

APPENDIX E – PROJECT BRIEF

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GLOSSARY

Design Team: In the Contract, the Consultant, Sub-Consultant(s), and Specialist Consultant(s) collectively are referred to as the Design Team.

GMP: Good Manufacturing Practices

CM: Construction Manager

DR: Departmental Representative

PWGSC: Public Works and Government Services Canada

PSPC: Public Services and Procurement Canada

NRC: National Research Council of Canada

PROJECT DESCRIPTION (PD)

PD1 PROJECT INFORMATION

Public Works and Government Services Canada (PWGSC), generally referred to as “Public Services and Procurement Canada (PSPC),” intends to engage a consultant and their multidisciplinary team to provide the services required for this project.

1.1 PWGSC Project Title: Clinical Trial Materials Facility (CTMF) / Infrastructure de production de matériel pour essais cliniques (IPMEC)

1.2 Project Address: 6100 Royalmount Avenue, Montreal, Quebec

1.3 PWGSC Project Number: R.115859.001

1.4 Client: Public Works and Government Services Canada (PWGSC)

1.5 Primary Users: National Research Council of Canada (NRC)

1.6 PWGSC Senior Project Manager: Marc Sabourin, P.Eng.

1.7 PWGSC Project Manager: Véronic Tétreault, P.Eng.

PD PROJECT IDENTIFICATION AND OBJECTIVE

PD 2.1 Project Description and Contract Objective

The services of an architectural and engineering firm (the Consultant) are required to design a Good Manufacturing Practices (GMP)-compliant facility to be constructed as a new annex to the existing National Research Council of Canada (NRC) building located at Royalmount Avenue (Montreal, QC). The facility will support the domestic production of vaccines and other biological therapeutic material (viral vector-, antibody-, and other protein-based products) for early-stage human drug substance clinical trials. Detailed information on process, performance and compliance requirements for the facility is provided in the accompanying user requirements brief (URB) available in Appendix 2.

Key components of the process and facility design (summarized from URB)

- Basic process unit operation encompassing cell amplification, production, clarification using depth filtration, purification chromatography, polishing chromatography, ultrafiltration, and bulk fill.

- Single-use production and purification trains at 500 L maximum scale.
- Unidirectional or bidirectional process flow (based on final project design).
- Single or double (partial) production lines (based on final project design).
- Designed to meet CL2 requirements in accordance with Canadian Biosafety Standards (2nd Edition) in designated areas (based on final project design).
- Compliance with all required regulations, most notably the ability to meet the requirement under Division 1A (DEL) and Division 2 (GMPs) of the Canadian Food and Drug Regulations.
- The process and facility design are not intended to accommodate an identified product. Primary function is contract manufacturing for external clients and must be designed to maximize client acceptance.
- The size and layout of the facility is constrained by the available site, municipal ordinances, and client expectations on maximum square footage.
- Utilities available from the existing building to support the new annex are subject to constraints.

Feasibility assessments and concept designs have been commissioned previously to model the evolving scope, strategic mandate, and operational plan for the facility. These concepts have informed the elements of the platform process and facility design that are reflected in the URB and enabled an initial evaluation of key aspects of project logistics (site conditions, codes and ordinances, utility availability, etc). Select aspects of the process and facility design remain flexible with the options under consideration identified within the URB.

PD 2.2 *Work Context*

The Consultant must factor in the following:

1. This project is a priority for PWGSC, the NRC and the Government of Canada. The timeline for this project is very tight, and deadlines must be met.
2. The design of the building must meet client requirements and *Good Manufacturing Practices* (GMP) at all levels. GMP is a risk management system to ensure that material is produced consistently and in a controlled manner according to specific quality standards. Quality assurance is achieved through design and constant validation that the design is being implemented as intended. GMP design begins with developing a work flow (process design) that allows a manufacturing process to be performed in a manner that will comply with risk management practices. This design establishes the equipment and physical layout required to conduct the process, which in turn establishes the nature of the infrastructure (facility design) required to contain the process. Cutting across the manufacturing process and facility layout, is the system required to document that the risk management practices are rigorously followed (automation design). Incorporating flexibility to accommodate different products and processes in a single facility greatly increases the complexity of the design.
3. The project will be carried out in construction management mode by a CM hired by PWGSC under a separate contract.
 - Construction management is a project delivery method characterized by collaboration between the client, the Consultant, and the construction manager, who work together as a team to increase efficiency in terms of time,

cost and constructability, especially during the pre-construction phase of a project. This also allows construction to start earlier, without having to wait for the design stage to finish.

- The CM is the entity responsible for providing the construction services specified in the construction management contract.
4. The project may attract a great deal of media attention. This fact must be taken into consideration at every step of the project. The Design Team must take into account the risks associated with project planning, development, delivery and ongoing coordination.

PD 2.3 Site Description

The following is provided for general information purposes only. The Consultant must conduct all site surveys necessary to carry out the project work.

2.3.1 Site description

The building will be adjacent to the existing NRC building at 6100 Royalmount in Montreal. The new centre will be attached to the existing building at the L4 laboratory loading dock (built in 2001) and, space permitting, will share some of the existing infrastructure and services.

An environmental soil characterization report will be provided to the selected proponent (see PD 5.2)

Planned location (in blue):



2.3.2 Site Photos



PD 2.4 Costs

The project budget has yet to be determined. As outlined in the URB (see Appendix 2), the building will measure approximately 25,000 sqft to 30,000 sqft spread over a maximum of two floors. No floor will measure more than 18,000 sqft.

PD 2.5 Project Schedule

The main project execution phases are as follows:

- Contract awarded to Consultant: May 2021
- Construction start: September 2021
- Final preliminary delivery: December 2022
- Client validation period end: December 2022

The project schedule is based on the need for operational facilities by December 2022. The validation process will begin in parallel to the completion of construction.

The Consultant must work closely with the DR, the CM and other stakeholders to maintain or reduce the deadlines set out in this schedule. The warranty period is not included in the above schedule.

PD3 PROJECT OBJECTIVES

PD 3.1 Project Implementation

The Project implementation strategy will optimize critical decision-making in order to prioritize the design and interim approvals of work packages, allowing construction to start early and in a streamlined sequence. Here is a short description of the Required Services for each Project phase. Appendix F provides additional information related to this section.

Analysis of Project Requirements and Schematic Design

The Consultant will work with the project team, including the DR and client's technical reference to finalize any outstanding elements of the production process design, consolidating the preferred options into a final functional design that balances performance, compliance, and project constraints. These activities also include, but are not limited to:

- Validation of process, QA, clean utility and other facility equipment needs
- User requirement specifications (URS) for long lead equipment
- Final block and process flow diagrams
- Process simulation and capacity analysis
- Critical utility assessment and flow
- Support for the development of the facility automation plan and related IT requirements

- The nature and amount of effort required for the above activities will vary based on how much the final process deviates from the draft process developed in earlier design actions.
- The Consultant will generate a basis of design for the facility that can accommodate the finalized process and other identified user requirements. It is expected that insight gained from previous feasibility and concept design activities will greatly inform the basis of design and expedite the process. Emphasis will be placed on validating the assumptions made in those earlier activities, incorporating changes arising from final revisions to the process design, and addressing gaps or deficiencies still outstanding from the preliminary concepts. These activities also include, but are not limited to:
 - User requirement specifications (URS) for remaining clean utilities, any custom design equipment, or other equipment as required
 - GMP architectural elements such as a facility program, GMP operational flow plans, and zoning, transition and adjacency layouts
 - GMP mechanical and electrical plans, such as area classification, pressurization and HVAC zoning
 - Associated schematics and 3D model for the final layout of the facility (inside/outside)
 - Assessment of the capacity of the existing facility to support the new annex in terms of utilities, etc
 - Validation of budget projections with +/- 15% confidence

Design development, construction documents, bidding and construction administration

From the basis of design, the Consultant will engage in detailed design activities necessary to allow a concurrent build-design approach in collaboration with a Construction Manager (CM) contracted separately by the DR. The Consultant will also need to collaborate closely with third-party experts contracted by DR or the client to oversee sundry aspects of the project, such as additional GMP, automation integration, and qualification and validation consultants. These activities also include, but are not limited to:

- GMP site design support, including qualification and validation of facility, equipment and systems not conducted by third-party contractors
- Sundry activities related to demonstrating and documenting compliance
- Support for the Construction Manager including production of user requirements specifications, construction costs, schedule management, constructability, availability and procurement of materials and equipment that requires a pre-order in order to meet project schedule, bid packages, and administration/supervision of construction services.
- Engineering design package and blue prints that encompasses but are not limited to:

- The final GMP layout of the Facility
- Piping & IND design
- Utilities drawing
- Electrical and mechanical (drawing)
- Architecture
- DP/Air flow
- Drainage
- Fire escape and Fire System

- HVAC
- Lighting
- Compressed air system distribution + Gases
- Sampling location for EM
- Clean room identification and room classification
- Personnel and material flows
- Material Entry to the building
- Water System
- Drainage Supply
- Electrical Supply
- Finished product flow

PD 3.3 Building Information Modelling

To meet project priorities, the Design Team, the CM, DR and all Science Partners are expected to work continually in an interactive manner, progressively resolving issues. Building Information Modelling (BIM) will be central to the design and construction process, as will digital and physical mock-ups of key laboratory or building features, to ensure the appropriate design and materials are selected for the facility.

The BIM computing requirements necessary for this Contract are significant.

The CM and Design Team will need to understand the information technology and multi-media equipment, and the specialized software required for BIM for this Contract, obtain said equipment and software, and plan and execute their collective and coordinated services as detailed in the Project Brief, specifically in the Project Administration (PA) and Required Services (RS) sections.

BIM is an object-based digital representation of the physical and functional configuration, characteristics and attributes of a project. BIM supports an integrated process built around coordinated, reliable digital information about a project from design through construction and into operations. The output of this process is referred to as a “model.”

BIM requires the cooperation and collaboration of all stakeholders to be fully utilized and effective. To establish essential parameters and interoperability requirements, the Project Team must recognize that BIM is not simply a design method, a software package, or a 3D Model. Rather, BIM is a comprehensive methodology that integrates established, new and emerging digital technologies to support the coordinated exchange of information from inception through to construction, commissioning and operations of the Project.

The Design Team has to use the Model to capture the entire Project scope facilitated by a common data environment for visualization, analysis and communication of the Project information for and between all stakeholders, including the Science Partners, the Design Team, the CM, the DR, and the property management team following Substantial Performance of the Project.

The Design Team will have to develop a BIM implementation plan based on the DR's BIM protocol and on two documents: The BIM Management Plan (BMP) and the BIM Implementation Plan.

PD 3.4 Surveys

Survey and information gathering work will typically take place at the same time as the development of the design and schematic design. The CM will carry out surveys under the supervision of the Design Team unit requiring the survey.

The gap analysis and report resulting from these surveys and investigations, along with the seismic, structural, physical security and functional programming requirements, will dictate the degree and scope of abatement, demolition and environmental remediation work required.

The purpose of the surveys is to gather any information required by the Design Team to develop the design, including:

- a) Confirming the existing conditions of the site and adjacent building (if applicable), including the condition of the building envelope where the new building is to be connected;
- b) Surveying existing infrastructure and services at the site;
- c) Where applicable, analyzing the existing structure and building materials to determine seismic reinforcement requirements;
- d) Testing and determining the content, type, location and approximate quantity of designated substances located on the site by validating existing designated substance surveys, if any;
- e) Confirming the geological characteristics of the site to provide data to develop seismic protection and excavation requirements, including soil and groundwater contamination;
- f) Completing formal and topographic surveys of the site and existing building (floor area, elevations, structure, etc.) surveys as required;
- g) Performing additional surveys to detect asbestos in the existing building in the area where work is planned to connect to the new building; and
- h) Performing other surveys that the Consultant or DR may recommend to prepare and advance a coordinated design.

The resulting analysis and report will provide information to the Project Team to help it develop and prepare design options and construction documents.

PD 3.5 Equipment Management Principles

The Design Team will be responsible for preparing the following: User Requirement Specifications (URS) for long lead equipment, remaining clean utilities, any custom design equipment, or other equipment as required.

The equipment procurement process will be shared between the NRC, the DR and the CM. The consulting team will be expected to participate in developing the optimal procurement strategy for equipment based on project needs and to respect the project schedule. The consulting team will be responsible for maintaining a comprehensive list of all project equipment, including status and procurement entity.

PD 3.6 Building Connectivity Components (BCCs)

Building connectivity components (BCCs) include, but are not limited to:

- Information technology and telecommunications (IT-telecom) systems
 - Information technology;
 - Wireless connectivity;
 - Telephony;
 - Telecommunications;
 - Video conferencing;
 - Multimedia;
 - Photocopiers; and
 - Fax machines.
- Integrated security systems (ISS)
 - Electronic and physical access control;
 - Electronic monitoring systems;
 - Indoor and outdoor cameras;
 - Intercommunications and computer system;
 - Electrified hardware; and
 - Fire alarm monitoring system.

BCCs are essential for meeting functional and operational requirements as well as user safety requirements. Occupancy cannot take place without a successful design and harmonious integration of these components with the project's various aspects. The purpose of the BCC program is to fully meet users' operational requirements so that the new building can be occupied as quickly as possible.

The Design Team must be able to provide specialist services in IT, multimedia and telecommunications systems at all project stages.

At each project stage, the Design Team must plan and organize regular BCC meetings with PWGSC, Shared Services Canada (SSC), clients and other stakeholders as necessary to ensure that the project progresses gradually, diligently and efficiently. The various BCC specialists must attend these meetings.

Information technology and telecommunications (IT-telecom) components

As the digital services specialist for the federal government, Shared Services Canada (SSC) will be involved in the design of data and telephony systems, the purchase and installation of some equipment, and the structured cabling design.¹ **SSC will not be involved in the design of specialized client systems and security systems.** However, SSC will be responsible for design of the network architecture and the various IT components and equipment (data and telephony) inside the main and secondary telecom rooms.

¹*Structured cabling includes the following: cabling type and protection, fibre optics, patch cord, copper and fibre patch panel, rack, cabinet, shelves, cable organizer and connectivity tests (certification).*

The IT-TELECOM expert will participate in the design and be responsible for the purchase and installation of all data and voice system as well as specialized IT and multimedia systems.

The Design Team will be responsible for designing the main and secondary telecom and technical server rooms. The Design Team will also be responsible for integrating the

physical IT, telecom and multimedia infrastructure in the design documents. Since this project involves the construction of a new building, the purchase and installation of cabling will be handled by the CM; for certain systems, however, SSC will design the system and provide its requirements to the Design Team, which will be required to include this information in the contract documents and oversee the work.

The clients have specialized IT and security systems that will not be handled by SSC; the Design Team will be fully responsible for designing the client's specialized IT and security systems.

PD 3.7 Security Principles

The principles that will guide security for Science Facilities include:

- a) Security will be managed in accordance with the requirements of the Treasury Board Policy on Government Security, including clearly allocating roles and responsibilities to the custodian and occupants;
- b) Security will be assessed, implemented and managed in a coordinated, integrated approach to ensure all requirements are met, while streamlining administration and aiming for common access and openness to the appropriate degree;
- c) Basic building security will be assessed using a threat and risk assessment (TRA) provided by the client. The design shall incorporate the requirements of this assessment.
- d) The design and implementation of the building safety parameters must be in accordance with Good Manufacturing Practices (GMP).

PD 3.8 Construction Packages and Tender Strategy

At a minimum, the project may require up to 50 construction packages. The CM is responsible for determining the actual number of packages, in consultation with the Consultant and the DR. While preparing the construction documents, the Design Team and the CM should agree on the definition of the packages, the sequencing of the various bid packages, and the scope of each construction package to enable the CM to issue requests for proposals for each package and to hire trade contractors for each package to optimize the construction schedule.

PD 3.9 Work Restrictions Plan

In collaboration with the Design Team and the DR, the CM is required to develop a work restrictions plan specific to the project. The purpose of this plan is to identify the restrictions, constraints and requirements that will be imposed on the construction so that stakeholder approval is received before the start of construction. The restriction plan shall include, but not be limited to:

- a) Access and notice procedures;

- b) Planning of interior and exterior construction work in and around occupied buildings;
- c) The identity and reputation of the NRC and PWGSC is paramount as the project will be scrutinized by the public and media. Specific risks the Design Team and the CM need to consider in project planning, development, delivery and ongoing coordination by the DR are:
 - i. How the natural environment is managed and cared for;
 - ii. How persons accessing and entering a site are cared for as per health, safety, security and accessibility; and
 - iii. How employee and public access to and use of facilities will be controlled.

PD 3.10 Quality management

PWGSC expects the Design Team to maintain a high standard of architectural and engineering design, based on recognized contemporary design principles and Good Manufacturing Practices (GMP).

The Design Team will be responsible for developing and managing a quality management plan outlining the method that will be applied to meet GMP criteria during the design and construction phases. This plan must include, but not be limited to, deliverables expected to be achieved at the various project stages and the individuals responsible for these deliverables. The GMP quality management plan will be a working document throughout the project and should be kept up-to-date and regularly (at least monthly) submitted for approval by the Science Partners and the DR.

The consulting team shall be responsible for GMP site design support, including qualification and validation of facility, equipment and systems not conducted by third-party contractors.

All design elements, planning, architecture and engineering must be fully coordinated among the trades and be consistent with good design principles. Quality of materials and construction methods must be commensurate with the type of building, the quality sought and the budget.

The quality management process that will be applied to the project must be respected and applied by all of the Consultant's departments and by all its Sub-Consultants.

The coordination of drawings and specifications among all trades shall be carried out by the Consultant and all Sub-Consultants. The expected deliverable is that all drawings and specifications are fully coordinated among all trades and that their content respect the client's needs. The Design Team is responsible for ensuring that the documents sent are coordinated.

PD 3.11 Sustainable Development

The project must be implemented in compliance with environmental standards and sustainable development principles. Refer to Appendix F for minimum requirements.

PD 3.12 Code Compliance and Universal Accessibility

The accessibility scope includes an integrated approach to the stewardship of assets and public use. PWGSC is committed to making its facilities accessible to people with reduced mobility and the design team will take into account applicable standards, codes, regulations, laws, policies and requirements to meet them.

For guidance, see Annex 1 of the Project Brief for applicable standards, codes, regulations, laws, policies and requirements.

PD 3.13 Cost Management

Effective cost estimating and cost control are of prime importance and must be provided by quantity surveyors who are members of a professional association such as the Canadian Institute of Quantity Surveyors (CIQS) or the Association des estimateurs et des économistes de la construction du Québec (AEÉCQ).

Class D, C, B and A cost estimates must be submitted in elemental cost analysis format. ASTM International standards govern submissions.

- ASTM E1557 – 09(2020)e1 Standard Classification for Building Elements and Related Sitework – Unifomat II
- ASTM E2083 – 05(2016) Standard Classification for Building Construction Field Requirements, and Office Overhead & Profit
- ASTM E2168 – 10(2016) Standard Classification for Allowance, Contingency, and Reserve Sums in Building Construction Estimating
- ASTM E2514 – Standard Practice for Presentation Format of Element Cost Estimates, Summaries, and Analyses

The project team's cost specialist must be an active participant in the drafting of the estimate and in project cost monitoring. Using his/her experience and skills, the cost specialist may influence on project decisions because he/she interprets data and exercises cost control in accordance with the economic parameters established for the project.

The cost specialist's expertise is required in every project phase.

When an estimate is requested, it should be submitted in the form of a full report. Where applicable, the estimate may be included in the reports of other trades for the project phase in question.

The estimate should be prepared on the basis of the BIM estimating and cost-analysis objective outlined in the BIM Management Plan (see Appendix 2).

PD 3.14 Schedule Management

Establishing a schedule for comprehensive control of project execution time and effective schedule control are critical activities at every step of the project. The Design Team must create a project planning and control system for planning, sequencing and monitoring project activities and for progress reporting. The specific services required for project delivery are outlined in Appendix F.

It is important to organize and deliver the project, and to determine priorities within the established time limits, permitting the full use and function as intended, proactively prioritizing work and managing resources to achieve the prescribed milestones.

As such, the schedule is very ambitious, and it is ***imperative*** that the schedule be followed to ensure the facility is built and commissioned as soon as possible. The occupancy date of the building cannot be postponed. Any methods to improve the schedule must be discussed and, if approved, implemented.

PD 3.15 Scope Management

Definition, development, verification and control of the project scope are crucial at every step of the project. One key objective is to execute the project within the boundaries of the project scope. The Design Team must immediately inform the DR in writing of any potential increases or decreases in the scope of work that could jeopardize the ability to achieve the project objectives **before** any repercussions on project costs, scheduling or quality and propose solutions to mitigate the impact of these changes. The specific services required for project delivery are outlined in Appendix F.

Implementing Good Manufacturing Practices (GMP) in the design, monitoring and commissioning of the project is **critical**.

PD 3.16 Health and Safety

The *Directive on Construction Occupational Health and Safety* (007-2) states that Public Works and Government Services Canada (PWGSC) acknowledges that any person to whom it gives access to federal government worksites must be protected from any hazard that could cause injury, illness or death.

The Design Team must plan to implement measures to mitigate the spread of COVID-19 or any other such disease, as well as contractor monitoring measures in the contractor's specifications. Provincial and federal public health requirements and regulations in effect at the time of construction shall be used as a basis for the specifications.

PWGSC also acknowledges that provincial and territorial occupational health and safety (OHS) acts and regulations apply to contractors subject to provincial or territorial jurisdiction who are hired to carry out work on Crown-owned or PWGSC-managed assets and lands.

In order to formalize PWGSC's commitment to protecting all persons granted access to construction sites managed or administered by the Department, the Consultant shall:

- Ensure that occupational health and safety (OHS) is an integral component of construction project delivery;
- Ensure that construction projects are organized and managed in such a way as to ensure that PWGSC's role is not deemed to be that of builder, principal contractor or prime contractor (CM responsibilities) and to ensure that PWGSC is deemed as having control over the work and activities;
- Reduce risks to the Crown and limit legal liability for PWGSC employees; and
- Provide clear direction with respect to roles and responsibilities.

PWGSC recognizes that it has an obligation to safeguard the health and safety of all persons working on government construction projects. It also recognizes that federal government employees and private-sector employees are entitled to receive the full protection afforded by occupational health and safety regulations.

To meet this requirement and enhance health and safety protection for all individuals on federal construction sites, PWGSC agrees to comply with provincial and territorial OHS acts and regulations, in addition to the *Canada Occupational Health and Safety Regulations*.

PD 3.17 Physical security (PS) and Integrated Security Systems (ISS)

The various components of physical security and ISS must be part of the project at every step.

PD 3.18 Industrial Security

This project does not have any security requirements, as stated in Section CS1.

PD 3.19 Operational Requirements

With the support of the CM, develop and submit, as a separate report accompanying the schematic design proposals, the operational requirements necessary to comply with Good Manufacturing Practices (GMP). Operating requirements are to be defined by each design trade and to be summarized in a comprehensive property management framework including, but not limited to:

- a) Annualized costs for each utility;
- b) All maintenance contract requirements and projected annual costs for:
 - i. All interior and exterior mechanical and electrical components and systems, and all control systems;
 - ii. Landscape maintenance by season;
 - iii. Interior and exterior building envelope maintenance (windows, roofing, doors, etc.);
 - iv. Daily housekeeping and janitorial services;
 - v. Specialized laboratory cleaning;

- vi. Loading dock equipment;
 - vii. Waste management and disposal;
 - viii. Security system, security staffing, and where applicable, remote supervision; and
 - ix. For each maintenance contract identified, maintenance frequency and standards for reliable facility operations;
- c) Science Partner staff requirements (number, type, budget cost, etc.); and
 - d) With the input of the DR and municipal officials, annual property taxes.

PD 4 CONSULTANT SERVICES

Members of the Design Team may have the necessary expertise to provide services in more than one trade or specialty. The Design Team for this project may use the services listed below in providing the services outlined in this RFP.

PD .4.1 Services

4.1.1 Architecture Services

- a) General architecture
- b) Landscape architecture

4.1.2 Engineering Services

- a) Civil engineering
- b) Structural engineering
- c) Mechanical engineering
- d) Electrical engineering

4.1.3 Specialist Consultant Services

- a) Specialist in design and laboratory programs, processes and automation, and in Good Manufacturing Practices (GMP)
- b) Functional and building programming specialist
- c) Door hardware specialist
- d) Signage and wayfinding specialist
- e) Building Code, life safety, fire protection and accessibility specialist
- f) Building information modelling (BIM) specialist
- g) Physical (building) security specialist
- h) Information technology and multi-media specialist
- i) Building automation specialist with experience in Programming Logic Controller (PLC) and Variable Frequency Drive (VFD) design and operation;
- j) Airflow modelling, zonal modelling, and energy simulation modelling specialist(s) with experience in Zero Net Energy (ZNE) building design
- k) Fume hood exhaust airflow modelling specialist
- l) Laboratory equipment specialist
- m) Lighting design specialist
- n) Surveyor
- o) Vertical transportation specialist
- p) Commissioning specialist, independent third-party for architectural, building envelope, engineering and laboratory systems

- q) Geotechnical engineering;
- r) Industrial hygiene
- s) Industrial engineering and material handling;
- t) Qualified quantity surveyor(s) certified by a professional association such as the Canadian Institute of Quantity Surveyors (CIQS) or the Association des estimateurs et des économistes de la construction du Québec (AEÉCQ); and
- u) Planning and scheduling specialist

PD5 AVAILABLE REFERENCES AND DOCUMENTS

PD 5.1 Documentation Available to All Proponents

The URB has been updated to reflect the expected scope of the project and should be used as the starting point for the design phase.

1. The User Requirement Brief dated 28/04/2021

Other pertinent documents to consider.

1. BIM Management Plan : R.115859 – CTMF – PGB_V1.0_ENG dated April 2021.

The following documents represent previous studies that were conducted during the preliminary phase of the project. They have been supplied for reference material, however, the recommendations of these previous studies have not been retained.

1. NRC CTMF feasibility study
2. Feasibility study review dated 23/12/2020
3. Concept report

PD 5.2 Existing Documentation to Be Provided to Consultant

The following documents will be made available to the successful proponent in the language in which they were written.

1. Designated substance survey – Document 914812 dated April 23, 2019
2. Soil characterization report

PD – APPENDIX 1 – Applicable Standards, Codes and Requirements

1.1 Standards and Code Versions

Design solutions shall comply with all federal statutes, regulations and referenced codes. This document references several standards and codes dynamically, which means that for all referenced standards and codes, the latest published version should be consulted unless otherwise noted.

1.2 Provincial Requirements

Where mandated inspections are required to make a utility connection or to ensure the safety of a system through a provincial inspection, the version of a code or standard adopted by the province shall be applied to the project

1.3 Responsibilities

The following list of reference materials is non-restrictive and is provided for information purposes only. consultant's responsibility to ensure that all applicable standards, codes, regulations and requirements are met for the project

A.1 Reference documents

A.1.1 Codes:

- National Building Code of Canada 2015
- National Fire Code of Canada 2015
- National Plumbing Code of Canada 2015
- Québec Construction Code, Chapter III 2010: Plumbing.
- CSA C22.1-21 – Canadian Electrical Code, Part I (25th edition)
- Quebec Construction Code Chapter V Electricity 2018 (Public Connections)
- National Energy Code of Canada for Buildings - 2017
- Safety Code for Elevators and Escalators, ASME A17.1-2010/CSA B44-10 (ASME A17.1-2016/CSA B44-16 for universal accessibility requirements only)
- Canada Labour Code (R.S.C., 1985, c. L-2), Part II – Occupational Health and Safety.
- Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems, 2015
- Installation Code for Oil-Burning Equipment (CSA B139)
- Code of Practice for the Environmental Management of Road Salts
- Code of Practice for the Reduction of Volatile Organic Compound (VOC) Emissions from Cutback and Emulsified Asphalt
- Safety Code for the Construction Industry, S-2.1, r. 4
- PSPC 2017-2020 Departmental Sustainable Development Strategy, 2015
- PSPC Real Property Sustainable Development and Environmental Strategy, 2018
- PWGSC Real Property Sustainability Framework, 2015
- Treasury Board of Canada Secretariat Greening Government Strategy

A.1.2 Standards:

- PSPC (PWGSC) standards, guidelines and clauses

- Treasury Board standards
- “Doing Business with PWGSC – Documentation and Deliverables Manual,” January 12, 2018, and “Doing Business with PWGSC – Addenda –Quebec Region,” June 1, 2018
- Computer-Aided Design and Drafting (CADD): PSPC Quebec Region, National CADD Standard Supplement, May 2019
- Government of Canada Workplace Fit-Up Standards, PSPC, 2021.04.01 (for office spaces)
- Technical Reference for Office Building Design, PSPC, July 2017 version
- SPAC Seismic Standard 2018
- Accessible Design for the Built Environment (CSA B651HB-18)
- Accessibility Standard for Real Property – Treasury Board of Canada Secretariat (2006)
- Federal Identity Program (FIP) manual
- PSPC Commissioning Manual and PSPC Commissioning Guidelines
- PSPC Asbestos Management Standard
- Norme de conception routière [Road Design Standard], Transport Québec
- IM 15000: Mechanical Environmental Standards for Federal Office Buildings (for the office portion)
- IM 15161: Control of *Legionella* in Mechanical Systems
- MD 250005-2009 – Energy Monitoring and Control Systems Design (EMCS) Guidelines
- E.21-11 Low Voltage Electricity Service from Distribution Stations
- E.21-12 Medium voltage electrical service
- ANSI/TIA 569, Telecommunications Pathways and Spaces and related addenda
- Government of Canada (GC) Workplace Fit-Up-Special Technical Standard Guidelines (Section A4): Telecommunications (Cable Networks) Pathways and Spaces – Planning and Implementation
- ASHRAE Standards and Manuals:
- ASHRAE 62-2001 excluding Addenda N (as referred to by NBC 2015)
- ASHRAE 135: BACnet: A Data Communication Protocol for Building Automation and Control Networks
- CAN/CSA B44: Safety Code for Elevators and Escalators
- Z7396.1, “Réseaux de distribution de gaz médicaux” [Medical Gas Distribution Systems]
- CAN/CSA C282-15: Emergency Electrical Power Supply for Buildings
- CAN/CSA ISO 50001: Energy Management Systems
- ISO 29481-1:2016 Building Information Models – Information Delivery Manual – Part 1: Methodology and Format
- ISO 29481-2:2012 Building Information Models – Information Delivery Manual – Part 2: Interaction Framework
- ISO/TS 12911:2012 Framework for Building Information Modelling (BIM) Guidance
- ISO 16739:2013 Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries
- ISO 15686-4:2014 Service Life Planning – Part 4: Service Life Planning using Building Information Modelling
- ISO 16354:2013 Guidelines for Knowledge Libraries and Object Libraries

- ISO 14040:2006, Environmental management — Life cycle Assessment — Principles and framework
- ISO 14044: 2006, Environmental management — Life cycle assessment — Requirements and guidelines
- Institute for BIM in Canada's Contract Language Documents Package
- The Canadian Practice Manual for BIM
- AWWA C651-14: Disinfecting water mains
- Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment (CCME, 2016) CCME | Ressources
 - Volume 1: Guidance Manual
 - Volume 2: Checklists
 - Volume 3: Suggested Operating Procedures
 - Volume 4: Analytical Methods.
- Guide d'intervention - Politique de protection des sols et de réhabilitation des terrains contaminés [Response Manual: Soil Protection and Contaminated Sites Rehabilitation Policy] (MELCC; updated 2019)
- Guide de caractérisation des terrains [Site Characterization Guide] (MELCC)
- Guide d'échantillonnage à des fins d'analyses environnementales [Sampling Guide for Environmental Analysis], (Centre d'expertise en analyse environnementale du Québec [CEAEQ]):
Booklet 1 – General; Booklet 3 – Sampling of Groundwater; Booklet 5 – Soil Sampling; Booklet 8 – Sampling of Hazardous Materials.
- Mode de conservation pour l'échantillonnage des sols [Preservation methods for soil sampling] (CEAEQ)
- Mode de conservation pour l'échantillonnage des eaux souterraines [Preservation methods for groundwater sampling] (CEAEQ)
- Liste des méthodes suggérées pour la réalisation des analyses de laboratoire [List of suggested methods for carrying out laboratory analyses] (MELCC)
- Lignes directrices sur l'évaluation des teneurs de fond naturelles dans les sols [Guidelines for Assessing Natural Soil Background Values] (MELCC)
- List of authorized treatment centres for contaminated soil (MELCC)
- List of authorized contaminated soil burial sites (MELCC)
- La gestion des matériaux de démantèlement – Guide de bonnes pratiques [Management of dismantling/decommissioning materials – Best practices guide] (MELCC)
- Guide de valorisation des matières résiduelles inorganiques non dangereuses de source industrielle comme matériaux de construction [Guide on reclaiming inorganic non-hazardous industrial waste as construction materials] (MELCC)
- Canadian Environmental Quality Guidelines
- Canadian Drinking Water Guidelines (Health Canada)
- Canada-wide Standards for Petroleum Hydrocarbons (PHC) in Soil (CCME)
- Canada-wide Standards for Petroleum Hydrocarbons (PHC) in Soil: Technical Supplement (CCME)
- Standard on Fire Protection
- Applicable NFPA standards - Canada

A.1.3 Directives:

- National Joint Council Occupational Health and Safety Directive, Part VII, Noise Control (Levels of Sound)
- Canadian Drinking Water Guidelines, Health Canada; June 2019 (or latest version)
- Public Services and Procurement Canada Asbestos Management Directive
- Treasury Board of Canada Secretariat Greening Government Strategy
- Building Emergency and Evacuation Directive

A.1.4 Regulations:

- Canada Occupational Health and Safety Regulations (SOR/86-304)
- SOR/2003-307: Environmental Emergency Regulations
- SOR/2009-264: Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations
- Canadian Environmental Protection Act, Ozone-Depleting Substances Regulations
- Canadian Environmental Protection Act, Federal Halocarbon Regulations
- Regulation Respecting Stationary Engines (provincial)
- Migratory Birds Regulations, C.R.C., c. 1035
- Wastewater Systems Effluent Regulations
- Regulation Respecting the Application of Section 32 of the Environment Quality Act
- Transportation of Dangerous Goods Regulations
- Transportation of Dangerous Substances Regulation (C-24.2, r. 43)
- Regulation Respecting Hazardous Materials (Q-2, r. 32)
- Pest Control Products Regulations (SOR/2006-124)
- Regulation Respecting Solid Waste, CQLR, c. Q-2, r.13
- Federal Halocarbon Regulations, 2003 (SOR/2003-289)
- Prohibition of Asbestos and Products Containing Asbestos Regulations, (SOR/2018-196)
- PCB Regulations, (SOR/2008-273)
- Ozone-depleting Substances and Halocarbon Alternatives Regulations, (SOR/2016-137)
- Petroleum Products Regulation (P-30.01, r. 2)
- Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations, (SOR/2008-197)
- Regulation Respecting Snow Elimination Sites (1997), Q-2 r.31
- Canada Occupational Health and Safety Regulations (s. 9.24) (SOR-86-304)
- Regulation Respecting the Landfilling and Incineration of Residual Materials
- Land Protection and Rehabilitation Regulation
- Regulation respecting the burial of contaminated soils
- Regulation respecting contaminated soil storage and contaminated soil transfer stations
- Regulation respecting the environmental impact assessment and review of certain projects
- Regulation Respecting Occupational Health and Safety, (c. S-2.1, s. 223)
- Current municipal by-laws
- Food and Drugs Regulations, Part A, Part C (Divisions 1, 2, 4 and 5)

A.1.5 Specifications:

- Canadian National Master Specification (NMS) (latest edition) NMS User's Guide: <https://nrc.canada.ca/en/certifications-evaluations-standards/canadian-national-master-construction-specification/nms-users-guide>

A.1.6 Guidelines:

- Guideline – Project GHG Options Analysis Methodology
- ICH Q5
- Guidelines for environmental control of drugs during storage and transportation 2011 (GUI-0069)
- PIC/S Good Practices for Data Management and Integrity in Regulated GMP/GDP environments (Reference, Health Canada GUI-0001)
- Health Canada – Good manufacturing practices guide for drug products 2018 (GUI-0001)
- Annex 1 to the Good manufacturing practices guide – Manufacture of sterile drugs (GUI-0119)
- Annex 2 to the Current Edition of the Good Manufacturing Practices Guidelines Schedule D Drugs (Biological Drugs) (GUI-0027)
- Health Products and Food Branch Directorate, Guidance Document: Annex 13 to the Current Edition of the Good Manufacturing Practices Guidelines Drugs Used in Clinical Trials (GUID-0036)

A.1.7 Documents:

- Cadre stratégique pour la durabilité des immeubles [Strategic Framework for Building Sustainability]
- A Federal Sustainable Development Strategy for Canada 2019–2022
- PSPC Real Property Sustainable Development and Environmental Strategy, 2018
- 2020–2023 Departmental Sustainable Development Strategy
- The Public Infrastructure Engineering Vulnerability Committee (PIEVC) Protocol, Institute for Catastrophic Loss Reduction, Engineers Canada
- CaGBC LEED BD+C V4.1 or most recent
- CaGBC Zero Carbon Building Standard
- WELL Building Standard V2 or most recent
- Workplace Hazardous Materials Information System (WHMIS) published by Health Canada
- Workspaces Supply Arrangement (AMA)
- Critères de qualité de l'eau de surface au Québec [Groundwater Quality Criteria for Quebec]
- Guide de gestion des eaux pluviales [Stormwater Management Guide]
- Guide d'aménagement des lieux d'élimination de neige et mise en œuvre du Règlement sur les lieux d'élimination de neige [Guide for Developing Snow Elimination Sites and Application of the Regulation Respecting Snow Elimination Sites] (MEF, 1997)
- Guide for Radon Measurements in Public Buildings, Health Canada
- BIM Management Plan (BMP), V1.0, April 2021

A.1.8 Policies:

- Emergency Preparedness Policy and the Operational Security Standard – Business Continuity Planning Program.
- PSPC Sustainable Buildings Policy
- Policy on the Management of Real Property, 2006

A.1.9 Acts:

- Canadian Environmental Protection Act
- Canadian Human Rights Act
- Environment Quality Act
- Employment Equity Act
- Official Languages Act
- Impact Assessment Act
- Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22)
- Species at Risk Act (S.C. 2002, c. 29)
- Transportation of Dangerous Goods Act, 1992 (TDG Act) [1992], (c. 34).
- Pest Control Products Act (S.C. 2002, c. 28)
- Hazardous Products Act (R.S.C., 1985, c. H-3)
- Petroleum Products Act, R.S.Q., c. P-29.1
- Accessible Canada Act (C-81, 2019)

PD – APPENDIX 2 – Reference documents

1. The User Requirement Brief dated 28/04/2021
2. BIM Management Plan : R.115859 – CTMF – PGB_V1.0_ENG dated April 2021.
3. NRC CTMF feasibility study
4. Feasibility study review dated 23/12/2020
5. Concept report