. Note that this is an evolving document and only an overview is required at these submissions.
- Update and submit for review at 99% Construction Documents submission. The Design Intent Brief should be essentially in its final format regarding its structure and organization, such that subsequent submissions need only add missing information. Note that the Design Intent Brief should be 90% complete when the Construction Documents are tender ready.

Final Submission Requirements:

- Submit the 99% complete Design Intent Brief to the Departmental Representative for review towards the end of the Construction and Contract Administration phase, at Interim Completion. Incorporate all comments and resubmit the Design Intent Brief as required.
- Within twelve (12) weeks of issuance of the Interim Certificate of Completion, but prior to issuance of the Final Certificate of Completion, Submit final, 100% complete Design Intent Brief with submission of Record Drawings and O&M Manual as one submission package. In addition to the contract submission requirements, provide three (3) additional electronic copies.
- Give an overview presentation of the Design Intent to the Project Team at the initial stage of construction.

7.2.4 Training:

Towards the end of the Construction and Contract Administration phase, the Consultant Team will present the Design Intent Brief as a training session for the User Group.

Prepare a training course outline and submit it to the Departmental Representative for review and comment at least two weeks prior to the proposed training dates. Update and resubmit as required. Include an agenda and a course outline summarizing the content and duration of training.

The training provided must clearly relay:

- An understanding of the intent of the design.
- Limitations of the systems.
- Reasons for the choice of systems.

Coordinate the date(s) of the training session(s) with the Departmental Representative. The Departmental Representative will organize the location and provide the lists of participants. Prepare a summary of the training sessions. Indicate dates, subject matter, and all personnel present for training. After training, submit the training summary to the Departmental Representative.

RS 7.3 DELIVERABLES:

- Commissioning:
 - Final Design Intent Brief in Canada's two official languages.
 - Record (as-built) drawings and specifications in Canada's two official languages.

- Certified and dated PV test results
- Debriefing report of Commissioning Activities

RS 8 RISK MANAGEMENT

RS 8.1 General

Throughout the project life cycle, the Consultant shall assist the Departmental Representative in identifying risks, and shall provide input to the project's Risk Management Plan (prepared and maintained by the Construction Manager).

Risk Management sessions will be organized by the Departmental Representative at 6-month intervals, whereby the full Project Team will be invited to participate (including the Construction Manager, User Group staff, Stakeholders, and representatives from other inter-related project teams).

The Consultant and representatives from its Key Sub-consultant / Specialists shall review and become familiar with PWGSC's best practice document on the Risk Management process.

The Consultant and representatives from its Key Sub-consultant / Specialists shall participate in these Risk Management sessions, which shall be held at approximately 6 month intervals throughout the entire project life cycle.

Risk Management Sessions will involve the following process:

- Review risks currently shown on Risk Management Plan, refresh/adjust based on current relevance.
- Identify new risk events based on past experience, expert opinion, etc.
- Qualify risk causes and effects.
- Quantify probability of risk event (Low, Medium, High) and their impact on project time, cost, and quality (Low, Medium, High).
- Prioritize risk events (*i.e.* concentrate efforts on risk events with High probability and Medium to High impact).
- Evaluate alternatives for risk response (*i.e.* mitigation, avoidance, transfer, etc.).
- Assign actions to Project Team members for implementing risk responses.

Following approval by the Departmental Representative, the Consultant shall implement the appropriate measures in response to those risks identified in the Risk Management Plan which require action by the Consultant Team.

RS 8.2 SCOPE OF SERVICES

- Assist the Departmental Representative in identifying risks throughout the project life cycle.
- Participate in regular Risk Management sessions, and provide input to the project's Risk Management Plan.
- Implement the appropriate measures in response to those risks identified in the Risk Management Plan which require action by the Consultant Team.

- Include a discussion and analysis of project risks in the Analysis of Project Requirements report, in the Design Concept report, and in the Design Development report.

RS 9 PROJECT TIME PLANNING, SCHEDULING AND CONTROL

RS 9.1 PLANNING/SCHEDULING REQUIREMENTS & APPLICATION

Planning and Scheduling are high priorities with all Federal Government projects. The concept of planning and scheduling is to facilitate the accomplishment of objectives and should be thought of as a continuous interactive process involving planning, action, measurement, evaluations and revision.

For this project, the key driver is to meet the schedule requirements for the West Block Program. Planning and Scheduling shall therefore be fully in-tune with the Construction Management approach, which will involve a phased construction sequence using multiple tender packages.

The Consultant is to retain the services of a fully qualified time planning, scheduling and control team, referred to herein as the Time Specialist, with a demonstrated record of successful time management on large construction projects is required. At least one member of the Time Specialist's team must hold a project management accreditation.

The Time Specialist shall play a major role in the development of the Design Phase schedules, and in the monitoring of the project schedule.

The Time Specialist shall provide scheduling services from commencement of the award of the Consultant contract, through to construction and commissioning completion, including the warranty period. The Time Specialist will also advise and cooperate in the preparation and maintenance of the construction cost plan.

The Time Specialist shall collaborate with the entire consultant team and coordinate all planning and scheduling information with the Departmental Representative, and with the Construction Manager.

PWGSC has retained an independent, third party professional planning and scheduling consultant (Scheduling Consultant) to develop and maintain the West Block Program Master Milestone Schedule. Cooperate and coordinate scheduling information with PWGSC's Scheduling Consultant.

RS 9.2 CONSULTANTS SYSTEM FOR PROJECT CONTROL

The Consultant shall provide a project control system for Design Phase schedules based on network techniques such as Critical Path Method (CPM) for Planning, Scheduling, Progress Monitoring and Reporting of project progress. The computerized Project Control System currently used is Primavera P6; the Consultant must utilize a commercial available software packages fully compatible with the one being used. The project control system selected must be capable of generating output as required by this section.

RS 9.3 SCOPE OF WORK

Under the supervision and direction of the Consultant, the Time Specialist shall be responsible for preparing, monitoring and maintaining the complete Design Phase schedules for the duration of the project. The Time Specialist will be conversant with project site conditions at all times. The Time

Specialist shall attend project meetings throughout the project and be prepared to present and defend the schedules to the Departmental Representative.

Note: the CM is responsible for the overall construction schedule. The Time specialist shall provide the CM with monthly updates of the Design Phase schedules.

9.3.1 General:

The general scope of work for planning and scheduling services include the following activities:

- Develop a schedule with key milestones for the required work and activities associated with the Consultant's services.
- Identify project activities, major elements, and phases of work for the project.
- Develop, monitor and maintain detailed schedules, bar charts and milestone listings that indicate deviations from the baseline schedule.
- Attend meetings.
- Prepare detailed commissioning schedule, including separate life safety testing per phase of occupancy.
- Incorporate scheduling of multiple construction packages and tender sequencing.
- Identify design team coordination requirements, including the PWGSC Design Review Committee and other authorities as applicable.
- Prepare progress reports monthly.

9.3.2 Planning:

Project Work Breakdown Structure

Prepare a Work Breakdown Structure (WBS) for the design work on the project. This WBS should be developed through at least five levels: project stage, element, sub-element and work package.

Cash Flow Projection

The Time Specialist will provide scheduling data to the Consultant and Cost Specialist to support the development and maintenance of the cash flow for the project.

9.3.3 Scheduling:

Detailed Schedules

The Time Specialist shall prepare and maintain a detailed schedule for Design Phase of the project. The overall schedule will be prepared and maintained, monthly by the CM, in consultation with all members of the Consultant, and the Project Team.

In order to provide a reasonable basis for progress monitoring and control, the schedule shall be presented in sufficient detail to ensure adequate planning and control. The detailed activities must relate at all times to the milestones developed and approved in the master program schedule maintained by CM.

The activities with no total float (early finish and late finish on the same date), which form the critical path, must be calculated and clearly indicated on the logical network. Secondary critical paths shall also be identified (paths that are at risk of becoming critical). No more than ten (10) percent of the activities shall be critical, or near critical.

The Consultant and Time Specialist shall, at the Departmental Representative's request and without additional charges, provide all additional information required by the Departmental Representative to validate the practicality of the project schedule.

Compliance with the Detailed Schedule

The Consultant must comply with the approved detail schedule, planning, coordinating and implementing their work with respect to the schedule. The Time Specialist will assist the Departmental Representative to actively monitor the Construction Manager's performance, documenting all activities on site throughout the construction periods. The Consultant must promptly address slippage in any work element of the construction schedule by providing immediate direction to the Departmental Representative and to the Construction Manager to mitigate and reverse delay impacts.

Progress Monitoring and Reporting

On a monthly basis, with status dated on the last working day of the month, the Time Specialist working with the Project Team shall perform a detailed schedule update for Design Phase scheduling as part of the monthly progress report. The detailed schedule shall reflect the following:

- Progress of each activity to the date of the report.
- Any logic changes, both historic and planned.
- Projections of progress and completion.
- The actual start and finish dates of all activities being monitored.
- A Gantt chart listing of all project activities including milestones in all networks (and sub-networks) from project start to project end. Group activities by similar work packages and sort by early start dates. List early and late start and finish dates together with durations, codes and float.
- A criticality report listing all activities and milestones with negative, zero and up to five (5) days total float used as a first sort for ready identification of the critical, or near critical paths through the entire project. List early and late start and finish dates, together with durations, codes and float for the critical activities printed.
- A written monthly Progress (narrative Report, by the Time Specialist, based on the detailed schedule, detailing the work performed to day, comparing work progress to planned, and presenting current forecasts. This report is to summarize the progress to date, explaining current and possible deviations and delays with respect to the detailed schedule and critical path. The report shall assess progress against project objectives, contract documents and the master program schedule.

Tender Documents

Included within the 66% tender document submission, the Consultant and Time Specialist will develop and present the NMS specification dealing with Construction Planning and Scheduling. This section will be the subject to detailed review and discussion with the Departmental Representative.

Construction and Implementation

During construction and commissioning the Consultant and Time Specialist will review and monitor all scheduling and planning activities as provided by the CM:

- Participate in planning sessions with the Project Team.
- Assist the Construction Manager as needed to develop their construction schedule.

- Assist in the development of the Construction Manager's commissioning schedule.
- Advise and prepare variance analysis reports as required.
- Upon receipt of the Construction Manager's current monthly status report, progress claim and project schedule, the Consultant and Time Specialist will review the information by:
 - Evaluating, on a general basis, actual progress achieved to date.
 - Comparing current status of detailed schedule and cash flow status with previously submitted detailed schedules and cash flows.

RS 9.4 PROJECT REPORTING

Monthly (Technical Focus)

The Consultant, in consultation with the Cost and Time Specialists, will prepare and submit monthly technical Progress Reports throughout the project, in a format agreed to with the Departmental Representative. The purpose of the report will be to review and monitor progress of the services by the Consultant and work by the sub-contractors. The report shall identify the progress of all deliverables, identify all instances where the schedule or cost plan are not being met, outline remedial measures being taken and identify any anticipated or potential problems to be addressed. This report is to be issued to the Departmental Representative.

Quarterly (Management Focus)

Quarterly, the Consultant, in consultation with the Cost and Time Specialists, will be required to submit a high level management report summarizing the project status including progress and issues internal to the design team. During construction the reports reviewing the sub-contractors performance relative to cost, cash flow, schedule and quality are required. Non-conformance issues (pre and post construction) are to be highlighted in this report. This report is to be issued to the Departmental Representative.

RS 10 ESTIMATING AND COST PLANNING

RS 10.1 COST SPECIALIST

Delivering this project on time and within budget is a high priority. The purpose of cost planning and cost control is to assist in the accomplishment of project cost objectives. This is to be a continuous and interactive process involving planning, action, measurement, evaluation and revision.

The Consultant is to retain the services of a fully qualified cost estimating, cost planning and cost control team, referred to herein as the Cost Specialist, with a demonstrated record of successful cost management on large construction projects is required. At least one member of the cost consultant team must hold professional accreditation as a quantity surveyor. This Cost Specialist will be conversant with all aspects of construction cost estimating during the design stages including the use of Elemental Cost Analysis, Risk Analysis, Life Cycle Costing and Value Engineering/Management techniques.

RS 10.2 SCOPE OF SERVICES

The Cost Specialist shall take into consideration the Construction Management approach, and shall adjust its services to suit a phased construction approach with multiple tender packages.

The Cost Specialist shall provide an interactive and continuous cost consulting service from the commencement of project design through to construction completion, including the preparation of complete estimates for all construction trades, escalation, inflation and contingency costs.

The Cost Specialist shall provide to the Project Team and to the Consultant, a cost advising, and cost monitoring/reporting service.

The Cost Specialist shall attend all project meetings throughout the design phases and be prepared to present and defend the estimates directly to the Departmental Representative.

RS 10.3 SERVICES - BASIC ACTIVITIES

The Cost Specialist shall work with and advise the Consultant team and the Departmental Representative of the costs of individual building components and costs of various design systems. Estimates should be prepared in detail and summarized using an Elemental Analysis format. Acceptable formats are noted below in section RS 10.3.2 - Submission Standards.

10.3.1 Reporting:

Milestone Reporting

At each of the Milestones specified in this document, provide a complete submission including the required Elemental Summaries, supported by all backup work sheets clearly detailing the process used in preparing the estimate. The detailed work sheets will be the prime basis on which estimates will be reviewed by the Departmental Representative. Cost comparisons and cost reports identifying and explaining the differences between each succeeding cost estimate and their cost effect are also required.

In addition, the Cost Specialist shall fully coordinate all estimates with schedules.

A typical Milestone Report will contain:

- Project Estimate Summary.
- Elemental Estimate Summary.
- Estimate Back-Up Detail:
 - Basis for escalation, inflation and contingency calculations.
 - Detailed measurement and pricing.
- Narrative.
- Outline description of estimate basis.
- Description of information obtained and used in the estimate including the date received.
- Listing of notable inclusions.
- Listing of notable exclusions; listing of items/issues carrying significant risk.
- Notes on past and forecast Cost Specialist activity.
- Estimate Reconciliation:
 - With last submission.
 - With Construction Cost Plan.
- Any other relevant information.

Monthly Report

In addition to the Milestone Reports, submit a Monthly Report outlining activities during the previous month, identifying areas of concern and new information received etc., along with forecast and proposed revisions to the current estimate. This report shall also contain a full up-to-date Elemental Cost Summary:

- Project Estimate Summary.
- Elemental Cost Summary.
- Narrative:
 - Description of the basis for estimate revision.
 - Description of new information used in the estimate including the date received.
 - Listing of notable inclusions.
 - Listing of notable exclusions.
 - Listing of items/issues carrying significant risk.
 - Notes on past and forecast Cost Specialist activity.

Exception Report

The Cost Specialist is to provide continuous cost monitoring, timely identification and early warning of all changes that affect or potentially affect the estimated construction costs of the project.

If the estimate falls short of or exceeds the Construction Cost Plan due to such changes, the Cost Specialist with the Consultant team shall fully advise the Departmental Representative. The Cost Specialist with the Consultant team shall submit to the Departmental Representative proposed alternative design solutions and revise the most recent monthly estimate.

An Exception Report will include sufficient description and cost detail to clearly identify:

- Scope Change: Identifying the nature, reason and total cost impact of all identified and potential project scope changes affecting Construction Cost Estimate.
- Cost Overruns and Underruns: Identifying the nature, the reason and the total cost impact of all identified and potential cost variations.
- Options Enabling a Return to Construction Cost Estimate: Identifying the nature and potential cost effects of all identified options proposed to return the project within Construction Cost Estimate.

10.3.2 Submission Standards:

Summary Format

- Elemental Analysis: All estimates shall be summarized in an agreed and consistent Elemental format. Several variations in format may be acceptable to the Departmental Representative (by discussion) but those following the ASTM (USA), CIQS (CDN), CSI Uniformat II (USA) or BCIS (UK) formats are preferred.
- Trade Summary: Where a trade summary is required, those following the Masterformat are preferred, except where local practice provides a more suitable alternative.
- Project Cost Subdivision: The estimate shall isolate the costs of each phase of construction.

Time Lag

Recognizing that estimates must follow the design decisions they represent, such estimates may lag. The cost portion of the Milestone Reports may follow, but by no more than two weeks unless otherwise determined by the Departmental Representative.

Use of All Available Information

The Cost Specialist is responsible for providing a complete cost estimate even though the information provided during the concept, design development and early working drawing stages is incomplete. Where requirements are not firmly defined, the Cost Specialist shall make assumptions, confirm them with the Consultant and either list them as assumptions, or have them incorporated in an outline specification modified by the Consultant.

10.3.3 Techniques:

The Cost Specialist is required to be familiar with and make use of a broad range of cost techniques, especially the following:

- **Risk Analysis** All construction estimates (except the final pre-tender estimate) shall include and identify design, estimating, escalation, and currency exchange allowances as are deemed necessary in light of the current information available. The Cost Specialist shall provide a satisfactory explanation of the level and/or amount of all such sums included within any estimate.
- **Scheduling** The Cost Specialist shall assist the Time Specialist by providing building quantities, building systems information and other quantifiable parameters deemed appropriate to the calculation of a reasoned project time schedule. The Time Specialist shall assist the Cost Specialist by maintaining an up-to-date schedule of all design activities along with an agreed bidding and Construction Schedule that will be incorporated by the Cost Specialist within the estimates on a timely basis.
- **Life Cycle Costing** In advising the Consultant of the cost information for alternative materials, methods and systems, it is necessary that the Cost Specialist uses all available information to ensure that a complete cost picture is made available, upon which design and construction decisions will be made.
- **Continuing Estimate Process** A process of continual adjustment of previous estimates may be used in place of total re-measurement at each milestone reporting point. This is acceptable, provided that at each monthly reporting point a full and up-to-date Elemental Cost Summary is provided and that at each milestone reporting point this Elemental Cost Summary is supported by complete, detailed, stand lone back-up/support documentation, as previously described.
- **Project Research** The Cost Specialist shall visit the proposed or alternative construction sites to become familiar with site conditions, site access, etc., analyze local labour and material supply conditions, local bidding practices and competition to establish pricing levels. A written report detailing this reconnaissance activity is expected.
- **Value Engineering/Management** The Project Team may require a Value Engineering/Management Study to be undertaken. The Consultant team will not be major players in this process, but shall answer questions and/or provide additional information called for by the Value Management team if requested to do so. The Cost Specialist shall assist the Value Management team by providing copies of the latest cost estimate and any additional cost information that may be required. No allowance should be made for this activity in the fee proposal, as services for this activity shall be on a separate negotiated basis.

RS 10.4 SERVICES - SPECIFIC ACTIVITIES

Analysis of Project Requirements Stage

Review, report on, and propose revisions to the existing Class “D” estimate. Do not proceed until the Cost Specialist, the Consultant and the Departmental Representative have accepted the revised Class “D” estimate.

The revised Class “D” estimate shall become the Construction Cost Plan.

Design Concept

A Class “C” estimate will be prepared at the highest level of detail commensurate with the available information using elemental and additional detailed costs.

Design Development

Upon completion of design development prepare a Class “B” estimate representing the increased level of design detail available. The report shall be prepared using detailed (elemental) costs *i.e.* measured quantities with minimal allowances or lump sums.

Upon final acceptance, the Class “B” estimate shall become the Construction Cost Plan.

Contract Documents

The consultant must take into account that the project will be delivered under a Construction Management approach that involves a phased construction using multiple construction packages.

During the production of the contract documents a process of continuing cost control progressively more detailed is required. At each review of contract documents, an up-to-date estimate shall demonstrate compliance with the Construction Cost Plan. Non-compliance with the Construction Cost Plan will require revisions to the contract documents. The progress submission Class “A” cost estimates shall be submitted in trade cost breakdown format. Cost estimates shall have a summary plus full back-up showing items of work, quantities, and unit prices.

Pre-Tender

For each construction package, upon completion of the contract documents a final pre-tender Class “A” cost estimate will be prepared using 100% measured quantities.

Provide a trade breakdown of the pre-tender estimate for use in reviewing the submitted bids and the successful bidder's estimate breakdown. Cost estimates shall have a summary plus full back-up showing items of work, quantities, and unit prices.

Tender Stage

For each construction package:

- **Tender Award:** During the tender period, examine and report on any cost impact created by the issue of tender/contract addenda. Incorporate the results of such addenda review into the final pre-tender estimate (both elemental and trade versions) prior to receipt of bids.
- **Bid Review and Analysis:** Assist the Departmental Representative, as required, by analyzing and reconciling any differences between the pre-tender estimate and the submitted bids.
- **Negotiation:** Should it be necessary to negotiate with any bidder prior to awarding tender packages, the Cost Specialist shall provide cost information as needed and enter into the negotiations if requested.
- **Reconciliation:** Upon the signing of a contract with the successful bidders, the Cost Specialist will reconcile both the elemental and trade estimates, in detail, with the agreed contract sum.

These reconciled estimates will be used by the Construction Manager during the construction phase of the project.

Cost Specialist Services through Construction

During construction, the Cost Specialist shall assist the Construction Manager with cost advice in relation to the following:

- Evaluation of price quotations for Contemplated Change Notices.
- Evaluation of claims.
- Evaluation of work completed.
- Evaluation of cash flow.

Post Contract

The Cost Specialist is be required to assist the Departmental Representative by providing details needed for an evaluation of the project, regarding the Project's cost performance.

RS 10.5 REVIEWS BY PROJECT TEAM

- The Departmental Representative will review all aspects of the Cost Specialist's work on a continuing basis to determine the validity and completeness of the information provided. Other members of the Project Team may also be asked by the Departmental Representatives to perform supplementary reviews. In the event the Departmental Representative may identify areas of concern including errors and omissions as well as areas of inadequate detail or areas that require further explanation, the Cost Specialist shall re-examine the estimates provided and make such revisions as are subsequently agreed to be necessary and/or provide ample acceptable evidence that such corrections or amendments are unnecessary.
- **No Action Abrogates Consultant's Responsibilities**
 - No acceptance or approval by the Departmental Representative, whether expressed or implied shall be deemed to relieve the Cost Specialist, or the Consultant, of professional or technical responsibility for the estimates and cost reports.
 - Neither does acceptance of an estimate by the Departmental Representative in any way abrogate the Consultant's responsibility to maintain the agreed Construction Cost Plan throughout the life of the project, or the requirement to redesign should the lowest acceptable bid differ significantly from the agreed Construction Cost Plan, unless and until the Departmental Representative indicates otherwise in writing.

ADDITIONAL SERVICES

AS 1 RESIDENT SITE SERVICES DURING CONSTRUCTION

AS 1.1 General

In order to ensure successful execution of the project it will be mandatory for the Consultant to provide full time Resident Site Services and throughout all construction activities related to the project.

The purpose of the Resident Site Services is to ensure the Consultant's presence on site to inspect, to co-ordinate, and to monitor all aspects of the work during the construction, as well as to liaise with the Project Team, with the various construction sub-contractors, and with Stakeholders as appropriate to the work.

The Resident Site Representative (RSR) will be required to provide continuous site review, including when construction operations perform multiple shifts per day.

AS 1.2 Description of Services

A minimum of one (1) Resident Site Representative is required to be on site at all times:

- The Resident Site Representative shall be a civil engineer with at least 10 years of construction industry experience relevant to tunneling and civil ground works. The RSR must also have a minimum of 3 years experience in the capacity of resident site representative on construction projects. This individual is required to be present on site for the full duration of construction.

Qualified back-up is required for the Resident Site Representative.

The RSR shall:

- Be directly responsible to the Consultant and to all members of the Consultant's team of specialist sub-consultant disciplines.
- Liaise with the Departmental Representative, the Construction Manager, other Project Team members, and Stakeholders.
- Become thoroughly familiar with the Construction Documents, the National Building code and all Fire Commissioner of Canada Standards for Construction operations (incl. FCC No. 301 dated June 1982 and the Standard for Welding and Cutting FCC No. 302 dated June 1982), and shall also be aware of all Provincial and Municipal standards for the health and safety of construction workers.

Become thoroughly familiar with the requirements of this Project Brief, and with the responsibilities of the other Project Team members.

AS 1.3 Specific Duties and Responsibilities

1.3.1 General

The Resident Site Representative shall:

- Provide full time resident inspection, clarification, co-ordination and monitoring during the construction work.
- Maintain daily records of all construction activities on site.
- Provide daily updates as to the progress of the work and ensure that current issues are communicated to the Project Team and to the Consultant Team.
- In case of emergencies, the Consultant RSRs are empowered to stop the work, or give orders to protect the safety of the workers or Crown property.

1.3.2 Interpretation of the Construction Documents

Interpretation of the Construction Documents shall be the responsibility of the Consultant. The Consultant may, however, delegate specific duties while maintaining responsibility.

It shall be the duty of the Resident Site Representative to assist the Consultant and to further inform the Consultant of any anticipated problems which may delay the progress of the work. The method for relaying such information shall be determined by the Consultant.

1.3.3 Changes in the Work

Except in the event of an emergency, the Resident Site Representative shall not authorize or order any change in the work which could constitute a change in the value of the Construction Manager's construction contract.

1.3.4 Communication & Liaison

The Resident Site Representative shall:

- Convey the Consultant's instructions regarding the required standards of workmanship to the Construction Manager and to the various sub-contractors.
- Verify that the work on site is in accordance with the specifications. Although informal discussions with Superintendents from construction sub-trades are usually permissible, (with the agreement of the Construction Manager), the Resident Site Representative should not deal directly with foremen or tradesmen, or interfere with the progress of the work.
- Communicate formally with the Construction Manager in writing, and immediately copy the Departmental Representative and the Consultant.
- Contact the Consultant immediately when it is apparent that information or action is required of the Consultant (e.g. general instructions, clarifications, sample of shop drawing approvals, requisitions, Contemplated Change Notices, site instructions, details, drawings, etc.)
- Accompany Project Team representatives on inspections and report as required on Consultant responses to the Project Team's requirements, comments, or instructions.
- Consider and evaluate any suggestions or modifications to the documents requested by the Construction Manager and immediately report these to the Consultant with comments.
- Ensure that the Project Team and the Consultant are notified promptly when key pieces and/or components of materials and equipment are delivered, so that these parties can arrange for the appropriate personnel to have an opportunity to inspect same prior to installation.

- Investigate, schedule, and inform the Departmental Representative of all proposed temporary or permanent connections into any of the buildings' systems prior to the work being done by the Construction Manager.
- Provide advanced forecasts and advise the User Group and the Departmental Representative of any interruption of normal services with a minimum 5 working days notice prior to the work being undertaken where this work cannot be done during the silent hours, and 48 hours notice otherwise. ***These notification requirements will be strictly enforced.***

1.3.5 Daily Log

- The Resident Site Representative shall keep a daily log recording:
 - Weather conditions, particularly unusual weather relative to construction activities in progress.
 - Workforce on site: construction firms on site, work being done by each firm, number of workers/firm, equipment on site (used and unused).
 - Any instructions given to the Construction Manager.
 - Material and equipment deliveries and removals.
 - Daily activities and major work done.
 - Start, stop or completion of activities; quantities of each type of work done (progress), shut-downs (time start and end/firms/workers affected).
 - Presence of inspection and testing firms, tests taken, results, etc.
 - Explicit confirmation of expected site conditions encountered, or a full description of unusual site conditions experienced.
 - Significant developments, remarks, etc.
 - Special visitors or events.
 - Authorities given for the Construction Manager to undertake certain or hazardous work.
 - Environmental incidents/accidents.
 - Safety incidents/accidents.
 - Record significant inspections of work performed.
- Provide copies of the daily log to the Departmental Representative on a daily basis.
- Maintain a collection of electronic photographs, taken on a daily basis, that illustrate daily activities on site, including deficiencies, progress, special conditions, etc. Incorporate date taken onto the photographs and into file names.
- At the end of construction, submit a report to the Departmental Representative containing all daily logs and photographs compiled in a sequential manner.
- During excavation phases of the work, maintain daily records of actual ground and groundwater conditions encountered during construction, in comparison to the GBR. Maintain daily records of personnel and equipment used, rates of production, and a description of all delays or breakdowns. Prepare a summary report at the completion of construction. Maintain daily records of all monitoring programs.

1.3.6 Weekly Records

The Resident Site Representative shall prepare weekly reports for the Consultant in the form directed, including:

- Progress relative to schedule.

- Major activities started or completed during the week; main activities in progress.
- Major deliveries of materials and/or equipment.
- Difficulties encountered which may cause delays in completion.
- Materials and labour needed immediately.
- Cost estimates of work completed and materials delivered (for cost plus contracts).
- Any outstanding information or action required by Consultant or by the Project Team.
- Other remarks.

1.3.7 Site Records

The Resident Site Representative shall maintain orderly and updated files at the site, for the use of the Departmental Representative and the Consultant, including the following information:

- Construction Documents.
- Reviewed Shop Drawings.
- Samples (reviewed by the Consultant and approved by the Departmental Representative).
- Site Instructions.
- Contemplated Change Notices / Expenditure Authorization / Request for Information.
- Change Orders.
- Memoranda.
- Inspection and testing Reports.
- Correspondence and Meeting Minutes.
- Names, addresses, telephone numbers of Project Team representatives, Consultant representatives, representatives of the Construction Manager and its construction sub-trades, key personnel associated with the project; including home telephone numbers in case of emergencies.

1.3.8 Inspection of the Work

The Resident Site Representative shall make site observations and spot checks of the work to determine whether the work, materials and equipment conform to the Construction Documents and supplementary conditions. The Resident Site Representative shall:

- Establish a written understanding with the Construction Manager as to what stages or aspects of the work are to be inspected prior to being covered up.
- Inspect all phases of the work in progress daily, and advise the Construction Manager verbally of any defects or deficiencies prior to him covering up the work, and follow up in writing same day to the Departmental Representative (c.c. to the Construction Manager).
- Photograph deficiencies electronically and record comments.
- Keep a daily log of inspections and issue a weekly written report to the Departmental Representative summarizing the inspections, including deficiency lists and any special notices given to the Construction Manager.
- Inspect materials and prefabricated assemblies and components at their source or assembly plant, if required.
- Arrange for the Consultant and its other sub-consultant disciplines to make their required inspections; both periodically and as-required based on work progress or issues on site.

- Report in writing if materials and equipment are being incorporated into the project prior to approval of relevant shop drawings or samples.
- Assist in the preparation of all deficiency reports, interim, preliminary, and final, in collaboration with Project Team and other Consultant Team representatives.
- Be responsible for the measurement of all work to be performed on a unit-cost basis. In taking measurements, the Resident Site Representative must arrange to be accompanied by the Construction Manager (or representative approved by the Construction Manager) to ensure agreement of the quantities measured, and to obtain sign-off by both parties of the quantities.
- Keep a log and receipts for materials being recycled, diverted from landfill, and going to landfill.

1.3.9 Site Meetings

The Resident Site Representative shall attend all job-site meetings.

1.3.10 Testing

The Resident Site Representative must see that the tests and inspections required in the Construction Documents are conducted, and should observe these tests and record the results in the daily log.

The Consultant should be notified if the test results do not meet the specified requirements, or if the Construction Manager does not have tests undertaken as required.

1.3.11 Emergencies

In the case of emergency where safety of persons or property is concerned, or work is endangered by the actions of the Construction Team or the elements in order to safeguard the interests of PWGSC, the Resident Site Representative shall immediately notify the Construction Manager and follow up with written notice of the possible hazard. The Resident Site Representative shall further, if necessary, stop the work to mitigate the immediate danger, and then contact the Consultant and Departmental Representative for further instruction. All infractions, or work stoppages ordered shall be followed-up in writing to the Consultant and Departmental Representative.

1.3.12 Limitations

The Resident Site Representative shall not:

- Authorize deviations from the Construction Documents.
- Conduct tests.
- Approve shop drawings or samples.
- Advise the User Group or Stakeholders in any matter without obtaining guidance from the Consultant and the Departmental Representative.
- Enter into the area of responsibility of the Construction Manager's Field Superintendent.
- Stop the work unless convinced that an emergency exists.

1.3.13 Hazardous Construction Operations

It is the duty of the Resident Site Representative to examine all site conditions and methods to be used by the Construction Manager in undertaking hazardous operations to ensure they conform to the requirements in the Construction Documents.

The Resident Site Representative shall provide timely notice to the Consultant, who will give written authority to undertake hazardous operations to the Construction Manager, when fully satisfied that all necessary precautions and acts have been taken by the Construction Manager to safeguard the life safety of the workers and Crown property. Written authority shall be countersigned by the Construction Manager to acknowledge that the latter is aware of the health and safety requirements and both parties will retain copies of the authority document signed mutually by them.

The Resident Site Representative shall inspect the areas where hazardous work is under way to verify and confirm that the Construction Manager is maintaining the agreed safety standards. Any infractions may result in the Resident Site Representative stopping the work. All infractions, or work stoppages ordered shall be reported in writing and verbally to the Consultant and Departmental Representative.

1.3.14 Tunnel Security

Maintaining stringent control measures for access to the existing tunnel network is a high priority for PWGSC.

The Resident Site Representative shall verify that all openings and means of access into the tunnels and buildings are firmly secured when the Construction Team leaves the site.

The Resident Site Representative will liaise immediately with the Consultant and with the Departmental Representative on all security and/or safety concerns that may arise due to the Construction Manager's operations.

1.3.15 Supplies and Equipment Required by the Resident Site Representative

The Construction Documents will describe the requirements of a site trailer for use by the Resident Site Representative and by the Departmental Representative during construction. The site trailer, complete with heat, air conditioning, toilet hook-up, tables, chairs, filing cabinets and other equipment approved by the Departmental Representative may be included in the Construction Documents and charged to the construction contract.

All supplies and equipment required by the Resident Site Representative, including stationary, office supplies, cameras, survey and measuring tools, computers, software, fax machines, modems, copiers and telephones cannot be charged to the construction contract and must be included in the cost of AS 1.

AS 2 BILINGUAL DOCUMENTS

AS 2.1 SCOPE OF SERVICES

2.1.1 Design Deliverables:

The Consultant shall produce **Design Deliverables** in accordance with the following language requirements:

- The Consultant shall prepare all visual presentations to AHJs (as described in sections RS 2 - Design Concept and RS 3 - Design Development) in Canada's two official languages.

2.1.2 Construction Documents:

The Consultant shall produce **Construction Documents** in accordance with the following language requirements:

- The Consultant shall prepare all Construction Documents in Canada's two official languages, including drawings, specifications, statements of work, tender addenda.
- It is standard practice to produce a single set of drawings (originals) on which written information is shown in both languages and separate written documents for each language for tendering, records drawings, and O&M documentation.

2.1.3 Commissioning-related Documents:

The Consultant shall produce **Commissioning-related documents** in accordance with the following language requirements:

- Final Design Intent Brief in Canada's two official languages.
- Record (as-built) drawings and specifications in Canada's two official languages.

AS 2.2 QUALITY STANDARDS

The Consultant shall ensure that these deliverables are of a professional standard in both languages.

The Consultant shall assume professional responsibility for the accuracy, completeness and consistency of translation. Both languages are considered equal in status - neither is considered to be of lesser standing because it is a translation of the other.