



Architectural & Engineering Services **TERMS OF REFERENCE**

Functional Assessment and Conceptual Options

For:
Canada Revenue Agency (CRA)
Taxation Centre
Winnipeg, Manitoba

October 24, 2019
R.088985.001



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1 PROJECT DESCRIPTION

1.1 GENERAL

1.1.1 PURPOSE OF TERMS OF REFERENCE (TOR)

- .1 Public Works & Government Services Canada (PWGSC) requires the services of an architectural firm, acting as the prime consultant with a multi-disciplinary team of sub-consultants for the delivery of services required for this project.

1.1.2 THE DOING BUSINESS WITH PWGSC DOCUMENTATION AND DELIVERABLES MANUAL

- .1 The TOR describes the project specific requirements, services and deliverables while the *Doing Business with PWGSC Documentation and Deliverables Manual* outlines the standards and procedures for construction documents, cost estimating and project scheduling.
- .2 Document precedence:
 - .1 In the event of a document conflict the TOR takes precedence.

1.1.3 PROJECT INFORMATION

Project Information	
Project Title:	Functional Assessment and Conceptual Options
Project Address:	66 Stapon Road, Winnipeg, MB
PWGSC Project Number:	R.088985.001
PWGSC Departmental Representative:	Thomas Melanchuk

1.2 BACKGROUND INFORMATION

1.2.1 USER DEPARTMENT

- .1 The User Department referred to throughout the TOR is the Canada Revenue Agency (CRA).
- .2 The CRA is responsible for the administration of Canada's tax programs, the delivery of economic and social benefits, and administers certain provincial and territorial tax programs. The CRA promotes compliance with Canada's tax legislation and regulations, and plays an important role in the economic and social well-being of Canadians. The CRA is committed to working closely with stakeholders, providing excellent service to clients, and ensuring responsible enforcement of legislation.

1.2.2 PWGSC/CRA NEED

- .1 PWGSC and the CRA require a clear and accurate understanding of the current physical and operational state of the Winnipeg Taxation Centre (WTC) in order to confidently inform future occupancy decisions regarding the building and its occupants, along with development of viable conceptual options for a future WTC.



1.2.3 EXISTING CONDITIONS

- .1 The WTC is currently located in Winnipeg at 66 Stapon Road and consists of 22,502 m²u / 27,509 m²r of combined office and special purpose space on two floors. This is a Crown facility that was built specifically for CRA in 1979.
- .2 The CRA building is 40 years of age, which is a milestone when federally owned buildings must be evaluated by the Federal Heritage Buildings Review Office (FHBRO) to determine whether there is heritage value to be conserved. The process of evaluation for the CRA building is in its early stages, and the outcome of the evaluation will not be known until after the scope of work outlined in this TOR is complete. As the building may have heritage value and character-defining elements, for the purposes of this work, the CRA building is to be considered a 'Recognized' FHBRO building.
- .3 CRA has undergone a business transformation effort and have densified their Full Time Equivalent (FTE) population into their current space.
 - .1 The WTC accommodates 2947 FTEs; comprised of ~10 leadership workers, ~33 special purpose space (SPS) workers, and ~2904 FTE fixed workers.
 - .2 Currently, 2000 fixed worker FTE's are daytime workers, and 900 fixed worker FTE's operate on an evening/night schedule due to the building capacity constraint.
 - .1 Shiftwork will not be removed from operational consideration in the project, but seasonal demand will drive this requirement instead of building spatial constraints.
 - .1 CRA will provide direction on ideal baseline number of FTE's and anticipated shift workers required during peak season.

1.2.4 CHALLENGES AND CONSTRAINTS

- .1 Escorts are required. CRA is able to provide escorting services.
- .2 All site visits must be arranged through the Departmental Representative.
- .3 The current location is densely populated with limited swing space. Planning of any renovation will require critical consideration of project phasing to maintain current operations.
- .4 The CRA WTC operates with peak periods of increased volume of document processing through the calendar year. Consideration must be given to ensure operations are not negatively affected.
- .5 As the building is to be considered a 'Recognized' FHBRO building for the purposes of this work, all options considered for the 66 Stapon Rd site must be reviewed for compatibility by the PWGSC Heritage Architect.



1.3 SUMMARY OF WORK

1.3.1 ASSESSMENT SERVICES

- .1 A complete functional program (based on existing documentation, onsite observations, information gathered from CRA and existing building condition reports).
- .2 A preliminary options analysis, based on and informed by the information gathered through the functional program.

1.4 OBJECTIVES

1.4.1 GENERAL GOALS

- .1 Quality Design through the:
 - .1 Collaborative Project Delivery (CPD) process – refer to Definitions;
 - .2 Appropriate incorporation of innovations within the project solutions;
- .2 Fully integrate all components and systems including architectural, interior design, structural, mechanical, electrical, IT and security design.
- .3 Provide an integrated assessment and process involving:
 - .1 Interdisciplinary collaboration, including all stakeholders as identified, design professionals and authorities having jurisdiction;
 - .2 Agreed upon principles and decision making protocols.
- .4 Consider the CRA's changing and future needs/uses to create solutions that are flexible and that are able to evolve over time:
 - .1 Employ advanced systems and technologies to support contemporary operating requirements with capacity for growth and change.
- .5 Review trends and identify, through benchmarking, requirements necessary to provide creative, functional and cost effective Work solutions.

1.4.2 HERITAGE

- .1 The Canada Revenue Agency Taxation Centre is to be considered as recognized by the Federal Heritage Building Review Office (FHBRO). For this reason, options for the 66 Stapon Rd site are to be considered following a conservation approach based on accepted principles and practices described in the Standards and Guidelines for the Conservation of Historic Places in Canada. Implement solutions with minimum intervention and resulting in the least harm to potential heritage characteristics of the building.
- .2 The PWGSC Heritage Conservation architect will review each submission of work by the Consultant if options for the 66 Stapon Rd site are considered.

1.4.3 PROJECT DELIVERY

- .1 Obtain written authorization from the Departmental Representative before proceeding from one project milestone to another.
- .2 Coordinate all services with the Departmental Representative.
- .3 Establish and maintain a Project Management Plan.



- .4 Maintain continuity of key personnel and a dedicated working team for the life of the project.
- .5 Conduct Quality Assurance reviews during the Project Milestones.

1.5 SUMMARY OF SERVICES AND SPECIALTIES

1.5.1 GENERAL SERVICES

- .1 Provide a full consulting team including the following consultant services and specialties:
 - .1 Professional/Registered Architectural Services:
 - .1 Prime Consultant
 - .2 Professional/Registered Engineering Services:
 - .1 Structural Engineering
 - .2 Mechanical Engineering
 - .3 Electrical Engineering
 - .3 3rd Party Functional Programming specialist
 - .4 Cost Estimating Services:
 - .1 Quantity Surveyor; certified by the Canadian Institute of Quantity Surveyors
 - .2 Life Cycle Cost Analysis specialist

1.6 SCHEDULE

1.6.1 GENERAL

- .1 Provide project deliverables in accordance with the project milestone listing identified below.
- .2 Prepare a Project Schedule in accordance with the milestone list.

1.6.2 ANTICIPATED MILESTONE DATES

Project Phase	Milestone Completion Date
Consultant Contract Award	March 30, 2020
Functional Programming	September 18, 2020
CRA/PWGSC Quality Assurance Review	October 02, 2020
Preliminary Options Analysis	October 30, 2020
CRA/PWGSC Quality Assurance Review	November 13, 2020
Final Document Submission	November 27, 2020

1.7 EXISTING DOCUMENTATION

1.7.1 AVAILABLE FOR THE CONSULTANT

- .1 Limited as-built drawings and Operation & Maintenance Manuals will be available. The Consultant will be responsible for verifying the accuracy of the information incorporated into the options/concept design.



- .2 Building drawings in AutoCAD format.
- .3 PWGSC Building Condition Report (BCR) November 2010;
- .4 PWGSC Building Condition Report (BCR) March 2018;
- .5 Preliminary operational/functional diagrams and staffing information provided by CRA;
- .6 Hazardous Materials Report;

1.7.2 DISCLAIMER

- .1 Reference information will be available in the language in which it is written.
- .2 The documentation may be unreliable and is offered, "as is" for the information of the Consultant.

1.8 CODES, ACTS, STANDARDS, REGULATIONS

1.8.1 GENERAL

- .1 The CRA Act grants the authority over all matters related to real property under its administration including the Government of Canada Workplace Fit-Up Standards.
 - .1 The CRA standards comply with Government of Canada Workplace Fit-up Standards with the exception of number of workspace allocations.
- .2 In addition to Provincial/Territorial and Municipal Acts, Codes, By-laws and Regulations appropriate to the area of concern, the following Codes, Acts, Standards and Guidelines are applicable to this project (in the event of a conflict between codes, the more stringent shall take precedence):
 - .1 NRC National Building Code of Canada 2015;
 - .2 NRC National Fire Code of Canada 2015;
 - .3 NRC National Plumbing Code of Canada 2015;
 - .4 NRC National Energy Code of Canada for Buildings 2015;
 - .5 CSA/B561-18 Accessible Design for the Built Environment;
 - .6 The Canada Labour Code (CLC);
 - .7 The Canada Occupational Health and Safety Regulations;
 - .8 PWGSC Mechanical Document (MD) Standards;
 - .1 The Departmental Representative will provide electronic copies on request.
 - .9 Government of Canada Workplace Fit-Up Standards;
 - .10 The Standards and Guidelines for the Conservation of Historic Places in Canada
 - .1 <https://www.historicplaces.ca/media/18072/81468-parks-s+g-eng-web2.pdf>;
- .3 At the start-up meeting the Departmental Representative will provide additional codes and standards unique and not published by the Federal Government.



- .4 Identify and analyse the project in accordance with the requirements of all AHJs and all applicable Codes, Acts, Standards and Guidelines and Legislation.



2 REQUIRED SERVICES

2.1 GENERAL REQUIREMENTS

2.1.1 SERVICES

- .1 WTC Assessment
 - .1 Functional Programming;
 - .2 Preliminary Options Analysis.

2.2 PROJECT REVIEW AND ACCEPTANCE

2.2.1 GENERAL

- .1 Comply with all applicable laws and regulatory requirements as required by the General Conditions of the Contract.

2.2.2 FEDERAL GOVERNMENT

- .1 CRA for functional requirements and project review;
- .2 Review by PWGSC Heritage Architect of consultant submission(s) that include options for the 66 Stapon Rd site;
 - .1 The purpose of this review is to consider impact on possible heritage character for options identified on the 66 Stapon Rd site only;
 - .2 Submit documents in formats such as reports, drawings, oral presentation or other formats as may be agreed upon as suitable,
 - .3 Expected turnaround time for each review is 3 weeks.

2.2.3 QUALITY ASSURANCE REVIEWS, ACCEPTANCE AND PRESENTATIONS

- .1 At each stage:
 - .1 Review submissions to be posted on AutoDesk BIM360 Docs in searchable PDF format;
 - .2 Expected turnaround time for reviews is 10 working days;
 - .3 The consultant team will receive review comments in the form of an editable MS Word document or MS Excel document;
 - .4 The consultant shall provide a single coordinated written response to the comments within 2 weeks of receiving review comments;
 - .5 The purpose of this review is information and awareness for PWGSC and not quality control for the Consultants. The Consultant Team must employ their own quality control program and remain fully responsible for the design and services provided.

2.3 FUNCTIONAL PROGRAMMING

2.3.1 GENERAL

- .1 The Consultant Team will meet with representatives of the User Groups to develop an Owner Project Requirements (OPR) / Functional Program Report that describes the spatial, operational and technical requirements to ensure the CRA can deliver current and future services effectively and efficiently.



- .2 Refer to Section 4 Definitions for "Owner Project Requirements (OPR)" and "Functional Program Level 3" definitions.

2.3.2 SCOPE AND ACTIVITIES

- .1 On the basis of the Departmental Representative's information, meet with the CRA to develop the functional requirements.
- .2 Prepare agenda and questionnaires to facilitate an on-site assessment of the CRA's functional space and operational/service requirements:
 - .1 Develop and document for CRA's approval, the relationship and adjacencies of all functional areas.
- .3 Analyse the project requirements, challenges, concerns and risks stated in terms of the OPR noting:
 - .1 Documentation of the methodology used;
 - .2 Value and goal statements;
 - .3 Data analysis summary and conclusions;
- .4 Provide a pertinent summarization of existing reports, documents and material related to the project;
 - .1 Integrate visioning information and principles derived from any National Tax Centre planning sessions held on this project according to documents TBD and provided by PSPC.
- .5 Prepare a complete list of all functional needs clearly describing all space requirements including:
 - .1 Area requirements for each individual functional space type;
 - .2 Useable areas for each function;
 - .3 Total useable area requirements for this project;
 - .4 Total useable area for each option, and;
 - .5 A description of work activity within each space.
- .6 Confirm and compare space allocations against the User Department organizational chart.
- .7 Provide a summary of each functional space type including:
 - .1 Plan diagram (including equipment and furnishings);
 - .2 Common spaces;
 - .3 Equipment spaces;
 - .4 Support spaces, and;
 - .5 Other functional spaces required by the User Department.
 - .1 Define individual functional space types based on organizational structure (ie. Branch > Division > Workload Area > Team).
- .8 Provide a summary of the number (and type) of staff for each functional space.
- .9 Provide summary and analysis commentary on the impacts of both shiftwork and peak season workload on operations and spatial requirements.
- .10 Provide a description of the technical requirements for Architectural, Structural, Civil/Landscape, Mechanical and Electrical systems including:
 - .1 Required operational and service infrastructure;



- .1 Collaborate with identified lead User Department representative and the Departmental Representative to obtain professional and technical input,
- .2 Identify all required special conditions to support the project program,
- .3 Identify all security, acoustic and special fire separation requirements, and;
- .4 Identify any potential Occupational Health and Safety requirements.
- .2 A review and definition of all IT requirements;
 - .1 Collaborate with the User Department and Shared Services Canada (SSC).
- .11 Identify major equipment and casework requirements for each functional space.
- .12 Review and define the User Department's storage requirements:
 - .1 Size, locations and furnishings/equipment.
- .13 Prepare a preliminary building code analysis.
- .14 Based upon the approved draft Functional Program, develop, for Acceptance by the Departmental Representative and User Department, the following:
 - .1 Spatial relationship diagrams to indicate adjacency requirements between each of the spaces and groups of spaces, and;
 - .2 Adjacency matrix;
 - .3 Functional Process and Flow Diagrams;
 - .4 Zoning Diagrams (bubble diagrams to illustrate required conceptual arrangements of functional units/groups);
- .15 Provide a minimum floor plate size for accommodating the entire functional program.
- .16 Agenda and Minutes complete with Issues, Decision and Action Logs for meetings.

2.3.3 FUNCTIONAL PROGRAMMING MEETINGS

- .1 Arrange and facilitate meetings in Winnipeg shortly after appointment of the Consultant Team;
 - .1 Introduce the functional programming process, stages and required arrangements and authorities, and;
 - .2 Participate in a site tour to understand the occupancy and operational requirements, office support areas, Special Purpose Space needs and layouts, and project related requirements.
- .2 Arrange and facilitate follow-up sessions during Functional Programming Services as required.

2.3.4 DELIVERABLES

- .1 Functional Program Report documenting the "Scope and Activities" and associated progressive deliverables.
 - .1 Provide one draft and one final submission



- .1 Revise as required.
- .2 For each submission provide two (2) hard copies of the Functional Program Report and an electronic copy in searchable PDF file formats.

2.4 PRELIMINARY OPTIONS ANALYSIS

2.4.1 GENERAL

- .1 The Preliminary Options Analysis Service is to demonstrate the feasibility and planning implications of the three options presented with the Functional Program.

2.4.2 SCOPE AND ACTIVITIES

- .1 Chair and minute bi-weekly meetings.
- .2 Identify any additional information that will be required to deliver the assessment;
 - .1 Based on the Functional Program, develop and describe, in a written and graphic format at the macro level, three (3) planning options, each with building block schematics and site plans;
 - .1 A minimum of one option must be at the current location and utilizing the existing building.
 - .2 Assess each option in narrative,
 - .1 Pros and cons with recommendations;
 - .2 Interior and exterior requirements;
 - .1 This should include consideration and commentary on site requirements, parking, access to site and various modes of transportation.
 - .3 Location of each functional component;
 - .4 Adjacency requirements between each of the spaces and groups of spaces;
 - .5 A functional program summary including variations of functional component areas and quantities.
 - .3 Consideration should be given to additions (horizontal and/or vertical) and new build elsewhere.
 - .4 Identify any compromises.
- .3 Cost Assessment
 - .1 Class D estimate to construct and/or fit up the space (facility, site and furnishings) for each design option.
 - .2 Current Building Condition Report (2018) identifies items in need of work over a 25 year period. PSPC's Building Management Plan (2019) includes projected maintenance costing for 5 years, based on the Building Condition Report. Review the Building Condition Report (2018) and Building Management Plan (2019) documents and provide extended cost projections for the 6-15 year timeframe.
- .4 Prepare agenda, meeting minutes and decision logs.
- .5 Revise based upon comments.



2.4.3 DELIVERABLES

- .1 Preliminary Options Analysis Report documenting the "Scope and Activities" and associated progressive deliverables.
 - .1 Provide one draft and one final submission
 - .1 Revise as required.
- .2 For each submission provide two (2) hard copies of the Preliminary Options Analysis Report and an electronic copy in searchable PDF file formats.

2.5 FINAL REPORT

2.5.1 DELIVERABLES

- .1 Combine the Functional Program and Preliminary Options Analysis reports into a single final report.



3 PROJECT ADMINISTRATION

3.1 GENERAL REQUIREMENTS

- .1 The administration requirements outlined in this section are applicable to all PWGSC projects in the Western Region, unless otherwise indicated in the TOR.

3.2 LANGUAGE

- .1 All documents must be prepared in English.

3.3 MEDIA

- .1 The Consultant shall not respond to any media inquiry.
- .2 Direct all media requests to the Departmental Representative.

3.4 PROJECT MANAGEMENT

3.4.1 GENERAL

- .1 PWGSC administers the project on behalf of Canada and exercises continual control over the project during all phases of development.
- .2 This project is to be organized, managed and implemented in a collaborative manner.
- .3 The PWGSC project management team, the Consultant and the User Department teams are to work cooperatively at every stage of the design and construction process in order to assure the creation of a successful, informative, and meaningful report.
- .4 Under the leadership of the PWGSC Departmental Representative, all team members are responsible for establishing and maintaining a professional and cordial relationship.

3.4.2 NATIONAL PROJECT MANAGEMENT SYSTEM

- .1 PWGSC uses the National Project Management System (NPMS) for management of its building projects in order to align with the Federal Government approvals processes. Refer to the PWGSC NPMS web site for more details.
 - .1 <http://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/index-eng.html>

3.5 LINES OF COMMUNICATION

- .1 All communications will be through the Departmental Representative, unless directed otherwise.
 - .1 This includes formal contact between the Consultant and the PWGSC Project Team and the User Department.
- .2 Direct communication between members of the PWGSC Project Team on routine matters may be required for resolution of technical issues.
 - .1 However, this shall not alter project scope, budget or schedules, unless confirmed in writing by the Departmental Representative.



3.6 MEETINGS

3.6.1 GENERAL

- .1 The Departmental Representative will arrange meetings throughout the project, with representatives from:
 - .1 The User Department;
 - .2 PWGSC, and;
 - .3 The Consultant team.
- .2 Project Start-up Meeting:
 - .1 Shall be arranged and facilitated by the Departmental Representative, and;
 - .2 Includes the PWGSC AECOE Design Manager, User Department Representatives and the Consultant's project team.

3.7 CONSULTANT RESPONSIBILITIES

- .1 The Consultant Team includes the Consultant's staff, sub-consultants and specialists.
 - .1 This team must maintain valid expertise for the duration of the project;
 - .2 The team must include qualified registered architectural and engineering professionals with extensive relevant experience and who are capable of providing all required services;
 - .3 Team members may be qualified to provide services in more than one discipline, and;
 - .4 The Consultant may expand the team to include additional disciplines.
- .2 The Consultant is responsible for:
 - .1 Obtaining Departmental Representative acceptance for each project phase before proceeding to the next phase;
 - .2 Accurately communicating design, budget, and scheduling issues to staff, sub-consultants and specialists;
 - .3 Coordinating input for the Departmental Representative's Risk Management Plan, and;
 - .4 Coordinating the quality assurance process and ensuring that submissions of sub-consultants are complete and signed-off.

3.7.2 DESIGN PROJECT MILESTONES

- .1 Attend meetings.
- .2 Record the issues and decisions.
- .3 Prepare and distribute minutes within two (2) working days of the meeting.
- .4 Ensure sub-consultants attend all required meetings.

3.8 PWGSC RESPONSIBILITIES

3.8.1 ADMINISTRATION

- .1 PWGSC administers the project and exercises continual control over the project during all phases of development.



- .2 The following administrative requirements apply during all phases of the project delivery.

3.8.2 REVIEWS

- .1 PWGSC will review the work at various stages and reserves the right to reject unsatisfactory work at any stage.
- .2 If later reviews show that earlier acceptances must be withdrawn, the Consultant shall re-submit at no extra cost.

3.8.3 ACCEPTANCE

- .1 PWGSC acceptance of submissions from the Consultant simply indicates that - based on a general review - the material complies with governmental objectives and practices, and meets overall project objectives.
- .2 Acceptance does not relieve the Consultant of professional responsibility for the work or compliance with the contract.

3.8.4 PWGSC PROJECT MANAGEMENT

- .1 The Project Manager assigned to the project is the Departmental Representative.
- .2 The Departmental Representative is directly responsible for:
 - .1 The progress and administration of the consultant contract, on behalf of PWGSC;
 - .2 Day-to-day project management and is the Consultant's single point of contact for project direction, and;
 - .3 Providing authorizations to the Consultant on various tasks throughout the project.
- .3 Unless directed otherwise by the Departmental Representative, the Consultant obtains all Federal approvals necessary for the work.

3.8.5 PWGSC ARCHITECTURE AND ENGINEERING CENTRE OF EXPERTISE (AECOE)

- .1 Provides advisory services and quality assurance reviews of consultant deliverables.
- .2 Participates regularly and may attend meetings as and when required.
- .3 Provides a Design Manager for the project who will coordinate the services of AECOE.

3.9 USER DEPARTMENT RESPONSIBILITIES

3.9.1 USER DEPARTMENT PROJECT LEADER

- .1 Reports to the senior User Department executive management.
- .2 Will play several critical roles for the successful implementation of the project, including:
 - .1 Coordination of the quality, timing and completeness of information and decisions relating to issues related to the functional performance of the facility.
 - .2 Providing complete and timely client requirements



3.10 TECHNICAL REPORTS

- .1 Technical Reports are official government documents, which are used to support an application for approval or to obtain authorization or acceptance. Technical Reports must:
 - .1 Be complete, clear and professional in appearance and organization, with proper reference to related parts and contents in the report;
 - .2 Clearly outline the intent, objectives, process, results and recommendations;
 - .3 Present the flow of information and conclusions in a logical, easy to follow sequence;
 - .4 Be in written narrative, graphic, model (traditional and/or computer generated), and photographic format, which can be web enabled;
 - .5 Ensure that all pages are numbered in sequence, and;
 - .6 Be printed double-sided, if hard copies are produced.
- .2 Standard practice for the organization of technical reports include:
 - .1 A cover page, clearly indicating the nature of the report, the date, the PWGSC project number and who prepared the report;
 - .2 A Table of Contents;
 - .3 An Executive Summary;
 - .4 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 easily;
 - .5 Appendices are to be used for lengthy segments of the report, supplementary and supporting information and/or for separate related documents.
- .3 The report content must:
 - .1 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;
 - .2 Use a proper numbering system (preferably legal numbering), for ease of reference and cross-reference;
 - .1 The use of 'bullet points' are to be avoided.
 - .3 Use proper grammar, including using complete sentences, in order to ensure clarity, avoid ambiguity and facilitate easy translation into French, if required;
 - .1 The use of undefined technical terms, industry jargon and cryptic phrases are to be avoided.
 - .4 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.



4 DEFINITIONS

4.1 PURPOSE

4.1.1 DOCUMENT DEFINITIONS:

- .1 Definition of words and phrases in the Terms of Reference (TOR), and *Doing Business with PWGSC – Documentation and Deliverables Manual* to:
 - .1 Expand the detail associated with the services and deliverables addressed in the above Documents, and;
 - .2 Ensure a clear understanding of the project scope, procedures, and Quality performance requirements.

4.2 DEFINITIONS

4.2.1 ACCEPTANCE

- .1 A formal action taken by an assigned person with authority (contractual or otherwise) to declare that some aspect of the project are permitted to proceed.

4.2.2 BASIS OF DESIGN (BOD)

- .1 Refers to CSA Z320 Article 3, Definitions.
- .2 A dynamic narrative document throughout the Project Milestones, recording the rationale for decisions and confirming to the Project Team design conformance to the ideas, concepts and criteria considered important to the owner as contained in the Owner Project Requirements (OPR) - for OPR see Definition;
 - .1 As the Design Consultant BOD also outlines the intended systems for the project, the Design Consultant's Cx Process Manager/Cx Authority, using a compliance evaluation/tracking matrix, confirms the BOD's compliance to the OPR.
- .3 Documents the primary thought processes and assumptions behind design and implementation decisions.
- .4 Text and graphics are organized to facilitate future use as a building reference document.
 - .1 The O&M Manual describes "what" components/systems have been selected, the BOD describes "why" and "how" the design achieves the performance requirements of the OPR, and;
 - .2 BOD and OPR are components of the Cx Manual.
 - .1 OPR - refer to Definition for further information.
- .5 Includes:
 - .1 A Summary:
 - .1 Project's conceptual framework;
 - .2 Compliance with OPR statement (including new Owner directives);
 - .3 Compliance with the Functional Program, and;
 - .4 Rationale for decisions made throughout the specific Project Milestone.



- .2 Design assumptions, such as:
 - .1 Anticipated future changes not included in the project, and;
 - .2 Selected assembly and system performance requirements.
- .3 A Unifomat Level 4 narrative description and statement on the purpose of the selected components, assemblies, systems and methods – see PPDFormat Definition, including:
 - .1 Areas served by the respective components, assemblies and systems, and;
 - .2 Illustrations of system configurations, including single line and plan drawings of each system.
- .4 Design options and analysis considered during the:
 - .1 Life cycle costing and value engineering workshops, and;
 - .2 Development of sustainable features and strategies.
- .5 Calculations and option analysis matrixes, organized by discipline, including:
 - .1 Connected or related loads and system capacities, and;
 - .2 Design criteria and the applicable codes/standards used in the calculations.
- .6 Special features or unique supply items/sources, general control strategies, sequences, and reset schedules, such as:
 - .1 Building Components and Connectivity (BCC – see Definitions for further details);
 - .2 Seasonal switch-over procedures, and;
 - .3 Emergency procedures during a fire condition, power or equipment failure, including:
 - .1 Reference to Standard Operating Procedures (SOP) requirements. For SOP – refer to Definition for further information.
- .7 Interfaces with existing systems, and;
- .8 Maintenance issues.

4.2.3 BASIS OF ESTIMATE (BOE)

- .1 A “living” document throughout the project design, construction process and project life cycle.
- .2 Provides a framework for progress monitoring and reporting.
- .3 Prepared and updated to facilitate the understanding, assessment and validation of the estimated value breakdowns, independent of any other supporting documentation.
- .4 Includes:
 - .1 Level of consensus between concurrent/third party estimates;
 - .2 Estimate methodology;
 - .3 Basis of pricing - cost data sources, and allowances;
 - .4 Description of information obtained and used in the estimate including the date received;
 - .5 Notable assumptions, exclusions and inclusions;



- .6 Listing of items/issues carrying notable risks;
- .7 Opportunities, and any deviations from standard practices;
- .8 Record of pertinent communications and agreements that have been made between the estimator and other project stakeholders;
- .9 Major changes relative to previous estimates;
- .10 Significant market events that may have an effect on the costs, and;
- .11 Estimate reconciliation.
- .5 With the last submission include:
 - .1 Variances related to:
 - .1 Change Orders;
 - .2 Work Package estimate, and;
 - .3 Estimate Construction Cost.
 - .2 And, any additional relevant information.

4.2.4 BUDGET

- .1 Developed using Cost Estimates and the Project Schedule.
- .2 Provides a view of how much the project is estimated to cost both in total and periodic terms.
- .3 Determines the cost performance baseline for use in cost management variance analysis such as, determining earned performance value.
- .4 Is aligned with funding limits to ensure funding availability/appropriation.
- .5 Also refer to - Estimated Construction Cost definition.

4.2.5 COLLABORATIVE PROJECT DELIVERY (CPD)

- .1 The CPD approach promotes and facilitates knowledge collaboration between design and construction professionals and subject matter experts to create optimal design and construction solutions and methodologies in order to achieve an appropriate, timely and fiscally responsible Quality project delivery.
 - .1 Recognizes that project success is tied to all Project Team members' success in the integrated process.
 - .1 The CPD process starts at the Pre-Design with Departmental Representative as Lead Partnering Session and the Design Consultant, as Lead, project start-up meeting early in Schematic Design.
 - .1 CPD as an interactive process which continues throughout the project life cycle.
- .2 Joint Project Team goals include:
 - .1 Ownership and focus on Quality including, Owner Project Requirements (OPR), Basis of Design (BOD) as well as budget and schedule performance;
 - .2 Focus on optimizing the design and construction as a whole to fulfill the PWGSC Quality expectations;
 - .3 Mutual support for the project procedures and management;



- .4 Leveraging Value Engineering, Life Cycle Costing and commissioning skills, and;
- .5 Creation of an innovative learning environment.

4.2.6 CONSTRUCTION COST ESTIMATE

- .1 Refer to the *Doing Business with PWGSC Manual*, Section 3 - Cost Estimates for further Construction Cost Estimate details.
- .2 Construction Cost Estimate as compared to the Budget – see Definition.
- .3 Estimates cost of the work associated with the overall project at each Project Milestone, and tender packages, Division 01 General Requirements and other supporting activities within the project lifecycle.
- .4 Cost breakdown estimating is formatted as per CIQS general best practices including the following formats associated with PPDFFormat™ and MasterFormat (MF) National Master Specifications:
 - .1 During Schematic Design (SD) – as mutually agreed upon CS C/CSI ASTM Uniformal Level(s) of Detail;
 - .1 For further detail refer to Preliminary Project Description (PPD/PPDFFormat™) Definition.
 - .2 During Design Development (DD) – as per ASTM Uniformal Level of Detail 5;
 - .1 For further detail refer to Preliminary Project Description (PPD/PPDFFormat™) Definition, and;
 - .3 During Construction Documentation (CD) – as per CSC/CSI MasterFormat - Divisional and Sectional details;
 - .1 National Master Specifications (NMS) is the basis for construction specifications.
- .5 In all cases, include Basis of Estimate (BOE) – see Definition.

4.2.7 CONSTANT DOLLAR ESTIMATE

- .1 This is an estimate expressed in terms of the dollars of a particular base fiscal year.
- .2 It includes no provisions for inflation.
- .3 Cash Flow over a number of fiscal years may also be expressed in constant dollars of the base year including no allowance for inflation in the calculation of costs.
 - .1 For Current Dollar Estimates – see Definitions;

4.2.8 CONSULTANT TEAM

- .1 An architectural or engineering firm and their sub-consultants (the Design Consultant), professionals and advisors with whom PWGSC has contracted to provide other services on this project.

4.2.9 CURRENT DOLLAR ESTIMATE

- .1 Budget Year Dollars is also to be referred to as Nominal dollars.
- .2 An estimate based on costs arising in each Fiscal Year (FY - ending March 31) of the project schedule.
- .3 Escalated to account for inflation and other economic factors affecting the period covered by the estimate.



- .4 Costs and benefits across all periods should initially be tabulated in Budget Year Dollars for the following reasons:
 - .1 It is the form in which financial data is usually available;
 - .2 Tax adjustments are accurately and easily made in budget year dollars; and
 - .3 It enables during analysis, the construction a realistic picture which takes into account changes in relative prices.
- .5 Constant Dollar Estimate – see Definitions.

4.2.10 DEPARTMENTAL REPRESENTATIVE (DR)

- .1 The person designated in the Contract, or by written notice to the Contractor/Consultant, to act as the Departmental Representative for the purposes of being a Contract entity.

4.2.11 ESTIMATED CONSTRUCTION COST

- .1 The Budget identified in the TOR or subsequently in writing by the Departmental Representative:
 - .1 Also stated as “Construction Cost Estimate” or “Construction Cost Limit”.

4.2.12 FUNCTIONAL PROGRAM

- .1 May be included in the RFP or may be a deliverable stating the end state functional and operational goals.
 - .1 The term “functional programming” is only one component of a “Programming” service which may also include technical programming, master schedules and program requirement cost estimates.
- .2 Defines the design problem by determining the details for achieving the goals. Goals may include, but are not limited to, design considerations regarding:
 - .1 Architecture: Area needs, adjacencies, circulation, acoustics, health and safety, personal forecasts, user characteristics, organizational structure, budget and costs and project schedule;
 - .2 Engineering: HVAC, plumbing, electrical, security, and communications.
- .3 One of Three Program Levels of effort are use based on complexity and risk:
 - .1 Level 1 Program is used for small, relatively simple or repetitive types of projects where the standard requirements are well understood, includes;
 - .1 A summary of required useable spaces, along with net areas and general notes outlining specific space requirements;
 - .2 The approximate gross useable area required to accommodate the program;
 - .3 A description, in general terms, of the relationships between spaces and groups of spaces, in sufficient detail to commence the Schematic Design Stage;



- .2 Level 2 Program is used for larger projects with some degree of complexity, includes;
 - .1 A summary of required useable spaces, along with net areas;
 - .2 An outline of specific technical and functional requirements for each space;
 - .3 The approximate gross area required to accommodate the programme, determined by developing component diagrams;
 - .4 Relationship diagrams indicating adjacencies and flow patterns between spaces and groups of spaces, and;
- .3 Level 3 Program is used for major projects and projects with a high degree of complexity, includes;
 - .1 A qualitative (functional) and quantitative (net area and gross area) description of all required spaces;
 - .2 Detailed Programme Areas including;
 - .1 Net useable area requirements for each space;
 - .2 Component Gross area requirements for all component groups, and;
 - .3 Gross Area Summary needed to accommodate the programme;
 - .3 An outline of specific Technical Requirements, indicating general Architectural, Structural, Mechanical, Electrical and Security systems applicable to the entire building and/or to each similar space types;
 - .4 Room / Space Data Sheets, indicating specific requirements for each space type not covered in the technical requirements;
 - .5 Space Concept Plans, associated with each Space Data Sheet, indicating all fixed equipment and any special features;
 - .6 Component (Group or Department) concept planning diagrams indicating required relationships between all spaces in each component group;
 - .7 Component Relationship Diagrams, indicating relationships between all component groups;
 - .8 A Demonstration plan (to scale) to confirm that:
 - .1 Net to gross area ratios are reasonable; and
 - .2 Component group relationships can reasonably be achieved either within the established gross building area for new buildings or within the limitations of the building floor plate(s) for existing buildings.
 - .9 Mechanical Schematic Zoning and Directional Air Flow Diagrams for laboratory projects.
- .4 Program Level selection and the associated level of detail is also determined by the Cx complexity and risk, providing further supporting information to the OPR development.

4.2.13 INTERIM ACCEPTANCE

- .1 Refer to CSA Z320 Article 4.6, Interim Acceptance.



- .2 Interim Acceptance will be synonymous with Substantial Completion as per GC's of the Construction and Consultant Contract.

4.2.14 ISSUES/RESOLUTION (I/R) LOG

- .1 The I/R Log contains description of project issues and/or variances ranging from specifics such as with the Owner Project Requirements (OPRs) to general design and construction and related processes and deliverables.
 - .1 On an ongoing basis the log maintains the status of current/ongoing and resolved issues;
 - .2 Issues are identified and tracked as encountered during all design phases, construction and operations of the facility.
- .2 I/R Log is also included as an item in:
 - .1 The meeting Design and Construction agenda; and
 - .2 The monthly construction phase report on the Cx Plan.
- .3 For more information on what needs to be documented also refer to ASHRAE Guideline, The Commissioning Process.

4.2.15 LIFE CYCLE COSTING (LCC)

- .1 LCC methodology, used during investment analysis and planning, design, construction and procurement, employs a comprehensive economic comparison of competing options.
- .2 Comparison of competing options is to be made between ideas similar in nature that are designed to satisfy the same basic function or set of functions.
- .3 LCC interpretation, as related to competing options assessment.
 - .1 The sum of the present values that are associated with investment costs, capital costs, installation costs, energy costs, operating costs, maintenance costs, and disposal costs, over the lifetime of the project.
- .4 Refer to industry standard practices for measuring life cycle costs of the building and building systems such as, ASTM Standards.
- .5 Also refer to Value Engineering (Assessment) definition.

4.2.16 MASTER SCHEDULE (MASTER PROJECT SCHEDULE)

- .1 Refer to the Doing Business with PWGSC Manual.

4.2.17 OPERATION AND MAINTENANCE MANUAL(S) (O&M)

- .1 Developed throughout the project lifecycle.
- .2 Produced by the Construction Manager/Contractor and is part of the CPD integrated process and is supported by the Design Consultant and Departmental Representative.
- .3 Requires Cx Process Manager sign-off at contract Substantial Performance.
- .4 Prepared using product information report forms/data provided by Subcontractors, Own Forces and information from other sources as required.



- .5 Refer to NMS Division 01 General Requirements document for further detail.

4.2.18 OWNER PROJECT REQUIREMENTS (OPR)

- .1 Refer to CSA Z320 Article 3, Definitions.
- .2 Developed by "the Owner" - PWGSC/User Department prior to Design or by Design Consultant during the Pre-Design Project Milestone.
- .3 Text and graphics are organized to facilitate future use as a building reference document.
 - .1 BOD and OPR are components of the Cx Manual.
- .4 A dynamic document throughout the project lifecycle that defines the Owner's values and end goals; their ideas, concepts and end state quantifiable and measurable performance benchmarks/criteria by usage, by systems and/or by occupancy classification associated with topics such as:
 - .1 Project Program – pertinent Functional (Space) Program extracts, such as;
 - .1 Basic facility data (such as, area, number of stories Occupancy and construction type(s)), user/area usage schedules, restrictions and limitations, expandability, flexibility and durability (life span).
 - .2 Environmental and Sustainability Goals including;
 - .1 LEED® certification, CO₂ monitoring, and resource reuse.
 - .3 Energy Efficiency Goals including;
 - .1 Measures affecting lighting and HVAC energy efficiency such as orientation shading, ventilation and renewable power.
 - .4 Indoor Environmental Quality Requirements regarding;
 - .1 Lighting, temperature and humidity, acoustics, air quality, ventilation and filtration, controls adjustability, after hour's accommodations, natural daylighting, ventilation and views.
 - .5 Equipment and system Expectations, such as;
 - .1 Levels of quality, reliability, flexibility, maintenance, complexity and target efficiencies, building system technologies regarding manufactures, acoustics, vibration, degree of integration, automation and functionality for controls load shedding and demand and response energy management.
 - .6 Building Occupant and O&M Personal Expectations;
 - .1 Building operation description and by whom and at what capability, level of training and orientation for occupants and O&M staff.
 - .7 CM Cx Process Manager Information;
 - .1 Name of Agency/Firm and contact person(s) and address name, address and personal contact.
- .5 Starting with the Pre-Design project milestone the OPR is the foundation of the Commissioning Process - an integral part of Commissioning and future Re-Commissioning.



- .1 Working through the various other project milestones is supported by the BOD documenting that the various decisions, concepts, designs, calculations, and product selections to meet the OPR.

4.2.19 PARTNERING SESSION WORKSHOP(S)

- .1 Workshop(s), by the Departmental Representative, as Lead, which includes the Project Team and other stakeholders.
- .2 Within the Workshop various members will be required to lead specific Workshop deliverables as agreed upon by consensus.
- .3 Other topics include the:
 - .1 Role and responsibilities matrix;
 - .2 Rules of engagement;
 - .3 Communication plan;
 - .4 Project status, goals, objectives, elements, scope, funding, and preliminary schedule;
 - .5 Deliverables plan;
 - .6 Measures of percentage complete and delivered;
 - .7 Issues tracking and documentation systems;
 - .8 Project risks and the initial risk management plan;
 - .9 Review of existing available documentation and project site conditions;
 - .10 Schedule of bi-weekly (or as otherwise determined by the Departmental Representative) project and milestone meetings; and
 - .11 Communication and document control plan.

4.2.20 PRELIMINARY PROJECT DESCRIPTION (PPD/PPDFORMAT™)

- .1 PPDFormat™ is a guideline document published by the Construction Specification Institute (CSI).
 - .1 A tool to evaluate the practicality of designs.
 - .2 The guide assists with an appropriate level of documenting qualitative descriptions of “functional elements” – Elements and their respective components, systems and assemblies comprising the project during the Schematic Design (SD) project milestone. The definition also includes the Design Development (DD) project milestone.
 - .1 Associated deliverables are integral documents of the SD and DD Reports.
- .3 Preliminary Project Descriptions are organized using Unifomat hierarchical structure and corresponding Level of Detail (LoD) - levels 1–5.
 - .1 Elemental and Elemental Components LoD breakdowns parallel preliminary project cost estimating formats, providing corresponding quantitative cost estimates per elemental component and related qualitative descriptions.
 - .2 The Consultant and Departmental Representative are to agree on the LoD based on the required accuracy of the Construction



Cost Estimate to secure funding, manage cash flow or address risk.

- .4 LoD may also be dependent on factors such as:
 - .1 How PPD may be used to throughout the design and documentation process to provide for opportunities, such as;
 - .1 Tracking decision progressions during design options development and final selection of preferred/optimum solution;
 - .2 Function elements complexities, and;
 - .3 Design decisions progression, such as, designing from the exterior into the interior.

4.2.21 PROJECT MANAGEMENT PLAN (PMP)

- .1 Live project interface document throughout the project life cycle.
 - .1 The Design Consultant designates a Project Manager from the Consultant Team to interface with the Departmental Representative, stakeholder and Design Team.
 - .2 Project Management progress is assessed against the PMP.
- .2 The PMP is structured to reflect project phases and respective Project Team's interdisciplinary service category required Deliverables – actual or virtual.
- .3 Establishes project Quality Control, set up with:
 - .1 Task management, processes, and procedures;
 - .2 Monitoring systems and reporting for early identification and registration of deviations and/or trends related to Quality Matrixes.
- .4 Creates an opportunity to monitor other Project Team members' management processes and procedures including:
 - .1 Departmental Representative's PMP.
- .5 PMP may include:
 - .1 High level, total project depiction/documentation including;
 - .1 Project quality and current performance status in comparison to the start of project including major changes;
 - .2 Risk management: risks mitigated and risks remaining towards project completion;
 - .3 Issues/resolution log management: issues resolved and issues remaining towards forecasted project completion.
 - .2 Resource management: people, tools and others;
 - .3 Communication protocol: coordination, leadership, communication lines/channels, communication type, and reporting approach;
 - .4 Claims management: towards equitable resolutions and minimal disruptions;
 - .5 Scope and change management: achieving project delivery and facility feature requirements;
 - .6 Time management: master and detailed design/construction activities milestone deliverable schedules – updated to include slippage, recovery and claims avoidance;



- .7 Budget and cost management: monitoring, tracking and projecting;
- .8 Risk management: methods of identifying and evaluating risk including risk indexes (probability/consequence), mitigation actions, progress tracking and contingency planning;
- .9 Quality management: quality design and delivery;
- .10 Procurement management: means of delivery;
- .11 Issues/resolution management: log development and maintenance;
- .12 Construction Delivery Close Out (as per Division 01) Project Management Control System; and
- .13 Meetings: preconstruction, progress and special meetings.

4.2.22 PROJECT TEAM

- .1 Typically includes entities, such as:
 - .1 Departmental Representative,
 - .2 Consultant;
 - .3 Independent third parties also in contract with PWGSC, and;
 - .4 User Department and Operational personnel.

4.2.23 QUALITY

- .1 The degree to which the Work meets or exceeds the Project requirements and expectations.

4.2.24 QUALITY ASSURANCE (QA) REVIEWS

- .1 PWGSC QA Reviews are an advisory service to the Project Team and stakeholders where respective submission/deliverable accountabilities remain in effect as per contractual conditions or other forms of commitment.
 - .1 Design Consultant remains professionally accountable for the design validation and verification required of the Project Milestone submissions during the project life cycle.
- .2 QA Reviews, supported by commentary, conclude with a risk assessment associated with Quality of design and documentation deliverables, and include:
 - .1 Parameters to confirm at the onset of a review whether deliverables are appropriately scoped and detailed with respect to current Project Milestones or phase/progressive submissions.
- .3 QA Reviews focus on Quality Indicators (QI) parameters associated with Design Quality Indicators (DQI) and Quality Deliverable Indicators (QDI).
- .4 Design Quality Indicators (DQI):
 - .1 3 Aspects of DQI:
 - .1 Functionality – design utility;
 - .2 Build Quality – design performance, and;
 - .3 Impact – project contextual interactivity (such as cultural, market, environmental conditions/factors):
 - .1 Project impact on context, and vice versa;
 - .2 Context impact on project.



- .2 Each DQI Aspect is considered against Good Design Protocols, such as;
 - .1 Creativity and Technical Competence;
 - .2 Functional Suitability;
 - .3 Whole-of-Life Performance;
 - .4 Health, Safety and Security;
 - .5 Inspiring and Attractive;
 - .6 Appropriate Innovation, and;
 - .7 Sustainable and Enduring.
- .3 As each DQI Aspect is considered against Good Design Protocols, each Aspect is also assessed against the same Characteristics such as:
 - .1 Conceptual Integrity;
 - .2 Functionality;
 - .3 Operability;
 - .4 Constructability;
 - .5 Biddability, and;
 - .6 Claims Prevention.
- .5 Quality Deliverable Indicators (QDI):
 - .1 Focus on documentation delivery.
 - .1 Submitted documentation is assessed against 6 characteristics:
 - .1 Clarity;
 - .2 Completeness;
 - .3 Compliance;
 - .4 Consistency;
 - .5 Correctness, and;
 - .6 Decision Traceability.

4.2.25 RISK MANAGEMENT (RM) PROGRAM/PLAN

- .1 Departmental Representative (DR) initiates and maintains a PWGSC RM Program to be in compliance with PWGSC National Project Management System (NPMS) requirement.
- .2 The objective of the Plan is to develop a methodology to improve risk management by:
 - .1 Establishing risk policies to ensure acceptable levels of non-compliance as per DR RM Plan;
 - .2 Focusing on external and internal risk parameters, and;
 - .3 Articulating an approach/framework to identifying risk and its impact in advance and managing the risk with the goal of reducing, transferring or avoiding risk where appropriate.
- .3 Program and Plans are collaboratively monitored and amendments are proposed to the DR by the Project Team as required for an effective project delivery.



4.2.26 STANDARD OPERATING PROCEDURES (SOP)

- .1 Systems Operations Manual component.
- .2 Procedures are to meet the Canada Labour Code requirement of “every employer” (User Department) by way of “a qualified person to set out, in writing, instructions for operations, inspections, testing, clearing and maintenance” of various components, systems and integrated systems.
 - .1 Updated throughout the building lifecycle for continued safety and consistent work practices.
 - .2 Capable of being the basis for the development of Departmental policies.
- .3 Includes site specific:
 - .1 Equipment, chemicals and other concerns such as life safety compliance, emergency provisions/procedures, security, access, sustainability and the environment.
 - .2 Series of flow charts designed to model the actions, activities and network of interconnected activities associated with systems and related operations and maintenance.

4.2.27 SUB-PROJECT

- .1 User Department/Departmental Representative project work completed by a Departmental Service Provider requiring a coordinated delivery in a main capital works project, for example:
 - .1 IT works, Furniture delivery and installation;
- .2 If work takes place in the same space and time as capital works then capital work’s health and safety plan governs Sub-Project work.

4.2.28 SYSTEMS

- .1 Refer to CSA Z320 Article 5, Specific systems.

4.2.29 VALUE ENGINEERING (VE)

- .1 Value Engineering (Assessment) methodology, as related to competing options assessment, emphasizes the return-on-investment aspect of decision making in terms of LCC to maintain or improve the desired levels of capability and performance during planning, design, construction and procurement.
 - .1 When the options satisfy the required function, then the best value option is to be identified by comparing the first costs and life-cycle costs of each alternative.
- .2 Refer to industry standard practices for value methodologies associated with buildings and building systems such as, SAVE and ASTM Standards.
- .3 Also refer to Life-Cycle Costs definition.

4.2.30 WORK

- .1 Refer to Contract Documents: General Conditions (GCs).

4.2.31 WORK BREAKDOWN STRUCTURE (WBS)

- .1 Integral to schedules and project execution plans.