COR/2015/02653

August 27, 2015

Dear [REDACTED],

RE: Your request for access to information under Part II of the Access to Information and Protection of Privacy Act (Our File TW/039/2015)

On July 31, 2015, the Department of Transportation and Works received your request for access to the following records/information:

Attached is a news release about a contract that was awarded and announced in July 2014. A line in the release states: The investment includes a $10.7 million contract being awarded to the Corner Brook Care Team. Can you please provide summary of the contract work requirements/plans, the work completed to date, projected project completion and the payments that have been made. Please provide additional details on how this work is impacted by the P3 announcement for the long term care facility in Corner Brook.

I am pleased to inform you that a decision has been made by the Deputy Minister for the Department of Transportation and Works to provide access to the requested information.

In accordance with your request, details about the Corner Brook Care Team’s Contract as well as the impact of the Request for Proposal (RFP) Announcement for Long-Term Care are provided below and a copy of the Consultant's Scope of Services from the project’s Request for Proposals has been enclosed.

P.O. Box 8700, St. John’s, NL, Canada, A1B 4J6
The Corner Brook Care Team was awarded a $10.7 million dollar contract for design development services for the Health Centre Campus on September 7, 2014. The contract is currently estimated to be 73 per cent complete ($8.77 million paid to July 31, 2015 with a revised contract value $11.948 million). The planned date of completion for the project is currently anticipated in February 2016.

To provide some background on the project in light of the new long-term care announcement, the scope of the Corner Brook Team Contract included the design development for the entire Health Care Campus proposed for the Corner Brook Site, including the Long-Term Care (LTC) facility. The vast majority of the design development work for long-term care had been completed when the decision was made to procure long-term care services from private long-term care providers.

The prior work completed was valuable for the analysis that led to the RFP Announcement for Long-Term Care. The design development of the Acute Care Center has since been impacted by necessary relocation and re-planning of Food Services, the Utility Building, Palliative Care, and Restorative Care and Rehabilitation beds (39 in total) from the LTC facility to the Acute Care campus. In comparison to the benefits that will be realized from this alternative approach to long-term care delivery, the impact on the Corner Brook Care Team work is considered minor.

Please be advised that you may ask the Information and Privacy Commissioner to review the processing of your access request, as set out in section 42 of the Access to Information and Protection of Privacy Act (the Act). A request to the Commissioner must be made in writing within 15 business days of the date of this letter or within a longer period that may be allowed by the Commissioner.

The address and contact information of the Information and Privacy Commissioner is as follows:

Office of the Information and Privacy Commissioner
2 Canada Drive
P. O. Box 13004, Stn. A
St. John’s, NL. A1B 3V8

Telephone: (709) 729-6309
Toll-Free: 1-877-729-6309
Facsimile: (709) 729-6500

You may also appeal directly to the Supreme Court Trial Division within 15 business days after you receive the decision of the public body, pursuant to section 52 of the Act.

Please be advised that responsive records will be published following a 72 hour period after the response is sent electronically to you or five business days in the case where records are mailed to you. It is the goal to have the responsive records posted to the Office of Public Engagement's website within one business day following the applicable period of time. Please note that requests for personal information will not be posted online.
If you have any further questions, please feel free to contact the undersigned by telephone at (709) 729-6814 or by e-mail at janinemurphy@gov.nl.ca

Sincerely,

Janine Murphy
ATIPP Coordinator
Department of Transportation and Works
Consultant's Scope of Services
APPENDIX B

CONSULTANT SCOPE OF SERVICES

FOR OPPORTUNITY #1
CONSULTANT SCOPE OF SERVICES

1.0 OVERVIEW

The truly collaborative Design Build delivery method envisioned for this project will take a team approach to the construction process. The Province’s project delivery concept joins the Owner, Consultant and Contractor in a team whose objective is to deliver the project with emphasis on time, budget and constructability.

The services detailed and described herein as well as those described elsewhere in the Contract Documents are to be included in the fee provided for this Opportunity.

The contract fee shall be deemed to be full and sufficient payment for all of the Services provided by the Consultant pursuant to this Agreement including its staff and payroll costs, its local, regional and head office costs, administrative overheads, profit margin, cell phones, vehicles and vehicle leases, travel between the Consultant’s local, regional or head offices and the Project site, meals and accommodations while in the Corner Brook area, the cost of computers, software, licenses, data storage capacity and other project management systems that are used in whole or part for the administration of the Project, and insurance provided by the Consultant, and all of its other costs of providing the services described in this agreement except the reimbursable expenses as set out in the Agreement.

To be clear, the fixed fee quoted is to be inclusive of all staff, irrespective of where they will be working out of, required to successfully complete the Services as detailed herein and as detailed in the Contract Documents including all representations made in the Proponent’s proposals.

The Owner has the authority to demand additional Consultant resources if / as deemed required, in their sole and unfettered opinion, to ensure the Project is sufficiently and properly resourced. The Owner will not be liable for any additional costs related to additional resources the Consultant is required to provide.
2.0 DUTIES OF THE CONSULTANT

The Consultant shall provide the services described in the Agreement in a timely manner and in accordance with best standards and best practices of the architectural & engineering consulting industry in Canada.

Specifically and in addition to the above, the Consultant is required to complete all deliverables and deliver all services:

- listed herein and elsewhere in the RFP;
- proposed in the Proponent’s submittals in response to the RFP; and
- covered in the PMDA Manual applicable to this Project; and

Section 4.0 details the requirements for Consultant Team Quality Assurance

Section 5.0 details the requirements for LEED / Sustainable Design

Section 6.0 details the requirements for Additional Professional Services

Section 7.0 details the requirements for Building Information Modeling
2.1 PRE-DESIGN PHASE

As a minimum, the following is required:

1. The final Functional Program
2. Room Data Sheets
3. LEED target and strategy
4. Furniture, Fixtures and Equipment Selection
5. Site assessment Checklist
6. Preliminary Class ‘4’ estimate

2.1.1 FUNCTIONAL PROGRAM

The functional program for the Project has been developed by the Owner. It is the intent to use the existing program as developed and build upon the information and direction provided. The Consultant will review and provide professional advice to complete both the site and building programs including functional adjacencies.

The Consultant will undertake a series of workshops with the Owner to assess the program developed, to challenge assumptions made to date, to ensure conformance with applicable standards, to recommend variations best on best practices / lessons learned, to apply LEAN principles to modern health care facilities planning, etc.

In refining the functional program and unit space requirements, the Consultant’s main task is to examine the requirements of each space in detail to confirm / finalize the function, location, technical requirements / features and sizing as required. These requirements will establish criteria for evaluating potential design solutions and other strategic alternatives. The Consultant must understand:

- The requirements, goals and objectives of the Owner as it relates to this facility and each of it component pieces.
- The potential impacts of the project on the community.
- To prepare a final functional program, the Consultant shall review and confirm:
  - The proposed program and space allocation.
  - Building infrastructure requirements such as mechanical, electrical and telecommunication rooms and the spatial requirements of the associated distribution systems.
The type and volume of activity planned for specific special purpose facility components,

- Flow patterns/proximity requirements.

The Consultant and Contractor team shall also advise the Owner on alternatives, such as the architectural and financial implications of various building options. The Team shall assist the Owner in assessing the advantages / benefits or the disadvantages / costs of each alternative. In this case, an example of possible alternatives could involve assessing the ability of different design alternatives to accommodate program / technological change.

The final functional program is a report which will include as a minimum:

- The client’s philosophy, values, goals, and desired “image”.
- Site requirements, such as circulation, orientation, public access (including barrier-free access considerations), noise, etc.
- Explicit space requirements for the various buildings, including any adjustments suggested relative to:
  - Definition of the activities which will take place in each space.
  - The functional relationships and specifics in Room Data Sheets.
  - “Bubble” diagrams and flow diagrams.
- Other requirements including:
  - Regulatory issues such as zoning and building code requirements.
  - Other requirements from Authorities having Jurisdiction.
  - Community goals and concerns.
  - Ecological and environmental concerns.

### 2.1.2 ROOM DATA SHEETS

The Consultant is to develop comprehensive Room Data Sheets for the entire complex including all programmed spaces, ancillary spaces, support spaces and circulation spaces. These Room Data Sheets are to include all information on the spaces including (but not limited to):

- Size & any key dimensions / clearances / ceiling height required
- Functional adjacencies required
- Qualitative criteria
- Locational criteria
Interior finishes
Architectural components (partition types, slab to slab, windows, STC, etc.)
Door and hardware
Millwork
Security
Any special structural considerations
FF&E (built in)
Mechanical (plumbing, gases, ventilation, specialty, etc.)
Electrical (lighting, power, UPS, emergency, communication, alarms, security, specialty, etc.)
Any special / unique requirements for the space, suite, unit, floor, building

2.1.3 LEED TARGET AND STRATEGY

The purpose of this stage is to detail a sustainable design and construction strategy. The Consultant is to initially target as many points as make sense for the subject project – not simply pursuing the low hanging fruit nor the practice of buying points for the sake of getting points.

The Consultant under the guidance and leadership of the LEED AP will prepare a report detailing what each “yes” and “maybe” point entails and the specific design strategy to obtain. The benefits relative to the project, the Owner, Western Health, the community and the taxpayers will be addressed as well as any risks. The Consultant will rank each point relative to cost impact (low, medium, high) based on initial quantifications.

2.1.4 FURNITURE, FIXTURES AND EQUIPMENT SELECTION

The Consultant is required to work with the Owner to determine the full extent of FF&E required for the Project – both what will be supplied / installed under the subsequent construction contracts as well as what will be procured directly by the Owner. This will include the development of technical specifications / procurement requirements / layout drawings.

2.1.5 SITE ASSESSMENT CHECKLIST

Analyze all available information regarding the site and its condition, and evaluate alternatives if necessary regarding appropriate approaches to developing the site. The Owner will provide information on the site relative to topographical / environmental / geotechnical / subsurface conditions / development to date. Any further investigations required by the Consultant will be organized, defined, coordinated and overseen by the Consultant with costs being paid directly by the Owner.
The consultant is to review:

1. **Site Ecology**:
   - Determine which environmental and regulatory statutes apply to the proposed development.
   - Identify and map existing site features including: drainage patterns, topography, hydrology, local microclimate.

2. **Energy**
   - Assess building orientations and massing studies to explore related energy-efficient measures.
   - Investigate opportunities for passive energy strategies including: daylighting, natural ventilation, exterior shading, solar heat gain.
   - Preliminary analysis of energy use strategies affecting orientation, envelope, and adjacent landscape.

2.1.6 **PRELIMINARY CLASS ‘4’ ESTIMATE**

The Owner will be required and will have to provide regular updates and projections to government on the forecast construction cost of the Project. The estimate will be developed in conjunction with the Contractor. The scope will include as a minimum:

- Prepare a *Class “4” cost estimate* and quantify construction costs, contingencies, allowances and risks.
- Prepare and investigate costing alternatives to assist in the identification of the most cost-effective design and/or construction approach.
- Document all unit pricing, analysis, and valuation. Identify, forecast and analyze project-related issues including possible market labour / trade shortages and potential price fluctuations.
- Advise on alternative procurement and construction strategies to create efficiencies wherever possible;
- Develop separate costs for each of the two proposed phases of the Project, specifically Opportunity #2 and Opportunity #3.
2.2 CONCEPT DESIGN

2.2.1 INTENT

- To prepare a detailed concept design for the new complex including any adjustments required to the program, functionality, scope, quality, cost, features, etc. due to recommendations / directions of the Project Director, authorities having jurisdictions and/or any project stakeholder with final say in the project.
- Develop an Implementation Plan
- To carry out a Dynamic Energy Analysis of different energy consuming systems considered for the facility.

2.2.2 SCOPE AND ACTIVITIES

- Ensure full coordination of all disciplines’ work and Contractor’s advice in developing the concept through an integrated design approach.
- Write a preliminary project-description report outlining the various components and system options while constantly checking decisions and choices against how they contribute to the overall project objectives regarding the project’s design philosophy.
- Perform required site testing and assessments.
- Carry out a dynamic energy analysis of the different systems being considered for the facility / complex such that the most cost effective option (within budget) can be chosen and show that the selected systems will meet the facility’s energy targets.
- Produce a Class ‘3’ Cost Estimate.
- Ensure that all disciplines have contributed effectively to the integrated design approach and that the energy analysis provided reflects the effects of their contributions.
- An energy target of at least 25% under the MNECB1997 has been established for the facility / complex / project. Every effort shall be made to improve upon this target.
2.2.3 IMPLEMENTATION STRATEGY AND SCHEDULE

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

The Consultant in conjunction with the Contractor will prepare a Project Master Plan and dependent Cash Flow Projection that accounts for all major project activities and costs. Significant phases of project development include; Concept Design, Design Development, as well as project Opportunity #2 and #3 activities including Working Drawings and Specifications, Tender, Contract Award and Construction.

The original Master Plan will be "frozen" to provide an original Target or Baseline Schedule. This Target Plan may be revised on instruction from the Project Director as conditions dictate. All revised Plans will be reconciled with previous targets to provide a continuous audit trail.

The Consultant and Contractor will provide the initial and subsequent Project Master Plans and dependent Cash Flow Projections for the Project in a bar chart identifying activity durations, percent complete and budget amounts and in monthly progress reports.

2.2.4 CONCEPTUAL FLOORPLANS, ELEVATIONS, SECTIONS AND SITEPLAN

The goal is to produce a series of preliminary drawings to visually illustrate what could be possible for the facility. The scope and activities will include as a minimum:

Architectural

Provide the following:

- Site analysis, showing all key site-related information and drivers which influence design approach and proposed solution.

- Code and standard analysis in report form.

- Conceptual site plan showing proposed building outlines, orientation, main accesses and other major exterior program requirements.

- Sketches that heavily influenced the Concept design.

- Concept building plans showing relative disposition of main accommodation areas, circulation patterns, floor layouts, fire separations/ compartments / ratings, occupant load and exit path (route) calculations, etc.
• Conceptual elevations and sections indicating the basic design approach and aesthetic philosophy.
• Sketch exterior perspectives or massing studies.
• Outside gross building areas and summary of main accommodation areas relative to established program requirements / program.
• Horizontal and vertical space relationships.
• Glazing types and glass-wall ratios.
• Expansion capacity / transformation studies that show how the Project (and each individual building) could be developed to accommodate future growth / transformation.

Landscaping

Provide Plans showing:

- Hard and Soft Landscaping (i.e., paved, grass and ground cover areas).
- Planting Concept.
- Pedestrian Pathways.
- Site Furniture including flagpoles, benches, etc...
- Preliminary Exterior Lighting and Signage Layout.
- Amenity Areas.

Structural

Provide the following (for each building):

- A recommended structural system, including the structural frame materials, the structural grid layout and the foundation.
- A summary of alternative systems that were considered.
- The design loads applicable to the building.
- Foundation recommendations based on geotechnical information.

Mechanical

Provide the following (for each building):

- The concept submission shall include a description of specific mechanical requirements and function for each area or room in the building. Incorporate
in the submission a schedule of requirements listing all rooms and identify the mechanical building services to be provided.

- Explain in the concept submission the manner in which the proposed mechanical systems correlate with functional requirements.
- Identify the volume of outdoor air to be supplied per person and the delivery rate of supply air to occupied spaces.
- Mechanical systems are to be designed for maximum efficiency and flexibility for environmental control. Remote monitoring of the primary mechanical functions should also be available.
- Identify location of entry point into the building of all mechanical services.
- Identify in square metres the area to be provided for mechanical rooms, and in conjunction with architectural staff, identify what percentage of total building area this represents. Identify location of mechanical spaces in the building.
- Analysis of alternative mechanical schemes at the conceptual design stage shall quantify energy consumption of building systems, operating and maintenance costs on a month by month basis for a time span of one year. Accordingly, the estimated energy, operating, replacement and maintenance costs shall be used in life cycle cost analyses in order to determine the most beneficial mechanical systems alternative. Life cycle cost analyses shall be based on a projected building life of 25 years.
- Carry out energy analysis on system alternatives including but not limited to:
  - Light fuel oil with electric cooling.
  - Full electric system.
  - Geothermal
- An energy target of at least 25% under the MNECB 1997 has been established for the facility / project. Total energy consumed in each of the buildings shall be expressed in MJ/m²
- Submit a complete energy analysis for each building and the complex as a whole as described in this section in the paragraphs under the heading Conceptual Design Report for Dynamic Energy Analysis.

Electrical

Provide the following (for each building):

- Proposed basic electrical systems of significance to the early design.
- Site plan showing location of service entrances.
- Distribution diagram showing single line diagrams to distribution centers.
- Floor plan(s) complete with locations of major electrical equipment and distribution centers.
- Distribution systems for lighting, power and telecommunications.
- Telephone rooms, conduits and telecommunication cable systems requirements and layout.
- Provide an electrical design synopsis, describing the electrical work in sufficient detail for assessment and acceptance by the Project Director. Include feasibility and economic studies of proposed systems complete with cost figures and loads.

### 2.2.5 Commissioning

- Define Commissioning Requirements.
- Define the operational and performance requirements for the Project.
- Identify responsibilities for meeting the performance requirements.
- Identify life cycle operating and maintenance costs.

### 2.2.6 Specifications

- Preliminary outline specification in NMS format indicating main building components and options for use of “Green” components and systems.

### 2.2.7 Cost Estimates

In conjunction with the Contractor:

- Prepare a “Class 3” Cost Estimate including quantification of construction costs, contingencies and risks.
- Prepare and investigate costing alternatives to assist in the identification of the most cost-effective design and/or construction approach.
- Document all unit pricing, analysis, and valuation.
- Advise on alternative procurement and construction strategies to create efficiencies wherever possible; and
- Identify, forecast and analyze project-related issues including possible market labour / trade shortages and potential price fluctuations.
- Specifically break out each big ticket item that require specific evaluation / discussion with the Project Director – this may include specific LEED points, site development, major systems, equipment, etc.
2.3 CONCEPTUAL DESIGN REPORT FOR DYNAMIC ENERGY ANALYSIS

2.3.1 General

- This report is a multi-discipline report prepared in two parts.

- Part I is a short report used to assist in obtaining development acceptance and to provide a starting point in the systems analysis portion of the energy conservation program.

- Part II is an extensive and detailed report providing decisions based on computer aided energy systems simulation and life cycle studies for all mechanical engineering design direction, i.e. energy sources, systems to be employed and capacities of major equipment.

2.3.2 DYNAMIC ENERGY ANALYSIS - Part I

1. The mechanical engineering consultant in concert with the Prime Consultant prepares a section summarizing the findings of the energy analysis studies involving the annual energy and life cycle costs of such architectural conceptual alternatives as:

   .1 Building orientation / location of spaces that benefit from daylight.
   .2 Building configuration, i.e. ratio of perimeter to floor area.
   .3 Glass to wall ratios.
   .4 Types of glazing.
   .5 Operable windows.
   .6 Types of building materials and construction.
   .7 Internal and external shading.
   .8 Interior lighting schemes.

2. The mechanical consultant prepares a section providing heating and cooling loads/schedules, zone temperature set points and schedules, as well as characteristics and performance for central system and terminal equipment. The section shall include:

   a. A general description of all mechanical systems and major equipment proposed complete with schematic.
b. Schematic arrangements of individuals systems with temperature schedules.

c. Proposed energy sources with current utility rate schedules.

3. The electrical consultant prepares a section describing proposed lighting system covering such features as type of distribution, recessed lighting, task lighting and estimated wattage levels for various areas. As well, anticipated loads required for the various mechanical systems proposed.

2.3.3 DYNAMIC ENERGY ANALYSIS - Part II

This report will state the Owner's requirements on which any design assumptions are made. All information shall be suitably indexed and cover the following:

.1 Load Calculations:


b. Systems and equipment: Operating conditions (i.e., temperature, pressure, etc.). Flow rates. Capacities.

c. Profiles: Tabulated and graphical profiles of energy and thermal data to permit simple analysis of building balance point, the potential for heat reclaim and storage, and unit checks on bulk loads. Graphical or numerical profiles of operating time schedules of various energy consuming items such as lighting, ventilation, fans, domestic hot water, thermal response, etc.

d. Building pressure gradient: This relates to scale of negative pressure at base of building in winter and to degrees of pressurization required at entrance floor to avoid noise and drafts, and with assumed building wall leakage coefficient, the effect on heating and humidification design. Tabulated and graphical profile.

e. Pressure analysis of duct and pipe distribution systems: Verification of velocity head losses in plenums, headers, and main and branch runs. Minimized overlapping safety factors.

f. Sound and vibration control: Noise analysis of duct runs with special checks such as for under branch takeoffs, at service cores, induction units, terminal units, and at air outlets.

.2 Systems:
All mechanical systems and their major equipment required by the facility adequately and completely described, such as the following, including their control systems and sequence of operating requirements:

.3 Drawings:
   
a. Typical floor plan system layouts: These require sufficient detail of mechanical systems to clarify satisfactorily interface and coordination with all other building systems, identify arrangement and locations, and maximize benefits of repetitiveness and standardization of components and elements of mechanical systems.

b. Schematic flow diagrams, Diagrams indicating relative locations, capacities, types, flow rates, and operating conditions of systems and their major equipment using single line flow diagrams. Automatic control systems schematics and their operating requirements for all systems and major equipment for all operating conditions such as heating and cooling cycles.

c. Mechanical equipment rooms: Indication of locations, types and sizes of major equipment and major distribution runs including capacities of major equipment.

.4 Life Safety and Fire Protection Systems: Description of systems and their operating requirements during emergency conditions.

.5 Equipment Standby: Indication of need for standby for continuous operation based on consideration of modular selection, full time standby and spares.

.6 Mechanical Systems Space Analysis: Space analysis for ducts, piping, equipment, chase shafts, and service cores which should be considered with other items of first cost when comparing various concepts.

.7 Maintenance Analysis: Recommend maintenance contracts to operate and maintain systems. Maintenance costs should be considered when comparing various concepts.

.8 Instrumentation and Control Panels:
   
a. Type, location, information, and procedure required to economically optimize control, monitoring, and feedback of systems and equipment for efficient performance, preventive maintenance, energy conservation, operating schedules and costs, and emergency alarm conditions.

b. Control panel requirements for systems and equipment related to: Local or central control consoles. Type and degree of automated and/or manual control.
c. Recording of information whether selective or continuous with or without written records such as charts and printouts. Type of graphics. Computerization. Communication between equipment rooms.

d. Where central control consoles are economically feasible and suitable for performance, provision for instrumentation and control of other building systems such as: voice communication, smoke and fire detection, alarm enunciation, lighting, security.

.9 Cost Budget:

a. The budget will be established by using a cost per area, coupled with approximation of units per load indices. These can be based on statistics obtained from other similar projects, with adjustments as required for factors such as escalation, changes in size, occupancy usage, scope, complexity, location, availability of manpower, expertise, materials and equipment.

b. Estimate for totally installed mechanical systems divided into the following main elements: Plumbing and drainage; Liquid heat transfer; Air distribution; Process refrigeration; Sprinklers and special fire protection; Heat generation plants; Chilled water generation plants; thermal insulation; Controls and instrumentation; Commissioning; Testing and balancing; Central monitoring; Vibration and acoustics; Special systems; Special sub- trades.

c. The cost premium of all measures included as part of the strategy to better the energy savings by at least 25% relative to the MNECB 1997 shall be calculated and reported separately.

.10 Life Cycle Costs:

a. Present day value for total owning and operating costs for life cycle of design concepts using suitable interest and escalating rates.

b. Breakdown of costs under three major headings: Amortization (capital); Maintenance and Operation; and Energy.

c. Investment horizon is 25 years.

.11 Energy Budget:

a. The goal (Planning Energy Budget) for this project is at least 25% less than the MNECB 1997. The Consultant and Contractor are to make every effort, through innovation and design, to surpass this objective and achieve an even lower energy consumption.

b. A Design Energy Budget, expressed in equivalent kilowatt hours per annum and based on a dynamic energy analysis of the
conceptual design of the building and building systems, will be established.

c. This budget will become the target for the project building and building systems final design. The Design Energy Budget should confirm or better the energy consumption provided in the Planning Energy Budget.

d. A Design Energy Budget which exceeds the Planning Energy Budget must be supported with an explanation approved by the Project Director.

.12 Standardization: Guidance on how to standardize system ducting, piping, equipment and other components to reduce costs by:

- Simplifying construction, types and arrangements.
- Increasing repetitiveness of components and typical layouts.
- Reducing number of types and sizes to be used.
- Increasing amount of prefabrication and reducing handling and field labour.

.13 Computer Analysis:

a. Copies of printouts from computer program studies concerning pertinent data on energy analysis, system simulation, and economic comparisons of design concepts.

b. Each relevant computer study packaged and consisting of the following: Title and purpose. Descriptions of building concept parameter energy systems, operating conditions and schedule profiles and system flow diagram with sequence of operation. Observations, summaries, and conclusions.

c. Computer study printout packages indexed and bundled separately to accompany the Concept Development Report. An index of the computer studies as a source of technical support in the technical appendices of the brief.

d. Relevant summaries of the computer studies as a source of technical appendices of the brief.

.14 Include the following as Inputs to the Dynamic Energy Analysis:

- Building orientation / internal space allocation.
- Building configuration.
- Glass to wall ratio.
- Type of glazing.
- Type of building materials and construction.
- Internal and external shading.
- Internal lighting types and schedules.
- Heating and cooling loads and schedules.
- Zone temperature set points and schedules.
- Terminal equipment characteristics and performance.
- Central system characteristics and performance.
- Energy type and cost.

The following items are to be shown as outputs for the Dynamic Energy Analysis Report:

- System capacities.
- Load profiles.
- Total projected energy consumption per unit area for alternatives.
- Total projected energy cost per year for each alternative.
- Total green house gas emissions for each alternative.
- Discounted life cycle cost analysis of alternatives.
- Any legislated staffing requirements for each alternative.
- Total capital, maintenance and replacement costs for the options analyzed.
- Energy usage (% under) relative to MNECB 1997 baselines based on primary heat source (Appendix A of the MNECB).
- Recommendation.

Note: The energy system chosen will be at the Project Director's discretion and direction.
2.4 CONCEPT NARRATIVE DESIGN SYNOPSIS

Prepare a report which states the Owner’s requirements and Consultant’s proposed approach / solution to same. All information shall be suitably indexed and cover the following as a minimum:

1.0 Project Narrative

2.0 Facility Program

2.1 Program Narrative
2.2 Program Design Comparisons
2.3 Summary of Departmental Spaces
2.4 Gross Area Comparison

3.0 Site Infrastructure

3.1 Site Earth Works
3.2 Water Mains
3.3 Sanitary Sewer Mains
3.4 Site Storm Drainage, Manholes and Catch basins
3.5 Hard & Soft Landscaping

4.0 Building Envelope

4.1 Foundations & Dewatering
4.2 Structural Framing
4.3 Concrete Slabs on Grade/Suspended Slabs
4.4 Roof Assembly
4.5 Exterior Wall Assemblies
4.6 Doors, Windows and Skylights
4.7 Interior Wall Assemblies

5.0 Barrier Free

5.1 Barrier Free Path of Travel (Exterior and Interior)

6.0 Fire and Life Safety

6.1 Code and Standard Reviews (NRCC & NFPA Life Safety)
6.2 Occupant Load Calculations
6.3 Fire Commissioner’s Form
6.4 Fire Separations
6.5 Escape Routes within Facility
6.6 Sprinkler System Devices
6.7 Pressurization/Smoke Control
6.8 Fire Alarm
6.9 Exit & Emergency Lighting Systems
6.10 Standpipes, Wet & Dry Pipe Sprinkler Systems
6.11 Wet Chemical Extinguishing Systems
6.12 Clean Agent Extinguishing System
6.13 Fire Pumps

7.0 Fit-Up and Finishes
7.1 Acoustical Performance
7.2 Room Fit-up and Finishes
7.3 Millwork

8.0 Food Services and Laundry
8.1 Kitchen Equipment
8.2 Pre-Fabricated Walk-in Freezers and Coolers
8.3 Laundry equipment
8.4 Cooler/Freezers Heat Recovery
8.5 Laundry Heat Recovery
8.6 Kitchen Ventilation

9.0 Conveying Systems

10.0 Plumbing

11.0 Medical Gas

12.0 HVAC
12.1 Boilers
12.2 Chilled Water Systems
12.3 Hot Water Heating System
12.4 Chilled Water System, Humidification
12.5 Air Handling Systems
12.6 Ground Source Heat Pump
13.0 Controls

13.1 DDC Systems
13.2 Energy Management System

14.0 Electrical-Distribution

14.1 Padmount Switchgear
14.2 Padmount Distribution Transformers
14.3 Dry-Type Transformers
14.4 Underground Service
14.5 Service Entrance Equipment
14.6 Motor Control Centres
14.7 Grounding

15.0 Electrical-Lighting

15.1 Lighting – General
15.2 Lighting – Specialty

16.0 Electrical-Emergency Power

17.0 Communications, Data and Security

18.0 Furniture & Equipment

Annexes

A. Room Data Sheets
B. LEED
C. Geotechnical Report
D. Dynamic Energy Analysis Report
E. Ground Source Heat Exchanger Sizing
F. MNECB Checklist
G. Wayfinding Report
H. Snow / Wind / Solar Report
I. Health Care Standards Compliance Report
J. Lean Consultant Report
2.5 DELIVERABLES

Provide all outputs described and noted herein, including:

- Conceptual Design Drawings, including additional drawings as may be required.
- Description of the options with recommendation of preferred solution.
- Implementation Plan.
- Project specification outline.
- Class ‘3’ Cost Estimate, including methodology of the estimate, assumptions made and costing alternatives.
- Report on deviation from schedule and recommend corrective measures or updated time line (If applicable).
- Concept Narrative Design Synopsis.
- Presentation to the Project Director and select Owner’s representatives for acceptance of the Concept Design, and any subsequent revisions and/or responses necessary to satisfy the concerns of the Owner.
3.0 DESIGN DEVELOPMENT

3.1 INTENT

To further develop the approved Concept to the level of a preliminary design package. The Design Development documents consist of drawings and other documents to describe the size and character of the facility as to architectural, wayfinding / signage, structural, civil, landscape, mechanical, electrical and specialty systems, materials and such other elements as may be appropriate.

The Design Development deliverables will be structured in a manner that they will become the Owner’s Statement of Requirements for Opportunities #2 and #3.

3.2 SCOPE AND ACTIVITIES

- Obtain written acceptance from the Project Director for development of the agreed upon Concept to a preliminary design level.
- If any alterations are required, document all required changes, analyze the impact on all project components, and resubmit for acceptance if and as required/requested.
- Expand and clarify the Concept Design intent for each design discipline.
- Identify jurisdictional authorities and planned schedule of submissions. Present design to the jurisdictions having authority where required.
- Ensure full integration and coordination of all disciplines’ design development.
- Analyze the constructability of the project and advise on the construction process and duration.
- Continue to review all applicable statutes, regulations, codes and by-laws in relation to the design of the project.
- Establish furniture, fixtures and equipment requirement lists showing all furniture that will be required in the facility.
- Provide a list and draft specification sections of all NMS sections to be used. Submit outline specifications for all systems and principle components and equipment. Provide in the outline specifications manufacturers’ literature about principle equipment and system components proposed for use in this project.
- Structure two packages, labeled Opportunities #2 and #3 respectively, detailing all requirements, standards of construction, performance narratives, drawings, layouts, renderings, specifications and related design intents. In addition, detail additional design / professional services specifically required of the teams for each of these Opportunities.
3.3 DESIGN DEVELOPMENT DETAILS FOR EACH BUILDING & ENTIRE SITE

3.3.1 Architectural

1. Site Plan showing the buildings and existing or proposed environmental items including the following:
   - Traffic patterns: (Pedestrian, Vehicular - including drop off area, Emergency response vehicles’ access) and other exterior program requirements which influence overall site design (e.g.: seating areas, etc.).
   - Grading: Existing and proposed grade elevations and storm drainage elements such as catch basin and manhole locations.
   - Cross Sections: Cross sections through the site to show the relationship of buildings to proposed ground elevations and planting, to illustrate the three-dimensional aspects of the site. Include detailed perspective sketches and renderings of main features.

2. Floor Plans of each floor showing all accommodation required, including all necessary circulation areas, stairs, elevators, etc., and ancillary spaces anticipated for service use. Indicate building grids, modules, etc. and key dimensions.

3. Plans showing inter and intra-departmental relationships on a room by room basis.

4. Plans showing all special purpose spaces such as kitchens, supply areas, therapy rooms, laboratories, etc… to fully illustrate the location of major items of equipment, circulation patterns, required clearances, etc…

5. Plans of rooms with typical layouts such as operating rooms, critical care units, patient bedrooms, exam rooms, barrier free patient washrooms, small offices, etc.

6. Interior elevations of rooms showing all 4 view planes.

7. Elevations of all exterior building facades showing all doors, windows, mechanical openings / vents, electrical fixtures, down spouts and trim accurately sized and projected from the floor plans and sections. Indicate clear floor and ceiling levels and any concealed roof levels.

8. Cross Sections through the building to show floor levels, room heights, inner corridor elevations, etc.

9. Detail Sections of walls or special design features requiring illustration and explanation of this stage, including fireproofing methods.
10. Wayfinding and signage concepts.

11. Furniture, Fixtures and Equipment Requirements: Prepare a FF&E Recommendation Report based on the requirements for the new complex. The report will include an examination of the following:

   a. Furniture and equipment type and layout.
   b. Power requirements.
   c. Finishes.

Provide a separate Class “3” Cost Estimate for the purchase of new furniture, fixtures and equipment.

3.3.2 Landscaping

- Planting Plan.
- Hard and Soft Landscaping (paved, grass and ground cover areas, potential roof).
- Pedestrian pathways, existing harbor boardwalk, sidewalks and links.
- Site Furniture layout including flagpoles.
- Lighting Layout.
- Signage.
- Amenity Areas.
- Bicycle Parking.
- Location of hose bibs.
- Site Services Layout showing all buried services and above ground structures such as hydro boxes, hydrants, generator, etc.

3.3.3 Perspectives and Schematics

1. The Consultant will provide color graphic renderings with the following features:

   - Renderings will be used for presentation purposes to various groups within the Province, general public and other stakeholders.
   - Digital site photo may be used as perspective background.
   - Detailed building perspective to show site positioning, building design, building colors.
   - Site landscaping, signage and key forecourt to appear in the perspective.
The Consultant will provide color schematics showing the interior layout with the following features:

- Floor plans showing the space layout for all levels.
- Floor layout showing functional areas by color coding.

### 3.3.4 Structural

- Preliminary drawings that indicate, the structural framing system, grid layout, location of shear walls, location of expansion joints, structural frame materials, foundation systems and any other significant or unusual details.
- The design loads applicable to the building.

### 3.3.5 Mechanical

- Site Plan showing service entrances for water supply, sanitary and storm drains, connections to public utility services, including all key invert elevations.
- Update the energy analysis and energy budget established at the Concept Design stage based on the systems chosen and refinement of the design.
- Provide information of all internal and external energy loads in sufficient detail to determine the compatibility of the proposal with existing services, approved concept and energy budget.
- Analysis of selected equipment and plant with schematics and calculations sufficient to justify the economy of the selected systems.
- Describe the mechanical systems to be provided and the components of each system. Describe the perceived operation of the mechanical systems.
- Explain the level of involvement that will be required by outside contractors or Owner staff to operate the building systems and the expected functions of the operations staff.
- Describe the building systems control architecture. Provide preliminary EMCS network architecture, mechanical control schematics, and sequence of operation. System to be used must be simple in architecture such that changes can be made locally by user staff and yet sophisticated enough that the building can be monitored remotely for troubleshooting purposes and energy consumption monitoring.
- Explain the acoustical and sound control measures that are to be included in the design.

- Mechanical plans with:
  - Floor elevations and room identification.
Legend of all symbols used.

Preliminary sizing of ventilation, cooling and heating systems showing locations.

Plumbing system, showing routing and sizing of major lines and location of pumping and other equipment where required

Fire protection systems showing major components

Separate plans for all specialty systems.

All major equipment layouts in mechanical rooms

3.3.6 Electrical Drawings

1. Provide drawings showing advanced development of the following:

- Site plan showing service entrances.
- Single line diagram of the power circuits with their metering and protection, including:
  1. Complete rating of equipment.
  2. Ratios and connections of CT's and PT's.
  3. Description of relays when used.
  4. Maximum short circuit levels on which design is based.
  5. Identification and size of services.
- Electrical plans with:
  - Floor elevations and room identification.
  - Legend of all symbols used.
  - Circuit numbers at outlets and control switching identified.
  - All conduit and wire sizes except for minimum sizes which should be given in the specification.
  - Communication system distribution.
  - Floor layout for lighting, power, telecommunication systems, fire alarm, security, closed circuit television and all other systems.
  - Lighting layout and fixture schedule clearly indicating methods of circuiting, switching and fixture mounting.
  - Separate plans for all specialty lighting
  - Separate plans for all specialty systems
- Electric heating layout and schedule (if applicable).
- Owners metering and control connections.
- Elevator equipment and control.

Provide the following data:
- Maximum demand and diversity factors.
- Short-circuit and Protective Device Coordination requirements and calculations showing the ratings of equipment used.

3.3.7 Commissioning
- Refine operational and performance requirements as required from the design development.
- Define commissioning requirements.
- Prepare a Commissioning Brief describing major commissioning activities for architectural, mechanical, electrical, security, communication and integrated system testing.
- Define and establish project specific archives.

3.3.8 Specifications
- Provide a list and draft specification sections of all NMS sections to be used.

3.3.9 Cost Estimate

In conjunction with the Contractor:
- Provide Class “2” Cost Estimate, c/w sign off from all disciplines involved.
- Highlight changes from class “3” cost estimate.

3.3.10 Time Plan (Schedule)

In conjunction with the Contractor:
- Update time plan (Schedule).
- Highlight changes to the time plan.
3.3.11 Design Development Narrative Design Synopsis

The Consultant is to update and significantly expand the Concept Narrative Design Synopsis (Section 2.4) to include all elements developed during Design Development. Outline provided below – these represent the minimums to be provided.

A document will be produced for each of the future phases of the Project, specifically Opportunity #2 and Opportunity #3 on a building by building basis with separate reports for each building. Each set will be developed and structured such that it forms a comprehensive Owner’s Statement of Requirements. It is to state design objectives and parameters, performance requirements, constraints and criteria, spatial and functional requirements and relationships, flexibility and potential for expansion, special equipment and systems, etc.

It is to be structured and developed in a way that details the Owner wants as well as what they don’t want. The intent is to be prescriptive and comprehensive in dealing with those elements that are important / critical to the Owner while maintaining flexibility for design innovation / efficiency for the team(s) engaged to develop and finalize the working drawings for Opportunities #2 and #3.

All BIM files developed will become the property of the Owner and will be available for the future teams’ use and development.
OUTLINE OF DESIGN DEVELOPMENT SYNOPSIS REPORT

1.0  Project Narrative

2.0  Facility Program

2.1  Program Narrative
2.2  Program Design Comparisons
2.3  Summary of Departmental Spaces
2.4  Gross Area Comparison

3.0  Site Infrastructure

3.1  Site Earth Works
3.2  Water Mains
3.3  Sanitary Sewer Mains
3.4  Site Storm Drainage
3.5  Manholes and Catch basins
3.6  Roads
3.7  Walks
3.8  Parking Areas
3.9  Planting
3.10 Lawn Areas

4.0  Building Envelope

4.1  Foundations & Dewatering
4.2  Structural Framing
4.3  Concrete Slabs on Grade/Suspended Slabs
4.4  Thermal and Moisture Protection
4.5  Roof Assembly
4.6  Exterior Wall Assemblies
4.7  Doors, Windows and Skylights
4.8  Door Operators
4.9  Entrances and Exits
4.10 Overhead Doors
4.11 Stairs
4.12 Structural Fireproofing
4.13 Interior Wall Assemblies
5.0 Barrier Free

5.1 Barrier Free Path of Travel (Exterior and Interior)
5.2 Barrier Free Washrooms
  5.2.1 Water Closets
  5.2.2 Lavatories
5.3 Shower Rooms
  5.3.1 Shower Stalls
  5.3.2 Shower Trim
5.4 Automatic Door Operators
5.5 Counter Spaces
5.6 Parking Spaces and Walkways

6.0 Fire and Life Safety

6.1 Code and Standard Reviews (NRCC & NFPA Life Safety)
6.2 Occupant Load Calculations
6.3 Fire Commissioner’s Form
6.4 Fire Separations
6.5 Escape Routes within Facility
6.6 Emergency Lighting
6.7 Sprinkler System Devices
6.8 Pressurization/Smoke Control
6.9 Fire Alarm
6.10 Exit Lighting Systems
6.11 Emergency Lighting Systems
6.12 Standpipes
6.13 Wet Pipe Sprinkler Systems
6.14 Dry Pipe Sprinkler Systems
6.15 Pre-Action Systems
6.16 Deluge Systems
6.17 Wet Chemical Extinguishing Systems
6.18 Clean Agent Extinguishing Systems
6.19 Fire Extinguishers
6.20 Fire Pumps

7.0 Fit-Up and Finishes

7.1 Acoustical Performance
7.2 Room Fit-up and Finishes
7.3 Millwork
8.0 Food Services and Laundry

8.1 Kitchen Equipment
8.2 Pre-Fabricated Walk-in Freezers and Coolers
8.3 Laundry equipment
8.4 Cooler/Freezers Heat Recovery
8.5 Laundry Heat Recovery
8.6 Kitchen Ventilation

9.0 Conveying Systems

9.1 Fire Services Elevator
9.2 Elevators
9.3 Patient Lifts
9.4 Hydraulic Lift
9.5 Elevating Docks

10.0 Plumbing

10.1 Plumbing Fixtures
10.2 Domestic Water System
10.3 Domestic Water Treatment
10.4 Domestic Water Booster Pumps
10.5 Sanitary Sewer
10.6 Storm Sewer

11.0 Medical Gas

11.1 Medical Air System
11.2 Medical Vacuum System
11.3 Medical Oxygen System
11.4 Oxygen Generation

12.0 HVAC

12.1 Boilers
12.2 Chilled Water System-Chillers
12.3 Hot Water Heating System
12.4 Chilled Water System, Humidification
12.5 Air Handling Systems
12.6 Fans, Reheat Coils
12.7 Space Pressure
12.8 Ground Source Heat Pump
12.9 Isolation Room Systems
12.10 Hot Water Generator-Boilers
12.11 Heat Recovery Systems
12.12 HVAC Water Treatment

13.0 Controls

13.1 DDC Systems
13.2 Energy Management System
13.3 System Architecture
13.4 Existing Systems
13.5 Control Sequences
13.6 Zone Control
13.7 Heater Control

14.0 Electrical-Distribution

14.1 Padmount Switchgear
14.2 Exterior Load Break Switches
14.3 Interior Switchgear
14.4 Air Circuit Breakers
14.5 Conductors
14.6 Interior Feeders
14.7 Padmount Distribution Transformers
14.8 Dry-Type Transformers
14.9 Lightning Arrestor
14.10 Overhead Service
14.11 Underground Service
14.12 Electric Load Bank
14.13 Cable Tray Systems
14.14 Power Factor Capacitors
14.15 Service Entrance Equipment
14.16 Motor Control Centres
14.17 Disconnect/Safety Switches
14.18 Equipment Enclosure
14.19 Splitters
14.20 Junction Boxes
14.21 Wiring Devices
14.22 Circuit Breakers
14.23 Conduits
14.24 Motor Starters
14.25 Grounding
14.26 Contactors
14.27 Electrical Outlets
14.28 Electric Heating
14.29 Snow Melt Cables

15.0 Electrical-Lighting
15.1 Lighting – General
15.2 Lighting - Specialty
15.2 Lighting Transformers
15.3 Lighting Panel Boards

16.0 Electrical-Emergency Power
16.1 Emergency Power Generation
16.2 Transfer Switches
16.3 Generator Switch Board
16.4 Ventilation
16.5 Fuel System
16.6 Emergency Power Distribution

17.0 Communications, Data and Security
17.1 Intercom System
17.2 Public Address System
17.3 Nurse Call System
17.4 Central Clock System
17.5 Central Dictation
17.6 Television System
17.7 Security System Card Access
17.8 Security System- CCTV
17.9 Telephone Systems
17.10 Assistive Listening Systems
17.11 Data Cable Systems
17.12 Uninterruptible Power Supply

18.0 Furniture & Equipment
18.1 Owner Supplied and Installed
18.2 Owner Supplied, Contractor Installed
18.3 Contractor Supplied and Installed
18.4 Ergonomic review
Annexes

A. Room Data Sheets
B. LEED
C. Geotechnical Report
D. Dynamic Energy Analysis Report
E. Ground Source Heat Exchanger Sizing
F. MNECB Checklist
G. Commissioning Plan
H. Interior Design Report
I. Wayfinding Report
J. Snow / Wind / Solar Report
K. Hardware Report
L. Health Care Standards Compliance Report
M. Lean Consultant Report
N. Infection Control Report
O. Phasing / interface of Opportunities #2 & #3 Report
P. Future Expansion Report
Q. Future Internal Churn & Modernization Report
R. Additional Services required of Teams #2 & #3
S. Specification Index
T. List of Drawings
U. Drawings (separate cover)
V. Specifications (separate cover)
W. Costing Studies (separate cover)
4.0 CONSULTANT TEAM QUALITY ASSURANCE

Prior to submitting any deliverable to the Project Director for review, the Consultant and all sub-consultants shall utilize an “Internal Senior Review and Acceptance Process”. To document this step, the deliverable(s) must be clearly signed and dated “Reviewed and Accepted” by the appropriate Senior Reviewer(s). Senior Reviewers will not be regular members / participants of the Consultant’s design team.

Deliverables not clearly signed and dated by the Senior Reviewer(s) will not be accepted by the Project Director.

Senior Reviewers will be responsible to ensure:

☑ Complenteness of document / deliverable relative to these Scope of Services requirements.
☑ Complete coordination between disciplines.
☑ Level of quality commensurate with professional standards.
☑ Accuracy of all designs/solutions/calculations.
☑ Compliance with all codes, standards and/or authorities having jurisdiction.
☑ All deliverables required by these scope of services or required in the performance of the services are delivered on time without prompting by the Project Director.

The Project Director will have access to any correspondence, marked up drawings, etc. between Senior Reviewers and the Consultant’s design team.

Disciplines Requiring Senior Reviewer(s)

- Architectural
- Structural
- Civil
- Mechanical
- Electrical
5.0 LEED & OVERALL SUSTAINABILITY

The following checklist provides the Consultant with a framework within which to develop the project. At every milestone submission to the Project Director (e.g. Concept, Design Development, 50%, 99% and 100%), the Consultant will be expected to include in their written documentation of the project’s progress, an update regarding sustainable aspects and issues.

All major project decisions must be scrutinized with respect to how best to achieve the Owner’s goals relative to LEED and overall sustainability. Meet with the Owner and become familiar with all applicable Provincial policies and requirements as it relates to LEED accreditation, sustainability and energy efficiency as it relates to construction of new assets. Become familiar with industry best practices as well as current / forecasted trends in health care and associated facilities as it relates to these goals.

The checklist provided below is intended to emphasize sustainability’s importance to the project and the fact that it influences all phases of the work as well as the tenets of sustainable design and construction specific to the function of the facility and the geographic / locational realities of western Newfoundland.

☑ Assemble a closely integrated, multidisciplinary design team;

☑ Include an Environmental Coordinator: this could be a sub-consultant, the LEED AP or be the dual responsibility of another team member;

☑ The Environmental Coordinator will table progress of the Project Environmental Strategy as a separate agenda item during the project meetings;

☑ Be familiar with applicable environmental codes, standards and references, including, but not limited to: Canada Labour Code, Model National Energy Code, ASHRAE, IESNA, CSA standards, and LEED;

☑ Complete a comparison of recently completed projects with respect to Owner’s functional program requirements to avoid overestimating total required building area;

☑ Review and become familiar with the Owner’s goals and objectives for this project; requirements of the target will be followed in the design work for this project;

☑ Begin to formulate a strategy for fulfilling the Owner’s specific environmental objectives;
Make building longevity an explicit issue in the overall approach to the building design;

Consider the longer-term impacts of energy use, recycling, and environmental impact throughout the life span of the building;

Consider the future reuse or recycling of the building: environmentally responsible plans for all options, including removal, should be made in advance, as they may impact upon the pre-design and schematic design of the project;

Consider the long-term life of the building when detailing, so that long-life components will not be damaged when shorter life-span elements are replaced;

Analyze all existing information regarding the site and its condition and evaluate alternatives, as necessary, regarding appropriate approaches to developing the site;

Review other environmental statutes which may apply to the proposed development;

Study the site for potential access to solar energy and daylight throughout the year: examine the seasonal sun path and prevailing wind directions and assess potential benefits and challenges;

Explore opportunities for incorporating passive solar or wind design strategies into the design concept, including solar heating and day lighting;

Consider the use of interior and exterior landscaping for both water conservation and air quality;

Explore the use of low-maintenance landscaping;

Consider different energy-efficient lighting options for distinct areas within the building;

Explore preliminary lighting studies that investigate the potential to use both natural and artificial light sources;

Develop a heating and cooling strategy for the project that includes energy efficiency, passive sources, natural and/or renewable sources, etc.;

Investigate new, advanced heating and cooling technologies that have better performance, energy efficiency, lower costs, etc..;
☑ Explore ways to achieve water-efficiency within the building through conservation measures, low-flow fixtures, etc.;

☑ Investigate opportunities for water conservation in HVAC and plumbing systems design;

☑ In the preliminary selection of building materials, consider durability, low and nontoxic maintenance, minimal impact on occupant health, recycled content and/or ability to recycle in the future;

☑ Look for materials available locally i.e. materials with low embodied energy, that can also be maintained with locally available skills;

☑ Look for opportunities to utilize materials with recycled content, or reused/reclaimed materials in the building;

☑ Consider building materials and maintenance products / procedures that minimize impact on occupant health;

☑ Consider the placement of various spaces / functions within the building and how they may affect each other in terms of occupant comfort, fumes from equipment, access to fresh air and natural light, etc.;

☑ Begin developing a waste management strategy for the entire construction and demolition processes;

☑ Investigate local recycling / waste management capabilities: what materials do they accept and would any material need to be transported elsewhere;

☑ Prepare a plan for monitoring of material use and packaging during the construction stage;

☑ Evaluate methods to minimize construction scrap at pre-design stages;

☑ Plan for on-site, source-separation of materials;

☑ Consider how facilities for recycling by building occupants will fit into the schematic design;

☑ Design spaces which are not overly specialized for one use so they will have greater flexibility in the future;

☑ Optimize the size and configuration of interior spaces;

☑ Consider utilizing multi-functional spaces and evaluate all potential space-sharing opportunities;
Maximize open planning of interiors, eliminating inefficient circulation areas, using perceptual volume cues, grouping like functions together;

Consider integrating services to reduce building volume, e.g. full service space depth is only required in certain areas, not over complete building area;

Consider using building thermal mass as a means to help regulate temperature variations;

Investigate day lighting opportunities: consider planning for the controlled admission of direct or indirect sunlight into the facility interior using effective solar control devices;

Plan the interior to provide the greatest possible visual access to the exterior;

Consider lighting to minimize energy requirements;

Plan on lighting with optimum colour rendering index;

Investigate options for an intelligent building lighting control system;

Explore the potential for using ground source / geothermal, solar, wind, passive solar or other renewable energy sources prior to looking at conventional sources, and evaluate them on a life-cycle basis;

Explore the potential for reducing excess solar gain into the building through the use of solar control devices;

Utilize operable windows to provide effective cross-ventilation of occupied areas;

Consider ventilation heat recovery;

Review the potential sources of pollution from outside the building, and consider this information when selecting materials for the exterior skin of the building;

Do not use foam plastic insulation blown in with ozone-depleting CFCs;

Design glazing in particular, as well as all elements of the exterior fabric of the building, to minimize energy consumption requirements within the building;

Consider using highly reflective ceiling systems or finishes;
Consider the overall environmental impact of each material selected, from “cradle-to-grave” or “cradle-to-cradle”;

Review and evaluate the recycled content and embodied energy of current and emerging materials;

Utilize materials easily cleaned and impervious to mould growth;

Consider measures to reduce the total amount of materials used in the project, such as greater modularity in building proportions and assemblies;

Identify materials which will be installed (in significant volumes) that may present an IAQ problem with off-gassing, indicate how this will be dealt with;

Use materials free of porous surfaces that could be conducive to mould growth in the areas subject to frequent moisture;

Establish mechanical design criteria for carbon dioxide levels;

Consider alternative heating and cooling distribution systems, such as hydronic systems, that minimize the distribution of dust and contaminants;

Review the potential sources of pollution from outside the building, and consider this information when designing air handling systems;

Design to optimize air circulation and IAQ;

Explore exceeding code requirements for providing air exchanges per hour;

Investigate the potential for natural ventilation;

Design to control ambient noise entry, and excess internally generated noise;

Consider appropriate sound treatment measures in areas where excess noise is expected to be a problem;

Design HVAC systems and equipment rooms to comply with a Noise Criteria (NC) rating of 40 or better for all occupied zones;

Provide for systems which eliminate vibration transfer through the structure and into the regularly occupied spaces;

Plan to accommodate the recycling of organic wastes in all food preparation areas, e.g.: staff lunch room and or coffee/relief areas;
Utilize advanced computer modeling and life-cycle cost analysis to compare design alternatives and confirm energy operating budget;

Integrate envelope, HVAC, and lighting for best total building performance;

Utilize energy-efficient motors where possible;

Organize electrical service to permit metering of energy use by category: cooling, pumping, fans, and heating;

Facilitate occupant control of heating and cooling at individual zones by providing controls which are easily accessible by occupants;

Utilize DDC for central and zone systems control, e.g. trend logging of all energy metering and day / night settings for lab and office spaces;

Utilize high performance glazing;

Utilize optimal insulation;

Design high-efficiency lighting to minimize energy requirements;

Provide lighting with optimum colour rendering index;

Utilize electronic ballasts;

Design lighting to minimize glare at computer monitors;

Use energy-efficient task lighting where possible;

Investigate alternative means of controlling light according to day lighting availability and/or occupancy;

Investigate the use of an intelligent building lighting control system;

Use occupancy sensors, photocells and dimming to reduce energy use;

Consider heat gain / losses when choosing exterior building colours;

Optimize glazing ratios to balance light / heat penetration;

Reduce life-cycle energy consumption by monitoring the embodied energy of materials;

Investigate equipment that can monitor indoor air quality levels after occupation;
Design to ASHRAE recommendations for prevention of standing water in the ventilation system, to minimize the potential for the growth of pathogenic bacteria and fungi;

Design to eliminate loose mineral fibers within the air system;

Plan ventilation cycles to maximize outdoor air proportions at morning "flushing periods";

Design for optimum filtration performance;

Design humidification and condensate systems to minimize moisture in ducts and contamination of duct liners;

Where possible, avoid materials containing vinyl, nylon, polyester, plastic, imitation leather, plywood, and particleboard which tend to off-gas the most;

Select water-based paints with reduced volatile, preservative, and solvent content, and/or have reduced VOC emissions;

Avoid paints which contain mercury, lead, hexavalent chromium or cadmium compounds in their formulation or tints;

Consider paints recommended by - among other rating programs - the Environmental Choice Program and where possible, paints which carry the Eco Logo label;

Epoxy based paints, including high build systems, over porous surfaces generally perform well in areas with a high moisture content;

Resilient flooring: select products that do not contain soft, flexible vinlyls; contain little or no chloroprene rubber, styrene, butyl rubber, or latex; that are factory sealed with a durable, no-wax finish; and can be installed with low-toxicity adhesive, or no adhesive at all;

Floor systems to be durable and easy to clean and must not support the growth of moulds. Epoxy based paints have generally performed well in wet areas;

Where carpets are specified, ensure that they have low VOC emissions by warranty and no CFC content in the backing;

Specify off-site airing-out of any carpets specified by requiring the manufacturer or supplier to open packaged materials and store them in a
heated and ventilated warehouse from the time of manufacture until delivery to the site;

☑ Specify carpets which do not have a latex backing, if possible;

☑ Specify under cushion made from natural or recycled materials, if possible;

☑ Consider carpets made from natural fibers, including jute and wool if appropriate for the space, traffic volume, etc.;

☑ Specify installation methods that reduce the potential for off-gassing, including tackless strips and low-VOC adhesives where possible;

☑ Use products with low-VOC emissions and reduced formaldehyde content in furnishings and millwork. Pressure treated wood and wood products in general are unacceptable for use in constantly wet areas;

☑ Do not use gypsum wallboard or exposed plywood in areas with high moisture contents;

☑ Select adhesives, glues, caulking materials, solvents, finishes (water-based), retardants, sealers (water-based), and waxes (natural) which have low VOC emissions. Avoid materials containing fire retarders or other toxic substances which can leach out;

☑ Avoid using suspended ceilings as return air plenums and duct returns. Exposed ceilings are preferred in industrial areas;

☑ Avoid the use of uncontained mineral fiber materials;

☑ Eliminate short-circuiting and dead air zones;

☑ Locate dedicated exhaust openings in proximity to photocopiers;

☑ Optimize air intake location: isolate intakes from sources of hazardous air contaminants and nuisance air contaminants; locate intakes to avoid “re-entrainment” of exhaust air;

☑ Utilize low noise generating equipment;

☑ Block flanking sound paths and isolate plumbing noise;

☑ Provide acoustic partitions and appropriate acoustic treatment at ceilings, doors, and sidelights;
☑ Provide adequate, dedicated storage for paper, cardboard, and other consumer recyclables, with at least 75% of the area designed for paper;

☑ Provide for recyclable waste collection of glass, metals, newsprint and plastic, as well as organic waste;

☑ Provide organize and manage the LEED design documentation and certification process;

☑ Review the LEED certification process and regularly report progress to the Project Director;

☑ Prepare submittals for Credit Rulings from the Canada Green Building Council (CaGBC) for interpretation of credit language, principles, or implementation strategies. Credit Ruling fees charged by the CaGBC shall be a reimbursable expense;

☑ Prepare and submit a LEED Certification Application for the project to the CaGBC, including required calculations and documentation for each LEED credit claimed, in accordance with the LEED Certification Plan;

☑ Prepare responses and submit additional documentation required by comments or questions received from the CaGBC after review of the original submission for certification;

☑ Provide specifications that incorporate LEED requirements for inclusion in the Owner's Statement of Requirements. The Owner's Statement of Requirements shall define the Contractor's responsibilities and documentation requirements related to LEED certification, including Construction Waste Management, Construction Indoor Air Quality, and obtaining material credits.

☑ Review construction practices to minimize adverse impacts on adjacent water bodies, water supplies and wastewater systems;

☑ Ensure no polluting substances are released into any water bodies;

☑ Flush-out strategy to include at least one week of full ventilation, using 100% outside air after construction and prior to building occupancy to reduce levels of residual volatile compounds in the air and in building materials;
5.0 ADDITIONAL PROFESSIONAL SERVICES

5.1 INTENT & SCOPE

In order to deliver a cohesive and holistic project, the Prime Consultant is to include the following specialty sub-consultants (as a minimum) in the team:

Core Team

✓ Architect (if not Prime Consultant)
✓ Mechanical Engineering
✓ Electrical Engineering
✓ Structural Engineering
✓ Health Care Consultant (design, process, clinical optimization, etc.)

Additional Design / Technical Specialists

✓ Civil Engineering
✓ LEED Specialist
✓ Budgeting & Cost Planning
✓ Acoustics Specialist
✓ Lighting Specialist
✓ Landscape Architect
✓ Interior Design
✓ Information & Communications Technologies Specialist
✓ Food Services Consultant
✓ Laundry Consultant
✓ Vertical Transportation Consultant
✓ Door and Hardware Consultant
✓ Fire & Life Safety Consultant
✓ Wayfinding Consultant
✓ Snow / Wind / Solar Consultant*
✓ Health Care Standards Compliance

Health Care Specialists (services can be provided by the “Health Care Consultant” noted as part of the Core Team)

✓ Lean Consultant
✓ Clinical Functional Programming
✓ eHealth Consultant
✓ Health Care process innovation specialist
✓ Clinical Equipment Consultant
✓ Infection Control Specialist

* See next page for scope added in addenda #9
The following outlines the requirements of the Wind and Snow Engineering Consultant for Opportunity #1 as referenced in the RFP and associated appendices:

The scope of services will consist of the following:

- ✔️ Air Quality and Exhaust Dispersion Study
- ✔️ Snowdrifting Study
- ✔️ Roof Snow Loading Study
- ✔️ Sliding Ice and Snow Studies

A) DESIGN REVIEW

Throughout Opportunity #1, provide guidance to the design team on air quality (exhaust re-entrainment), snowdrifting, roof snow loading and sliding ice and snow issues. This review shall include recommendations, where necessary, to be incorporated into the design to address any potential problems early on.

B) PROXIMITY MODEL STUDY

Construct a turntable proximity model and building models appropriate for the various studies types with appropriate instrumentation. The scale of the proximity model shall be in the range of 1:300 to 1:500 and shall include all existing buildings and geographical features located within a 400 metre radius from the project site boundary.

C) WIND CLIMATE MODEL

Assemble a statistical model of the local wind climate based on hourly surface wind measurements taken at nearby meteorological stations over a period of at least 15 years.

D) AIR QUALITY AND EXHAUST DISPERSION STUDY

Identify exhaust sources from the proposed buildings that might have undesirable impacts on each other. Conduct wind tunnel testing which simulate exhaust gas emissions and atmospheric dispersion based on a test plan agreed upon by the wind engineering consultant and the project design team. Assess the proposed exhaust stacks and fresh air intake designs by considering the potential for exhaust gases to be entrained into the air intakes and impact sensitive pedestrian areas.
E) SNOWDRIFITING STUDY

Investigate snowdrifting conditions in key pedestrian areas including pedestrian areas, building entrances, parking areas on and around the site. Provide recommendations, where necessary, to mitigate adverse snowdrifting conditions.

F) ROOF SNOW LOADING STUDY

Predict the anticipated snow loads on the roofs of each of the five buildings as per NBCC. As needed, revise the code calculations with scale model tests to account for the various building and roof geometries that may under or over-predict roof snow loads based on NBCC.

G) SLIDING ICE AND SNOW STUDY

Based on the shape of the buildings and anticipated climatological conditions, perform a qualitative evaluation to identify locations that are susceptible to ice or sliding snow. Propose methods to address the effect of sliding snow and ice.

For all of the services detailed above, deliver interim reports as needed to expedite the use of test results.

Deliver a final report which includes a detailed narrative on the methodology, design criteria, results and recommendations.
6.0 **BIM SUBMISSION REQUIREMENTS**

At each phase of the Design and Construction process the *Owner* requires the delivery of the model, electronic versions of hardcopy submissions and other files that support the intent of the Project. In an effort to assist the *Consultant* with the requirements of each phase, file types have been identified in the section entitled Deliverables. To further guide in the specifics of each deliverable, the section describes in further detail the requirements of each phase of this *Project*.

The table provided below describes the types of models and any analysis files required at each submission. Depending on the specifics of each facility, the Building Information Model may vary. It is required that each file will be supplied at the incremental submissions during each phase as they are available.

Upon award, the *Owner* will work to develop a list of proposed “Object Requirements” which will contain a list of objects with tables outlining object parameters required at each phase of the project. Specifically, parameters will be defined by Level of Development (LOD) to better align with industry standards. Each parameter will support the anticipated analysis performed on the model at each phase.

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6.1 PRE-DESIGN

Pre-Schematic Design should align with the First Level of Development (LOD 100) – to be defined after award.

6.1.1 Existing Conditions Model

The Consultant shall provide a parametric model of all existing conditions that may affect their scope of work. Understanding the capabilities of BIM and the ability to capture multiple BIM uses in a single model, objects and model elements designated as Existing Conditions shall be consistently defined as such and clearly managed and differentiated from new construction or proposed future work.

6.1.2 Site Analysis

Surveys shall be provided as 3D topographic information within the Model. Using best BIM practices survey points using comma separated values in .txt format or points available in other CAD applications shall be imported and used as the basis to develop topography. Additional information might be provided as 2D elements as long as they are not required for the project specifics or they are used as a reference only.

6.1.3 Space Program

As the Consultant is developing a space program for this project, the space program shall be able to be seamlessly integrated with the BIM application in use during the Concept design phase, as well as be imported and further developed in any Owner approved space programming application.

6.1.4 Design Authoring - Volumetric Model

The Volumetric Model shall be defined as masses based on the information gathered from the Site and should define the building
footprint. This model should be the basis of what will be developed in future phases.

As the Model evolves, the Design Authoring – Volumetric Model should include:

✓ Building function and occupancy
✓ Building location
✓ Building HVAC equipment information (EER, COP, MBH, kW, tons, )
✓ Building envelope construction components including U-values, SHGC, absorptivity, SRI value, color, thickness, etc.

6.1.5 Zoning & Orientation

The Volumetric Model shall be used in support of an early decision making process for building location and orientation within the property line. The purpose of these simulations is to inform early design decisions with reference to building envelope, lighting, domestic water, and HVAC systems.

Multiple energy simulation iterations shall be performed by changing one component at a time and comparing those results to the results of other iterations in a “percent better” or “percent worse” scenario. Design components that present “percent better” that are in line with the project energy goals will then be developed further in the Concept design phase.

6.2 CONCEPT DESIGN

Concept Design must align with the Second Level of Development (LOD).

6.2.1 Design Authoring - Preliminary Model

The Preliminary Model shall at least include the following generic elements to ensure the appropriate effort within this phase.

✓ Site Model
  ○ Existing Conditions
  ○ Topography
✓ Architecture
  ○ Interior and Exterior Walls
  ○ Doors and Windows
  ○ Stair and Ramps
Ceilings
Roofs
Bounded Rooms with Names and Numbers

Structure
Foundations
Columns
Beams
Bracing
Floors
Mechanical
Equipment
Main Pipe Lines Plumbing
Fitting, Fixtures & Equipment
Main Pipe Lines Electrical
Panels and Fixtures
Panels and Fixtures
Main Conduit Lines

6.2.2 Sustainability (LEEd) Evaluation

All aspects of sustainability should be considered at this stage in order to evaluate the LEED criteria of materials, performance, and processes. Building performance should be optimized by tracking energy use, indoor air quality and space planning for the adherence to LEED standards. LEED goals should be established at this stage and strategies for evaluating, tracking, and documenting LEED within the BIM shall be implemented.

6.2.3 Programming

During this phase a space program is expected to be incorporated into the BIM. The creation of this data can support the design team in program validation, program reporting and tracking. A space programming application may be used to achieve this requirement where customized reports may be produced. All program data in support of the space program regardless of where it derived shall be updated and maintained in the BIM.

The following shall be derived automatically from the BIM:

- Program Function
- Room Name
- Room Number
Assignable Areas measured to inside face of wall objects and designated boundaries of areas

✓ Gross Area measured to the outside face of wall objects

6.2.4 Phase Planning

Design phases should be defined at this stage and shall be consistent throughout all the different project models for proper coordination. Design phases shall be implemented using a tool or a parameter to define or categorize all elements contained within the BIM.

6.2.5 Preliminary Cost Estimate (Square Footage)

Extract square foot information directly from the BIM integrated tools to support comparative costs analysis of options studied. Outputs shall be converted to spreadsheets and submitted as part of the design solution justification at end of this phase.

A summary of construction cost per trade is expected at this stage

6.2.6 Design Review

A detailed Design Review is critical at this stage since the Model will be developed further once it’s moved to the next stage. Program evaluation and layout design, lighting, acoustics, textures and colors should be considered as part of the review.

6.2.7 Preliminary Clash Detection

Preliminary coordination at this stage should, at a minimum, be performed within the major systems on these pairs of elements:

- Architectural Systems vs. Structural Systems
- Architectural Systems vs. Mechanical Systems
- Architectural Systems vs. Electrical Systems
- Structural Systems vs. Mechanical Systems
- Structural Systems vs. Electrical Systems
- Mechanical Systems vs. Electrical Systems
6.3 DESIGN DEVELOPMENT

Design Development must align with the Third Level of Development (LOD).

All systems shall be defined at this stage with the appropriate shapes and sizes along with the proper documentation to support the analysis. Listed below are defined systems with the most common elements defined for each. The list is not intended to be all inclusive, but rather a foundation to build upon.

6.3.1 Design Authoring – Models

The Model will evolve from the previous phase and shall include better defined elements to ensure the appropriate effort within this phase.

Additional elements and objects may need to be added from the previous stage Design Authoring - Preliminary Model to represent new features of the project.

6.3.2 Sustainability (LEED) Analysis

This model shall be detailed and finalized enough to use as an indicator of approximate building energy use after occupancy. This model shall also serve as a baseline for future comparisons.

Custom parameters may be created to associate LEED information to the different elements within the BIM.

This model shall be used as a tool to facilitate post-occupancy commissioning should discrepancies between modeled and actual energy use arise.

6.3.3 Cost Estimation

All elements or objects included within the Model should be automatically extracted and quantified for estimating purposes.

6.3.4 Clash Detection

Coordination at this stage should be performed within the major and minor systems based on these pair of elements:

- Architectural Systems vs. Structural Systems
6.3.5 Program Validation

Program requirements should be compared and validated with the actual design solution through reports and charts generated automatically from the BIM.

6.4 CONSTRUCTION DOCUMENTS

Construction Documents should align with the Fourth Level of Development (LOD 400). This model should include the current design models from each phase through the end of Design Development.
6.4.1 Design Authoring - Final Model

The Model will keep evolving from the previous phase and shall include construction specifications along with constructions details including text, dimensions, tags, notes, materials, colors and any other description or characteristic required for construction.

As previously stated, the integrity of the Model should not be compromised to reflect the 2D representation of 3D elements contained within the BIM.

6.4.2 3D Coordination Validation

3D coordination validation should evolve from the previous phase. All conflicts previously found should be resolved at the end of this phase by running a final Clash Detection Report to validate the absence of Conflicts.

6.4.3 Cost Estimation

Quantity takeoffs should be automatically extracted from the model. Cost should be validated by integrating applications with Quantity tools or exported as spreadsheets for traditional methods.

6.4.4 Sustainability (LEED) Reporting

All LEED documentation and reports should be completed at this stage and should be ready to be submitted as part of the project deliverables.

These documents and reports will use the previously defined custom parameters in which LEED information have been associated to the different elements within the BIM.

6.5 SERVICES DURING CONSTRUCTION

Services during Construction should align with the Fifth Level of Development (LOD 500) and the Services during construction section of the Scope of Services section. The design BIM will be provided in its native authored format along with an assembled BIM in a format appropriate for collaboration. The Contractor shall use the Design BIM as a basis for creating a construction model to achieve the desired BIM uses outlined in this section.
6.5.1 Construction System Design

The BIM shall be used to better understand how complex element or elements of the project can get built on the site. These virtual mock-ups can be used to replace the on-site mock-ups and facilitate or expedite construction through tools that will allow linking the BIM sequencing, take offs, etc.

These virtual mock-ups will enable the trial of alternate options before construction begins allowing the contractor to select the best one that fits the project needs.

6.5.2 Phase Planning

Phases during Construction should be defined after the Design phase is completed and before the project is handed over for construction. Construction phases shall be implemented to improve constructability through the use of tools that will allow linking the BIM to a construction scheduling application, such as Primavera and/or Microsoft Projects.

The BIM shall be used to analyze and perform construction sequencing to avoid conflicts once construction starts and therefore improve the constructability process.

6.5.3 Scheduling

During construction the BIM shall be utilized to facilitate activity scheduling. Prior to construction the BIM shall be linked to the schedule by the Contractor for the purpose of 4d scheduling. Using applicable tools and applications elements or parts of the BIM shall be linked to the specific task in the schedule for the purpose of informing critical planning decisions and construction methods, site space utilization, resource allocation, activity sequencing, visualization and communication. Primary elements of the model listed below shall be linked to the schedule to achieve desired results.

✓ Structural system—structural framing components including foundations, grade beams, columns, load bearing walls, floor and roof decks and support.

✓ Exterior building envelope—stud wall, exterior panels and assemblies, curtain walls, openings, and glazing.

✓ Interior partitions—main interior walls, plumbing walls, and wall assemblies.
✓ Mechanical systems—main ductwork and equipment, separated by floors.

✓ Roof systems—roof assemblies, major equipment, and openings.

✓ Site work—excavation work, footings, foundations, and slabs on grade.

✓ Plumbing systems—main connection lines from site and main plumbing lines.

Additional considerations shall be made to specific construction activities and task where detailed construction planning is required such as virtual test installations and logistics planning. Linking the model to the schedule in these instances shall improve coordination and parallel activity workflows reducing conflicts and delays by location and resource unavailability.

6.5.4 3D Coordination

3D coordination is an on-going process which should start at the early stages of the Design phase and evolve and mature as the project progresses.

3D coordination will also happen during construction to assist and to support the creation of the “as built” model once construction is completed so a conflict-free model can be provided for the operations and maintenance of the building.

6.5.5 Digital Fabrication

The BIM can be used to extract information directly from it to streamline the pre-fabrication and/or fabrication of elements such as pipes, ducts, structural members, etc. A list of intended objects that will be part of this effort shall be defined at the Construction phase so they can be modeled using the characteristic defined within their construction specifications.

6.5.6 Record Modeling

As construction progresses, the BIM shall be updated as changes occur on site due to conflicts and/or changes in scope this way at the completion of the project the BIM becomes the “as built” and can be leveraged beyond construction.
6.5.7 Asset Management

The “as built” BIM shall be leveraged to manage and operate the building once construction is completed, to that extent, the BIM shall include fields (parameters) to support this effort.

These fields may vary from project to project and may be different depending on the type of project as well, therefore, they should be defined and incorporated within the BIM at the Construction phase with the input of the people responsible for maintenance and operations.