

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
Bid Receiving Public Works & Government Services  
Canada/Réception des soumissions Travaux publics et  
Services gouvernementaux Canada  
1713 Bedford Row  
Halifax, N.S./Halifax, (N.E.)  
B3J 1T3  
Halifax  
Bid Fax: (902) 496-5016

**SOLICITATION AMENDMENT**  
**MODIFICATION DE L'INVITATION**

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

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

Comments - Commentaires

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

Issuing Office - Bureau de distribution  
Atlantic Region Acquisitions/Région de l'Atlantique  
Acquisitions  
1713 Bedford Row  
Halifax, N.S./Halifax, (N.E.)  
B3J 3C9  
Halifax  
Nova Scot

<b>Title - Sujet</b> ROUTE 117 KOUCHIBOUGUAC PARK	
<b>Solicitation No. - N° de l'invitation</b> EC015-150845/A	<b>Amendment No. - N° modif.</b> 002
<b>Client Reference No. - N° de référence du client</b> EC015-15-0845	<b>Date</b> 2014-10-06
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$PWA-122-5124	
<b>File No. - N° de dossier</b> PWA-4-72028 (122)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2014-10-09</b>	<b>Time Zone</b> Fuseau horaire Atlantic Daylight Saving Time ADT
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Chinye (PWA), Chukwudi	<b>Buyer Id - Id de l'acheteur</b> pwa122
<b>Telephone No. - N° de téléphone</b> (902) 496-5476 ( )	<b>FAX No. - N° de FAX</b> (902) 496-5016
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

Instructions: See Herein

Instructions: Voir aux présentes

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> Raison sociale et adresse du fournisseur/de l'entrepreneur	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> (type or print) <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

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Due to the technical nature of this amendment, it will ONLY be available in English.

Amendment 002 is raised to change the solicitation closing date and answer the following question:

**Bidders are advised that the closing date has been EXTENDED from October 07, 2014 to October 09, 2014. Closing location and time to remain unchanged.**

**Question 1:** A couple questions on schedule:

- Project Brief states the following schedule:
  - o RS1 Dec 1, 2014 Required
  - o RS2 Dec 1, 2014 Required
  - o RS3 Jan 1, 2015 Required
  - o RS4 Feb 1, 2015 Required
  - o Tender – March 31, 2015
- The duration for RS4 is 4 weeks, however RS4 includes multiple review submissions (33%, 66%, 99%, and Final). It appears unrealistic to provide 4 document submissions within a 4 week period with allowance for PWGSC review and production of bilingual documents. Please confirm number of submission required for RS4.

**Answer to Question 1:** Number of submissions remain unchanged. The completion date for RS4 is changed from Feb 01, 2015 to March 01, 2015 (see revised project brief).

Please note that a proposal submitted may be amended by letter or facsimile provided the revision is received at the office designated for the receipt of proposals, on or before the date and time set for the receipt of proposals. The revision must be on the Proponent's letterhead or bear a signature that identifies the Proponent, and must clearly identify the change(s) to be applied to the original proposal. The revision must also include the information identified in G116.2.(d). See URL link below

<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R/R1410T/17>

All Other Terms and Conditions Remain the Same.

## PROJECT BRIEF / TERMS OF REFERENCE

### PR 1 Project Description

#### PR 1.1 Project Information

PR 1.1.1	PWGSC Project Title:	Route 117 Rehabilitation
PR 1.1.2	Location of Project:	Kouchibouguac National Park
PR 1.1.3	PWGSC Project Number:	R.070695.001
PR1.1.4	Client Service Unit :	New Brunswick
PR 1.1.5	Client/User :	Parks Canada

#### PR 1.2 PWGSC Project Team

PR 1.2.1	PWGSC Project Manager	TBD	Phone:
PR 1.2.2	Senior Project Manager	TBD	Phone:
PR 1.2.3	Project Leader	TBD	Phone:
PR 1.2.4	Property Manager	TBD	Phone:
PR 1.2.5	COE Design Manager	TBD	Phone:

#### PR 1.3 Client Mandate

Parks Canada on behalf of the people of Canada, protect and present nationally significant examples of Canada's natural heritage, and foster public understanding, appreciation and enjoyment in ways that ensure the ecological and commemorative integrity for present and future generations.

#### PR 1.4 Project Outline

##### PR 1.4.1 Purpose of the Project

The purpose of the project is to produce a design and tender documents for pavement rehabilitation for 23.7 kms of Route 117 in Kouchibouguac National Park in New Brunswick. The segment of road under this design will start at the southern Park entrance at Route 134 and extend northward.

##### PR 1.4.2 Required Work

The work required by these terms of reference is described in detail under other clauses of this document.

##### PR 1.4.3 Project History Synopsis

## TEMPLATE Request for Proposal for a Medium Complexity requirement

The purpose of this project is to complete the investigation, design and tender documents for the repaving of the 23.7 km of Route 117 in Kouchibouguac National Park. Construction is expected in the summer of 2015.

The highway was originally part of the provincial network of highways and was re-built in the 1960's. Various sections have been re-built over the years. Route 117 was last paved in 1993. Pavement Inspection Data have been collected every three years for the last 10 years. The last inspection was done in 2010.

### PR 1.4.4 Detailed Scope of Work

Elements of this project include the following:

- a) Field investigation and survey to determine existing conditions.
- b) Review existing Pavement Condition Data pertaining to this project (see attached)
- c) Review the existing highway condition and rate in accordance with current Ontario Ministry of Transportation and Communications, "Manual for Condition Rating of Flexible Pavements, Distress Manifestations."
- d) Complete field survey and geotechnical testing. Complete topographical field survey.
- e) Review previous construction methods, maintenance methods for sections of this highway.
- f) Perform field strength test using Dynaflect, FWD, or Benkelman Beam.
- g) Recommend the most cost effective method for the rehabilitation and maintenance of the highway over a 20 year design life. Specifically address by chainage along the roadway different repair techniques and give the pros and cons of each.
- h) Verify condition of culverts, make recommendations for replacement methods.
- i) Complete design and replacement for the guide rail using flex beam and EAGRT systems.
- j) Complete design for clearing and ditching of off-takes.
- k) Complete design for asphalt gutters.
- l) Complete design for curve re-alignment and road widening in Black River area
- m) Recycle plan for any milled asphalt materials.
- n) Complete RS 1, 2, 3, and 4 by March 1, 2015.
- o) Optional services for RS 5, 6, and 8.4 by Dec 31, 2015
- p) Complete design, drawing/specification and tender document preparation for the selected options from the Concept Design stage, including culvert replacement design, highway repair, rehabilitation, and/or replacement design, and design and drawing/specification preparation for all other associated features as required for the implementation of a complete highway upgrade.

### PR 1.4.5 Site Conditions

## TEMPLATE Request for Proposal for a Medium Complexity requirement

At least one traffic lane must be kept open during the day and two lanes at night. The supply, installation, operation, maintenance, relocation and removal of work area traffic control devices and the provision of traffic control persons will be carried-out in accordance with the Province of New Brunswick's Work Area Traffic Control Manual and item no.576," Construction Traffic Control" Of the Province of New Brunswick, Department of Transportation's Standard Specifications, January 2011.

### PR 1.4.6 Implementation Strategy

The project is expected to be tendered by March 31st, 2015 using conventional design, bid, build.

### PR1.4.7 Consultant Access to the Site

All provincial traffic requirements must be met for work on this highway during field inspection, survey, and geotechnical testing.

### PR1.4.8 Issues/Constraints/Challenges/Opportunities

At least one traffic lane must be kept open during the day and two lanes at night. The supply, installation, operation, maintenance, relocation and removal of work area traffic control devices and the provision of traffic control persons will be carried-out in accordance with the Province of New Brunswick's Work Area Traffic Control Manual and item no.576," Construction Traffic Control" Of the Province of New Brunswick, Department of Transportation's Standard Specifications, January 2011.

## PR 1.5 Budget

The construction costs for this project are estimated at \$14,500,000.00

## PR 1.6 Schedule

	Completion	
RS1	Dec 1, 2014	Required
RS2	Dec 1, 2014	Required
RS3	Jan 1, 2015	Required
RS4	March 1, 2015	Required

## PR 1.7 Existing Documentation

- 1) 2010 Pavement Inspection Report
- 2) Highway 117, Strengthening km 0.00 to 4.25, Kouchibouguac Nat'l Park, 1989 plans
- 3) Upgrading highway 117 km 0.00 to 6.5, Kouchibouguac Nat'l Park, 1981 plans
- 4) Upgrading highway 117 km 6.5 to 19.8, Kouchibouguac Nat'l Park, 1981 plans
- 5) data , cross-sections and preliminary design for curve re-alignment , Black River area, 2008

## PR 2 General Project Objectives

The General Project Objectives are stated in the Annex to this document:

<b>GPO 1</b>	<b>General Project Objectives</b>	
GPO 1.1	Design Principles – General	Included
GPO 1.2	Sustainable Development	Included
GPO 1.3	Code Compliance	Included

## TEMPLATE Request for Proposal for a Medium Complexity requirement

GPO 1.4 Risk Management Included

GPO 1.5 Health and Safety Included

GPO 1.6 PWGSC Standards & Procedures Included

### **GPO 2 Issues**

GPO 2.1 Major Cost Issues Included

GPO 2.2 Major Time Issues Included

GPO 2.3 Major Operational Issues Included

### **Project Administration – PA**

The requirements for Project Administration are stated in the Annex to this document.

### **Required Services – RS**

#### **RS 1 Pre-Design Services**

RS 1.1 Feasibility Studies/Options Analysis Required

RS 1.2 Project Approach Required

RS 1.3 Implementation Strategy and Schedule Required

RS 1.4 Site Condition Reports and Performance Audits Required

RS 1.5 Infrastructure Evaluation & Recommendation Reports Required

RS 1.6 Engineering/Geotechnical or Other Investigations Required

RS 1.7 Environmental Protection Requirements Required

RS 1.8 Order of Magnitude Class 'D' (indicative) Cost Reports Required

RS 1.9 Hydrology and Drainage Structure Sizing Required

RS 1.10 Regulator Issues Required

**RS 2 Concept Design** Required

**RS 3 Design Development** Required

**RS 4 Construction Documents** Required

Bilingual Documents Required

**RS 5 Tender Call, Bid Evaluation & Construction Contract Award** Optional

TEMPLATE Request for Proposal for a Medium Complexity requirement

<b>RS 6</b>	<b>Construction &amp; Contract Administration &amp; Post Construction Warranty Review</b>	Optional
<b>RS 7</b>	<b>Risk Management (All Stages)</b>	Not Required
<b>RS 8</b>	<b>Support Services</b>	
RS 8.1	Estimating and Cost Planning	Not Required
RS 8.2	Surveying (during Design)	Required
	Surveying (during Construction)	Optional
RS 8.3	Materials Testing	Optional
RS 8.4	Resident Construction Services	Optional

**PR 3 HEALTH AND SAFETY PLAN**

**Health and Safety Plan**

- .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the Work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.
- .2 Health and Safety Plan shall include the following components:
  - .1 List of health risks and safety hazards identified by hazard assessment.
  - .2 Control measures used to mitigate risks and hazards identified.
  - .3 On-site Contingency and Emergency Response Plan as specified below.
  - .4 On-site Communication Plan as specified below.
- .3 On-site Contingency and Emergency Response Plan shall include:
  - .1 Operational procedures, evacuation measures and communication process to be implemented in the event of an emergency.
  - .2 Evacuation Plan: prior to entering the Work Site confirm escape routes, marshalling areas, and location of fire fighting equipment.
  - .3 Emergency Contacts: name and telephone number of officials from:
    - .1 Departmental Representative.
    - .2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.
    - .3 Local emergency resource organizations.
  - .4 Harmonize Plan with Facility's Emergency Response and Evacuation Plan. Departmental Representative will provide pertinent data including name of PWGSC and Facility Management contacts.

TEMPLATE Request for Proposal for a Medium Complexity requirement

- .4 On-site Communication Plan:
  - .1 Procedures for sharing of work related safety information to subconsultants, including emergency and evacuation measures.
  - .2 List of critical work activities to be communicated with Facility Manager which have a risk of endangering health and safety of Facility users.
- .5 Address all activities of the Work including those of subconsultants.
- .6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever a new subconsultant arrives at Work Site.
- .7 Departmental Representative will respond in writing, where deficiencies or concerns are noted and may request re-submission of the Plan with correction of deficiencies or concerns.

## REQUIRED SERVICES

### GENERAL PROJECT OBJECTIVES

#### GPO 1 PROJECT OBJECTIVES

Each request will elaborate on the specific objectives for individual projects, however, the following broader government objectives will apply to all requests:

##### GPO 1.1 Design Principles - General

1. PWGSC expects the Consultant to maintain a high standard of engineering design, based upon recognized industry design principles. All design elements, planning, and engineering, must be fully coordinated and consistent in adherence to good design principles.
2. The level of quality is to be consistent with Government of Canada policies and guidelines as well as all other similar designed works performed for the Government of Canada.
3. The projects are to be implemented in a sustainable environmentally responsible manner.
4. Quality of materials and construction methods shall be commensurate with the type of infrastructure required and the budget. Avoid experimental materials. Take into account the total life-cycle costing of the infrastructure
5. Design for maximum flexibility to meet immediate and future needs.

##### GPO 1.2 Sustainable Development

The Canadian Federal Government has begun a series of initiatives to ensure that sustainable development principles are built into the policy of all federal organizations. Sustainable development goals will be outlined in each call-up.

##### GPO 1.3 Code Compliance

Codes, regulations, by laws and decisions of “authorities having jurisdiction” will be observed. In cases of overlap, the most stringent will apply. The Consultant shall identify other jurisdictions appropriate to the project.

##### GPO 1.4 Risk Management

A risk management strategy is crucial for PWGSC Project Management and integrates project planning into procurement planning. All the stakeholders of a project will be an integral part of the risk management strategy, culminating in an integrated product team. Specific services required for project delivery are outlined in Required Services and the level of effort, if required, will be noted in the request.

##### GPO 1.5 Health and Safety

1. Public Works and Government Services Canada (PWGSC), recognizes the 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.
2. In keeping with the responsibility and in order to enhance health and safety protection for all individuals on federal construction sites, PWGSC voluntarily complies with the applicable

## TEMPLATE Request for Proposal for a Medium Complexity requirement

provincial/territorial construction health and safety acts and regulations, in addition to the related Canada Occupational Safety and Health Regulations.

### **GPO 1.6 PWGSC Standards and Procedures**

For standards relating to the service provisions required, please refer to the document Doing Business.

## **GPO 2 ISSUES**

### **GPO 2.1 Major Cost Issues**

**Issue:** Budget Limitations

Effective cost estimating and cost control is of prime importance and shall be provided by qualified personnel. The Class 'C' and Class 'B' cost estimates, where required, shall be submitted 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. The level of effort will be noted in the individual request.

The Class 'A' cost estimate shall be 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.

### **GPO 2.2 Major Time Issues**

**Issue:** Out of Service Time Frame

It is imperative that the out of service time frame for the various projects as a result of construction be minimized as much as possible. Program operations and time frames will govern the particular allotted time frame for construction through the identified Call-Up.

### **GPO 2.3 Major Operational Issues**

**Issue:** Adjacent Programs

Minimize impact of any ongoing adjacent programs is mandatory and therefore design decisions must be sensitive to that requirement. Additional factors recognized as affecting adjacent programs are the following: reliability of systems and equipment, redundancy to ensure continued operation and prolonged commissioning issues.

## **PROJECT ADMINISTRATION**

### **PA 1 INTENT**

The following administrative requirements apply during all phases of project delivery and will be stipulated in each Call-Up.

#### **PA 1.1 Coordination**

1. The Project Manager assigned to the project is the Departmental Representative.
2. The Project Manager is directly concerned with the project and responsible for its progress. The Project Manager is the liaison between the Consultant, Public Works and Government Services Canada or Other Government Department (OGD) and the Client Departments.

## TEMPLATE Request for Proposal for a Medium Complexity requirement

Public Works and Government Services Canada or OGD administers the project and exercises continuing control over the Consultant's work during all phases of development. Unless directed otherwise by the Project Manager, the Consultant obtains all Federal requirements and approvals necessary for the work. The consultant shall:

- a. Carry out services in accordance with approved documents and directions given by the Project Manager;
- b. Prior to starting any project, obtain the Project Manager's approval of sub-consultant(s). Upon receipt from the Project Manager of written confirmation that the proposed sub-consultant(s) are acceptable, execute the Consultant Call-Up;
- c. Ensure all communications carry the PWGSC's or OGD's Project Title, Project Number and File Number, Callup Number, WBS Number;
- d. Advise the Project Manager of any changes that may affect schedule or budget or are inconsistent with instructions or written approvals previously given. The consultant shall detail the extent and reasons for the changes and obtain written approval before proceeding.

### **PA 1.2 Coordination with Sub-Consultants**

The consultant shall:

1. Throughout all stages of the Project, coordinate and assume responsibility for the work of any sub-consultants and specialists retained by the consultant;
2. Ensure clear, accurate and ongoing communication of concept, budget, and scheduling issues (including changes) as they relate to the responsibilities of all sub-consultants and specialists from initial reviews to post construction reports;
3. Ensure Sub-Consultants provide adequate site inspection services and attend all required meetings.

### **PA 1.3 General Project Deliverables**

1. Where deliverables and submissions include summaries, reports, drawings, plans or schedules, six (6) hard copies shall be provided plus one (1) copy shall be provided in electronic format as follows unless approved otherwise in Appendices. Electronic format shall mean:

- |                                     |   |
|-------------------------------------|---|
| a. For written reports and studies: | Microsoft Word and PDF;   |
| b. For Spreadsheets, and budgets:   | Microsoft Exel and PDF;   |
| c. For Presentations:               | Microsoft Power Point;  |
| d. For Drawings:                    | AutoCad 2005 (*.dwg) refer to Doing Business;                                       |
| e. For Specifications:              | Either most recent version NMS Edit or MS Word as specified by the project manager; |
| f. For Schedules ( Time Plans)      | Microsoft Project;  |

## TEMPLATE Request for Proposal for a Medium Complexity requirement

For GIS

ARCGIS refer Doing Business.

### **PA 1.4 Lines of Communication**

1. Correspond only with the Project Manager at the times and in the manner dictated by the Project Manager. The consultant shall not communicate with the client department unless so authorized in writing by the Project Manager.
2. During construction tender call, Public Works and Government Services Canada conducts all correspondence with bidders and makes the contract award.
3. After contract award the consultant shall follow communication protocol call as received from PWGSC or OGD.

### **PA 1.5 Media**

The consultant shall not respond to requests for project related information or questions from the media. Such enquiries are to be directed to the Project Manager.

### **PA 1.6 Meetings**

1. The Project Manager shall arrange meetings as required per Call-up relative to project scope and phase of work, for members of project team, including representatives from:
  - a. Client Department;
  - b. Public Works and Government Services Canada;
  - c. Consultants.
2. The Consultant shall attend the meetings, record the issues and decisions and prepare and distribute minutes within 48 hours of the meeting.

### **PA 1.7 Project Response Time**

It is a requirement of this Request for Standing Offer that the prime consultant and their proposed sub-consultants should be personally available to attend meetings **within 48 hours**, in the locality of the place of the work and to respond to inquiries **within 24 hours** of the Project Manager's request, from the date of the award of the consultant call-up until final inspection and turnover.

### **PA 1.8 Submissions, Reviews and Approvals**

For each call-up, work in progress may be reviewed by the Project Manager as well as a minimum, the following:

#### **PWGSCor OGD in-house resources:**

- Submission Format: drawings and specifications;
- Submission Schedule: Submissions are reviewed at a time to be arranged with 10 days notice when completed work has been forwarded to the Project Manager;
- Expected Turnaround Time: 2 weeks;
- Number of Submissions: until approval has been received.

#### **Design review committee:**

TEMPLATE Request for Proposal for a Medium Complexity requirement

Submission Format: reports, drawings and specifications, and oral presentations;

- Submission Schedule: Submissions are reviewed at a time to be arranged with **10** days notice;
- Expected Turnaround Time: 2 weeks;
- Number of Submissions: until approval has been received.

Reviews and approvals will be established at the time of issuing a call-up and the below table is provided for example purposes only.

	PWGSC/OGD		Client	
	R	A	R	A
Environmental Site Assessments	x	x	x	
Risk Assessments	x	x	x	
Remediation Action Plans	x	x		x
Environmental Impact Assessments	x	x	x	
Environmental Protection Plan	x	x	x	x
Project Scope of Services		x	x	
Class 'D' Estimate(s)		x	x	
Design Options	x		x	
Recommended Design Option		x		x
Class 'C' Estimate(s)		x	x	
Design Development Documents		x	x	
Class 'B' Estimate(s)		x	x	
33% Construction Drawings		x	x	
66% Construction Drawings and Specs		x	x	
99% Construction Drawings and Specs		x	x	
Class 'A' Estimate(s)		x		x
Final Tender Documents		x		x
Inspection Report	x	x	x	

R = Review    A = Approval

## General Scope of Services:

1. Be advised that services provided must be complete in that they identify all major issues that will have a significant impact on the project. This will promote a surprise-free environment which will enhance the success of project implementation.
2. If the project requirements are such that the prime consultant is asked to provide a sub consultant team, the proposed sub consultant names are to be submitted to the project manager for approval, prior to their being engaged for the work.
3. The RS sections following are intended to show the level of effort required for a ‘full service’ package. Individual call-ups will include a scope of services required for that specific project, which may or may not include all of the services noted in the sections below. Services that are required for a specific call-up are to follow the guidelines as set out herein.

### RS 1.0 PRE-DESIGN SERVICES

1. The purpose of this stage is to develop, as required by the scope of work
  - (1) Feasibility Studies/Options Analysis;
  - (2) Project Approach;
  - (3) Implementation Strategy and Schedule;
  - (4) Site Condition Reports and Performance Audits;
  - (5) Infrastructure Evaluation & Recommendations Report;
  - (6) Engineering/Geotechnical or Other Investigations;
  - (7) Environmental Protection Requirements (limited to services as required to identify the need for further investigation/analysis);
  - (8) Order of Magnitude Class ‘D’ (Indicative ) Cost Reports;
  - (9) Hydrology and Drainage Structure Sizing Design;
  - (10) Regulatory Issues.

### RS 1.1 Feasibility Studies / Options Analysis

#### 1.1.1 Intent

A report which outlines the research and subsequent analysis to determine the viability and practicality of a project. A feasibility study analyzes economic, financial, market, regulatory, environmental/sustainable and technical issues. The purpose at this stage is to investigate and analyze site conditions, including soil conditions, zoning, bylaws, traffic reports, service capacities, support systems, special purpose support systems, and provide recommendations.

#### 1.1.2 Scope and Activities

##### Feasibility Study includes as a minimum:

1. Attend project start up meeting:
  - (1) Visit the site, investigate and analyze the needs of the project;
  - (2) Investigate the requirements for the particular site, including existing and new technologies;
  - (3) Analyze the project requirements/program;
  - (4) Review all available existing material related to the site;
  - (5) Investigate and analyze all applicable codes, regulations standards as a minimum: National Building Code, Canada Labour Code, NFPA, Provincial Occupational Health and Safety Act, Medical Research Council; Environmental and DFO acts and regulations.
2. Evaluate existing infrastructure including: municipal, civil, environmental, mechanical, electrical and structural systems, functional adaptability, code compliance, hazardous and non-hazardous waste;
3. Identify and verify all authorities having jurisdiction over the project;
4. Establish a policy for this project to minimize environmental impacts consistent with the project objectives and economic constraints, and the application of the *Canadian Environmental Assessment Act (CEAA)*;
5. Review the proposed project milestones for verification that all dates are achievable;
6. Review the cost plan/budget for verification that the costs are realistic and achievable; and
7. Prepare recommendations on the feasibility of the project.

##### Options Analysis as a minimum:

1. Test the feasibility study recommendations using a minimum of three (3) options, schematic (sketch) only;
2. Pro/ Cons of each option;
3. Financial analysis (Class ‘D’) including life cycle analysis and best value for operation and maintenance;

## TEMPLATE Request for Proposal for a Medium Complexity requirement

4. Indication of the preferred option.

### 1.1.3 Deliverables:

1. Comprehensive summary of the requirements, conditions, feasibility and options analysis, demonstrating an understanding of the scope of work, including:
  - (1) Report on existing infrastructure including its condition, deficiencies and life expectancy;
  - (2) Report on existing facilities and systems requirements;
  - (3) Report on all applicable codes, regulation, standards and authorities having jurisdiction;
  - (4) Report on potential environmental impact, sustainability and the whether there is a need for further environmental assessment;
  - (5) Report on recommendations and options analysis;
  - (6) Confirmed or adjusted project cost and time plans;
  - (7) Written identification of the problems, conflicts or other perceived information/clarifying assumptions for the acknowledgment of the project manager;
  - (8) Report on Class 'D' Order of Magnitude Cost for each option.

## RS 1.2 Project Approach

### 1.2.1 Intent

1. A written statement which describes various criteria and data for a project including design objectives, site requirements and constraints, equipment and systems, and requirements. The purpose of this stage is to describe the requirements which must be met to satisfy the requirements of the project. The process seeks to answer the following questions:
  - (1) What is the nature and scope of the problem?
  - (2) What information is required to develop a proper engineering solution to the problem?
  - (3) How much and what type of construction is needed?
  - (4) What are the future requirements of this site

### 1.2.2 Scope and Activities

1. In preparing a functional program, the Consultant's main task is to examine the project/ site in detail so as to define the clients needs and objectives. These requirements will establish criteria for evaluating potential design solutions and other strategic alternatives.
2. The Consultant must understand:
  - (1) The impacts of the project on the environment;
  - (2) The social impacts of its program on the community;
  - (3) The impacts on the existing infrastructure;
  - (4) Long term maintenance requirements and operational needs.
3. The Consultant shall then develop approximate sketches and technical requirements for the proposed works including:
  - (1) Details for proposed works;
  - (2) Environmental criteria; (Note: It is not the intent of this Supply Arrangement to procure Environmental Assessment services from this Consultant. However, on many projects, environmental criteria, identified by others, may need to be incorporated into the design.)
4. The Consultant shall also advise Project Manager on alternatives, such as the engineering and financial implications of various options. The Consultant shall assist in assessing the advantages or benefits - and the disadvantages or costs - of each alternative.

### 1.2.3 Deliverables:

1. The final Project Review is a report including as a minimum:
  - (1) Site requirements;
  - (2) Explicit space requirements for the future of the site including:
    - b) Definition of the function of each type of infrastructure;
    - c) The functional relationships between different types of infrastructure or areas;
    - d) Site and sketch of the different infrastructures;
    - e) Special technical requirements of each of the items.
  - (1) Financial requirements and a preliminary "Order of Magnitude "Class 'D' budget;
  - (2) Scheduling and time frame for the project;
  - (3) Other requirements including:
    - f) Regulatory issues;
    - g) Other requirements from Authorities having Jurisdiction;
    - h) Community goals and concerns;
    - i) Ecological and environmental concerns.
  - (1) A recommended construction delivery method (traditional design-bid-build, design-build, construction management).

## RS 1.3 Implementation Strategy and Schedule

### 1.3.1 Intent

The purpose of this stage is to detail an implementation strategy to meet the project goals and objectives.

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### 1.3.2 Scope and Activities

The Consultant shall complete the following as a minimum:

1. Prepare a detailed implementation strategy that documents, in a report, all activities, milestones and deliverables required for the effective delivery of the project including time frames for submissions, reviews and approvals;
2. Prepare a project schedule that identifies, in a graphic format such as Critical Path Method (CPM) or Program Evaluation Review Technique (PERT), all activities, milestones including critical deadlines, long lead delivery items and drop dead dates, required for the effective delivery of the project deliverables, including time frames for submissions, reviews and approvals;
3. The Implementation Strategy and Schedule described above shall include as a minimum:
  - (1) Site Master Plan;
  - (2) Sequencing of project tasks including items not included as part of constructed works;
  - (3) Move sequencing;
  - (4) Client construction requirements ( i.e. Security and training, etc.);
  - (5) Construction strategy;
  - (6) Advise the Project Manager of any changes to the scope that may affect schedule or are inconsistent with instructions or written approvals previously given. The Consultant shall detail the extent and reasons for the changes and obtain written approval before proceeding;
  - (7) Submit the Implementation Strategy and Schedule for review. Revise as required. Resubmit for final approval. The original approved schedule will become the "Baseline" schedule to monitor project progress;
  - (8) Throughout the project, monitor critical path and deadlines for submissions, revisions and approvals and as a minimum submit monthly updates.

### 1.3.3 Deliverables

1. Implementation strategy
2. Time Plan (Schedule)

## RS 1.4 Site Condition Reports and Performance Audits

### 1.4.1 Intent

1. The purpose of this stage is to evaluate a site in order to determine the most appropriate management strategy for the retention, maintenance and/or retrofit / renewal of the infrastructure in order to satisfy current and future client requirements.
2. The cyclical review of infrastructure consists of the performance of a range of major evaluation and analysis studied:
  - (1) Management Plans
  - (2) Condition Reports
  - (3) Performance Reviews
  - (4) Serviceability
3. The scope of these cyclical reviews provides, in general terms an examination of inventory performance in five major areas:
  - (1) Operational Performance
  - (2) Functional Performance
  - (3) Financial Performance
  - (4) Technical Performance
  - (5) Environmental Performance

### 1.4.2 Scope and Activities

#### 1.4.2.1 Project Start-up

A Start-Up Meeting will be held at the time and place to be determined by the Project Manager.

#### 1.4.2.2 Research Phase

This phase represents the site pre-inspection review of the existing documentation in order to confirm the range of information available and to identify any missing components or areas of concern which will require special attention during the next phase - Infrastructure review.

#### 1.4.2.3 Infrastructure review

1. The Consultant team will undertake a detailed review of the current performance conditions of the infrastructure with respect to:
  - (1) Operational, Functional, Technical and Financial Performance.
2. The Consultant team will review pertinent information provided on the current performance conditions of the infrastructure with respect to Environmental performance.
3. With respect to maintenance, the consultant will:
  - (1) assess the levels of maintenance with respect to infrastructure meeting its anticipated life cycle;
  - (2) ensure that maintenance is completed to a level so as to avoid failure that could impact on users;
  - (3) Ensure that systems are evaluated for maintenance and testing;
  - (4) The on-site review will be structured in such a manner as to identify and document the inter-relationship of the findings for each specific set of performance criteria as they are affected by other sets of criteria.

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### 1.4.2.4 Report Development

After inspections data is analyzed with respect to condition, remaining useful life, code compliance, condition descriptions, and their impact on the functionality of the asset, and priorities for intervention are established.

### 1.4.3 Deliverables

1. Content Plan: This section of the Terms of Reference outlines the format and minimum scope of review to be undertaken in the performance of this infrastructure condition study.
2. The format has been developed in order to provide a direct link with the development of a Site Management Plan and therefore must be strictly adhered to.
3. The content plan is divided into seven major divisions and appendices:
  - (1) Executive Summary;
  - (2) Project Framework/Introduction;
  - (3) Operational Performance;
  - (4) Functional Performance;
  - (5) Technical Performance;
  - (6) Environmental Performance;
  - (7) Infrastructure Components Summary Tables;
  - (8) Appendices:
    - b) Annual Inspections;
    - c) Serviceability;
    - d) Performance Audits;
    - e) Environmental Audit (prepared by others if/as appropriate);
    - f) Other Audits and Studies.

## RS 1.5 Infrastructure Evaluation & Recommendations Reports

### 1.5.1 Intent

The purpose of this stage is to identify and evaluate existing infrastructure including as a minimum civil infrastructure, mechanical and electrical equipment and all other infrastructure which will be utilized in the current and future operation of the site.

### 1.5.2 Scope and Activities

1. Prepare a detailed inventory of existing infrastructure and equipment found on the site. Include drawings identifying existing location, layout.
2. Based on parameters developed in conjunction with the Project Manager and the client department, prepare an evaluation report that assesses the condition of existing infrastructure and equipment. Assess the current inventory against the client department's functional requirements. Include an examination of the following:
  - (1) Reusing/refurbishing existing infrastructure and equipment; and/or
  - (2) Procuring/ constructing new infrastructure and equipment; and
  - (3) Current technologies and innovative solutions for the site;
  - (4) Prepare a detailed cost analysis that compares the reuse/refurbishment of existing infrastructure and equipment, with the purchase of new . Consideration should be given to cost effectiveness and time frames required for refurbishment of existing infrastructure and equipment and/or the procurement of new.

### 1.5.3 Deliverables

Submit report for review, revise as required and resubmit for final approval.

## RS 1.6 Engineering/ Geotechnical or Other Investigations

### 1.6.1 Intent

The purpose of this stage is to research and carry out all Geotechnical and Engineering investigations, as a minimum, to complete the requirements of the site or project.

### 1.6.2 Scope and Activities

1. Conduct investigations to obtain the required information, as a minimum Geotechnical and Engineering, to prepare and carry out the activities necessary to establish the required infrastructure for the site or project.
2. Prepare report on each investigation clearly describing what information was required, why it was required and what the results were.

### 1.6.3 Deliverables

Submit report for review, revise as required and resubmit for final approval.

## RS 1.7 Environmental Protection Requirements

### 1.7.1 Intent

The purpose of this stage is to outline the requirements for discharge off site, erosion control and water management, environmental protection, waste management and permitting.

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### 1.7.2 Scope and Activities

1. Prepare a report that identifies environmental protection requirements and make appropriate recommendations.
2. Prepare requirements for a water management, waste management and environmental protection plans for construction and post construction stages.

### 1.7.3 Deliverables

Submit report for review, revise as required and resubmit for final approval.

## RS 1.8 Order of Magnitude Class 'D' (Indicative) Cost Reports

### 1.8.1 Intent

The purpose of this stage is to provide an indication of the total cost of the project, based on the user's functional requirements to the degree known at the time. It is based on historical cost data for similar work, suitably adjusted for such factors as: effect of inflation, location, risk, quality, size and time. All related factors affecting cost are considered to the extent possible. Such an estimate is strictly an indication (rough order of magnitude) of the project total cost and completion date. This estimate is used to establish the indicative estimate required by Treasury Board for Preliminary Project Approval. Expected degree of accuracy: 20%.

### 1.8.2 Scope and Activities:

1. **Cost Planning:** Specific tasks include as a minimum:
  - (1) Prepare cost plans from project briefs, preliminary concepts or other preliminary information;
  - (2) Prepare cost analysis;
  - (3) Prepare option analysis and "what if" scenarios;
  - (4) Provide advice and recommendations on project planning in order to achieve the most cost effective project sequence;
  - (5) Identify and quantify potential risks and make contingency recommendations in order to minimize negative cost impacts;
  - (6) Advise on alternative procurement and construction strategies to create efficiencies wherever possible;
  - (7) Identify, forecast and analyze project-related issues including possible market shortages and potential price fluctuations.
2. **Cost Estimating:** Develop cost estimates of projects:
  - (1) Prepare order of magnitude Class 'D' cost estimates; and be prepared to further develop the cost estimate to level Class 'A' ready for tender.
  - (2) Quantify design and construction costs, contingencies and risks;
  - (3) Prepare and investigate costing alternatives to assist in the identification of the most cost-effective design and/or construction approach; Investigate and report on life-cycle costs;
  - (4) Document all unit pricing, analysis, and valuation.

### 1.8.3 Deliverables

1. **Cost Planning**
  - (1) Cost plans;
  - (2) Cost analyses and "what if" scenarios;
  - (3) Cash flows; and / or
  - (4) Reports on alternative procurement and construction strategies or other project-related issues.
2. **Cost Estimating**
  - (1) Fully detailed cost estimate. Order of magnitude Class 'D' accuracy; and be prepared to further develop the cost estimate to level "A" ready for tender.
  - (2) Documentation of the methodology of the estimate and any assumptions made;
  - (3) Documentation of all pricing and valuation calculations;
  - (4) Reports on investigation of costing alternatives; and / or
  - (5) Reports on life-cycle costs.

## RS 1.9 Hydrology and Drainage Structure Sizing Design

### 1.9.1 Intent

A study of the local hydrology to assess the requirements for drainage structure design.

### 1.9.2 Scope and Activities:

To review and summarize aspects of drainage requirements for a project and to calculate the structure type and sizing requirements.

### 1.9.3 Deliverables

A detailed engineering design of drainage structures for each project requirement and a report that outlines the basis for structure sizing and location.

## RS 1.10 Regulatory Issues

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### 1.10.1 Intent

To confirm that all design meets all requirements as set forth by code and regulatory authorities having jurisdiction.

### 1.10.2 Scope and Activities:

To attend meetings for discussion purposes of any design issues and to resolve any design issues.

### 1.10.3 Deliverables

Plans and specifications compliant with necessary requirements meeting regulatory and code requirements.

## RS 2.0 CONCEPT DESIGN

### 2.1 Intent

To translate the project requirements into preliminary design to explore design options and analyze them with respect to priorities and program objectives previously identified. Out of this process, one option will be recommended to proceed to Design Development.

### 2.2 Scope and Activities:

1. Obtain written approval from Project Manager for development of schematic design options based on the analysis of the Project Brief;
2. Provide alternative design options exploring possible technical and environmental strategies which are viable and have potential for development;
3. Analyze each solution with regard to the project goals including cost and schedule;
4. Write a preliminary project-description report outlining the various components and system options;
5. Incorporate the findings of environmental assessment and Canadian Environmental Assessment Act (CEAA) Screening Report (prepared by others), if required/requested;
6. Minimize the use of hazardous/toxic materials and products made from endangered or rare species (i.e. tropical hardwoods);
7. Recommend one option for further development with all supporting background and technical justifications;
8. Produce a Class 'C' cost estimate for the various options; and be prepared to further develop the cost estimate to level Class 'A' ready for tender.
9. Produce an implementation schedule, including alternative procurement and construction strategies.

### 2.3 Deliverables

10. Schematic Design Drawings;
11. Site plan showing proposed works, existing infrastructure, existing and proposed services and fit within surrounding context;
12. Description of the options with recommendation of preferred solution;
13. Waste Management plan
14. Project specification amendment;
15. Plan to incorporate the recommendations of decisions for the CEAA (prepared by others), if required/requested;
16. Cost Plan, including cost analysis, "what if" scenarios, potential risks, alternative procurement and construction strategies;
17. Class 'C' Cost Estimate, including methodology of the estimate, assumptions made, costing alternatives and life cycle costs. Document all unit pricing, analysis, and valuation
18. Prepare project master schedule and identify potential risks to schedule;
19. Report on deviation from schedule and recommend corrective measures or updated time line.

## RS 3.0 DESIGN DEVELOPMENT

### 3.1 Intent

To further develop one of the options presented at the Concept Design stage. The Design Development documents consist of drawings and other documents to describe the size and character of the entire project as to engineering, structural, environmental, mechanical and electrical systems, materials and such other elements as may be appropriate.

### 3.2 Scope and Activities:

20. Obtain written approval from Project Manager for development of one of the proposed concept design options;
21. If any alterations are demanded, document all required changes, analyze the impact on all project components, and resubmit for approval if required;
22. Expand and clarify the Concept Design intent for each design discipline;
23. Present the design materials to the client, design review or other committees as indicated by the project manager;
24. Present the design to the government or local authorities where required;
25. Ensure coordination of all disciplines' design development;
26. Analyze the constructability of the project and advise on the construction process and duration;
27. Based on all material available at the time, prepare a milestone schedule for the consideration with special attention to the impact on tenants;
28. Continue to review all applicable statutes, regulations, codes and by-laws in relation to the design of the project;
29. Define Commissioning Requirements;

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30. Provide a list of all NMS sections to be used, complete with a full draft specification, catalogue cuts and sustainable development/green choices.

### 3.3 Deliverables

1. Plans for all works, including all disciplines, showing all infrastructure. Indicating all key dimensions;
2. Preliminary works plans and plans for site preparation;
3. Engineering plans and details.
4. Elevations;
5. Site models as required;
6. Outline specifications for all systems and principle components or equipment;
7. Updated cost plan and cash flow;
8. Class 'B' (substantive) cost estimate showing changes from Class 'C' (indicative) cost estimate
9. Update time plan (Schedule) with highlighted changes to the time plan:
10. Preliminary construction schedule including long term delivery items;
11. Project dossier detailing the basic assumptions of the project and the justifications for all major decisions;
12. Prepare a Commissioning Brief describing major commissioning activities which include, as a minimum, civil, mechanical, electrical, municipal and integrated system testing;
13. Updated sustainable development strategy report.

## RS 4.0 CONSTRUCTION DOCUMENTS

### 4.1 Intent

14. Based on approved Design Development documents, the Consultant is required to prepare drawings and specifications setting forth in detail the requirements for the final cost estimate and construction of the project.
15. To prepare drawings and specifications setting forth in detail the requirements for the construction and final cost estimate of the project.
  - (1) 33% indicates technical completeness of all working documents;
  - (2) 66% indicates substantial technical development of the project - well advanced engineering and engineering plans, details, schedules and specifications;
  - (3) 99% is the submission of complete Construction Documents ready for tender call and submission to local authorities for pre-permit purposes;
  - (4) Develop project specific Systems Operations Manual (SOM);
  - (5) Final Submission incorporates all revisions required in the 99% version and is intended to provide PWGSC with complete construction documents for tender call.

### 4.2 Scope and Activities:

**Activities are similar at all three stages; completeness of the project development should reflect the stage of a submission.**

- (1) Obtain Project Manager's approval for Design Development submissions (33%, 66%, 99% and Final)
- (2) Requirements pertaining to such elements as format, type, content, number of copies, etc. For the preparation and submission of Construction Documents are presented in PA 1 and in Doing Business.
- (3) Confirm format of drawings and specifications;
- (4) Clarify special procedures (i.e. phased construction);
- (5) Submit drawings and specifications at the required stages. (33%, 66%, 99%);
- (6) Provide written response to all review comments and incorporate them into Construction Documents where required;
- (7) Advise as to the progress of cost estimates and submit updated cost estimates as the project develops;
- (8) Update the project time plan (schedule);
- (9) Prepare a final Class 'A' (substantive) estimate;
- (10) Review and approve materials and construction processes specifications to meet sustainable development objectives.

### 4.3 Details

1. Technical and Production Meetings
  - (1) Production of construction documents at the 33%, 66%, and 99% submissions will be reviewed during the meetings arranged by Project Manager and Consultant;
  - (2) Representatives from Client Department(s) and PWGSC support staff will be present as arranged by the Project Manager;
  - (3) Consultant shall ensure that their staff and the sub-consultant representatives attend the technical and production meetings as required;
  - (4) Consultant shall ensure all documents are coordinated with all sub-consultants and disciplines;
  - (5) Consultant shall arrange for all necessary data, progress prints, etc.;
  - (6) Consultant shall prepare minutes of the meetings and distribute copies to all participants.
2. Progress Review
  - (1) As work progresses on construction drawings, submit, from each discipline, drawings, schedules, details, pertinent design data and updated Cost Plan and Project Schedule as required.

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### 4.4 Deliverables

3. Deliverables are similar at all three stages; completeness of the project development should reflect the stage of a submission.
4. 99% Submission:
  - (1) Complete specification and working drawings.
  - (2) 99% Commissioning plan and Systems Operations manual
  - (3) One copy of site information, soil investigation report, borehole logs, etc.
  - (4) One copy of support data, studies, calculations, etc., required by Engineering disciplines for final checking and record.
  - (5) One copy of updated Cost Plan and Project Schedule
5. Final Submission:
  - (1) This submission incorporates all revisions required by the review of the 99% submission. Provide the following:
    - b) Ten complete sets of originals of the working drawings.;
    - c) Ten sets of original specifications;
    - d) Class 'A' estimate;
    - e) Complete Commissioning Plan;
    - f) Complete Systems Operations Manual;
    - g) As a safeguard against loss or damage to the originals, retain a complete set of drawings in reproducible form and one copy of specification;
    - h) Inspection Authorities Submission;
    - i) Submit and obtain approval on plans and specifications required by Inspection Authorities before tender call.

## RS 5.0 TENDER CALL, BID EVALUATION & CONSTRUCTION CONTRACT AWARD

### 5.1 Intent

To assist in obtaining and evaluating bids from qualified contractors to construct the project as per the Tender Documents.

### 5.2 Scope and Activities:

1. Tender Call
  - (1) The Project Manager shall be responsible for the production of the required number of copies of the Tender Documents and for such other documents as are necessary for tender call purposes.
  - (2) The Consultant shall:
    - b) Prepare, sign, seal and submit complete sets of approved tender-ready, Construction Drawings and Specifications to the Project Manager. Requirements pertaining to number and types of copies of Construction Drawings and Specifications are outlined below under PA 1.
    - c) Provide the Project Manager with all information required by tenderers to fully interpret the Construction Documents. The Contracting Authority will issue the addenda to all participants.
    - d) Attend tenderers briefing meeting(s) (i.e. Job Showing), upon request
    - e) Prepare addenda based on questions arising in such meetings for issue by the Contracting Authority. The Contracting Authority will issue the addenda to all participants; and
2. Bid Evaluation and Construction Contract Award
  - (1) The Consultant shall, as a minimum, assist tender evaluation by providing advice on such elements as;
    - b) The completeness of tender documents in all respects;
    - c) The technical aspects of the tenders;
    - d) The effect of alternatives and qualifications which may have been included in the tender;
    - e) The tenderers capability to undertake the full scope of work;
    - f) The availability of adequate equipment to carry out the work;
    - g) Examine and report on any cost and schedule impact created by the issue of tender / contract addenda.
  - (1) If PWGSC decides to re-tender the project, provide advice and assistance to the Project Manager;
  - (2) Revise and amend, at your cost, the construction documents to bring the cost of the work within the limits stipulated.

### 5.3 Deliverables

1. Originals of drawings and specifications;
2. Electronic copies of drawings and specifications;
3. Addenda where needed;
4. Full notes of all inquiries, and related correspondence, during the bidding period;
5. Changes to the documents, if re-tendering is necessary;
6. Updated cost estimate or schedule;
7. Submission Requirements for Construction Drawings and Specifications;
8. Provide three (3) complete sets of approved Construction Drawings as follows:
  - (1) One (1) hard copy, signed and sealed; and
  - (2) Two (2) electronic copies (one in native format and one in PDF format);
9. Provide three (3) sets of approved Construction Specifications as follows:
  - (1) One (1) hard copy properly bound and covered;and

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- (2) Two (2) electronic copies (one in native format and one in PDF format).
10. The electronic true copy of drawings and specifications is for tendering purposes only and do not require to be signed and sealed.
11. The original signed and sealed hard copy of drawings and specifications will be the version used by the successful contractor for construction and building permit purposes.
12. Electronic Versions of Construction Drawings and Specifications
- (1) Electronic true copy of the final submission drawings and specifications on one or multiple CD-ROM in Portable Document Format (PDF) in accordance with Doing Business. The PDF files should to the greatest extent possible be derived from the native software in which they were created and must not have any password protection and printing restrictions.

### RS 6.0 CONSTRUCTION & CONTRACT ADMINISTRATION & POST CONSTRUCTION WARRANTY REVIEW

#### 6.1 Intent

To ensure the implementation of the project in compliance with the Contract Documents and to direct and monitor all necessary or requested changes to the scope of work during construction.

#### 6.2 Scope and Activities:

1. During the implementation of the project, act on PWGSC's behalf to the extent and scope noted in the request;
2. Carry out the review of the work at intervals appropriate to determine if the work is in conformity with the Contract Documents;
3. Attend site and or job meetings as required;
4. Keep Project Manager informed of the progress and quality of the work and report any defects or deficiencies in the work observed during the course of the site review;
5. Ensure compliance with Commissioning Plan, update plan as necessary;
6. Determine the amounts owing to the Contractor based on the progress of the work and certify payments to the contractor for approval;
7. Act as interpreter of the requirements of the Contract Documents;
8. Provide cost advice during construction;
9. Advise the Project Manager of all potential changes to scope, schedule and cost, for the duration of the implementation;
10. Review the Contractor's submittals;
11. Prepare and justify change orders for issue by the Departmental Representative;
12. Indicate any changes or material/equipment substitutions on Record Documents;
13. During the twelve (12) month warranty period investigate all defects and alleged defects and issue instructions to the Contractor;
14. Prepare and post Systems Operating Instructions;
15. Assist in commissioning activities as requested;
16. Finalize Systems Operations Manual;
17. Conduct a final warranty review and coordinate as built of the final work.;

#### 6.3 Deliverables

1. Written reports from site visits including persons involved;
2. Written reports on the progress of the work and the cost of the project at the end of each month;
3. Additional detail drawings when required to clarify, interpret or supplement the Construction; Documents
4. Post contract drawings (As-Built Drawing);
5. Interim or Final certificates;
6. Debrief of Commissioning Activities;
7. As built records;
8. Warranty deficiency list;
9. Report on Final Warranty Review;

### RS 7.0 RISK MANAGEMENT (ALL STAGES)

#### 7.1 Intent

The consultant is to provide support to the Project Manager in identifying risks throughout the project life cycle.

#### 7.2 Scope and Activities:

1. Identify risk events based on past experience and using proposed checklist or other available lists;
2. Qualify/quantify probability of risk event (Low, Medium, High) and their impact (Low, Medium, High);
3. Prioritize risk events (i.e. concentrate efforts on risk events with High probability and Medium to High impact);
4. Develop risk response (i.e. evaluate alternatives for mitigation. This is the real added-value of risk management); and
5. Implement risk mitigation.

#### 7.3 Deliverables

1. Prepare Risk Management Reports at Design Development, 66% Design Documents, and 100% Design Documents stages;

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2. Include input from all sub-consultants, and from Client;
3. Take steps to implement risk mitigation. This includes as a minimum further recommendations, analysis, investigations, site meetings and site supervision.

### RS 8.0 SUPPORT SERVICES

#### 8.1 ESTIMATING AND COST PLANNING

##### 8.1.1 Cost Specialist: (where required by project scale/scope and as outlined in the call-up).

1. Delivering projects on time and within budget is a high priority. A fully qualified cost estimating, cost planning and cost control resource(s), referred to herein as the Cost Specialist, with a demonstrated record of successful cost management on construction projects may be required. 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.
2. The purpose of cost planning and cost control is to assist in the accomplishment of project cost objectives. It is a continuous and interactive process involving planning, action, measurement, evaluation and revision.

##### 8.1.2 Scope of Services

3. The Cost Specialist shall provide an interactive and continuous cost consulting service from the commencement of project design through to construction completion and subsequent evaluation, including the preparation of complete estimates for all construction trades, escalation, inflation and contingency costs, as noted in the previous RS sections.
4. The Cost Specialist shall provide a cost advising, and cost monitoring/reporting service.
5. The Cost Specialist shall attend all relevant project and production meetings throughout the design phases and be prepared to present and defend the estimates directly to the Project Manager.

##### 8.1.3 Cost Estimate and Planning Report

6. 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.
7. If the estimate falls short of or exceeds the Construction Cost Limit due to such changes, the Cost Specialist with the Consultant team shall fully advise the Project Manager. The Cost Specialist with the Consultant team shall propose alternative design solutions.
8. An Cost Estimate and Planning Report will include sufficient description and cost detail to clearly identify:
  - (1) Scope Change: Identifying the nature, reason and total cost impact of all identified and potential project scope changes affecting Construction Cost Estimate;
  - (2) Cost Overruns and Under runs: Identifying the nature, the reason and the total cost impact of all identified and potential cost variations;
  - (3) Options Enabling a return to the Construction Cost Estimate: Identifying the nature and potential cost effects of all identified options proposed, in order to return the project within the Construction Cost Estimate.

##### 8.1.4 Responsibilities

PWGSC will review all aspects of the Cost Specialist's work on a continuing basis to determine the validity and completeness of the information provided. In the event areas of concern are identified, 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.

##### 8.1.5 No Action Abrogates Consultant's Responsibilities

9. No acceptance or approval by PWGSC, 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.
10. Neither does acceptance of an estimate by PWGSC in any way abolish the Consultant's responsibility to maintain the specified Construction Cost Limit 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 Project Manager indicates otherwise in writing.

### 8.2 Surveying

#### 8.2.1. Intent

To have adequate survey control for design purposes or during construction.

#### 8.2.2 Scope and Activities

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To provide survey personnel and necessary equipment to conduct all necessary surveys and survey information required for design purposes. If required, services during construction provide personnel and equipment necessary for construction contract survey purposes.

### 8.2.3 Deliverables

Complete survey plans consistent with design requirements to be supplied in digital format.

## 8.3 Materials Testing

### 8.3.1 Intent

To procure materials testing services during construction, including the testing of placed materials such as backfill soils and gravels.

### 8.3.2 Scope and Activities

To provide materials testing services, equipment and personnel on an as required or as specified basis to conduct testing of materials: at source, as samples submitted by the Contractor, and as placed in-situ, to make sure that the materials and the construction and/or placement methods are in accordance with the contract drawings and specifications.

### 8.3.3 Deliverables

Materials testing reports and, if required/requested, recommendations for removal and /or remediation of non-conforming materials.

## 8.4 RESIDENT CONSTRUCTION SERVICES

### 8.4.1 Intent

1. The intent of the provision of Resident Construction Service is to implement the project in compliance with the Construction Contract Documents and to ensure construction contractor compliance with their contract. The Consultant shall provide a Resident Construction Services Representative for the duration of the construction contract stage.
2. The purpose of the Resident Construction Services Representative is responsible to:
  - (1) ensure the presence of the Consultant on site for the project;
  - (2) to inspect, coordinate and monitor all aspects of the work during key periods of the construction of the facility, and liaise with the contractor, Public Works And Government Services Canada and other agencies as appropriate to the work.;
  - (3) to provide resident inspection during key periods of construction work and maintaining records of all construction work placed on behalf of the design engineer and Project Manager;
  - (4) ensure that a sufficient level of communication is maintained with the Project Manager, Consultant, Contractor and any other organization applicable to the construction and construction contract administration of the individual detachment construction contract.
3. Resident Construction Services Representative(s) should:
  - (1) be a registered Professional Engineer or be eligible for registration in the Province of New Brunswick or Nova Scotia or Prince Edward Island or Newfoundland and Labrador; or
  - (2) be a registered Certified Engineering Technologist or be eligible for registration in the province of New Brunswick or Nova Scotia or Prince Edward Island or Newfoundland and Labrador; or
  - (3) be a registered Certified Engineering Technician or be eligible for registration in the province of New Brunswick or Nova Scotia or Prince Edward Island or Newfoundland and Labrador;
  - (4) Other combinations of education and experience will be considered considering the requirements and complexity of the service(s) required.
4. The Resident Construction Services Representative shall:
  - (1) be directly responsible to the Consultant;
  - (2) become thoroughly familiar with all pertinent documents for the construction including as a minimum the National Building Code. They shall be aware of all Federal, Provincial and Municipal standards for the health and safety of construction workers;
  - (3) become thoroughly familiar with the requirements of the Consultant Project Brief and project responsibilities of others which relate to these services;

### 8.4.2 Scope and Activities

#### 1. General

- (1) The Resident Construction Services Representative's service shall commence on the date the contractor physically mobilizes on a site and finish on the date of Certificate of Substantial Performance unless otherwise stated by the Project Manager.
- (2) The Consultant shall be responsible to distribute and assign the Construction Services Representative in such a manner that the intent of these services, as stated above is assured. The consultant shall ensure, via his planned

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allotment of the Construction Services Representative's time, that quality assurance is maintained and that all critical aspects of the work by the construction contractor's forces occur in the presence of the Resident Construction Services Representative.

- (3) The Consultant shall, prior to the construction contract tender of the facility provide Detail Project Schedule, identifying the key stages of construction and the planned allotment of hours when the Resident Construction Services Representative shall be on site.
  - (4) The PWGSC representatives may, at their discretion, request additional amounts and/or less amounts of services of the Resident Construction Services Representative. Those additional and/or reduced services shall be calculated utilizing the hourly rate identified by the Consultant.
2. Duties and Responsibilities
- (1) Provide Resident Construction Services including inspection, coordination and monitoring during the construction work and be responsible to the Consultant.
  - (2) Maintain daily records, while on site, of all construction work placed and ensure constant communication amongst Project Manager, the Consultant and Contractor.
  - (3) The Consultant shall ensure that the Resident Construction Services Representative maintains, records and submits time sheets. The Consultant shall forward time sheets of the Resident Construction Services Representative to Project Manager after verifying accuracy and approving. The Consultant shall submit reviewed and approved time sheets to the Project Manager, within two weeks after completion of 40 hours of service by the Resident Construction Services Representative, for review.
3. Inspection and Reporting
- (1) The Resident Construction Services Representative shall:
    - b) inspect all phases of the work in progress, for the purpose of bringing to the attention of the Contractor, after checking with the Consultant, and Project Manager any discrepancies between the work, the contract documents and accepted construction procedures;
    - c) keep a daily log of such inspections and issue a weekly written report to the Consultant in the form directed.
  - (1) The Consultant shall review and approve weekly reports prior to distribution to the Departmental Representative (Project Manager). Reports shall be distributed within five (5) working days of the reports week ending date.
  - (2) The Resident Construction Services Representative shall make any other reports or surveys as may be requested by the Project Manager through the Consultant.
4. Interpretation of the Contract Documents
- (1) Interpretation of the contract documents shall be the responsibility of the Consultant. The Consultant may, however, have the Resident Construction Services Representative provide him with information regarding job conditions and may require him to relay day-to-day instructions to the Contractor.
  - (2) It shall be the duty of the Resident Construction Services Representative to assist the Consultant and further inform the Consultant of any anticipated problems which may delay the progress of the work. The method of relaying such information shall be determined by the Consultant.
5. Changes in the Work
- (1) The Resident Construction Services Representative shall not authorize or order any change in the work which will constitute a change in design or in the value of the contract except as delegated by the Project Manager.
  - (2) The Consultant may call upon the Resident Construction Services Representative to assist in the evaluation of changes in the work, where a knowledge of job conditions is required.
6. Communication and Liaison
- The Resident Construction Services Representative shall:
- (1) Convey the Consultant's instructions regarding the required standards of workmanship to the Contractor(s);
  - (2) Check specifications, confer and obtain guidance on these findings with the Consultant. The matter is then to be brought to the attention of the Contractor's Superintendent. Although informal discussions with Sub-trade Superintendents are usually permissible, (but only with the agreement of the Contractor), the Resident Construction Services Representative should not deal directly with foreman or tradesmen, or interfere with the progress of the work;
  - (3) Communicate formally with the Contractor via memorandum form only. When this form is issued the Resident Construction Services Representative must immediately file copies with PWGSC and the Consultant;
  - (4) 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 orders, site instructions, details, drawings, etc.;

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- (5) Accompany PWGSC representatives on inspections and report to the Consultant requirements, comments or instructions of PWGSC's forces. Note that the Resident Construction Services Representative should encourage such requirements, comments or instructions to be provided to him in writing;
  - (6) Consider and evaluate any suggestions or modifications to the documents advanced by the Contractor and immediately report these to the Consultant with comments;
  - (7) Ensure that PWGSC 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.
7. Inspection of the Work
- (1) The Resident Construction Services Representative shall make on site observations and spot checks of the work to determine whether the work, materials and equipment conform with the contract documents and supplementary conditions. The Resident Construction Services Representative shall advise the Contractor of any deficiencies or unapproved deviations via memorandum and report immediately to the Consultant and Project Manager any of these on which the Contractor is tardy or refuses to correct.
  - (2) The Resident Construction Services Representative shall arrange for the Consultant's architectural, structural, mechanical, electrical and other consultants to make the periodic inspections required by the Consultant's contract, and for these inspections to be made timely with respect to the progress of the work.
  - (3) The Resident Construction Services Representative shall also report if materials and equipment are being incorporated into the project prior to approval of relative shop drawings or samples.
  - (4) The Resident Construction Services Representative shall assist in the preparation of all deficiency reports, interim, preliminary, and final, in collaboration with the PWGSC and Consultant's representatives.
  - (5) The Resident Construction Services Representative shall be responsible for the measurement of all work to be done by the Contractor
8. Site Meetings
- The Resident Construction Services Representative shall attend and participate in all job-site meetings held during key periods of construction.
9. Inspection and Testing
- (1) The Resident Construction Services Representative must see that the tests and inspections required by the contract documents are conducted, and should observe these tests and report the results in the daily log.
  - (2) The Consultant should be notified if the test results do not meet the specified requirements, or if the Contractor does not have tests undertaken as required.
10. Emergencies
- (1) In the case of emergency where safety of persons or property is concerned or work is endangered, to safeguard the interests of PWGSC, the Resident Construction Representative shall give immediate written notice and verbal contact to PWGSC of the possible hazard.
11. Limitations
- The Resident Construction Services Representative shall not:
- (1) Authorize deviations from the contract documents;
  - (2) Approve shop drawings or samples unless requested by project manager for project use;
  - (3) Accept any work or portions of the build works;
  - (4) Enter into the area of responsibility of the Contractor.
12. Hazardous Construction Operations
- The Resident Construction Services Representative is to communicate regularly with the Construction Safety Professional regarding any issues of site safety. All safety related issues must be forwarded immediately to the Safety Professional, as well as the Project Manager.
13. Equipment Required and Provided by Consultant
- (1) Costs of all equipment required shall be covered in the quoted fixed hourly rate. Equipment required shall include as a minimum:
    - b) Digital Camera;
    - c) Personal Protective Equipment;
    - d) Office Supplies required to perform services;
    - e) Cell Phone or other acceptable means of communication;
    - f) Laptop computer.

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- (1) Provision of a site trailer and cover costs associated with same, including: fax machine and furniture will be supplied by construction Contractor.

### 8.4.3 Deliverables

#### 1. Daily Log

- (1) The Resident Construction Services Representative shall keep a daily log while on site. This will record the following:
  - b) weather conditions, particularly unusual weather relative to construction activities in progress;
  - c) major material and equipment deliveries;
  - d) daily activities and major work done;
  - e) number of workers on site (full day or part day) and trade represented;
  - f) start, stop or completion of activities;
  - g) presence of inspection and testing firms, tests taken, results, etc.;
  - h) unusual site conditions experienced;
  - i) significant developments, remarks, etc.;
  - j) special visitors on site;
  - k) authorities given Contractor to undertake certain or hazardous works;
  - l) Environmental, Safety or other notable incidents;
  - m) reports, instructions from Appropriate Authorities Response Actions.

- (1) Based on site/ project specific conditions, the items recorded may expand or be reduced. The log is the personal property of the Resident Construction Services Representative. Copies of the log book, certified as copies, are to be provided at the end of the project.

#### 2. Weekly Records

- (1) The Resident Construction Services Representative shall prepare weekly reports for the Consultant in the form directed:
  - b) progress relative to schedule;
  - c) major activities commencing or completed during the week; main activities now in progress;
  - d) major deliveries of materials and/or equipment;
  - e) difficulties which may cause delays in completion;
  - f) materials and labour needed immediately;
  - g) cost estimates of work completed and materials delivered (cost plus contracts);
  - h) outstanding information or action required by Consultant or PWGSC;
  - i) work force;
  - j) weather;
  - k) remarks;
  - l) accidents on site;
  - m) safety hazards caused by the work, the Contractor or his agents.

- (1) The items may be expanded or reduced based on site/ project specific conditions.

#### 3. Site Records

- (1) The Resident Construction Services Representative shall maintain up to date files at the site for the use as follows:
  - b) Contract and Tender Documents;
  - c) Approved Shop Drawings;
  - d) Approved Samples;
  - e) Samples;
  - f) Site Instructions;
  - g) Contemplated Change Orders;
  - h) Change Orders;
  - i) Memoranda;
  - j) Test and Deficiency Reports;
  - k) Correspondence and Minutes of Meeting;
  - l) Names, addresses, telephone numbers of Client representatives, Consultant and all Contractors, sub-trades key personnel associated with the contract; including home telephone numbers in case of emergencies.

- (1) The items may be expanded or reduced based on site/ project specific conditions.

- (2) In addition, the Resident Construction Services Representative shall maintain an up to date progress schedule.

A reproduction of the original contract drawings shall be carefully preserved and shall be kept marked up to date with all addenda, change orders, site instructions, details, as-built conditions, etc., issued sub