

Form Title:	Commissioning Oversight Requirements and Scope of Work for 3 rd Party Commissioning Agent		
Document #:	COMM 302 02 RP1	Revision #:	5

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Portfolio	Portfolio Name	Date
34	Atlantic	July 14, 2017
Building ID	Building Name	
GOC00042	DANIEL J MACDONALD BUILDING	
Project #	Project Name	
R.056687.005	DANIEL J MACDONALD GOCB – MODERNIZATION PROJECT	

Project Description

Major upgrades to Veterans Affairs Canada (VAC) building located in Charlottetown, Prince Edward Island which will remain partially occupied and operational during construction. Midlife refit type renovation.

Regulatory Requirements

Applicable Codes and Standards, Policies, Guidelines, Design and Construction Documents Requirements

The list provided below is not limitative. The following list shall not alleviate the Contractor’s liability to perform the work(s) in accordance with all applicable laws, codes and statutory regulations, nor does it alleviate the Contractor’s responsibility to provide formal and proper notification to Brookfield Global Integrated Solutions when any direction is received that is contrary to any law, code, regulation, statute or any other mandatory or legal requirement.

- Canada Labour Code Part II – Occupational Health and Safety.
- Canada Occupational Health and Safety Regulations.
- Brookfield Global Integrated Solutions Health & Safety Policies and Procedures
- Provincial Occupational Health and Safety Act
- Provincial Safety Code for the Construction Industry
- All applicable Provincial regulations respecting health and safety.
- National Building Code of Canada (NBCC).
- National Fire Code of Canada (NFCC).
- Provincial Construction Code.
- National Fire Protection Association (NFPA) standards.
- Canadian Environmental Protection Act (CEPA).
- Canadian Environmental Assessment Act (CEAA).
- Canadian Electrical Code (CEC) – CSA C22.1.
- CAN/ULC S1001-11 Integrated Systems Testing of Fire Protection and Life Safety Systems and Fire Protection Commissioning.
- PWGSC National Performance Standards for Office Buildings (NPS) – May 2016.
- ANSI/ASHRAE/IES Standard 90.1-2013 -- Energy Standard for Buildings Except Low-Rise Residential Buildings.
- ASHRAE standards, handbooks, and guidelines.

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Commissioning Requirements and Scope of Work for Commissioning Agent

The commissioning process was selected as the quality process for the project planning, design, construction and operation. The commissioning process provides a plan, procedure and documentation allowing the verification and confirmation that the built work and/or facility meets the Project Requirements.

This document provides a record of the project Commissioning Requirements and Scope of Work for Commissioning Agent. This document forms part of the project Request for Proposal (RFP) for Commissioning Agent.

The commissioning process selected for the project is summarized below. The project commissioning team will include the appointment of a Third Party Commissioning Agent. The commissioning process to be implemented for the project will include the preparation, implementation and update of a commissioning plan and manual by a Third Party Commissioning Agent. The Model/Pre-Design Phase Commissioning Plan and Specifications will be provided by the Commissioning Oversight Manager. The requirement is for the Commissioning Agent to use and update this format to become the design phase Commissioning Plan forming part of the contract documents and ultimately the Final Commissioning Plan and Manual (Final Report) at the project completion and close-out.

The commissioning program, services and documentation shall adhere to the following standards, policies and guidelines as appropriate for the scope of work.

- BGIS COMM 101-00-RP1 Commissioning Oversight Management Policy.
- PWGSC Commissioning Manual CP-1 - 4th Edition – November 2006.
- PWGSC Commissioning Guidelines CP.3 to CP.13.
- CSA Z320 Building Commissioning Standards and Check Sheets,

- ASHRAE Guideline 0 – The Commissioning Process.
- ASHRAE Guideline 1 – The HVAC Commissioning Process.
- BCxA – Handbook, Samples and Templates.
- PECI – Model Commissioning Plans and Specifications,
- PECI - Templates and Sample Documents.
- PECI - Sample Functional Tests and Checklists.-

The commissioning program, services and documentation for life-safety and fire protection systems shall also adhere to the following standards.

- CAN/ULC S1001-11 Integrated Systems Testing of Fire Protection and Life Safety Systems and Fire Protection Commissioning.

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Composition, Roles and Responsibilities of the Commissioning Team and Commissioning Participants

The Commissioning Oversight Manager has selected the following composition for the project Commissioning Team. The general roles and responsibilities of the Commissioning Team members are summarized below.

The commissioning team shall consist of;

<input checked="" type="checkbox"/>	<p>Commissioning Authority - BGIS Commissioning Oversight Manager and PSPC Cx Manager;</p> <p>The Commissioning Oversight Manager is responsible for providing oversight and quality assurance of the project commissioning activities and documentation. The Commissioning Oversight Manager maintains the overall responsibility for the project commissioning and ensures the performance and completion of commissioning in the delivery of a fully functional and operational project.</p> <p>The Commissioning Oversight Manager provides planning and technical support and advice on the project and O&M matters and coordinates the commissioning services and activities from the project initiation/planning phase to acceptance and close-out. During the design stage, the Commissioning Oversight Manager reviews all aspect of the design from their early development to final contractual documents. During the project implementation, acceptance and close-out, the Commissioning Oversight Manager provides quality assurance, monitors and reviews commissioning services, deliverables and documentation including training.</p>
<input checked="" type="checkbox"/>	<p>PSPC Project Manager;</p> <p>The Project Manager maintains the overall responsibility for managing the project, and for ensuring that the implemented project meets the requirements defined in the Project Requirements document and subsequently, the Investment Analysis Report (IAR) recommendation. From a commissioning perspective, the project manager is responsible for ensuring that where applicable, the commissioning forms part of, and is contractually included in and carried out in the project they manage.</p>
<input checked="" type="checkbox"/>	<p>BGIS Property Manager;</p> <p>The Property Manager represents the client/owner (PSPC), and building operator. The Property Manager is responsible for the daily management and operation of the facility and its tenants. The Property Manager takes the management and operation responsibilities for the completed project after it has been accepted by the project team.</p>
<input checked="" type="checkbox"/>	<p>Consultant / Design Professional;</p> <p>The Consultant maintains the overall responsibility for the project conceptual design, the contract documents, its construction/implementation, its performance, and conformance to applicable regulatory, codes and standards requirements.</p> <p>During the planning phase, the project consultant reviews the project Requirements Document and references specifying the project objectives, and its functional and operational requirements. The project consultant complete its investigation and prepares the project Investment Analysis Report (IAR), documenting the project Design Intent and recommendation. During the design phase, the consultant prepares the contract documents and integrates the commissioning process requirements and specifications, prepares and submits the project Basis of Design document, coordinates required interfaces between the trades divisions, systems and assemblies, reviews and incorporate as appropriate the Commissioning Team comments from submittal reviews. During the project implementation, acceptance and close-out phase, the consultant participates in the training of O&M personnel, reviews and comment commissioning test procedures and reports, reviews and prepares record documents and deliverables, recommends acceptance of the project to the project manager.</p>

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<input checked="" type="checkbox"/>	<p>Third Party Commissioning Agent;</p> <p>The Commissioning Agent is responsible for the development, implementation and update of the project Commissioning Plan and specifications, as well as the commissioning reports and documentation. The Commissioning Agent also organizes and monitors the commissioning activities, supervises and witnesses the completion of all commissioning inspection, verification and testing. The Commissioning Agent collects the commissioning data, prepares and submit reports to the Commissioning Authority. The Commissioning Agent regularly submits update of the Commissioning Issues Log to the Commissioning Authority. The Commissioning Agent assembles the final commissioning documentation and submits the completed final Commissioning Plan and Manual to the Commissioning Authority for review and acceptance and recommends acceptance of the project equipment, systems and assemblies.</p>
<input checked="" type="checkbox"/>	<p>Contractors and subtrades;</p> <p>The Contractor is responsible for the construction and installation in accordance with contractual documents. From a commissioning perspective, the contractor is responsible to coordinate and carry-out the commissioning inspection, start-up and functional performance testing in accordance with the contract documents and commissioning specifications and provides to the Commissioning Agent the commissioning data/results and documentation. The contractor is also responsible for the development of the Commissioning Schedule and the coordination of the commissioning activities and subtrades.</p>
<input checked="" type="checkbox"/>	<p>Manufacturers and Equipment Suppliers;</p> <p>The Manufacturers and/or Equipment Suppliers are responsible for providing all information pertaining to the specifications, performance, Installation Operation and Maintenance (IOM), Installation and Start-Up checklists/reports templates, and warranty requirements of the supplied products, equipment, systems, and assemblies. When specified, the Manufacturer or its approved representative is responsible to carry-out the product specific commissioning inspection, start-up and functional performance testing as detailed in the contract documents. The Manufacturer or its approved representative may also be required to provide specific training and/or demonstrations of operation and performance.</p>
<input checked="" type="checkbox"/>	<p>Independent testing specialists(s) / contractor; Air balancing, etc....</p>

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Extent of Commissioning

The BGIS Commissioning Oversight Manager was not shared the scope of this project so is not capable at this time to identified the building systems and equipment for which the commissioning process shall apply. The PSPC Cx Manager can further elaborate in the RFP. The table below was kept as an example only.

Unless indicated otherwise, the sampling rate shall be 100% of the applicable systems and equipment.

[Select and copy applicable divisions (NMS divisions), systems and equipment type from the NMS Commissioning Plan Section 01 91 31, 198 Extent of Commissioning. Add specific systems and equipment as applicable to the project. Add and clearly identify, where applicable, the requirements for Integrated Systems Testing indicating the systems and equipment that the IST shall include. The Model Commissioning Plan and Specifications (section 01 91 31, 1.8 and 1.16) shall be edited to match the extent of commissioning and IST presented in the table below.]

<input checked="" type="checkbox"/>	<i>Example; Fire and Life Safety Systems – Fire Protection (division 21); -Wet sprinkler system. -Standpipe and hose system. -Fire pump.</i>
<input checked="" type="checkbox"/>	<i>Electrical systems and equipment (division 26); -Low voltage distribution system and equipment. -Emergency power generator. -Transfer switch and controllers.</i>
<input checked="" type="checkbox"/>	<i>Electronic safety and security systems (division 28); -Fire Alarm system and ancillaries.</i>
<input checked="" type="checkbox"/>	<i>Integrated Systems Testing, including; -Fire Protection system. -Electrical system and equipment. -Fire Alarm system and ancillaries.</i>
<input checked="" type="checkbox"/>	<i>[Other as applicable]</i>

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1.0 Commissioning Agent's Responsibilities

- 1.1 The Commissioning Agent is being engaged to provide commissioning services on the project with the objective to review and ensure that the built work, systems and equipment are planned, designed, installed, tested, optimized and capable of being operated and maintained in conformance with the Project Requirements, the consultant's/design professional Basis of Design, and any other requirements set forth in the contract documents. The Commissioning Agent maintains the overall responsibility for the development, implementation and update of the project Commissioning Plan and specifications, as well as the commissioning reports and documentation. The Commissioning Agent also organizes and monitors the commissioning activities, supervises and witnesses the completion of all commissioning inspection, verification and testing. The Commissioning Agent collects the commissioning data, prepares and submit reports to the Commissioning Authority. The Commissioning Agent regularly submits update of the Commissioning Issues Log to the Commissioning Authority. The Commissioning Agent assembles the final commissioning documentation and submits the completed final Commissioning Plan and Manual to the Commissioning Authority for review and acceptance and recommends acceptance of the project built work, systems, equipment and assemblies.

The Commissioning Firm shall designate a Commissioning Agent representative with demonstrated experience in the commissioning of building systems. The Commissioning Firm represents that is thoroughly familiar with, and fully understands the project and commissioning requirements and that has all necessary [architectural and/or engineering \(as applicable\)](#) education, skill, knowledge and experience required for the services provided here under.

The appointment of a Commissioning Authority and Commissioning Agent does not permit the Consultant/Design Professional to abrogate its contractual professional responsibilities, including performing the required site supervision and reviews ensuring that the built work conforms to Project Requirements, Design Intent, Contract Documents and applicable regulatory requirements, codes and standards.

The commissioning scope of work and services to be performed apply to the project specific systems and equipment to be commissioned identified on the **Extent of Commissioning**.

2.0 Planning Phase Services

- 2.1 Attend the project start-up and planning phase meetings.
- 2.2 Review the Project Requirements documents, including the Requirements Document and the Commissioning Scope of Work for Consultant and Commissioning Agent, including the Model/Pre-design Commissioning Plan and Specifications.
- 2.3 Review the consultant Basis of Design (BoD) including all and any schematic design documents, and comment on their completeness and the ability to achieve the Project Requirements for the applicable built work, systems, equipment and assemblies.
- 2.4 Provide recommendations for improved functionality, efficiency, operability, maintainability and cost savings.

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3.0 Design Phase Services

- 3.1 Attend the project design phase meetings.
- 3.2 Prepare and update the Design Phase Commissioning Plan and Specifications along with the Consultants 66% and 99% design progress submissions. The commissioning specifications shall include detailed descriptions of the responsibilities of all parties including contractor, sub-trades, manufacturers and specialist testing contractors for each and all commissioning activities; details of the commissioning process; reporting and documentation requirements including formats; alerts to coordination issues; commissioning issues log and deficiency resolution; pre-functional checklists and startup requirements; the functional testing process; specific functional test requirements and procedures; testing equipment and instrumentation requirements, acceptance criteria for each of the applicable project systems, equipment and assemblies.
- 3.3 At each of the design phase progress submissions (33%, 66%, 99%, and Tender), review and comment the plans and specifications with respect to their completeness in all aspects of the Commissioning Process. This also includes the review of the plans and specification for compliance with the Project Requirements, Consultant/Design Professional Basis of Design, as well as industry standards for the facility type, coordination and constructability.
- 3.4 Develop project, systems, equipment, assemblies specific commissioning forms including, as applicable, *Pre-Functional Checklists, *Start-Up Checklists, *Functional Performance Testing Procedures and Report Templates, and *Integrated System Testing Procedures and Report Templates. These requirements apply to each and all of the project specific systems and equipment to be commissioned identified on the **Extent of Commissioning**. Include the forms as part of the Commissioning Forms specification section (01 91 33) submissions.
- 3.5 Develop the Commissioning Issues Log form to be used throughout the project construction, acceptance and close-out.
- 3.6 Verify and confirm that the design and contract documents include all devices, components, instrumentation required for the performance of the commissioning and to properly document the performance of each applicable equipment, systems and/or assemblies.
- 3.7 Verify and confirm the adequacy and completeness of the HVAC Testing, Adjusting and Balancing (TAB) specifications, as well as other relevant equipment and systems Execution and Field Quality Control specifications.
- 3.8 Coordinate the integration of the commissioning process requirements, the commissioning plan and specifications, and the commissioning forms to the project Specifications with the consultant/Design Professional.
- 3.9 Along with the Commissioning Oversight Manager, the Facility Maintenance Supervisor, the Consultant/Design Professional, and where applicable, the facility controls contractor, coordinate a controls requirements and integration meeting. Develop and coordinate the Building Automation System (BAS) trend parameters and requirements necessary for the performance of the commissioning. Discuss integration and interface issues between systems and equipment controls.
- 3.10 Prepare and submit the completed Design Phase Commissioning Plan, Specifications and forms to the Commissioning Oversight Manager for review and approval. Review all Commissioning Oversight Manager's comments and revise documentation accordingly. Obtain approval prior to releasing the documentation to the Consultant/Design Professional for integration in the Tender contract documents.
- 3.11 Assemble the Commissioning Team and hold a meeting for the presentation and review of the complete commissioning process, including the completed Design Phase Commissioning Plans, Specifications and Commissioning testing procedures and forms.

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Commissioning Requirements and Scope of Work for Commissioning Agent (cont...)

4.0 Construction, Acceptance and Close-Out Phase Services

- 4.1 Attend the project job showing / pre-bid meeting. Present the project commissioning process and requirements. Answer to commissioning related questions to the Commissioning Authority.
- 4.2 Attend the project construction, acceptance and close-out phase meetings, including commissioning team meetings.
- 4.3 Review the applicable contractor submittals and shop drawings from commissioning, integration, performance, operation and maintenance perspectives. Review the equipment manufacturer specific Installation, Operation and Maintenance manuals (IOMs), Start-Up instructions and checklists, and other relevant manufacturer documentation. Identify issues. Submit Shop Drawings Review forms and comments to the Commissioning Oversight Manager.
- 4.4 Revise, adapt and update, as applicable, the Commissioning Plan test procedures and Commissioning Forms (Pre-Functional, Start-Up, Functional Performance Testing and Integrated Systems Testing) to suit the approved equipment specificities.
- 4.5 Revise, adapt and update, as applicable, the Commissioning Plan test procedures and Commissioning Forms (Pre-Functional, Start-Up, Functional Performance Testing and Integrated Systems Testing) to reflect changes made to system and equipment during construction and acceptance phase, such as those directed by Request For Information (RFIs), Site Instructions, and Change Notice by the Consultant/Design Professional.
- 4.6 Coordinate the integration of commissioning activities into the project construction schedule with the contractor.
- 4.7 Schedule regular commissioning coordination meetings with contractor, sub-trades and other Cx Participants (Controls contractor, TAB contractor, Manufacturer Representatives, Specialist Testing Contractors, other as applicable). Lead meetings, prepare and distribute minutes.
- 4.8 Perform site visits and inspection to review component, equipment and system installations in preparation for the completion of the Pre-Functional/Installation Verifications and Checklists.
- 4.9 Monitor and witness the performance of the Pre-Functional/Installation Inspections and Testing completed by the contractor. Review contractors Pre-Functional/Installation Reports for accuracy and completeness. Identify deficiencies, issues and required corrective actions. Prepare final reports and checklists using approved forms and confirm readiness of equipment and systems for start-up. Submit reports to the Commissioning Oversight Manager for review and approval.
- 4.10 Monitor and witness the performance of the Start-Up Verifications completed by the contractor, manufacturer representative or specialist testing contractor as applicable. Review contractors Start-Up Reports for accuracy and completeness. Identify deficiencies, issues and required corrective actions. Prepare final Start-up Reports with the start-up reports, data, results, adjustment and setting provided by the contractor and confirm adequacy of equipment or system operation and/or readiness of equipment and systems for Functional Performance Testing (FPT).
- 4.11 Monitor and witness system and assembly Functional Performance Testing and Integrated Systems Testing (IST) performed by the contractor. Supervise and coordinate the commissioning team members and participants in completion of the testing. Gather and verify all test results, data, and other relevant information. Prepare Commissioning FPT and IST reports using approved forms. Document deficiencies and actions items stemming from the FPT and IST. Recommend acceptance or rejection of individual systems and/or equipment commissioning. Submit completed Functional Performance Testing and Integrated Systems Testing Reports to the Commissioning Oversight Manager for review and approval.
- 4.12 Regularly review the contractor's record drawings (mark-ups) for accuracy with respect to the installations. Report issues to the Commissioning Oversight Manager.
- 4.13 Review contractor's Operation and Maintenance (O&M) Manual, As-Built Drawings, finalized product and equipment schedules, and other "Close-out" documents related to commissioned systems and equipment. Review for completeness, accuracy and updates including modifications made during the project.
- 4.14 Review the proposed training program from the contractor. Attend contractor provided training, review completeness and adequacy with the trainees supervisor. Recommend training acceptance or issues to the Commissioning Oversight Manager.

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4.15 Prepare the Final Commissioning Process Report. The Report shall be organized as follow and include;

- I. An Executive Summary report that includes a list of the Commissioning Process team members and participants, roles and responsibilities, brief building and project description, brief of the Project Requirements and Basis of Design, overview of commissioning and testing scope and methods. For each commissioned system and equipment, the report should contain the disposition of the commissioning agent regarding the adequacy of the systems and equipment meeting the Project Requirements, Basis of Design and contract documents in the following areas;
 - a) Installed equipment specifications,
 - b) Equipment and systems installation,
 - c) Systems and equipment operation, functional performance, efficiency, optimization,
 - d) Adequacy for operation and maintenance, serviceability,
 - e) Documentation.
 - f) Operator training
- II. Final update and status of the Commissioning Issues Log(s). All outstanding deficiencies, issues and non-compliance items shall be specifically listed. Each item shall be referenced to the specific test, inspection, trend log report from which it is identified and documented. Include recommendations for corrective actions, improvements, optimization, systems and equipment operation parameters, performance and efficiency, future actions, commissioning process changes, recommissioning, etc.

4.16 Assemble all final commissioning documentation, and prepare the Final Commissioning Manual. Submit the Manual to the Commissioning Oversight Manager for Review and Approval. The Final Commissioning Manual related documents shall be compiled in a searchable electronic format (PDF) and shall include;

- I. Final Commissioning Process Report,
- II. Project Requirements document,
- III. Basis of Design,
- IV. Schematic Design documents,
- V. Construction Drawings,
- VI. As-Built/Record Drawings,
- VII. As-Built Single-Line Diagram(s),
- VIII. As-Built product and equipment schedules,
- IX. Commissioning Specifications,
- X. Commissioning Reports (PF, SU, TAB, FPT, IST, Controls, BAS Trend Logs Reports, Data Loggers Reports, other as applicable),
- XI. Operator Training Records,
- XII. Computerized Maintenance Management System (CMMS) Equipment Forms,
- XIII. Other relevant project reports and correspondence,
- XIV. Systems and Equipment Manuals;
 - a) One set of applicable shop drawings (including transmittals, and review forms and approvals),
 - b) Installation, Operation and Maintenance manuals,
 - c) Performance Data Sheets (updated to *as commissioned* operating condition if applicable),
 - d) Other relevant manufacturer's literature, brochures, product bulletins, technical information,
 - e) Equipment specific warranties,
 - f) System Operation Manuals / Standard Operating Procedures (SOP).

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5.0 Post-Occupancy / Operations Phase Services

5.1 Review and propose corrective measures for systems and equipment not operating in accordance with the Project Requirements, and the design and operating parameters set out in the Basis of Design and Contract Documents.

***Notes on the requirements for the development and use of Commissioning Forms (PF, SU, FPT, IST);**

Pre-Functional Inspections/Verifications (PF) and Start-Up Checklists (SU);

- When available from the equipment manufacturers, the Installation, Operation and Maintenance (IOM) instructions, and the manufacturer’s installation and Start-Up check lists are acceptable and should be used. As deemed necessary by the Commissioning Oversight Manager/Specialist, supplemental verifications and additional data could be required for specific project conditions and such verifications and data shall be documented on same or separate forms.

Functional Performance Testing (FPT) and Integrated System Testing (IST);

-The functional performance testing (FPT) shall include and cover operating the system and components through each of the written sequences of operation, and other significant modes and sequences, including startup, shutdown, unoccupied mode, manual mode, staging, miscellaneous alarms, power failure, security alarm when impacted and interlocks with other systems or equipment. Sensors and actuators shall be calibrated during pre-functional check listing by the installing contractors, and spot-checked by the commissioning agent during functional testing.

-Tests on respective HVAC equipment and systems shall be executed, if possible, during both the heating and cooling season. However, some overwriting of control values to simulate conditions shall be allowed. Functional Performance Testing shall be done using conventional manual methods, control system trend logs, and where appropriate or required with data loggers. FPT shall be done to provide a high level of confidence in proper system function, as deemed appropriate by the Commissioning Authority.

-The Functional Performance Testing procedures and reports shall allow for the complete review and analysis of the systems and equipment performance, operating parameters and sequence.

BGIS Commissioning Oversight Manager	Signature
Daniel Desjardins	