

PROJECT BRIEF

PROJECT ADMINISTRATION (PA)

PA1 PROJECT ADMINISTRATION

INTENT

The following administrative requirements apply during all phases of project delivery and must be taken into account by the Consultant in its fee proposal. Associated services are complementary to Required Services (RSs) and Additional Service (ASs).

1.1 PWGSC Project Management

The Project Manager is the Departmental Representative directly concerned with the project and is responsible for its progress. The Project Manager is the liaison between the Consultant, Public Works and Government Services Canada (PWGSC) and the Client Departments.

Public Works and Government Services Canada PWGSC provides general supervision of the project and manages the Consultant's contract during all phases of development. Unless directed otherwise by the Departmental Representative, the Consultant must meet all federal requirements and obtain all approvals necessary for the work.

1.2 General Project Deliverables

When deliverables and submissions include summaries, reports, drawings, plans, specifications, estimates or schedules, six (6) hard copies must be provided and the electronic version must be uploaded to the electronic document-sharing site (in original software format **and** PDF), unless otherwise specified.

Where deliverables and submissions include models or the results from any given modelling process, versions must be provided in the native electronic format and in 2D (AutoCAD) and 3D (BIM) formats, unless otherwise specified.

Electronic format and versions refer to the following (a PDF version must be provided in addition to the formats below):

Deliverable	Format accepted by PWGSC
Written reports and studies:	Microsoft Word
Spreadsheets and estimates:	Microsoft Excel
Presentations:	Microsoft PowerPoint
Schedules:	Microsoft Project
Drawings:	AutoCAD and
BIM models:	Electronic 2D format– AutoCAD
	Electronic 3D format – Revit
Specifications:	Microsoft Word

BIM models: Clarifications concerning interim deliverables to be provided when milestones are achieved, and based on models coordinated by Project Team members,

including all information-sharing requirements, will be indicated in the BIM Project Execution Plan.

The Construction Manager will be responsible for setting up an electronic document-sharing site. The Consultant will be responsible for uploading the various deliverables to that site.

1.3 Communication Channels

The Consultant must develop a Communications Management Plan and submit it to the Departmental Representative for approval. Once the plan has been approved, the Consultant and all of its sub-consultants must follow it. The Consultant must keep the Communications Management Plan up to date and revise it as required.

The Communications Management Plan must be developed as follows:

- It must cover all project stakeholders;
- It must be based on the stakeholders' project organization chart in order to maximize the effectiveness of communications;
- The Departmental Representative must be the single point of contact with stakeholders in the non-project organization chart (client department, etc.). The Consultant must not contact the latter stakeholders.

1.4 Media

The Consultant must not respond to requests for project-related information or questions from the media. Such inquiries are to be directed to the Departmental Representative.

1.5 Meetings, Conferences and Workshops

The design and construction teams must meet regularly over the course of the project to ensure that work is proceeding in a diligent and efficient manner. Meetings are to be held either at the PWGSC offices in Montréal (800 de la Gauchetière Boulevard West, Suite 7300, Montréal), at the project site, at the Consultant's place of business, or virtually. The Consultant is responsible for proposing a location that is appropriate for the type of meeting, the proposed location must be authorized by the Departmental Representative.

The Consultant must schedule and organize the various types of meetings based on their status as a Required Service (RS) or an Additional Service (AS):

- RS:
 - Project oversight meetings
 - Coordination meetings
 - Design meetings
 - Technical meetings
 - Presentations and presentation review meetings
 - Tender meetings
 - Construction meetings
 - Commissioning meetings
 - Risk management meetings
 - Cost, schedule and deliverable coordination meetings
 - Value analysis meetings
 - Meetings related to the life cycle analysis (LCA) process for the building

- Lessons learned meetings
- Building information modelling (BIM) management and coordination meetings
- Any other meeting relevant to the project
- AS:
 - Workshops related to the integrated design process (IDP)
 - Furniture coordination meetings
 - Any other meeting relevant to the project

The Consultant is responsible for convening all relevant members represented in the project organization chart based on the type of meeting, conference or workshop. Upon explicit direction from the Departmental Representative, the Consultant may also be responsible for convening stakeholders from the non-project organization chart (client department, etc.). The Consultant is also responsible for ensuring the attendance of sub-consultants when invited.

At every phase of the project (except RS6 – Construction), the Consultant must prepare and distribute the agenda (at least 24 hours before meetings), send out the invitations (using MS Outlook), and prepare and distribute the minutes. The Consultant must prepare and distribute the draft minutes within two (2) working days of the meeting. Upon reception of comments or approval by the Departmental Representative, the Consultant must prepare and distribute the final version of the minutes within two (2) working days of receiving comments or approval. The Consultant should specify a time frame of no more than 5 business days for receipt of comments or approval when sending the draft minutes.

Although the Consultant must attend RS6 (construction) meetings, the Construction Manager will be responsible for preparing and distributing the agenda, the invitations and the minutes during this phase.

1.6 Response Time

For this project, the service standard for key personnel of the Consultant and sub-consultants will be two working days to respond to communications sent or agree on an action plan with the Departmental Representative.

This service standard applies to, but is not limited to, information requests, miscellaneous communications, meeting requests, requests for expert opinions, and requests for information during the construction phase.

1.7 Submissions, Reviews and Approvals

1.7.1 Writing style of deliverables

The writing style of documents prepared by the Consultant must be logical, objective, clear and concise. Documents must be organized so that the reviewer can easily locate references and respond to related information in the document.

1.7.2 Content of reports

Reports typically include the following sections, but may contain other sections:

1. A cover page indicating the project title, nature of the report, the Consultant's contract number, author's name, PWGSC contract name and reference number, and date in a non-ambiguous format (e.g., January 1, 2020);
2. A table of contents;
3. An executive summary that provides an accurate and complete synopsis of the report with the same structure, including only key points, results and recommendations requiring review and approval;
4. An introduction;
5. A methodology section explaining the methods and tools used, such as weightings and comparative analysis;
6. A section presenting the content;
7. A conclusion or synopsis; and
8. Appendices containing supporting material referenced in the report and supplementary and supporting information.

Reports must be written in accordance with the following instructions:

1. Use an organizing system, such as MS Word Document Map, for ease of reference and cross-referencing;
2. Use correct grammar, including complete sentences, to avoid ambiguity and facilitate translation when required;
3. Avoid incorrect use of technical terms, and avoid using trade jargon and complex sentences;
4. Write efficiently, with only essential information included in the body of the report and supporting information in an appendix.

1.7.3 Revisions and work in progress reviews

The Departmental Representative, the PWGSC Professional and Technical Services Team (architecture, design, engineering, environment, etc.) and other quality assurance teams, users, and authorities having jurisdiction will, at every phase of the project, review the Consultant's deliverables and provide comments. The Consultant must allow 20 business days for review of the various deliverables. The Consultant must respond formally in writing to all comments and adjust documentation until all comments are resolved to the satisfaction of and acceptance by all authorities. In the case of conflicting comments, the Consultant must identify these to the Departmental Representative, who will make the final decision.

1.7.4 Presentations

This list is not exhaustive, but includes:

Stakeholders in the non-project organization chart such as PWGSC senior management and client departments

Purpose of presentation:	High-level presentation vulgarize, for a non-technical audience, the key points, results, issues, options, directions and recommendations.
Presentation format:	Oral presentations with appropriate support such as PowerPoint presentations.

Stakeholders in the project organization chart, such as the PWGSC Professional and Technical Services Team (project management, architecture, design, engineering, environment, building management team, users and the Construction Manager)

Purpose of presentation: A detailed presentation for a technical audience to report on key points, results, issues, options, directions and recommendations.

Presentation format: Oral presentations with appropriate support such as reports, PowerPoint presentations, drawings, BIM mock-ups, specifications, data tables and charts.

The Ville de Montréal and the Ministère de la Culture et des Communications du Québec (MCCQ)

Purpose of presentation: Obtain the agreement of the municipality to proceed, obtain a municipal building permit, provide information to the urban planning advisory committee (UPAC), deal with studies for an implementation and architectural integration plan (PIIA), etc.

Presentation format: As determined by the municipality or the Ministry.

1.7.5 Reviews and approvals

The Consultant must obtain the Departmental Representative's acceptance, in writing, during each of the project phases before proceeding to the next phase.

PWGSC reserves the right to reject incomplete or unsatisfactory work. Deliverables that have been rejected in this way must be taken back and resubmitted for approval entirely at the Consultant's expense. PWGSC acceptances do not preclude the rejection of deliverables deemed to be unsatisfactory in subsequent reviews. If project design or technical analysis reveals that earlier acceptances should be withdrawn, the Consultant is responsible for redoing the work and resubmitting it for acceptance at the Consultant's sole expense.

R = Review
A = Approval

Chart of Reviews and Approvals (see the RSs and ASs for a complete list of deliverables)	PWGSC		Client		Treasury Board (TB)		Property Management (PM)		Construction Manager	
	R	A	R	A	R	A	R	A	R	A
RS1 Analysis of Project Requirements – Verification and Validation										
1. Delivery Strategy and Schedule	x	x					x			
2. Report on Class D Order of Magnitude Cost	x	x		x					x	
3. Sustainable Development Strategies Report	x	x		x			x			
4. Communications and Stakeholder Management Plan	x	x							x	
5. Project Requirements Analysis Report	x	x		x			x		x	
RS2 Schematic Design										
1. Design Options	x		x				x		x	
2. Recommended Design Option		x								
3. Sustainable Development Accreditation Checklist	x						x		x	
4. Class C Cost Estimate	x	x		x					x	
5. Implementation and construction Timeline	x								x	
6. Communications and Stakeholder Management Plan Update	x	x							x	
7. BIM Mock-up	x	x					x		x	
RS3 Design Development										
1. Design Development Documents	x	x	x				x		x	
2. Class B Estimate(s), descriptions of the various construction packages, and Class B Estimate for Each Construction Package	x	x		x		x			x	

3. Sustainable Development Accreditation Checklist and LCA Report	x	x							x	
4. BIM Mock-up	x								x	
5. Communications and Stakeholder Management Plan Update	x	x							x	
6. Implementation Schedule for Each Construction Package	x	x					x		x	
RS4-5 Construction and Tender Documents (by package)										
1. 33%, 66% and 99% Complete Construction Drawings and Specifications	x	x	x				x		x	
2. Class A Estimates (33%, 66%, 99%, 100% and post-addenda)	x	x		x					x	
3. Finalized Bid Documents (by package)	x	x	x				x		x	
4. Sustainable Development Accreditation Checklist and LCA Report	x								x	
5. Total Cost Analysis	x								x	
6. BIM Mock-up	x								x	
7. Human Resources and Communications Plan	x	x							x	
8. Implementation Timeline	x	x							x	

1.8 Other Authorities Having Jurisdiction

Although the federal government does not formally recognize jurisdiction at other levels of government, the federal government may choose to voluntarily comply with the requirements of these other authorities unless otherwise indicated by the Departmental Representative. In areas of conflict concerning provincial requirements, federal authority prevails.

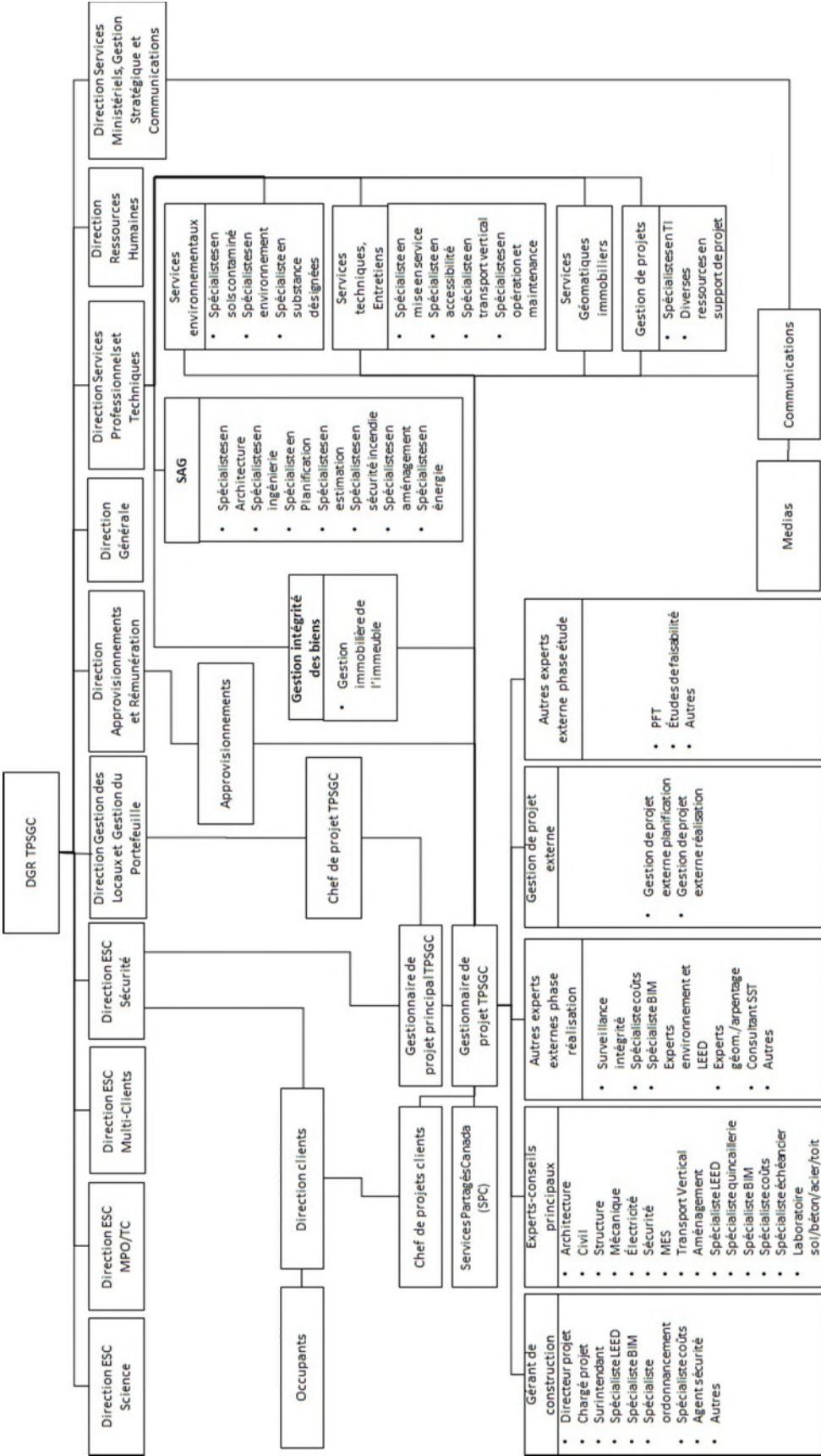
1.9 Building Permits

On behalf of PWGSC, the Consultant must support the Construction Manager in applying for building permits from the Ville de Montréal by supplying supporting documentation. The Consultant must also make the necessary presentations. The Construction Manager will be responsible for payment of the permit. The Consultant must participate in any negotiations and assist in resolving related issues prior to tender of each construction package.

2.0 Project Team Organization and Role

2.1.1 Project Team organization

This project is to be managed and implemented in a collaborative manner. All members of the Project Team are required to work cooperatively at every phase of the design and construction process in order to achieve a successful and meaningful end result. Under the Departmental Representative's leadership, all Project Team members will be responsible for establishing and maintaining professional and cordial relations. The Project Team refers to the key representatives involved in coordinating and delivering this project.



2.1.2 PWGSC Team

Regional Director General (RDG)

- Provides supervision and approvals for the project
- Acts as a point of contact for senior management of occupant departments
- Updates senior management of occupant departments on project progress and facilitates decision-making regarding major project issues

Director, Accommodation and Portfolio Management (APM))

- Acts as a point of contact for PWGSC senior management and NHQ
- Updates senior management on project progress and facilitates decision-making regarding major project issues

Director, Client Service Teams (CST) – Security

- Acts as a point of contact for clients for major issues
- Updates client directors on project progress, facilitates decision-making and provides strategic oversight of activities

Director, Acquisitions and Compensation

- Acts as a point of contact for PWGSC senior management
- Ensures the availability of resources for the procurement component of the project

Director, Professional and Technical Services

- Acts as a point of contact for PWGSC senior management
- Ensures the availability of the necessary resources for the professional and technical services component of the project

Director, Corporate Services, Strategic Management and Communications

- Acts as a point of contact for PWGSC senior management
- Ensures the availability of the necessary resources for the communications component of the project

Project Leader (PWGSC)

- Responsible for all aspects of the project, as well as the supervision and approval thereof, and acts as the client.
- Obtains the approval and funding needed to carry out the project, and provides overall leadership to the project team.

Senior Project Manager (PWGSC)

- Responsible for high-level management of the project.
- Determines the general directions of the project.
- Acts as liaison between senior management and the Project Team.
- Manages the project's major issues.

Project Manager (PWGSC)

- Acts as the single point of contact during project delivery
- Manages delivery phase activities
- Monitors project progress
- Ensures that a technical team is set up within PWGSC to obtain technical expertise/advice and guidance on architecture, engineering, spatial information,

sustainable development, furniture specifications and procurement from Architecture and Engineering Services and Acquisitions and Environmental Services

- Ensures that the technical team is set up externally
- Provides project coordination with client departments
- Manages the project for PWGSC and assigns and defines duties and responsibilities identified in relevant internal and interdepartmental agreements
- Manages the procurement process, including development of the terms of reference and the bid evaluation criteria, with assistance and expertise from Acquisitions and Architecture and Engineering Services

Procurement

- Ensures that all PWGSC procurement activities meet quality standards and comply with applicable policy and regulatory practices

Integrated Asset Manager

- Responsible for managing property and facility operations and maintenance in Crown-owned, leased or custodial assets/facilities
- Responsible for ensuring the integrity of the assets and providing advice on the project's operational functionality
- Responsible for administering new leases
- Provides advice to the Project Manager concerning the proposed scope of work
- Participates as a key member of the commissioning inspection team

Project Management

- The PWGSC Project Management Team is comprised of project managers, project authorities, IT specialists, and various project support resources. The team supports the Project Manager and acts as a single point of contact between the various project stakeholders during all phases of the project.

Architectural and Engineering Services (A&E)

- The technical team responsible for ensuring that the technical and design aspects of the project are well-defined and properly communicated. It protects the best interests of the Crown and ensures that requirements are compliant with client and departmental standards, with technical regulatory requirements, and with codes and standards. It ensures, through quality assurance and quality control processes, that service providers and consultants understand and apply these requirements at all stages of the project.

Environmental Services

- The technical team responsible for anticipating and preventing the degradation of environmental quality (including air, water, land, natural resources, flora, fauna and humans) and incorporating such factors into the planning and decision-making processes for design, construction and maintenance activities on real property projects in order to promote sustainable development. This team also ensures the

integration and implementation of government sustainability commitments throughout the project.

Technical Services and Maintenance (TSM)

- The technical team responsible for ensuring that aspects related to commissioning, accessibility, vertical transportation and project operation and maintenance are well-defined and properly communicated. It protects the best interests of the Crown and ensures that requirements are compliant with client and departmental standards, with technical regulatory requirements, and with codes and standards. It ensures, through quality assurance and quality control processes, that service providers and consultants understand and apply these requirements at all stages of the project.

Real Property Geomatics

- The technical team responsible for coordinating the geo-referenced data management aspect of the project.

Communications

- A designated team that handles all official communications related to the project. This team is responsible for communicating with the media.

2.1.3 Other government departments (clients)

Client Project Leaders

Client department representatives who actively participate in Project Team activities at every stage of the project.

A Project Leader will represent each occupant department and will be responsible for

- identifying all client-specific requirements, including the ongoing interpretation of operational needs in the context of internal departmental and broader government objectives;
- determining security requirements and information management and information technology (IM-IT) requirements and needs.

Client Executive

Client Executive representatives. Act as the client point of contact for major issues. Monitor project progress and facilitate strategic decision-making.

2.1.4 Other government departments (services)

Shared Services Canada (SSC)

The department responsible for ensuring that all information technology needs are properly identified, communicated to the Project Team, coordinated with the other project requirements, and incorporated into the project, all in a timely manner.

The SSC team is made up of IT specialists and external suppliers contracted by SSC.

2.1.5 Other stakeholders

Construction Manager

Generally, but not exclusively, the Construction Manager is responsible for the execution and supervision of the work and will join the Project Planning and Design Team as a construction expert. The Construction Manager will be responsible for ensuring that the project is built to the desired quality, within the accepted project schedule and at a construction cost less than or equal to the approved construction budget. The Construction Manager participates in the integrated design process and attends team meetings, design meetings, design workshops and site meetings.

Other outside experts, delivery phase

PWGSC will engage the services of outside experts during the project's delivery phase. These experts will be an integral part of the Project Team and will be involved at various levels depending on their duties and responsibilities.

Other outside experts, study phase

PWGSC engaged the services of outside experts during the project definition phase. These experts participated in the various preparatory studies associated with project definition.

Outside Project Management

PWGSC has used and will use outside project management services during the project's planning and delivery phases. They provide support in the day-to-day management of the project and provide construction advice throughout the project. The outside project management team will also provide a review of deliverables submitted by the Consultant and the Construction Manager.

PROJECT DESCRIPTION (PD)

PD1 PROJECT INFORMATION

Public Works and Government Services Canada (PWGSC) intends to hire a Consultant and its multidisciplinary team (e.g., mechanical, electrical, civil, structural and other engineers as well as LEED, BIM and other specialists) to provide the services required for this project.

- | | |
|--|--|
| 1.1 PWGSC Project Title: | New Montréal Justice Complex |
| 1.2 Project Address | 46 St-Jacques Street, Montréal, Quebec |
| 1.3 PWGSC Project Number: | R.090448.500 |
| 1.4 Client: | PWGSC |
| 1.5 Principal Users: | Courts Administration Service (CAS)
Administrative Tribunals Support Service of
Canada (ATSSC) |
| 1.6 PWGSC Senior Project Manager: | Jimmy Rondeau, Arch. |
| 1.7 PWGSC Project Manager: | Frédéric Boily, Arch. |

PD2 PROJECT IDENTIFICATION

2.1 *Description*

Public Works and Government Services Canada (PWGSC) requires Required Services (RS) and Additional Services (AS) from a consultant for the construction of a new building to house the Courts Administration Service (CAS) and the Administrative Tribunals Support Service of Canada (ATSSC).

In accordance with the National Accommodation Strategy for federal courts and tribunals developed by PWGSC in conjunction with CAS and ATSSC, the Government of Canada has agreed to the construction of a new Crown-owned building in Montréal on land bordering Notre-Dame and St-Jacques streets. The new building, with an approximative gross floor area of 12 708 square metres, is to house CAS and ATSSC offices and the offices of the building manager.

The work covered by this Request for Proposals relates to, but is not limited to, the construction and complete fit-up of the new building and the peripheral site.

2.2 *Work Context*

The Consultant must factor in the following:

1. The project will be carried out using the construction management model with a Construction Manager 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 Construction Manager is the entity responsible for providing the construction services stipulated in the construction management contract.
2. The new building will be built on a vacant lot located at 46 St-Jacques Street in Montréal, in a densely built-up urban area. The fact that the land is situated in the historic district of Old Montréal means that the design of the building will have to take into account the heritage aspect of the site and neighbouring buildings.
 3. The concept of the NMJC building must also
 - be consistent with the brand image representing the Canadian justice system and the values of judicial clients;
 - meet client requirements at all levels (facilities, functions, circulation, zoning, programs, operations, quality, technology, security, etc.);
 - aim for optimal architectural quality and achieve exemplary levels of energy performance.
 4. The project may attract a great deal of media coverage. This must be taken into consideration at every stage of the project.

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, as described in the RSs.

2.3.1 Site description

The intended address for the building is 46 St-Jacques Street, Montréal. The land was previously owned by the Ville de Montréal but is now Crown property. The site is located in the Ville-Marie borough, on the block bounded by St-Jacques Street, St-Laurent Boulevard, Notre-Dame Street West and Place d'Armes. Its "L" shape is irregular and crosses from St-Jacques Street to Notre-Dame Street. The site covers 2,023.8 m² and was previously used as a parking lot (the site will not be used for other purposes until construction begins). It is entirely concreted, and the only built structure is a small attendant booth. The rest of the block is densely built up and mainly commercial. The current site corresponds to lot 1 180 954 in the official cadastre of Quebec.

2.3.2 Site environmental constraints

An analysis of site environmental constraints and issues has identified certain issues at or near the site, primarily the following.

Contaminated Soil

An environmental site assessment (ESA) was conducted to identify the potential sources of contamination linked to the current and past activities on the site. The study revealed the presence of four potential or actual sources of environmental impact on soils:

- The presence of filler pipes and vents on the northeast wall of the adjacent southwest building located at 55 Notre-Dame Street West (Aldred Building) suggests the

probable presence of heating oil tanks on this neighbouring property. They may pose a risk of environmental impact to the soils at the study site.

- The presence of a property listed in the MELCC's inventory of contaminated land whose remediation has not yet been completed at the site located across Notre-Dame Street West, at 50 Notre-Dame Street West, constitutes a risk of environmental impact for the soils at the study site.
- The presence of buried waste (demolition debris, concrete, mortar, cement, bricks, slag and ash) in the backfill, possibly resulting from the demolition of old buildings on the site, constitutes a risk of environmental impact to the soil.
- The presence of old tanks, probably for heating oil, that have not been inventoried throughout the history of the site is strongly suspected and constitutes a risk of environmental impact to the soils at the site.

It should be noted that soils at or near the four impact sources were characterized in previous site studies. A study conducted for Public Services and Procurement Canada (PSPC) by Akifer on December 11, 2018 (dated March 2019) confirmed the presence of two areas of contaminated soil in the "A-B" range, five areas of contaminated soil in the "B-C" range, seven areas of contaminated soil in the RBCS "C" range, and three areas of contaminated soil above the RBCS Schedule I limits. Of these 17 areas, 13 do not meet the CCME's federal guidelines for commercial use (CSQG and Canada-wide standards).

A Phase 2 ESA and geotechnical study revealed soil contaminated with hydrocarbons at a depth of approximately 10 meters. An additional characterization is in progress (summer 2020).

An environmental impact assessment (EIA) under the 2012 *Canadian Environmental Assessment Act* (CEAA) is being carried out (summer 2020) to determine the project's potential impact on the environment and to identify mitigation measures.

A study of the site's vulnerability to climate change is also being carried out (summer 2020) to determine the elements of the site most at risk from major climate events and from climate change in general. This study will also provide recommendations and guidelines to be considered in the design of the new building.

All of the above-mentioned studies will be provided to the successful proponent, see PD9.

2.3.3 Archaeological analysis

The archaeological analysis will be completed in the summer of 2020 for a specific part of the site; the results will be provided to the successful proponent.

Previous archaeological discoveries are described in the document entitled "Analyse de mise en valeur des ressources archéologiques et historiques" (2020), which is available to proponents under this Request for Proposals (see PD9).

2.3.4 Archaeological and historical resource development analysis

The site of the new complex is in the heart of Old Montreal, and PWGSC made a commitment, when acquiring the land, to submit the results of the archaeological digs on the site. The archaeological discoveries and historical data for the site, from the 17th century to today, are presented in a report that was completed in spring 2020. This information will serve as a basis for understanding the heritage value of

the site, of Old Montreal and of its built environment. It will also inform the building design process, promote the project's integration into the historic urban landscape and will serve for the design of the archaeological heritage enhancement project that must be undertaken as part of the proponent's mandate.

Reference: "*Analyse de mise en valeur des ressources archéologiques et historiques*", by PSPC, April 2020.

2.3.5 Photos of the site



View
from St-
Jacques
Street
toward
the
southeast



View from
St-
Jacques
Street
toward the
southwest



View from
Notre-
Dame
Street
toward
the
northwest

2.4 Building Users

In addition to meeting the requirements of PWGSC and the property manager that will operate the building on behalf of PWGSC, the new building will have to meet the needs of the following occupant departments.

Courts Administration Service (CAS)

The CAS will be the new building's main occupant. The role of the Courts Administration Service is to provide administrative services to four courts of law: the Federal Court of Appeal, the Federal Court, the Court Martial Appeal Court of Canada and the Tax Court of Canada. Those services permit individuals, companies, organizations and the Government of Canada to submit disputes and other matters to the courts, and enable the courts to hear and resolve the cases before them fairly, without delay and as efficiently as possible.

Administrative Tribunals Support Service of Canada (ATSSC)

The ATSSC will also occupy the new building. The ATSSC's mission is to provide the tribunals it serves with the support and facilities required to exercise their powers and perform their duties and functions in accordance with their statutory responsibilities. The ATSSC provides services which support tribunal chairs and members in fulfilling their statutory responsibilities and ensures that their independence is protected in a manner which promotes Canadians' confidence in the federal tribunal system.

These services include the specialized services required by each court (Registry service, legal services, and mandate and member services), as well as internal services (e.g., human resources, financial services, management and court technology, information, accommodation, security, planning and communications).

Other users

In addition to meeting the needs of the occupant departments listed above, the new building must meet the needs of the following users.

Property manager

Acting as the operator of the building on behalf of PWGSC, the property manager will occupy the new building.

Canadian Corps of Commissionaires

Members of the Canadian Corps of Commissionaires serve as the building's security guards and occupy the Operational Security Centre (OSC) around the clock; the OSC is located near the building entrance.

Maintenance

Employees of a private company responsible for building maintenance, working day and evening shifts, will occupy the building.

Others

Other users may be added as required.

2.5 Costs

For information purposes, the cost of construction is capped at **\$85 million** (excluding taxes).

2.6 Project Schedule

The main project execution phases are as follows:

- | | |
|--|--------------------------------------|
| ➤ Award of consulting contract: | June 2021 |
| ➤ Completion of tender documents for 1 st package | July 2023 (= end of phase A) |
| ➤ Start of package tendering: | August 2023 (= beginning of phase B) |
| ➤ Start of construction: | November 2023 |
| ➤ Move-in: | October 2026 (at the latest) |

Note that activity durations are preliminary, and the Consultant is responsible for verifying and confirming the feasibility of the above schedule as part of its scheduling mandate. The project schedule is driven by the need to move users into the new building as soon as possible and no later than October 2026.

The Consultant must work closely with the Departmental Representative, the Construction Manager and the users to maintain or reduce the durations set out in this schedule. The warranty period is not included in the above schedule.

PD3 PROJECT BACKGROUND

The CAS has been in leased offices at 30 McGill Street in Montréal since 1994. It is the only tenant in the building, which was built specifically for its needs. The ATSSC has been in leased offices at 1501 McGill College Avenue in Montréal since 2014. Both addresses are located in downtown Montréal.

The 30 McGill Street building was built to meet the CAS's needs following a public call for lease tenders by PSPC in 1992. The layout of the premises is not standard, as the space consists mainly of hearing rooms, judges' offices and ancillary premises in support of court services.

Since its establishment in 2014, the ATSSC has been at 1501 McGill College Avenue. Those offices were originally occupied, since 2008, by the Canada Industrial Relations Board (CIRB). The CIRB already had hearing rooms and support staff, and the other administrative tribunals were added without making any changes to the space used.

Studies have shown that construction of a new building is the best option and would meet the clients' accommodation requirements for many years. The new building will meet all current requirements, will have environmental certifications and will offer modern, leading-edge workspaces fully suited to delivery of the services of the two occupant departments.

PD4 PROJECT OBJECTIVES

4.1 Section Content

Several objectives have been set to ensure the success of the project. They have to do with the following elements:

4.2 Quality Management

4.3 Sustainable Development

- 4.4 Waste Management
- 4.5 Compliance with Codes, Laws and Regulations
- 4.6 Risk Management
- 4.7 Cost Management
- 4.8 Schedule Management
- 4.9 Scope Management
- 4.10 Safety and Security

4.2 Quality Management

4.2.1 Design Principles – General

The Department expects the Consultant to maintain a high standard of architectural and engineering design, based on recognized contemporary design principles. All design elements, planning, architecture and engineering must be fully coordinated among the disciplines and be consistent with good design principles.

The quality of the materials and the construction methods must be commensurate with the type of building, the desired quality and the budget. The design of the building and the choice of materials must also allow for an overall reduction in the building's intrinsic carbon footprint, compared with a reference building, and must be made using a life cycle analysis approach that takes into consideration the useful life of the building. Thus, the choice of materials and of equipment must take the results of the building's LCA into account. The use of experimental materials must be avoided.

The quality management process that will be applied to the project must be followed and implemented in all of the Consultant's branches and by all its sub-consultants.

The coordination process for drawings and specifications among all disciplines shall be carried out by the Consultant and all its sub-consultants. The expected deliverable is that all drawings and specifications be fully coordinated among all disciplines and that their content address the client's needs. The Consultant is responsible for ensuring that submitted documents are coordinated.

The developed project must ensure that operating costs are kept as low as possible. This is to be achieved through compliance with the energy budget, selection of equipment requiring minimum operating personnel, easy-to-maintain building finishes, etc.

The character, overall configuration and scope of the project and the materials used must be compatible with the surrounding area and must enable the designed facility to be resilient to climate change.

The design must permit maximum flexibility in immediate and future use of the space.

It is important to understand that needs must be met within the available budgets and in compliance with the Project Schedule in a creative and proactive manner.

4.3 Sustainable Development

4.3.1 General

The project must be implemented so as to comply with environmental standards and sustainable development principles. The new building will need to obtain sustainable development accreditations (see *RS11 – Sustainable Development*). In addition, a life cycle analysis of the building must be carried out, and the results must be taken into account in order to reduce the project's environmental footprint.

Sustainability is defined in broad terms as the capacity to endure and to sustain now and in the future. It is about building lasting social and cultural equity, economic prosperity and protecting and restoring ecological integrity.

Sustainable development is an integral part of the Government of Canada's goals. Compared with other projects of the same size, PWGSC's objectives are to obtain more elaborate environmental services at the time of design and for this building to be a model for sustainable development. A number of policies and strategies have been implemented to provide a framework for the Government's property management practices. Thus, the project must comply with the guidelines in

- The Greening Government Strategy of the Treasury Board of Canada Secretariat;
- The PSPC Departmental Sustainable Development Strategy 2020 to 2023;
- The PSPC Real Property Sustainable Development and Environmental Strategy, 2018;
- The PWGSC Real Property Sustainability Framework, 2015.

For the purposes of this project, the following is an outline of this strategic plan that must be factored in at every stage of project delivery.

4.3.2 New building construction and site development

The following components, at a minimum, must be considered throughout the design and construction phases for the new building and the site work:

- Use smart building systems to reduce energy consumption.
- Ensure the physical, cognitive and emotional well-being of employees and the surrounding community.
- Implement best practices for healthier water management, better air quality and improved waste management.
- Anticipate and consider that Property Management will aim to achieve an environmental performance level corresponding to the BomaBest v3 rating - Office buildings, level 2 Gold;
- Reduce energy use and GHG emissions/carbon footprint;
- Design a building that achieves a zero carbon balance by being 100% electric;
- Design the building based on LCA recommendations in order to reduce the new building's environmental footprint, compared with that of a similar reference building;
- Use smart systems to reduce energy consumption;
- Use only building automation systems (a building control system or energy management system [EMS]) and building components that are compatible with an open protocol (BACnet);

- Have enhanced energy performance targeting cost savings over NECB 2011. An energy study was conducted to validate feasibility and will be made available to the successful proponent;
- Energy efficiency measures will be selected based on the life cycle analysis of the costs over 25 years;

Climate change adaptation

- Design and build new infrastructure to be resilient to climate change. A study of infrastructure vulnerability to potential climate and weather effects is currently being prepared and will be provided to the successful proponent. The purpose of this study is to assess the vulnerability of the NVCC site by identifying the components that may be subject to defects, damage and/or wear from climate events (temperature, precipitation, wind, ice, lightning, etc.) and to formulate recommendations for the new building and for site work. This study must be taken into consideration during project development.
- Reduce heat islands.

Water management (drinking water, domestic wastewater and stormwater) and landscaping

- Apply best practices for water use to reduce water consumption.
- Reduce outside water consumption (irrigation), stormwater runoff and the use of toxic products with appropriate landscaping. Plan for infrastructure that fosters ecological management of runoff in outside traffic areas. Support the use of low-water landscaping and low-maintenance lawns with drought-resistant species.
- Design new infrastructure for efficient management of erosion problems, stormwater and sediment.

Sustainable building and transportation

- Achieve a level of environmental performance (see RS11).
- Plan for and consider that Property Management will aim to achieve an environmental performance level equivalent to BOMA Best v3 – Office, Level 2 Gold.
- Fit up the interior spaces with equipment and furniture that is certified eco-responsible.
- Design parking that will accommodate fast-charging electric vehicle charging stations in order to support the conversion of fleet and private vehicles from gasoline to electricity.
- Achieve better management of domestic waste (and construction, renovation and demolition (CRD) waste). See RS11.

Workplace, employee well-being and local community

- Integrate controlled design components for occupants.
- Provide spaces that include natural aesthetic elements.
- Provide showers and lockers for employees who travel to work by bike or on foot, who jog or who have a membership at a local gym.
- Implement air filtration systems and management strategies to reduce contaminant levels and manage CO₂ levels in office spaces.
- Identify quiet and collaborative areas for employees to use.
- Promote exposure to light and aim to create optimal lighting environments for visual, mental and biological health.
- Determine what public spaces and facilities may be useful to the local community.

Fit-up conducive to sound waste management

- Provide a ventilated room for the storage of garbage, recyclable materials and organic materials. This cool, dry room could be in the basement. It must be isolated from the rest of the building by firewalls with an appropriate fire resistance rating.
- In all common areas, provide for the addition of sorting islands with a minimum of three lanes (waste, mixed recycling and composting) and whose capacity and aesthetics meet requirements. As there must never be individual or so-called orphan garbage cans, spaces must be designed to allow the addition of such equipment wherever necessary.

4.4 CRD Waste Management

Construction projects generate waste. The Treasury Board's Greening Government Strategy calls for a landfill diversion rate of 90% (by mass) of CRD waste.

To achieve this diversion target, prior to the work, carry out an analysis of CRD waste. The analysis should include an assessment of the various types of waste and mass quantification of construction and demolition waste. See RS11.

4.5 Compliance with Codes

The Consultant is responsible for verifying and complying with standards, codes, legislation, regulations, including municipal by-laws and decisions made by authorities having jurisdiction in project execution. In case of overlap, the most stringent requirements must be applied and take precedence. The Consultant must identify other regulatory instruments and agencies that have authority over the project.

For information purposes, see **PD Appendix 1** – Applicable standards, codes and requirements.

4.6 Risk Management

A risk management strategy is crucial for PWGSC Project Management. All project stakeholders are an integral part of the risk management strategy and form an integrated production team. The specific services required for project delivery are outlined under Required Services (RS).

4.7 Cost Management

Effective cost estimation and cost control are crucial at every stage of the project. One of the key objectives is to execute the project while staying within the funding allocated for each stage of the project and across all construction packages, justifying in particular the viability and cost-effectiveness of the design choices and carrying out any necessary design adjustments so that the work stays within the project budget. The specific services required for project delivery are outlined under Required Services (RS).

4.8 Schedule Management

Establishing a schedule for comprehensive control of project execution time and effective schedule control are critical activities at every stage of the project.

The Consultant 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 under Required Services (RS).

4.9 Scope Management

Definition, development, verification and control of the project scope are crucial at every stage of the project. One key objective is to execute the project within the boundaries of the project scope, as defined.

The Consultant must immediately inform the Departmental Representative, in writing, of any potential increase or decrease in the scope of work that may jeopardize the ability to achieve the project objectives, **before** any resulting effects on project costs, scheduling or quality, and propose solutions to mitigate the impact of the changes. The specific services required for project delivery are outlined under Required Services (RS).

4.10 Safety and Security

4.10.1 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 may cause injury, illness or death.

The Consultant must include mitigation measures for the spread of COVID-19 or any other such disease, as well as control measures for the contractor in its specifications. The Consultant must follow provincial and federal public health requirements at the time of delivery.

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.

To formalize PWGSC's commitment to protecting all persons granted access to construction sites managed or administered by the Department, the Consultant must

- ensure that 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 (roles of the Construction Manager), and that PWGSC is not deemed to have control over the work or activities;
- reduce risks to the Crown and limit legal liability for PWGSC employees; and
- provide clear direction with respect to duties and responsibilities.

PWGSC recognizes that it is required 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 OHS 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 occupational health and safety acts and regulations, in addition to the Canada Occupational Health and Safety Regulations.

4.10.2 Physical security

The various components of physical security must be part of the project at every stage. A team of physical security/integrated security system (ISS) specialists will be hired by PWGSC to design and install ISS components.

The Consultant must coordinate with this specialist in order to integrate the physical infrastructure into the design documents. The ISS specialist will provide the requirements for substructure, conduits (if required), cable trays, technical details, etc. to the Consultant in the course of the design.

The security specialist retained by PWGSC will specify the security elements that will be out of contract for the proponent. The security elements refer to the standard G13-01 Secure storage rooms (PES) - of the RCMP (Royal Canadian Mounted Police).

In addition, for security considerations, the plans and specifications prepared by the consultant will be issued with the mention 'Old Montreal Sector', without the building address, or street identification, or mention of occupants or room names.

Thus, without being limited to it, the following elements will be in the contract of a third party:

- Security systems (surveillance, secure electrified hardware, access control, etc.) and their conduits;
- Partition reinforcement elements for safety rooms (expanded metal and / or any other safety partition reinforcement element);
- Safety bars in HVAC ducts (heating, ventilation and air conditioning).

The proponent may however be called upon to indicate quantities of materials to be included in the specifications they produce.

4.10.3 Industrial security

This project has specific security requirements, as set out in sections IP6 and CS1. All project stakeholders must comply with these requirements at every stage.

PD5 IMPLEMENTATION STRATEGY

The project implementation strategy must make important decisions easier in order to prioritize the interim design approvals and allow construction to start promptly and in an optimized sequence.

5.1 Phased Design Method

Since construction management is the delivery mode that will be used, the project will be executed in sequential construction packages.

During the design phase, the Consultant must work with the Construction Manager and ensure that the Construction Manager has all the information needed to provide accurate and complete advice on construction activities such as the following:

- Construction costs;
- Material delivery and construction schedules;
- Constructability;
- Suitability and availability of materials, equipment and components;
- Identification of materials, components or equipment that require pre-purchase and their procurement terms;
- Sustainable, integrated principles and practices for design, construction, commissioning and operation.

During the preparation of the construction documents, the Consultant and the Construction Manager must agree on the definition of the packages, the sequencing of the tender packages and the scope of each construction package to allow the Construction Manager to issue requests for proposals for each package and to retain the services of specialized contractors for each package, with a view to optimizing the construction schedule.

5.2 Integrated Design Process (IDP)

The Consultant must design the project using an Integrated Design Process (IDP). The Design Architect must adopt, structure and direct a comprehensive, integrated approach to the project design to ensure that all elements, systems and factors that influence the final project design solution are identified, incorporated into the design work, analyzed and prioritized on the basis of the project objectives, beginning at the RS1 stage of the project design process (see all RSs). Hence, the Consultant Team's Design Architect will take an efficient, cost-effective and environmentally responsible approach by implementing strategies that facilitate space flexibility, while meeting user needs and project requirements. See also AS4.

5.3 Construction Management

A construction management approach will be used for this project.

The role of the Construction Manager is to undertake all the responsibilities of the Contractor/builder of the project and to participate, as a construction expert, on the project delivery team and to provide construction advice, guidance and recommendations to enable the Consultant to refine the design of the project and mitigate certain risks associated with the construction market during the design phase of the project.

The project will be implemented using a sequential construction approach to minimize the project design and construction time. The Construction Manager will define the requirements and sequencing of tender packages and will inform the Departmental Representative and the Consultant so that the Consultant can plan the tasks and activities accordingly.

The Construction Manager is responsible for completing the project within the accepted project construction schedule and the accepted project construction budget. The Consultant and the project team must work with the Construction Manager to coordinate all of the project's planning, design and construction work.

5.4 *Building Information Modelling (BIM)*

Building information modelling (BIM) (referred to as the “Model”) is a digital representation of a project's configuration, characteristics, and physical and functional attributes, and will be used to execute this project.

BIM is based on coordinated, reliable digital information about a project from design through construction. BIM, facilitated by a common data environment, will be used in this project for visualization, analysis and communication of project information for all stakeholders (the Project Management Team, the Consultant Team, the Departmental Representative, etc.). It is a source of common data.

Working with the Departmental Representative, the Consultant must foster a spirit of collaboration for monitoring and coordinating the design and execution.

The working methods of the various design stakeholders will be recorded in the BIM implementation plan responding to the BIM Management Plan (BMP), see Appendix 1 after the Additional Services (AS).

The Consultant must coordinate all BIM activities and participate actively and in close collaboration with all stakeholders and with the Departmental Representative in the meetings described in this document, in order to meet the design needs arising from the objectives. The services required for project delivery are outlined under Required Services (RS).

PD6 PROGRAM

6.1 *Purpose*

See section PD4.

6.2 *Functional and Technical Program (FTP)*

The functional program (PF) will be provided to the proponents during the request for proposals.

The technical program (PT) will be provided following the award of the contract.

6.3 *Building Connectivity Components (BCCs)*

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

- Information technology and telecommunications (IT/telecom) systems
 - Information technology
 - Wireless connectivity
 - Telephony
 - Telecommunications

- Videoconferencing
- Multimedia
- Photocopiers
- Fax machines
- Integrated security systems (ISS)
 - Electronic and physical access control
 - Electronic monitoring systems
 - Indoor and outdoor cameras
 - Intercommunications and computer system
 - Electrified hardware
 - Fire alarm monitoring system

BCCs are essential for meeting functional and operational requirements and user safety requirements. Occupancy cannot take place without a successful design and harmonious integration of these components with the various aspects of the project. 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.

Description of services

The Consultant Team must be able to provide IT/telecom specialist services.

Within each project stage, the Consultant must plan and organize BCC meetings on a regular basis 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 responsible for IT and telecom equipment design, purchasing and installation and for cabling design (but not the purchase nor installation of the wiring).

At every stage of the project, the Consultant and its IT/telecom specialists must work closely with SSC, PWGSC, the occupant departments, the Construction Manager, and so on, to ensure that the IT/telecom physical infrastructure is fully integrated into the design documents and to ensure the general coordination of IT/telecom requirements.

The Consultant will be responsible for the design of the main and secondary server rooms, as well as for integrating the IT/telecom physical infrastructure into the design documents. Since this project is for the construction of a new building, the purchase and installation of the cabling will be done by the contractor, but SSC will still design the cabling and provide the cabling requirements to the Consultants, who will include this information in the contract documents and monitor the work.

However, SSC will be responsible for design of the network architecture and the various IT components and equipment (data and telephony) inside the server rooms.

Integrated security system (ISS) components

A team of physical security/integrated security system (ISS) specialists will be hired directly by PWGSC to design and install ISS components.

The Consultant must coordinate with this specialist to integrate the physical infrastructure into the design documents. The ISS Specialist will provide requirements for substructure, conduit, cable trays, technical details, etc. to the Consultant during the design phase.

At every stage of the project, the Consultant must work closely with the ISS specialist, PWGSC, the occupant departments, the Construction Manager, and so on, to ensure that the physical infrastructure of various systems (for the basic building) is fully integrated into the design documents and to ensure the general coordination of ISS requirements.

6.4 Short Project Description

6.4.1 Construction of a new building

The New Montréal Justice Complex (NMJC) will consist of a gross floor area of approximately 12 708 m² on approximately nine (9) above-ground floors, plus one level of underground parking and one level of technical sheds on the roof. In addition to the reception areas of the occupant departments, hearing rooms (and related space) and offices, there will also be support areas (security, IT/telecom, and property management).

The new building is intended to provide healthy, secure, high-performance premises that are compliant with current codes and standards and that provide a modern, efficient and productive workspace that supports the occupants' programs.

The new building to be constructed on a vacant site at 46 St-Jacques Street in Montréal must include all the typical construction components required, including infrastructure, superstructure, building envelope, architecture, interior fit-up, mechanical and electrical services, IT/telecom infrastructure (equipment rooms, cable trays, posts, roof antennae, etc.), security infrastructure and systems (physical and electronic access control, intrusion alarm, video surveillance system, etc.).

Client requirements are described in the Functional Program (FP). Although the building will not be accessible to the general public, client programs require direct service with outside clients (members of the public, lawyers, delivery people, etc.), and dedicated on-site client services will be required.

Spaces and equipment will be required in order to meet the building's operational requirements or to support the building's services for clients (generating sets, specific load capacity based on use, e.g., file storage, elevators, maintenance rooms, waste storage, waiting area, the property manager's repair shop, spare parts storage, and telecommunications rooms).

Other spaces or equipment may be needed in order to meet federal or departmental objectives for employee support (e.g., bicycle storage, showers, locker room). See the FP that will be provided to proponents during the RFP process.

The new building must integrate the various sustainable development components identified in section PD 4.3 and under Required Services (RS) and Additional Services (AS).

6.4.2 Complete fit-out of the new building

The new building must include all typically required interior fit-up components, including equipment and furnishings (screens, built-in and mobile furniture, etc.), signage, accessories (white boards, display boards, window coverings – security plastic film, blinds, etc.) and security components (hardware, video surveillance systems for access control and communications).

The new fit-out must integrate the various sustainable development components identified in section PD 4.3 and under Required Services (RS) and Additional Services (AS).

Accessories, furniture, equipment and moving

The new building will be fitted out with new furniture and new equipment. Certified eco-responsible furniture and equipment must be chosen where available. In addition to preparing the blockage plans and the comprehensive, detailed fit-out plans, the Consultant must assist PWGSC procurement services by organizing, managing and drafting tender documents using PWGSC tools. The Consultant must also coordinate and fully oversee the phased installation of the furniture. The services required for project delivery are outlined under Required Services (RS) and Additional Services (AS).

Although PWGSC will be responsible for coordinating the move of users to the new building through an independent firm, the Consultant must prepare the move-in drawings and specifications so that the Construction Manager can issue the tender. The services are listed under Required Services (RS) and Additional Services (AS).

6.4.3 Site layout

Site work includes traffic lanes for vehicles, pedestrians and cyclists, fencing, traffic control devices, civil engineering works, landscaping, and so on.

The site must be redeveloped so that the facilities are suited to the area's urban and natural environment.

Treatment of building access must be part of the site work. For example, an entrance area conducive to employee meetings and exchanges among employees when arriving and departing from work must be created. Site development must include signage to identify the building, traffic control signs and flag poles. Additionally, freight delivery areas, waiting areas for taxis and for stops of less than 10 minutes must be incorporated into the building's periphery. Consideration must be given to creating a sheltered, secure outside space for bicycle storage located near an entrance that provides access to showers and lockers.

Functional and spatial interactions must be factored in, such as the positioning of inside living areas in relation to the outside environment. In particular, by encouraging the penetration of natural light and providing perspectives and views from inside the building of the site's attractions: terraces, landscaped pedestrian walkways, etc. The outdoor layout must be flexible so that a variety of activities can be carried out: a meeting and relaxation area for coffee breaks. The choice of surface covering must prioritize durability and minimal maintenance. LEED and WELL certification criteria must be considered.

The selected plants must limit maintenance and the use of water and chemicals. Native and naturalized plants must be given priority, and the possibility of creating wildlife habitats for local populations of insects must be assessed. Runoff management must include the use of permeable surfaces that allow water to percolate into the soil and refill the site's aquifer.

PD7 ISSUES

Although the project's cost, quality and schedule are very important and must be considered at every stage of the project, the following issues are deemed crucial to the execution of this project.

7.1 Critical timelines and deadlines

The construction of a new justice complex is an important commitment by the Government of Canada. The Courts Administration Service (CAS) and the Administrative Tribunals Support Service of Canada (ATSSC) are currently in leased accommodations until March 2027. The purpose of this project is to plan for occupancy prior to the end of the leases (see *PD2.6 – Project Schedule*).

It is therefore **essential** that the schedule be adhered to so that the users can move to the new building as early as possible, while complying with PWGSC policy. This date cannot be pushed back. Any way of improving the schedule must be discussed and, if approved, implemented.

7.2 Sustainable development

Achieving the government's sustainable development objectives is a key issue for this project (see *PD4.3*).

7.3 Accessibility (*barrier-free design and universal, safe access*)

All Canadians deserve to be able to fully participate in the life of their community and their workplace and to have equal opportunities to succeed. The Government of Canada developed the *Accessible Canada Act* in order to eliminate the obstacles to inclusion that persons with disabilities continue to face in their day-to-day life in society.

PWGSC must meet accessibility requirements in providing access to and use of its buildings. These requirements include building components, entrances, passenger elevators, public areas and federal work areas. These are minimum requirements.

As part of this project, the objective is to exceed the minimum requirements set out in the Treasury Board of Canada Secretariat's Accessibility Standard for Real Property, by improving full and equal participation in society by all, especially persons with disabilities, through the elimination and prevention of barriers, among other measures.

Achieving the government's accessibility objectives is thus a key issue for this project.

7.4 Media and visibility

The construction of the New Montréal Judicial Complex is a high-profile project. Its location, scope, numerous technical challenges and purpose could make it a project that receives a lot of media coverage.

The Consultant and all the sub-consultants must therefore respect the official communication channels throughout the project. Any requests for information from the media or the public must not be addressed directly and must be referred to the Departmental Representative.

7.5 Heritage enhancement of the site

The integration of a heritage and archaeological enhancement aspect into the project is also an issue that must be taken into account for this project, see PD2.3.4.

Also see Section 3 (The Project) of the FP, provided as an appendix to the Project Brief (Appendix 2).

PD8 CONSULTANT SERVICES

Members of the Consultant Team may have the necessary qualifications and expertise to provide services in more than one discipline or specialty. The Consultant Team for this project must be able to provide integrated services in the following disciplines:

- Universal accessibility
- Acoustics
- Signage and orientation aids
- Fit-up and interior design (including furniture)
- Code analysis
- Life cycle analysis of buildings and construction materials
- Architecture
- Lighting design
- Sustainable design and development (GBCI LEED, GBCI WELL, etc.)
- Carbon neutral design
- Integrated design (IDP)
- Schedule control
- Civil engineering
- Electrical engineering
- Geotechnical engineering
- Mechanical engineering
- Energy and efficiency mechanical engineering
- Structural engineering
- Contaminated waste management
- Uncontaminated waste management
- Storm water management and compliance with municipal requirements
- Risk management
- Cost and control management
- Building information modelling (BIM) and management

- Industrial hygiene, health and safety
- Laboratories
- Commissioning
- Environmental protection
- Fire protection
- Door hardware
- Fire safety
- Technological security (infrastructure, coordination with external specialist)
- Active and passive security systems (infrastructure, coordinate with external specialist)
- Information technology and telecommunications (IT, communications, multimedia, videoconferencing, etc.)
- Transportation and traffic
- Vertical transportation

In addition, the Consultant Team for this project will include the following consultants, sub-consultants, and specialists:

Consultant

1. Person responsible for the contract
2. Senior project architect responsible for design
3. Project manager for the architecture planning/design phase
4. Project manager for the architecture delivery/implementation phase

Sub-consultants / Specialists

5. Lead design civil engineer
6. Lead design structural engineer
7. Lead design mechanical engineer
8. Lead design electrical engineer
9. Project managers for the planning/design phase for the following disciplines:
 1. Civil engineering
 2. Mechanical engineering
 3. Electrical engineering
 4. Structural engineering
10. Project managers for the delivery/implementation phase for the following disciplines:
 1. Civil engineering
 2. Mechanical engineering
 3. Electrical engineering
 4. Structural engineering
11. Senior Interior Designer
12. Specialist(s) in cost estimation and planning (schedule)
13. Specialists in sustainable development:
 1. LEED specialist
 2. WELL specialist
 3. Energy modeling specialist
 4. Specialist in building life cycle analysis

14. Physical security specialist (who will coordinate with the specialists hired by PWGSC)
15. Lead BIM manager
16. Integrated design process (IDP) specialist/leader
17. Enhanced commissioning specialist

The positions of design manager, planning/design project manager and project manager for the delivery/implementation phase must not be filled by the same person.

PD9 AVAILABLE DOCUMENTS

9.1.1 Documentation available to all proponents

1. Functional Program (FP) by Bisson Fortin architecture + design, Sept. 2020

9.2 Available documentation to be provided to the Consultant

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

Site and environment:

1. *Évaluation environnementale de site - phase I* [Environmental Site Assessment - Phase I] by Akifer, February 18, 2019
2. *Évaluation environnementale de site - phase III* [Environmental Site Assessment - Phase III] by Akifer, March 18, 2019
3. Phase II ESA by ABS Group (February 2011)
4. Phase I ESA by Solroc (April 2007)
5. Preliminary Phase II ESA by Solroc (April 2007)
6. *Précisions relatives à la découverte d'une ancienne structure enfouie* [details of the discovery of an ancient buried structure], Qualitas, February 2013
7. PWGSC National CRD Waste Management Worksheets
8. SSC Special Guidelines on IT Technical Standards, March 15 2018
9. *Données sur carbone intrinsèque des produits de béton et de ciment à faible empreinte carbone basées sur leur Analyse de cycle de vie* [Data on the intrinsic carbon for low carbon footprint concrete and cement products based on their life cycle analysis] – Sept. 2020
10. *Étude de vulnérabilité du site aux changements climatiques* [study of site vulnerability to potential climate and weather effects] by AECOM, Sept. 2020
11. Environmental Impact Assessment, PWGSC
12. Archaeology report, Arkéos, November 2020
13. *Guide des locataires – Services de gestion immobilière et de réalisation de projets fournis par les contrats Biens immobiliers-1 (BI-1)* [Tenant Guide – Property Management and Project Execution Services Supplied by Real Property-1 (RP-1) Contracts] by BGIS, August 28, 2018
14. *Arrangement en matière d'approvisionnement pour les espaces de travail* [supply arrangement for workspaces] (furniture SA)
15. Technical Program (TP) by Bisson Fortin architecture + design, October 2020

PD – APPENDIX 1: APPLICABLE STANDARDS, CODES AND REQUIREMENTS

The list of reference documents below is not exhaustive and is provided for information purposes only. Use the most recent version applicable when designing the project.

A.1 Reference documents

A.1.1 Codes

- National Building Code of Canada, 2015
- Québec Construction Code, Chapter I, 2010
- National Fire Code of Canada, 2015
- Québec Safety Code, Chapter VIII, 2010
- National Plumbing Code of Canada, 2015
- Québec Plumbing Code, Chapter III, 2010
- CSA C22.1-18 – Canadian Electrical Code, Part I (24th edition)
- 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 – 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
- Greening Government Strategy of the Treasury Board of Canada Secretariat

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 drawing: PSPC Quebec Region, Supplément à la norme CDAO [Supplement to the CADD standard], May 2019
- Government of Canada Workplace Fit-Up Standards, PSPC, May 2018
- Technical Reference for Office Building Design, PSPC, July 2017 version
- Accessible Design for the Built Environment – CSA B651-18
- 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
- MD 15000: Mechanical Environmental Standards for Federal Office Buildings
- MD 15161: Control of Legionella in Mechanical Systems
- MD 16001 – Air Filters for HVAC Systems
- MD 250005-2009 – Energy Monitoring and Control Systems Design Guidelines (EMCS)
- ANSI/TIA 569, Telecommunications Pathways and Spaces and related addendums
- Government of Canada (GC) Workplace Fit-Up Special Technical Standard Guidelines (Section A4): Telecommunications (Cable Networks) Pathways and Spaces – Planning and Implementation
- AABC National Standards for Total System Balance
- AHRI 410: Forced Circulation Air-Cooling and Air-Heating Coils
- ANSI/AHRI 880: Performance Rating of Air Terminals
- ANSI/AMCA 210: Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating
- ASHRAE handbooks:
 - Handbook – HVAC Applications
 - Handbook – Fundamentals
 - Handbook – Refrigeration
 - Handbook – HVAC Systems and Equipment
- ASHRAE 0: The Commissioning Process
- ASHRAE 4: Preparation of Operating and Maintenance Documentation for Building Systems
- ASHRAE 15: Safety Standard for Refrigeration Systems
- ASHRAE 34: Designation and Classification of Refrigerants
- ASHRAE 52.2: Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size
- ASHRAE 55: Thermal Environmental Conditions for Human Occupancy
- ASHRAE 62.1: Ventilation for Acceptable Indoor Air Quality
- ASHRAE/IES 90.1: Energy Standard for Buildings Except Low-Rise Residential Buildings
- ASHRAE 105: Standard Methods of Determining, Expressing, and Comparing Building Energy Performance and Greenhouse Gas Emissions
- ASHRAE 111: Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems
- ASHRAE 135: BACnet: A Data Communication Protocol for Building Automation and Control Networks
- ASHRAE/ACCA 180: Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems
- ASHRAE 189.1: Standard for the Design of High Performance Green Buildings
- ASME UPV: Code for Unfired Pressure Vessels
- ASME BPVC: Boiler and Pressure Vessel Code
- CAN/CSA B149.1: Natural Gas and Propane Installation Code (CSA B149)
- CAN/CSA B214: Installation Code for Hydronic Heating Systems
- CAN/CSA B44: Safety Code for Elevators and Escalators

- CAN/CSA B51: Boilers, Pressure Vessels, Pipework
- CAN/CSA B52: Mechanical Refrigeration Code
- CAN/CSA B64: Vacuum Breakers and Backflow Preventers (DAR)
- CAN/CSA B651: Accessible Design for the Built Environment
- CAN/CSA C282-15: Emergency Electrical Power Supply for Buildings
- CAN/CSA C743: Performance Standard for Rating Packaged Water Chillers
- CAN/CSA Z204: Guideline for Managing Indoor Air Quality in Office Buildings
- CAN/CSA ISO 50001: Energy Management Systems
- CAN/CSA B651: Accessible Design for the Built Environment
- CSA B125.1: Plumbing Supply Fittings
- CTI STD201: Certified Cooling Towers
- National Environmental Balancing Bureau (NEBB) TABES, Procedural Standards for Testing, Adjusting, Balancing of Environmental Systems
- NFPA 54, National Fuel Gas Code
- NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
- NFPA 214, Standard on Water-Cooling Towers
- 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
- 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)
- Volume 1: Guidance Manual
- Volume 2: Checklist
- Volume 3: Suggested Operating Procedures
- Volume 4: Analytical Method Summaries
- *Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés* [Action Guide – Soil protection and rehabilitation of contaminated sites] (MELCC, 2019)
- Site Characterization Guide (MELCC, 2003)
- *Guide d'échantillonnage à des fins d'analyses environnementales, Cahier 1 - Généralités* [environmental analysis sampling guide, book 1 – General], Centre d'expertise en analyse environnementale du Québec (CEAEQ)
- *Guide d'échantillonnage à des fins d'analyses environnementales, Cahier 3 - Échantillonnage des eaux souterraines* [environmental analysis sampling guide, book 3 – groundwater sampling], CEAEQ (updated in 2011)

- *Guide d'échantillonnage à des fins d'analyses environnementales, Cahier 5 - Échantillonnage des sols* [environmental analysis sampling guide, book 5 - soil sampling], CEAEQ
- *Guide d'échantillonnage à des fins d'analyses environnementales, Cahier 8 - Échantillonnage des matières dangereuses* [environmental analysis sampling guide, book 8 – hazardous materials sampling], CEAEQ
- *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 the assessment of natural background levels in soils] (MELCC)
- *Liste des centres autorisés de traitement des sols contaminés* [list of authorized treatment centres for contaminated soil] (MELCC)
- *Liste des lieux autorisés d'enfouissement de sols contaminés* [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]
- *Guide de valorisation des matières résiduelles inorganiques non dangereuses de source industrielle comme matériaux de construction* [guide to the reclamation of inorganic non-hazardous industrial waste as construction materials]

A.1.3 Directives

- National Joint Council's (NJC) Occupational Health and Safety Directive, Part VII – Noise Control (Levels of Sound)
- Guideline for Canadian Drinking Water Quality, Health Canada, June 2019 (or latest version)

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 System 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 Act (P-30.01)
- 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
- Regulation respecting occupational health and safety (c. S-2.1, s. 223)
- Existing municipal by-laws

A.1.5 Specifications

- Canadian National Master Specification (NMS) (latest edition)

A.1.6 Guidelines

- Guideline – Project GHG Options Analysis Methodology

A.1.7 Documents

- *Cadre stratégique pour la durabilité des immeubles* [strategic framework for building sustainability]
- Federal Sustainable Development Strategy for Canada, 2019–2022
- Greening Government Strategy of the Treasury Board of Canada Secretariat
- CaGBC LEED BD+C V4.1 or latest
- CaGBC Zero Carbon Building Standard
- WELL Building Standard V2 or latest
- Workplace Hazardous Materials Information System (WHMIS), published by Health Canada
- SMACNA HVAC Air Duct Leakage Test Manual
- Workspaces Supply Arrangement (SA)
- *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* [development guide for snow elimination sites and application of the Regulation respecting snow elimination sites] (MEF, 1997)
- Guide for Radon Measurements in Public Buildings, Health Canada

A.1.8 Policies

- Policy for Emergency Preparedness and the Operational Security Standard Business Continuity Planning (BCP) Program
- PSPC Sustainable Buildings Policy
- Policy on the Management of Real Property, 2006

A.1.9 Legislation

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

REQUIRED SERVICES (RS)

A. General

The services that the Consultant undertakes to provide under this contract include, but are not limited to, the following:

- Architectural, engineering and specialized professional services (as per the PD) in accordance with the following Required Services (RS) set out in this section, including RS1 (RS1A, RS1B), RS2, RS3, RS4, RS5, RS6, RS7, RS8, RS9, RS10, RS11 and RS12.
- Professional services required to obtain, coordinate and integrate Additional Services (AS1, AS2, AS3, AS4, AS5, AS6) and expert analysis and laboratory services (disbursement) complementary to the Required Services (RS). These services include, without being limited to, the following:
 - Drafting of contracts required to obtain Additional Services (AS) and laboratory services (disbursement);
 - Call for tenders, analysis of service offerings and negotiations, if required;
 - Coordination and integration of Additional Services (AS) and laboratory services (disbursement) with the documents to be delivered in each stage of the Required Services (RS).

The Consultant must ensure that the services of all sub-consultants listed in the RSs and ASs are included in its proposal so that the Consultant can fulfill its contract.

The team members must be authorized to provide the required services to the full extent prescribed by Quebec law, be a member in good standing of the regulatory body for their profession, and respect the security criteria required for this project.

In this Request for Proposals (RFP), except where indicated otherwise, the services of the Prime Consultant also include the services of any of its sub-consultants or specialist consultants, required to complete its mandate.

The Required Services task list is not complete and in no way limits the professional obligations of the Consultant to perform the required tasks for the purpose of fulfilling the project contract.

The Required Services include the following:

- RS 1 Analysis of Project Requirements – Verification and Validation
- RS 2 Schematic Design
- RS 3 Design Development
- RS 4 Construction Documents
- RS 5 Tender Call, Bid Evaluations and Construction Contract Award to Subcontractors (by package)
- RS 6 Construction and Contract Administration, Post-construction Warranty Review
- RS 7 Risk Management
- RS 8 Enhanced Commissioning of the Facility
- RS 9 Estimating and Cost Planning

RS 10 Schedule Planning, Sequencing and Control

RS 11 Sustainable Development

RS 12 Building Information Modelling (BIM)

The required services apply to all of the following project components (except where otherwise indicated in the breakdown of required services):

1. Deconstruction of the existing parking lot and access roads, excavation and decontamination of the site;
2. Construction of the new building;
3. Connection to existing public infrastructure;
4. Access road construction;
5. Complete fit-out of the new building;
6. Complete fit-up of the site.

The following incomplete lists identify services expected from each discipline. Some of the activities listed below may require the participation of several or all professionals. The Consultant must coordinate its various team members (including sub-consultants and specialist consultants) and is responsible for performance of all elements in the contract. The Consultant is responsible for ensuring that all the documents produced and information supplied are coordinated among all disciplines.

B. Meetings

All of the meetings and workshops described below are an integral part of the Required Services (RS1 to RS12) and Additional Services (AS).

Meetings may be held in person or by telecommunications, as appropriate.

B.1 Coordination meetings

The Consultant will

- Invite its staff members, sub-consultants and specialist consultants, the Departmental Representative, PWGSC support staff (if required), client departments (if required) and the Construction Manager to coordination meetings. Half-day meetings will be held on a regular basis (every two weeks) for steps RS1 to RS4;
- Chair the meetings to coordinate and direct project activities;
- Draft the minutes and distribute copies to all participants within 48 hours.

The Departmental Representative will retain the services of the FTP designer to attend coordination meetings as required when FTP data issues are discussed.

Meetings must cover, but will not be limited to, the following:

- Monitor the progress of the project design against project objectives, scope, costs and timelines and identify the measures to be put in place to ensure that progress meets basic requirements (costs, schedule, contract scope);
- Ensure communication between all participants;
- Address special issues;

- Ensure quality assurance and effective coordination;
- Ensure design coordination across all disciplines;
- Monitor the implementation strategy (packages);
- Coordinate critical technical aspects, such as building connectivity elements (BCE), and IT/telecom components.

If the Consultant finds that the amount of time allocated for coordination meetings is insufficient to deal with these technical issues, the Consultant must plan as many technical meetings as will be required to understand and resolve the technical issues raised during the coordination meetings and to properly carry out the design work.

B.2 Project Meetings

The Consultant will

- Invite members of its staff, sub-consultants and specialized consultants, the Departmental representative, PWGSC support staff, client departments and the Construction Manager to project meetings. Half-day meetings will be held on a regular basis (every four weeks) for steps RS1 to RS4.

The Consultant will

- Chair meetings and coordinate and direct activities;
- Draft the minutes and distribute copies to all participants within 48 hours.

Meetings must cover, but will not be limited to, the following:

- Inform PWGSC and client department stakeholders of the project's progress and the issues that affect them.

B.3 Deliverable Presentation Meetings

B.3.1 Project Team

The Consultant will

- Invite its staff members, sub-consultants and specialist consultants, the Departmental Representative, PWGSC support staff and client departments to half-day design document (deliverables) presentation meetings at the following frequency:
 - One (1) presentation at RS1 (including RS1a and RS1b)
 - Five (5) submissions at RS2 (at 50% and 99% completion)
 - Two (2) presentations at RS3 (50% and 99% completion)
 - Ten (10) presentations at RS4 (percentage of completion and frequency to be determined based on construction packages).

Meetings must cover, but will not be limited to, the following:

- Present the design documents and answer questions related to technical quality assurance, TFP compliance, constructability, etc.

The Consultant will

- Chair meetings and coordinate and direct activities;

- Draft the minutes and distribute copies to all participants within 48 hours.

B.3.2 PWGSC Senior Management

The Consultant will

- Invite its staff members, sub-consultants and specialist consultants, the Departmental Representative, and members of PWGSC senior management to half-day design document presentation meetings at the following frequency:
 - Three (3) presentations at RS2 (99% completion)
 - One (1) presentation at RS3 (99% completion)
 - Two (2) presentations at RS4

Meetings must cover, but will not be limited to, the following:

- Present the design documents and answer questions from stakeholders invited by the Departmental Representative.

The Consultant will

- Chair meetings and coordinate and direct activities;
- Draft the minutes and distribute copies to all participants within 48 hours.

B.3.3 Ville de Montréal and Ministère de la Culture et des Communications du Québec (MCCQ)

The Consultant will

- Invite its staff members, sub-consultants and specialist consultants to meetings as directed by the municipality and at the required frequency to obtain the building permit, and as directed by the MCCQ on request.

Meetings must cover, but will not be limited to, the following:

- Present the design documents and answer questions from municipal and federal authorities;
- Secure the issuance of the construction permit from the Ville de Montréal, Ville Marie borough.

Expected turnaround time: As determined by the municipality or the Ministère.

B.4 Pre-construction Briefings

The Consultant will

- Immediately following the award of each construction package, attend half-day information meetings with its staff, sub-consultants and specialist consultants, held with the Construction Manager, selected subcontractor and Departmental Representative;

The Construction Manager will chair the meetings, prepare the minutes and distribute them to all participants within 48 hours.

Meetings must cover, but will not be limited to, the following:

- Ensure efficient communication between all participants;

- Ensure effective construction coordination with site and building operations.

B.5 Construction meetings

The Consultant will

- Attend half-day construction meetings with its staff, sub-consultants and specialist consultants, where the Departmental Representative and the Construction Manager and subcontractors will be present. Meetings will be held on a regular basis (every two weeks) for step RS6.

The Construction Manager will chair the meetings, prepare the minutes and distribute them to all participants within 48 hours.

Meetings must cover, but will not be limited to, the following:

- Monitor the progress and administration of the prioritized construction against the approved scope and construction cost estimate, and the construction schedule; Identify the measures to be put in place to ensure that progress meets basic requirements (costs, schedule, contract scope);
- Ensure efficient communication between all participants;
- Ensure effective construction coordination with site and building operations; Coordinate and integrate solutions that avoid or mitigate potential conflicts related to information technology systems;
- Ensure effective and efficient site coordination of all disciplines and subcontractors;
- Identify opportunities or issues, assign responsible individuals and set dates for resolution;
- Ensure effective quality management.

B.6 Commissioning Meetings

The Enhanced Commissioning Consultant (ECS) must

- Invite to Enhanced Commissioning Meetings (ECMs) the Consultant, its sub-consultants and specialist consultants, the Departmental Representative, the Construction Manager and their subcontractors.
- ECS should be a topic addressed during general coordination meetings from stages RS1 to RS3.
- Meetings will be held on a regular basis (every 8 weeks) from step RS4 to step RS6;
- Chair the meetings to coordinate and direct project activities;
- Draft the minutes and distribute copies to all participants within 48 hours.

Meetings must cover, but will not be limited to, the following:

- Discuss implementation;
- Coordinate work and progress.

B.7 Constructability Workshops

The Construction Manager will hold constructability workshops at different stages of the project. It will prepare review reports that document the problems identified

and recommended solutions. The Consultant is not invited to these workshops. However, it will need to review the reports and take the recommendations into account in its design.

B.8 Cost, Schedule and Deliverables Coordination Workshops

The consultant will

- Coordinate the preparation, compilation and presentation of each deliverable, including estimates and schedules, with its sub-consultants and specialists at all stages of the project.
- Invite its staff members, sub-consultants, cost specialist, planning and scheduling specialist to cost and schedule coordination workshops. The Construction Manager will be responsible for summoning the other stakeholders.
- Half-day workshops will be held from step RS1 to RS4.
- The Consultant must plan to attend fifteen (15) meetings;
- Chair the workshops to coordinate and direct the activities of the project.
- The Construction Manager will chair the workshops, write up the minutes and ensure their distribution to all participants.

Workshops must cover, but will not be limited to, the following:

- Analyze and conclude on the progress of the design and implementation of the project, at each stage of the project, and in relation to the objectives, to the scope, to the budget and to the deadlines. Identify the measures to be put in place to ensure that the progress meets the basic requirements (costs, schedule, and contractual scope).

Authorization to proceed to the next stage of the project

- Five (5) days after the workshop is held, the consultant, the Departmental Representative and the Construction Manager will conclude on the workshop results and adjustments to the revised deliverables and post their signatures to the deliverable.

B.9 Risk Management Workshops

The consultant will

- Invite its staff members, its sub-consultants, the Departmental representative and the Construction Manager to the risk management workshops. Half-day workshops will be held at each step (one (1) meeting per step) from RS1 to RS5, and there will be three (3) meeting during RS6;
- Chair the workshops to coordinate and direct activities.

The Consultant will

- Draft the minutes and distribute copies to all participants within 48 hours.

Workshops must cover, but will not be limited to, the following:

- Identify, inventory and update the risks inherent to the project;
- Identify the risk mitigation measures to be applied;

- Identify, record and update the risk management table.

B.10 Lessons Learned Workshops

The Departmental Representative will

- Invite the Consultant, its sub-consultants and the Construction Manager to the lessons learned workshops. Half-day workshops will be held on a regular basis (24 weeks) at steps RS4 to RS6;
- Chair the workshops to coordinate and direct activities.

The Consultant will

- Draft the minutes and distribute copies to all participants within 48 hours.

Workshops must cover, but will not be limited to, the following:

- Document lessons learned from problems related to the design and construction process;
- Identify and update the table of lessons learned for the project;
- Improve the process of producing, issuing and managing tender documents in separate construction packages.

B.11 Value Analysis Workshops

The Consultant will

- Invite from among its staff members, sub-consultants and specialist consultants, those whose participation is required because of the work or other subjects covered. It must also invite the cost specialist, Departmental Representative, client departments and the Construction Manager. Half-day workshops will be held on a regular basis (eight weeks) at steps RS1 to RS4;
- Chair the workshops to coordinate and direct project activities;
- Draft the minutes and distribute copies to all participants within 48 hours.

Workshops must cover, but will not be limited to, the following:

- Maximize design resources;
- Optimize the choice of materials, equipment, products, etc.;
- Optimize the proposed construction schedule;
- Optimize the proposed construction method;

B.12 Integrated Design Process (IDP) Workshops

For a description of the IDP Workshops, the services of the IDP Specialist that the Consultants will need to add to the team, and who will be expected to act as the IDP Leader, see AS4.

B.13 Building Information Modeling (BIM) Management Workshops

The Consultant must participate actively and in close collaboration with all stakeholders involved and with the Departmental Representative in meetings to meet the design needs arising from the objectives.

Workshops for preparing the BIM management plan:

The Consultant, via its BIM Senior Manager, must:

- Prepare, chair and lead the workshops;
- Attend workshops with BIM managers from each of its disciplines and those of its sub-consultants;
- Plan six (6) half-day workshops to prepare the BIM management plan;
- Invite the Senior Consultant and the BIM managers from each of the disciplines of the Consultant and its sub-consultants to the workshops;
- Draft the minutes of the workshops and distribute copies of them to all participants with 48 hours.

Workshops must cover, but will not be limited to, the following:

- Define and standardize the method for integrating information into the Building Information Modeling (BIM) mock-up.

BIM Coordination Workshops

The Consultant, via its BIM Senior Manager, must:

- Prepare, chair and lead the workshops;
- Plan twenty (20) half-day workshops to ensure consistency in the application of the BIM management plan;
- Invite the Senior Consultant and the BIM managers from each of the disciplines of the Consultant and its sub-consultants to the workshops;
- Attend workshops with BIM managers from each of its disciplines and those of its sub-consultants;
- Incorporate the measures agreed upon in the workshops into the design and the preparation of the tender documents;
- Draft the minutes of the workshops and distribute copies of them to all participants with 48 hours.

The Consultant is responsible for the full coordination of the BIM work.

Workshops must cover, but will not be limited to, the following:

- Ensure that the information integrated into the BIM mock-up is consistent and coordinated.

C. Coordination and Collaboration with Stakeholders Mandated by the Departmental Representative

All coordination and collaboration services are an integral part of the Required Services (RS1 to RS12) and Additional Services (AS)

C.1 Construction Manager

The Departmental Representative will retain the services of a Construction Manager.

The Consultant must

- Collaborate with the Construction Manager at all design stages from RS1 to RS12 and AS1 to AS;
- Consider the Construction Manager's recommendations regarding constructability, cost estimation and planning, and planning, scheduling and schedule control;
- Work closely with the Construction Manager on
 - Schedule planning, sequencing and control;
 - Preparing and coordinating tender documents in separate construction packages;
 - The call for tenders, bid evaluation and construction contract award by separate construction packages;
 - Construction and contract administration.

C.2 Building Connectivity Components (BCC)

The Departmental Representative will retain the services of a specialist in integrated security systems (ISS) and of a specialist in IT/telecom components (SSC).

The consultant must collaborate and consider expert recommendations at all stages of the project from RS1 to RS12 and AS1 to AS6.

C.2.1 Integrated security systems (ISS)

The Consultant must

- Work with the ISS specialist to provide the required infrastructure (empty conduit system, secure partitions, etc.) for the integration of the following services:
 - Electronic and physical access control
 - Electronic monitoring systems
 - Indoor and outdoor cameras
 - Intercommunications and computer system
 - Electrified hardware
 - Fire alarm monitoring system
 - And others (see PD 4.10.2)

The ISS requirements are defined in the Functional and Technical Program (FTP).

C.2.2 Information technology and telecommunications (IT/telecom) components

The Departmental Representative will retain the services of a federal government digital services specialist from Shared Services Canada (SSC). SSC will be responsible for the network architecture, for selecting the various computer components and equipment in server rooms, and for the design, purchase and installation of IT (data)/telecom equipment.

The Consultant must work closely with Shared Services Canada (SSC) and provide him/her with the required infrastructure to integrate IT and telecommunications services, as follows:

- Design of server rooms (main and secondary) in accordance with SSC requirements;
- Incorporation of physical IT/telecom infrastructure in the design documents (main room and secondary room, empty conduit system, cable trays, cabling and terminators, etc.).

RS 1 ANALYSIS OF PROJECT REQUIREMENTS – VERIFICATION AND VALIDATION

At the end of the RS1 stage, the Consultant will submit a summary report consolidating the contents of the documents developed and submitted in sub-stages RS1A.1 to RS1A.4 and RS1B.1.

This stage is part of the Integrated Design Process (IDP) and the Building Information Modeling (BIM) program.

All Required Services (RS) are applicable to the entire project.

RS 1A Pre-Design Services – Development (Phase 1A)

During this stage, the following documents will be produced:

- RS1A.1 Implementation Strategy and Schedule (Timeline):
Applicable to the entire project.
- RS1A.2 Cost Estimate Report:
Applicable to the entire project
- RS1A.3 Sustainable Development Strategies Report:
Applicable to the entire project.
- RS1A.4 Communications and Stakeholder Management Plan: Applicable to the entire project.

RS 1A.1 Implementation Strategy and Schedule (Timeline)

1A.1.1 Purpose

The purpose of this step is to detail an implementation strategy to meet the project goals and objectives. (See RS10.)

1A.1.2 General

Scope of work

The Consultant must provide a detailed implementation strategy and schedule, including (but not limited to) the following:

- Prepare a detailed implementation strategy that documents, in a report, all activities, milestones and deliverables required for the effective delivery of the project, including time frames for submissions, reviews and approvals.
- Prepare a project schedule that identifies, in a graphic format such as Critical Path Method (CPM) (obligatory) and Program Evaluation Review Technique (PERT), all activities and milestones, including critical deadlines, long-lead delivery items and drop-dead dates, required for the

effective delivery of the project deliverables, including time frames for submissions, reviews and approvals.

- The Implementation Strategy and Schedule described above must include, but not be limited to, the following:
 - ❖ The master schedule;
 - ❖ Deconstruction and environmental clean-up strategy;
 - ❖ Construction strategy;
 - ❖ Facility equipment and furniture procurement strategy;
 - ❖ Move-in sequencing.
- Inform the Departmental Representative of any changes to the scope that may affect the schedule or are inconsistent with instructions or written approvals previously given. The Consultant must detail the extent and reasons for the changes and obtain written approval before proceeding.
- Submit the Implementation Strategy and Schedule for review. Make revisions as appropriate. Resubmit for final approval. The approved document will be the basic schedule to be used as a reference document and updated by the Consultant throughout the project.
- Throughout the project, monitor critical path and deadlines for submissions, revisions and approvals. Submit weekly progress reports identifying completed deliverables, slippage and upcoming activities.

1A.1.3 Deliverables

- Submit the implementation strategy and timeline for review.
- Amend as necessary.
- Resubmit for final approval.

RS 1A.2 *Order of Magnitude Class 'D' (indicative) Cost Reports*

1A.2.1 Purpose

The purpose of this stage is to provide an indication of the total cost of the project, based on the user's functional requirements to the degree known at the time. Costs are based on inflation data, location, risk, quality, project size and schedule. All related factors affecting cost are considered to the extent possible.

The cost estimate is a rough indication of the total project costs and the completion date. The required degree of precision is 20%. (See RS9.)

1A.2.2 General

Scope of work

Cost Planning

This activity includes, but is not limited to, the following:

- Prepare cost plans from project summaries, preliminary concepts or other preliminary information;
- Prepare cost analysis;
- Provide advice and recommendations on project planning in order to achieve the most effective work sequence;

- Identify and quantify potential risks and make contingency recommendations in order to minimize negative cost impacts;
- Advise on alternative procurement and construction strategies for the greatest possible efficiency;
- Identify, forecast and analyze project-related issues, including possible market shortages and potential price fluctuations.

Cost estimates

Develop project cost estimates:

- Prepare Class 'D' cost estimates according to the overall summary format and detailed elemental breakdown in the Uniformal II standard for all work (estimates not broken down by construction package);
- Calculate design and construction costs, contingencies and risks;
- Prepare and investigate alternatives to help identify the most cost-effective design and/or construction approach;
- Investigate and produce a report on life-cycle costs;
- Document all unit pricing, analysis, and valuation.

1A.2.3 Deliverables

Submit for review:

Cost planning

- Cost plans;
- Cost analyses scenarios;
- Cash flows;
- Reports on alternative procurement and construction strategies or other issues within the project.

Cost estimates

- Cost breakdown; Accuracy of Class 'D' cost estimates (20%);
- Documentation of the methodology for the estimate and assumptions;
- Documentation of pricing and valuation calculations;
- Reports on investigation of costing alternatives;
- Reports on project life-cycle costs.
- Amend as necessary.
- Resubmit for final approval.

RS 1A.3 *Sustainable Development Strategies Reports*

1A.3.1 Purpose

The purpose of this stage is to research and investigate a wide range of strategies to achieve sustainability, including, but not limited to, the following:

- Reduction in energy consumption and greenhouse gas (GHG) emissions/carbon footprint;
- Building life cycle analysis and integration of low-carbon building materials. Life cycle costs and cost-benefit analysis;
- Climate change adaptation;
- Water management and landscaping;
- Sustainable building and transportation;

- Workplace, employee well-being and local community;
- Waste management (including CRD management to meet the landfill diversion target).

1A.3.2 General

Scope of work

The Consultant must research and investigate sustainable development strategies in the context of the project and make recommendations. The Consultant must

- Review potential environmental impacts and project aspects identified in the Environmental Impact Assessment (EIA) report;
- To reduce greenhouse gas production and save costs regarding backfill soil management, it is expected that the designer will consider storing and reusing the backfill soil generated during the construction of the building to backfill or integrate into landscape improvements. The specifications of the call for tenders should also encourage the reuse of controlled backfill already present on the site. This strategy is recommended insofar as the environmental quality of backfill soils is established following soil characterization and considered favourable to their reuse.
- As stipulated in the Project Description (PD) section, the design of the new complex must incorporate sustainable development elements in order to meet the objectives of the various sustainable development policies and strategies developed by the Government of Canada.

The following must be taken into consideration in the delivery of this Required Service (in relation to RS11):

1. Reduction in energy consumption and GHG emissions/carbon footprint

- Design a building to achieve a carbon-neutral footprint; in other words, design an infrastructure whose operational activities will be carbon-neutral.
- Use intelligent systems to reduce energy consumption.
- Use only building automation systems and building components compatible with an open protocol (BACnet).
- Design a building that will achieve energy and operating cost savings in relation to the requirements set out in the National Energy Code for Buildings – Canada 2011, as specified in RS11.

2. Building Life Cycle Assessment, including a cost-benefit analysis, and integration of low carbon building materials

- The analysis should also include a cost and cost-benefit analysis on the main building elements.
- LCA should be performed using the Environmental Impact Estimator and the Athena Sustainable Material Institute EcoCalculator or equivalent.
- Use and incorporate building materials that have a lower carbon footprint and contain fewer hazardous substances in the building's design based on the results of the Building Life Cycle Assessment (LCA). Also choose types of concrete that have a smaller carbon footprint than traditional concrete. The Departmental Representative

will provide the architectural firm with carbon footprint data for several categories of building materials so that the firm can take this into account in the design of the new structure.

3. Climate change adaptation

- Design and build new infrastructure to be resilient to climate change. The Departmental Representative will provide the architectural firm with the site's specific constraints related to current and future climate events so that these elements can be considered in the design of new infrastructure.
- Reduce heat islands: incorporate materials that are highly reflective of solar radiation (high albedo) over at least 75% of the impermeable surface, and implement other heat island reduction strategies. Design a high-reflection roof surface or a at least 25% green roof.

4. Water management (drinking water, domestic wastewater and stormwater) / landscaping

- Reduce drinking water consumption by 25%, compared with the national average for PSPC-owned buildings. The Departmental Representative will provide the architectural firm with average consumption data.
- Reduce outside water consumption (irrigation), stormwater runoff and the use of toxic products with appropriate landscaping. For example, the architectural firm may design an infrastructure for the recovery and treatment of rainwater, greywater and/or blackwater and reuse it for toilets, urinals, irrigation of green spaces, etc.
- Design the new construction to manage at least 50% of runoff on the site during 95th percentile precipitation events. Management techniques should reduce the amount of suspended solids and total quantity of runoff leaving the site after storm, heavy rainfall, and snowmelt events.
- Design a landscape to reduce the use of cleaning products and ban the use of toxic pesticides. This design should take into account species selection techniques that can be adapted to local constraints.

5. Sustainable building and transportation

- Achieve a level of environmental performance corresponding to the LEED and WELL project objectives specified in RS11.
- Develop innovation pilot projects that take advantage of new technologies to improve building performance in line with the mission zero objectives (energy, GHG, water and waste).
- Design the parking lot for installation of electrical charging stations. The Departmental Representative will provide information on the number of charging stations it plans to install.

6. Workplace, employee well-being and local community

- Integrate occupant-controlled design elements, such as operable windows, seasonal building solar shading, modular furniture, adjustable radiative technology in furniture for thermal comfort, and ventilation distribution systems that employees can use in order to manage changes.

- Provide outdoor spaces that allow for relaxation and gatherings.
- Provide showers and lockers for employees who travel to work by bicycle or on foot, who jog or who have a membership at a local gym.
- Implement air filtration systems and management strategies to reduce contaminant levels and manage CO₂ levels in office spaces.
- Identify quiet and collaborative areas for employees to use.
- Incorporate materials and lighting that minimize artificial light entering the building and site.

7. Waste management (including CRD management to meet the landfill diversion target)

- Management of domestic waste: Provide adequate indoor facilities for the selective collection of waste—recycling, composting and final waste—in order to achieve a minimum of 75% diversion of domestic waste.
- Management of construction, renovation and demolition (CRD) waste: The Consultant must establish an initial diagnosis with tagging of the reclamation containers, develop a waste management plan, and prepare a report with weight data showing that the objectives defined in RS11 have been achieved.

1A.3.3 Deliverables

- Submit a report on the sustainable development strategy for review.
- Amend as necessary.
- Resubmit for final approval.

RS1A.4 Communications and Stakeholder Management Plan

1A.4.1 Purpose

The purpose of this step is to submit a detailed communications management plan and a stakeholder management plan for the project.

1A.4.2 General

Scope of work

Communications management plan

- Develop a communications management plan specific to this Project. The Consultant is to work closely with the Departmental Representative to ensure the Consultant's communications plan is consistent with and complementary to all other communications plans.
- Define the structure and methods of information-gathering, screening, formatting and distribution.
- Present the understanding, within the Consultant's team, of the actions and processes necessary to facilitate the critical links among people, ideas, and information that are necessary for Project success.
- The Consultant's communications management plan must include, but not be limited to, the following:
 - The internal communications approach and methods of the Consultant Team and the Project Team, including a table detailing communications interactions;

- Communication requirements and standards during meetings and workshops and reporting or subsequent action;
- Description as to how correspondence, reports and performance records are managed;
- Actions and processes necessary to facilitate the critical links between people, ideas, and information for Project success; and
- A directory for the Consultant Team is to be included to provide contact information for everyone involved in the Project, including their areas of responsibility.

Stakeholder management plan

- Develop and implement a stakeholder management plan tailored to the project that effectively directs the team's activities.
- The Consultant's Stakeholder Management Plan must include, but not be limited to, the following:
 - Identification of all consulting services required for the duration of the project;
 - Consultant Team organization chart clearly indicating how project team resource persons interact with one another;
 - Duties and responsibilities of the Consultant Team members throughout the Contract;
 - Identification of alternate resource persons for the project team;
 - Any other relevant information regarding the Consultant's services to be provided for the Contract.
- The Consultant must continuously implement the plan in conjunction with the Departmental Representative, and must ensure that the latter is engaged in the reassessment process and any modifications to the Consultant's stakeholder management plan.

1A.4.3 Deliverables

- Submit a communications management plan and a stakeholder management plan for review.
- Amend as necessary.
- Resubmit for final approval.

RS 1B Pre-Design Services – Verification and Validation (Phase 1B)

During this step, the Consultant will

- Analyze the project requirements;
- Review the plans, specifications and other documents for the existing site and surrounding buildings;
- Review the geotechnical and environmental study prepared by others;
- Review the functional and technical program (FTP) prepared by others. The FTP will be submitted by the consultants responsible for drafting it following the project start-up;
- Review the other documents described in the PD9 section;
- Carry out exhaustive surveys of the project site;
- Make recommendations on pre-construction studies, tests and trials.

The Consultant must ensure that formal approval is obtained from the Departmental Representative at this stage, because the approved deliverables will become the scope of the project work and will be used as reference documents throughout the project.

RS 1B.1 *Analysis of Project Requirements*

1B.1.1 Purpose

The purpose of this stage is to ensure that the Consultant has reviewed and integrated all the project requirements, identified and evaluated conflicts or problems, provided alternative strategies, submitted and received approval for a Project scope, delivery process, schedule and estimate required to deliver a project of consistent quality.

The Consultant must analyze, review, validate and incorporate the content of the FTP and all pre-design studies developed by others and ensure that the information submitted is complete and coordinated. The Consultant must identify any missing information, contradictions or queries resulting from its verification.

In the event that additional or complementary information is required by the Consultant to fulfil the contract, the Consultant must notify the Departmental Representative as soon as possible, and provide the required information in writing. Formal approval from the Departmental Representative will be required before the Consultant can proceed with contracting and obtaining additional geotechnical and environmental services, which will be treated as disbursements (e.g., geotechnical and environmental study).

The Consultant must identify and assess conflicts and problems. The Consultant must list the documents received, check them, validate them and list the missing elements at this stage.

The Consultant must provide the Departmental Representative with a detailed work plan for the development and production of the documents to be provided at this stage. After approval by the Departmental Representative, the Consultant may make the necessary changes or produce the missing documents.

1B.1.2 General

Scope of work

- Visit the site and neighbouring buildings and verify the availability and capacity of services needed for the project;
- Attend the project start-up meeting;
- Attend the FTP presentation meeting;
- Analyze and validate project requirements;
- Review all available material related to the project;
- Review and validate the plans, specifications and other documents concerning the site and neighbouring buildings. Conduct the inspections and surveys required for the development of the deconstruction and decontamination plans for the existing site at step RS4;

- Review and validate the proposed project schedule to ensure that all milestones are realistic and that all stages can be met;
- Identify and verify the authorities having jurisdiction over the project;
- Investigate and validate all applicable codes, regulations and standards;
- Carry out exhaustive surveys of the project site;
- Establish an environmental impact mitigation policy consistent with the project objectives and economic constraints;
- Review potential environmental impacts and application of the *Impact Assessment Act*;
- Incorporate LEED principles with particular emphasis on energy efficiency and intrinsic carbon reduction.

1B.1.3 Deliverables

- Submit a document listing the documents received, what has been verified and validated and what is missing. After approval by the Departmental Representative, make necessary changes or produce the missing documents. Resubmit for final approval.
- Produce a comprehensive summary of the Project Brief and the Program demonstrating understanding of the scope of work, including the following:
 - Written identification of the problems, conflicts or other perceived information/clarifying assumptions for consideration by the Departmental Representative;
 - Complete and up-to-date existing site plans, including adjacent existing buildings.
 - Description and validation of proposed components;
 - Submission of a sustainable development action plan applied to the project with a timeline, including an overview of potential strategies to be considered for the project and an annotated checklist for the various accreditation desired for the project (LEED, WELL, etc.);
 - A report on all applicable codes, regulations, standards and authorities having jurisdiction;
 - An initial code study;
 - Following the review of the geotechnical study provide any additional analyses required to complete the data presented, if necessary;
 - Provide the identification of any additional analyses required to obtain accurate and detailed information on soil characteristics, the biological environment and the surface development needs;
 - Submit the end-of-stage documents.

RS 2 SCHEMATIC DESIGN

RS 2.1 Purpose

The purpose of this stage is to translate the project requirements into spatial parameters in the most environmentally friendly, sustainable way possible, explore design options and analyze them against priorities and program objectives that were previously identified. Out of this process, one option will be recommended for Design Development.

This stage is part of the Integrated Design Process (IDP) and the Building Information Modeling (BIM) program.

All Required Services (RS) are applicable to the entire project.

RS 2.2 General

Scope of work

- Provide the Departmental Representative with written replies to the review comments issued in the previous stage (RS1) by the Departmental Representative and the Construction Manager.
- Obtain the written approval of the Departmental Representative to develop alternative design concept options based on an analysis of the project brief.
- Prepare and provide a minimum of three (3) complete and distinct design options, exploring all viable technical and environmental strategies that could be implemented. Each option must be illustrated separately (reports, BIM mock-up, energy model, life cycle analysis, drawings, PowerPoint presentation, etc.) and incorporate architectural, structural and mechanical solutions, including the envelope and interior design.
- Submit for comments the BIM mock-up illustrating each option developed. Demonstrate how they mock-ups meet the general requirements of the FTP and step RS1.
- Analyze each solution in relation to the project objectives, including the project cost and schedule (via a comparative analysis detailing the advantages and disadvantages of each one).
- Prepare a preliminary report on the project description which describes the different elements and the various systems options.
- Minimize the use of hazardous/toxic materials/products and products made from endangered or rare species.
- Recommend one option for further development with all supporting background and technical justifications.
- Verify and ensure compliance with all acts, regulations, codes, standards and municipal regulations applicable to the project design. Verify and validate the processes for the various accreditations desired for the project (LEED and WELL) and update them if required.
- Perform a code study (see AS6).
- Submit a Class 'C' cost estimate (15% imprecision) for the various options based on the overall summary format and detailed elemental breakdown in the Unifomat II standard.
- Produce an implementation schedule, including alternative procurement and construction strategies for all options.

RS 2.3 Details

The following incomplete lists identify services expected from each discipline. Some of the activities listed below may require the participation of several or all professionals. The Consultant must coordinate its various team members (including sub-consultants and specialist consultants) and is responsible for performance of all elements in the contract. The Consultant is responsible for ensuring that all the documents produced and information supplied are coordinated among all disciplines.

2.3.1 Architecture

- Site plan showing the location of the proposed building and the parking lot to be deconstructed, their orientation and the main access points. The general layout of the site, traffic lanes and parking lots are provided for information only;
- Schematic plans of the new building, of alternatives showing relative disposition of main accommodation areas, circulation patterns, numbers of floors, etc.;
- Sketch elevations and sections indicating the basic design approach and aesthetic philosophy;
- Sketch perspectives or massing studies;
- Outside gross building areas and summary of main accommodation areas required and proposed; and
- Horizontal and vertical space relationships.

2.3.2 Landscape architecture

- Conceptual design drawings including the details of typical sections;
- Sketch elevations and sections indicating the basic design approach and aesthetic philosophy;
- Sketch perspectives or massing studies;
- General plan and layout of the building's peripheral facilities, including traffic lanes and site layout;

2.3.3 Civil engineering

- Existing conditions (including location of contaminated soils and levels) and demolition plans illustrating strategies for deconstructing existing parking lots and access roads.

2.3.4 Structural engineering

- Proposed or alternative structural systems, including foundation methods and explanatory sketches, and a copy of the site report on which the design is based;
- Initial seismic analysis.

2.3.5 Mechanical engineering

- The concept study submission must include a description of the specific mechanical requirements and the function of each area (or room) in the project. Identify any unique or specialized equipment required by the subject facility. 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 user requirements.
- Identify whether full-time operating staff will be needed for operation of any of the mechanical equipment. Differentiate between staff needed to meet code requirements and staff who may be needed because of the nature and size of the facility.
- Identify the location of the building entry points for all mechanical services.
- Identify in square metres the area to be provided for mechanical rooms and the percentage of the total building area this represents. Identify the location of mechanical spaces in the building.

- Analysis of alternative mechanical schemes at the conceptual design stage shall reveal energy consumption of building systems, and operating and maintenance costs on a month-by-month basis for a time span of one year. Accordingly, the estimated energy, operating 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 must be based on a projected building life of 25 years.
- Carry out an energy analysis for each mechanical systems option.
- Draw up an energy budget for the building and compare it with the energy consumption of similar buildings. Total energy consumed in the building must be expressed in kWh/m².
- Provide the following details by discipline:
 - ❖ Heating/ventilation/air conditioning:
 - Provide a preliminary estimate of heating and cooling loads;
 - Confirm that electricity is the chosen energy source;
 - Identify the main mechanical equipment in the building (boilers, chillers, water towers, etc.) and provide economic and technical explanations to support the type chosen;
 - Provide a summary list of mechanical systems to be connected to the emergency electrical system and provide a preliminary estimate of the expected loads;
 - Provide technical documentation for the main equipment;
 - Identify the volume of outdoor air to be supplied by the ventilation system;
 - Identify the delivery rate of supply air to occupied spaces.
 - ❖ Plumbing:
 - Provide an estimate of the expected domestic water, sanitary sewer and stormwater flows and indicate whether available services can handle this load. If not, develop a solution;
 - Indicate the pressure and flow rate of available water;
 - Indicate the drainage method intended for roofs;
 - Provide technical documentation for the main equipment.
 - ❖ Fire protection:
 - Provide a preliminary estimate of the required water flows and pressure required. Indicate the source of supply;
 - Coordinate with the city to conduct a flow test, and prepare a report in accordance with the requirements of NFPA-13;
 - Indicate the probable classification of risks by type of premises;
 - Indicate if pumping stations will be required;
 - Provide technical documentation for the main equipment.
- Provide the following plans with the recommended option for all disciplines:
 - Plans of each service or network;
 - Show the location of mechanical rooms with the main equipment locations;
 - Indicate by means of single-line diagrams the operating principles of the main systems proposed.
- Provide demolition plans for the existing site.

2.3.6 Electrical engineering

- Main basic electrical systems proposed at the design stage;
- Site plan showing location of service entrances;
- Distribution diagrams showing single-line diagrams to distribution centres and including details of the type of connection proposed by the electricity distributor;
- Typical floor plans complete with locations of major electrical equipment and distribution centres;
- Location of light fixtures (inside and outside);
- Location of power outlets;
- Ceiling distribution systems for lighting, power and telecommunications;
- List of standard PWGSC details to be used;
- Requirements for and layout of telephone equipment rooms, conduits and telecommunication cable systems;
- Provide an electrical design synopsis, describing the electrical work in sufficient detail for assessment and approval by the Departmental Representative. Include feasibility and economic studies of proposed systems complete with cost figures and disbursements.

2.3.7 Building connectivity components (BCC)

- Collaborate with the BCC specialists (SSC and the security specialist) to provide the infrastructure required to integrate their services;
- Present the infrastructure provided.

2.3.8 Enhanced commissioning (see RS8)

- Define the commissioning requirements;
- Identify in square metres the area to be provided for maintenance employees, including storage and workshops for mechanical, electrical and housekeeping;
- Identify the project verification archives (data storage and retrieval system).

2.3.9 Sustainable development

- Consider the sustainable development elements listed in RS1 in the development of the various design options;
- Carry out the life cycle analysis required in RS11, for each of the options including the life cycle costs of the elements studied;
- Develop and evaluate design options that involve environmental protection strategies;
- Check that the design options do not result in environmental effects not identified in the EIA report;
- Incorporate LEED principles into the design and construction, with particular emphasis on energy efficiency and intrinsic carbon reduction, while staying within the available budget.

2.3.10 Specifications

- Complete preliminary outline specifications based on the MasterFormat standard, indicating main building components and options for using “green” components and systems.

2.3.11 Cost plan

- Prepare a preliminary cost plan based on the design concept;
- Prepare a preliminary cost analysis;
- Prepare an options analysis and “what if” scenarios;
- Provide advice and recommendations on project planning in order to achieve the most cost-effective project sequence;
- Identify and quantify potential risks and make contingency recommendations so as to minimize the negative cost repercussions;
- Advise on alternative procurement and construction strategies to achieve efficiencies wherever possible;
- Identify, plan for and analyze project-related issues, including possible market shortages and potential price fluctuations.

2.3.12 Cost estimates

- Prepare Class ‘C’ cost estimates (15%) using the overall summary format and the detailed elemental breakdown in the Unifomat II standard for all work (estimates not broken down by construction package);
- Quantify design, construction and deconstruction costs, contingencies and risks;
- Prepare and review alternative costing solutions to determine the most cost-effective design and/or construction strategy;
- Investigate and report on life-cycle costs of the project’s main components;
- Provide documentation for all the unit prices, analyses and evaluations.

2.3.13 Timeline (Schedule)

- Prepare and update the project master schedule (based on established criteria);
- Identify potential scheduling risks;
- Advise on alternative procurement and construction strategies to achieve efficiencies wherever possible.

RS 2.4 Deliverables (at 50% and 99% completion)

Provide the following:

- Concept design drawings;
- Plan and elevation drawings of the current conditions in work areas;
- Preliminary analysis report of current applicable codes, standards, acts and regulations (see AS6);
- Energy analysis;
- Description of the options with recommendation of preferred solution;
- Project specifications amendments;
- Commissioning plan;
- Report on contaminated and non-contaminated waste management;
- Environmental design modification report;
- Cost plan, including cost analysis, “what if” scenarios, potential risks, and alternative procurement and construction strategies;
- Report on schedule deviations and recommended corrective measures or updated timeline;
- Total cost analysis studies and reports for major electrical and mechanical systems and the building envelope;

- Analytical report on maintenance costs for the options being evaluated;
- Traffic simulations;
- Program of laboratory tests and trials for quality control, geotechnics, etc.;
- Updated checklist of sustainable development accreditations desired for the project;
- Class 'C' cost estimate (15%), including methodology of the estimate, assumptions made, costing alternatives and life cycle costs;
- Implementation timeline update;
- Update of the communications management plan and the stakeholder management plan;
- Project life cycle analysis for each option;
- BIM mock-up (see AS8).

RS 3 DESIGN DEVELOPMENT

RS 3.1 Purpose

The purpose of this stage is to develop one of the options submitted in the Design Concept stage. The Design Development documents consist of drawings and other documents describing the size and character of the entire project with respect to architectural, interior design, structural, mechanical and electrical, civil and landscape design systems, materials and such other elements as may be appropriate.

This stage is part of the Integrated Design Process (IDP) and Building Information Modeling (BIM) program.

All Required Services (RS) are applicable to the entire project.

RS 3.2 General

Scope of work

- Provide the Departmental Representative with written replies to the review comments made in the previous stage (RS1) by the Departmental Representative and the Construction Manager;
- Obtain written approval from the Departmental Representative for development of one of the proposed Design Concept options;
- If any alterations are required, document all required changes, analyze the impact on all project components and resubmit for approval if required;
- Expand and clarify the Concept Design intent for each design discipline;
- Submit for comment the Building Information Modeling (BIM) mock-up illustrating the design plans, based on the analysis of all comments received in the previous stage. Demonstrate how it meets the FTP's requirements and performance criteria;
- Submit the design materials to the client, design review or other committees, as directed by the Departmental Representative;
- Ensure design coordination across all disciplines;
- Analyze the constructability of the project and advise on the construction process and duration;

- Verify and ensure compliance with all acts, regulations, codes, standards and municipal regulations applicable to the project design;
- Provide a list of all National Master Specification (NMS) sections to be used, including a complete draft of the specifications, catalogue cuts and sustainable development/green choices;
- Update the requested sustainable development and wellbeing accreditation processes;
- Update the energy analysis;
- Update the code study;
- Present the studies to government authorities or local authorities if appropriate.

RS 3.3 Details

The following incomplete lists identify services expected from each discipline. Some of the activities listed below may require the participation of several or all professionals. The Consultant shall coordinate its various team members (including sub-consultants and specialist consultants) and is responsible for execution of all items in the contract. The Consultant is responsible for ensuring that all the documents produced and information supplied are coordinated among all disciplines.

3.3.1 Architecture and interior design

- Site plan showing the location of the proposed building, its orientation and the main access points. The general layout of the site and access roads are provided for information only.
- Cross-sections showing the relationship of the building to the proposed plantings, in order to illustrate the three-dimensional aspects of the site.
- Deconstruction plans for the existing parking lot.
- A floor plan for each floor showing all accommodation required with room names and calculated surface areas, including all necessary circulation areas, stairs, elevators and anticipated ancillary spaces for service use. Indicate building grids, modules, etc., and key dimensions of the major components.
- Furniture and equipment layout plans (see AS3).
- Signage plans (see AS3).
- Elevations of all exterior building facades showing all doors and windows accurately sized and projected from the floor plans and sections. Indicate clear floor and ceiling levels and any concealed roof levels.
- Cross-sections through the building(s) to show floor levels, room heights, inner corridor or court elevations, etc.
- Detail sections of walls, building envelope design features or other special design features requiring illustration and explanation at this stage, including fireproofing methods.

3.3.2 Landscape architecture

- Site plan confirming the location of the proposed building, its orientation, main access points, traffic routes (vehicular, public transit, pedestrian, service and unloading), parking lots and site design (earthworks, existing and proposed elevations) and landscaping (plantings, turf).

- Cross-sections showing the relationship of the building to the proposed plantings, in order to illustrate the three-dimensional aspects of the site.
- General plans, overall design, details, elevations and cross-sections to clarify the geometry of the traffic network, drainage and earthworks, service infrastructure, surface coating, street furniture, landscaping and other utility works.
- Details, sections or elevation or any other special design features that require illustration or explanation, including various anchoring methods.
- The drawings must be integrated with those of other disciplines.

3.3.3 Civil engineering

- Drawings showing the proposed structural elements, type of foundation, sub-foundation, construction materials, details of retaining walls, if relevant, and other significant or unusual details proposed.
- Drawings showing all the existing elements of the rainwater, sanitary, water and electricity systems and the connection points with the public systems.
- Drawings of the locations of new elements of the rainwater, sanitary, water and electrical systems, including foundations, embankments, key levels and inverts.
- Details, utility trench cuts or any other special design features that require illustration or explanation at this stage.

3.3.4 Structural engineering

- Drawings indicating the proposed structural framing system, structural materials, and other significant or unusual details proposed. The drawings may be separate from or incorporated into the architectural drawings. Include a copy of the site investigation report on which the design is based.
- Update the seismic report.

3.3.5 Mechanical engineering

Specific requirements

- Produce the preliminary designs based on the approved concept. Update the energy analysis and energy budget established during the concept design stage.
- Update the schedule of requirements.
- Provide information on all internal and external energy loads in sufficient detail to determine the compatibility of the proposal with existing services, approved concept and energy budget.
- Analyze selected equipment and systems and attach schematics and calculations necessary to demonstrate the economic advantages of the selected systems.
- Describe the mechanical systems (including their preliminary capacities) to be provided and the components of each system.
- Describe the proposed operation of the mechanical systems, including all the information required to understand the diagrams on the plans.
- Describe the skills required of operating personnel to operate the building systems and their expected duties.

- Describe the acoustical, vibration and seismic control measures to be included in the design.
- Describe the selected forms of renewable energy as well as their installation and mode of operation; attach the operating diagrams for heating, air conditioning and ventilation; attach calculations showing the economic benefits of the selected systems.
- Provide the following details by discipline:
 - ❖ Heating/ventilation/air conditioning:
 - Provide in tabular form, for each system, the following preliminary information:
 - Identification of systems, spaces served
 - Area served
 - Heating capacity
 - Cooling capacity
 - Average air flow rate per m²
 - Total air flow rate, fresh air flow rate, static pressure
 - Pump water flow rate, head pressure
 - Motor horsepower
 - Power connected to the emergency electrical system
 - Indicate whether the ventilation system should be shut down in the event of a fire alarm.
 - Provide a report on design criteria including operating temperatures and pressures of the various systems.
 - ❖ Plumbing:
 - Indicate the intended energy source for domestic water heating.
 - ❖ Fire protection:
 - Provide in tabular form, for each system, the following information:
 - System identification
 - Area served in m²
 - Probable number of sprinkler heads
 - Risk categorization
 - Water flows and pressures anticipated
 - Capacity of the pumps if required
 - Indicate the power of the equipment to be connected to the emergency electrical service if required.
 - Indicate the required connections to the alarm system.
 - ❖ Control:
 - Describe the building systems control architecture. Provide a preliminary Building Automation or Energy Management & Control Systems (EMCS) network architecture, mechanical system control schematics, and sequence of operation.

Drawings (construction)

- Site plan showing service entrances for water supply, sanitary and storm drains and connections to public utility services, including all key invert elevations. Include plumbing diagrams (domestic water, recirculation, sanitary, vent and rainwater circuit) and show service inverts at building entrances.
- Drawings showing preliminary sizing of ventilation, cooling and heating systems showing locations, and all major equipment layouts in

mechanical rooms. Include operating diagrams of water and air systems showing how the proposed systems work.

- Drawings of the plumbing system, showing routing and sizing of major lines and location of pumping and other equipment where required.
- Drawings of the fire protection systems showing major components. Show the main fire protection networks in a single-line diagram.
- Drawings of control diagrams for the main equipment.

3.3.6 Electrical engineering

- Provide drawings showing detailed information on the following:
 - ❖ Single-line diagram of power circuits with their metering and protection, including
 - Power rating of connected equipment
 - Ratios and connections of CTs and PTs
 - The description of energy-smart sub-metering
 - Maximum short-circuit levels on which design is based
 - Identification and capacity of services
 - Connected load and estimated maximum demand on each load centre, including the one connected to the generator.
 - ❖ Electrical plans with
 - Floor elevations and identification of electrical, IT and telephony rooms
 - A legend of all symbols used
 - Identification of circuit numbers at outlets and control switches
 - All conduit and wire sizes except for maximum sizes, which should be stated in the specification
 - A panel schedule with loadings for each panel
 - Telephone/computing conduits system layout for ceiling/floor distribution
 - ❖ Riser diagrams for lighting, power, telephone and telecommunication cable systems, fire alarm and other systems
 - ❖ Distribution diagrams for fast-charging stations for electric vehicles
 - ❖ Elementary diagrams for control systems
 - ❖ Schedule for motors and controls
 - ❖ Complete lighting layout and fixture schedule clearly indicating methods of circuiting, switching and fixture mounting
 - ❖ Electric heating layout and schedule
 - ❖ Provide the following data:
 - Total connected load
 - Maximum demand and diversity factors
 - Sizing of standby load
 - Short-circuit requirements and calculations showing the ratings of equipment used

3.3.7 Building connectivity components (BCC)

- Collaborate with the BCC specialists in order to provide the infrastructure required to incorporate their services.

3.3.8 Enhanced commissioning (see RS8)

- Define the operational requirements.

- Define the commissioning requirements.
- Prepare a Commissioning Brief describing major commissioning activities for mechanical, electrical and integrated system testing.
- Define and determine what document to deposit in the project archives.

3.3.9 Sustainable development

- Develop and evaluate design options that involve environmental protection strategies.
- Incorporate concrete or cement-based materials with a lower carbon footprint than their traditional equivalent based on material life cycle data.
- Procurement contracts for materials and equipment should be green and include specific criteria to meet the elements of sustainable development. To that end, the Departmental Representative's procurement and environment experts will work with the Consultant to define the criteria to be included in the plans and specifications.
- Incorporate the mitigation measures identified in the Environmental Impact Assessment (EIA) report into plans and specifications, where applicable.
- Incorporate sustainable development certification principles into the design and construction, with particular emphasis on energy efficiency, while staying within the available budget.
- Provide a diagnosis of construction waste to see what the diversion of 90% of the construction waste looks like.

3.3.10 Specifications

- Provide a list and outline specification sections of all National Master Specifications (NMS) sections to be used.
- Submit outline specifications for all systems and principal components and equipment.
- Provide in the outline specifications manufacturers' literature about principal equipment and components of the systems proposed for this project.
- Highlight proposed "green" materials, components and systems.

3.3.11 Cost plan

- Update the cost plan.
- Highlight changes from the preliminary cost plan.
- Include a cash flow analysis.

3.3.12 Cost estimates

- Provide a Class 'B' (substantive) cost estimate (10%).
- Prepare the cost estimate based on the overall summary format and detailed elemental breakdown in the Unifomat II standard. Produce a cost breakdown where the amounts are clearly differentiated by funding source (breakdown for base building and each client department). The cost estimate must also be broken down by construction package.
- Highlight changes made to the Class 'C' (indicative) cost estimate (15%) and the solutions proposed to prevent cost increases.

3.3.13 Timeline (Schedule)

- Update the timeline (schedule).
- Highlight changes to the timeline and the proposed solutions to avoid extensions of the timeline.

RS 3.4 Deliverables (at 50% and 99% completion)

- Floor plans, including all disciplines showing all floor elements and services in detail, which are necessary to make all design decisions and to make a substantive estimate of the project cost.
- Two (2) or three (3) building sections.
- Architectural, structural, engineering, landscape design, millwork and finishing details to determine choices of materials and finishes.
- Reflected ceiling plans.
- Elevations.
- Interior and/or exterior perspectives.
- Analysis report of applicable codes, standards, acts and regulations.
- 3D models of the site and the building.
- Using the 3D model, prepare a virtual walkthrough of the exterior and main interior spaces of the building (including lobbies, typical offices, typical mediation rooms and a typical courtroom).
- Schedules of finishes and colour schemes and samples.
- Preliminary outline specifications for all systems and principal components or equipment.
- Updated cost plan and cash flow.
- Class 'B' cost estimate (10%).
- Preliminary construction schedules, including long-lead delivery items.
- Report by the fire protection engineer covering the requirements, strategies or actions to ensure protection of the building and its occupants.
- Project file detailing the project's basic assumptions and the rationale for all major decisions
- Report and blocking plan with scenarios that describe IT requirements by sector, position, meeting room, etc. for possible submission to SSC.
- Commissioning plan.
- Updated sustainable development strategy report.
- Description of building components with data on design structured as an EPD.
- Final Total Cost Analysis studies and reports applied to major electrical and mechanical (HVAC) systems and the building envelope.
- Analysis report on maintenance costs for the assessed options.
- Updated energy analysis.
- Updated code study (refer to AS6)
- Operating diagrams for heating, air conditioning and ventilation systems, including the selected renewable energy sources.
- Traffic simulations.
- Life cycle assessment.

RS 4 CONSTRUCTION DOCUMENTS

RS 4.1 Coordination with the Construction Manager

Since the project will be carried out using the construction management model with a Construction Manager hired by the Departmental Representative under a separate contract, the Consultant must adapt the method of preparing the tender documents (plans and specifications) based on several separate construction packages.

The tender documents to be produced by the Consultant at stage RS4 must be a coherent, complete and coordinated set of drawings and technical specifications (specifications) that meet the project requirements and allow the Construction Manager to proceed with the bidding process.

The services to be provided by the Consultant in this section apply to all solicitation documents that will be processed in RS5.

The Construction Manager and the Consultant must work together to

- Establish the scope and extent of the documents to be prepared for each construction package that will be the subject of separate tender documents;
- Split tender documents into packages, according to different disciplines, in order to select subcontractors who will carry out each stage and sub-stage of the project;
- The Construction Manager and the Consultant will be jointly responsible for defining the lots.
- Agree on changes to be made to the tender documents and the sequence of work in order to optimize the work schedule;
- Coordinate the changes to be made to the tender documents;
- Ensure that the tender documents are complete by incorporating comments and suggestions for revisions before the calls for tenders are published;
- Produce a BIM mock-up as described in RS12 which provides a detailed picture of the relationships between the various elements constituting the building and its location, the names or identifiers, dimensions and shapes and any other information necessary to carry out the work and obtain the desired results. It is important to ensure that conflicts are identified and corrected weekly in the model. The individual work flow of each Consultant Team member must be revised and optimized to meet schedule requirements and minimize the time required;

Tender documents (plans and specifications) must be prepared in accordance with “Doing Business with PWGSC – Documentation and Deliverables Manual”, “Doing Business with PWGSC – Addendum – Quebec Region”, the BIM Management Plan (BMP) and all other contractual requirements. Tender documents must describe

- The products, materials, standards, equipment, construction systems, methods and processes and level of workmanship required;
- The physical and environmental conditions that are existing and that are to be created and maintained in work areas, on-site, in adjacent work areas or off-site;
- Procedures for contract administration;
- Performance verification and progress reporting requirements.

Design Services:

The Consultant must ensure congruency between all construction tender packages and

- Confirm the content and timing of each construction tender package with the Project Team;
- Coordinate with the Construction Manager on the scope and content of each construction package;
- Coordinate with the Departmental Representative and the Construction Manager to prepare and finalize performance specifications per discipline;
- Coordinate and integrate all the submissions from the Consultant Team;
- Define commissioning procedures, construction monitoring requirements, performance expectations, Consultant-led and Contractor-led training sessions, requirements for operating and technical maintenance manuals, post-construction monitoring, and record drawings/model;
- Submit construction tender packages, conduct design charrettes and reply to construction tender package comments;
- Coordinate and integrate all construction tender package submission review comments;
- Confirm the format of the model, drawings and technical specifications and comply with the stipulated requirements for the project;
- Confirm drawings and specifications format requirements with PWGSC and the Construction Manager;
- Revise the design schedule (provided by the Consultant), coordinate with the Construction Manager's construction schedule and revise the project schedule;
- Provide continual input on the construction tender packages and the overall construction estimates by the Construction Manager, by means of written reports; and
- Collaborate with the Construction Manager to split the construction tender packages into the trade-specific tender packages based on content, cost estimates, unit prices, etc.

RS 4.2 Purpose

The purpose of this stage is to prepare drawings and specifications for each separate construction package, describing in detail the requirements for carrying out the work and establishing the final project cost estimate.

This stage is part of the Building Information Modelling (BIM) program.

- Documents must be submitted for verification at the following levels of progress:
 - 33% indicates that technical development of all execution documents is one-third (1/3) complete;
 - 66% indicates that technical development of all execution documents is two-thirds (2/3) complete;
 - 99% is the submission of complete (3/3) construction documents ready for tender call and submission to local authorities for pre-permit review.
 - Final submission (100%) incorporates all revisions required in the 99% version and is intended to provide the Departmental Representative with complete construction documents for the tender call.

- Develop a project-specific Systems Operations Manual (SOM).
- In every phase and sub-phase, the Consultant is responsible for ensuring that all documents produced are properly and completely coordinated among all the disciplines and specialties involved in the project.
- Follow up on the Review Reports from Architecture and Engineering Services after the intermediate submissions (33%, 66% and 99%).
- Prepare the plans and specifications in both official languages, as per AS1. The construction drawings must be coordinated among all disciplines involved, the technical specifications and the descriptive specifications at 99% progress.
- Prepare a Class 'A' Pre-Tender Estimate, with a 5% contingency allowance, establishing the project's total cost. Prepare based on the overall summary format and detailed elemental breakdown in the Uniformat II standard and the distribution of costs based on the model provided.
- Update the project execution timeline (schedule).
- These documents constitute the complete file that can allow the construction manager to obtain bids (in batches) and to build the structure.

RS 4.3 General

Activities are similar in each of the four stages of deliverables (at 33%, 66%, 99% and final); completeness of the project development should reflect the required stage of deliverables. The Consultant is responsible for ensuring the seamless coordination of documents between the various disciplines. This preparation must be done for each separate construction package.

Scope of work for each construction package:

- Provide the Departmental Representative with written replies to the review comments issued at the previous stage (RS3) and at the 33%, 66% and 99% stages by the Departmental Representative, AES, MTS and the Construction Manager;
- Obtain Departmental Representative's approval for Design Development submissions (33%, 66% and 99%);
- Confirm the format of drawings and specifications with the Departmental Representative;
- Describe the specific methods (i.e., staggered execution of the work in phases and based on several separate construction packages).
- Submit for comment a Building Information Modelling (BIM) mock-up illustrating the plans at the 33%, 66%, 99%, and final stages based on the analysis of all comments received in the previous stage. Demonstrate how the mock-up meets the FTP's requirements and performance criteria.
- Submit the complete and coordinated drawings and specifications for each construction package at the required stages (33%, 66%, 99% and final), based on the structure provided by the Departmental Representative.
- Ensure compliance with existing codes, standards, legislation and regulations that apply to the project.
- Provide written replies to all review comments and incorporate them into the Construction Documents where required.

- Advise as to the progress of the cost estimates and submit updated cost estimates as the project develops.
- Prepare a Class 'B' estimate (10%) based on the overall summary format and detailed elemental breakdown in the Uniformat II standard.
- Produce a breakdown of the costs where the amounts are clearly differentiated by funding source (breakdown for base building and each client department) at the 50% progress mark.
- Prepare a final Class 'A' (substantive) estimate (5%), based on the overall summary format and detailed elemental breakdown in the Uniformat II standard at 99% progress and at final submission.
- At each level of progress (33%, 66%, 99% and final submission), prepare an overall cost estimate for the work (including the entire project and the packages), identify variances, and propose solutions to ensure compliance with the overall construction budget.
- Produce an overall Class 'B' estimate for all packages and/or components of the project so that PSPC can submit the project (total cost) for approval.
- Update the project schedule, including the package schedules and overall schedule.
- Prepare discipline summaries based on the MasterFormat model.
- Review specifications for construction materials and processes, and confirm that they meet the sustainable development objectives.
- Update the annotated project checklist for the desired sustainable development certifications.
- Prepare the administrative and technical file (simulations, technical data sheets, interpretation requests, reports, etc.) required for the desired sustainable development certifications.
- Plan to complete LEED and WELL certification applications in several stages - prepare and submit files for credits as all required inputs as they are available to expedite the certification processes.
- Update the energy analysis.
- Prepare and submit a final analysis report on current applicable laws, regulations, codes and standards (see AS6).
- Prepare and submit the Final Total Cost Analysis studies and reports applied to major electrical and mechanical systems and the building envelope.
- Prepare and submit the construction waste management plan.

RS 4.4 Details

The following incomplete lists identify services expected from each discipline. Some of the activities listed below may require the participation of several or all professionals. The Consultant must coordinate its various team members (including sub-consultants and specialist consultants) and is responsible for performance of all elements in the contract. The Consultant is responsible for ensuring that all the documents produced and information supplied are coordinated among all disciplines. This preparation must be done for each separate construction package.

4.4.1 Progress Review

- As work on the construction drawings progresses, submit drawings, schedules, details, relevant calculation data and an updated cost plan as required. Coordinate the project schedule with the Construction Manager.

4.4.2 Mechanical

- Flow diagrams, system layout plans, equipment selections and dimensions, floor plans showing major equipment.
- All major ductwork sized and shown on drawings, including the layout of all major mechanical and transformer rooms.
- Building Automation or Energy Management & Control Systems (EMCS) network architecture, mechanical system control schematics, sequence of operation for each mechanical system, schematics for electrical system controls, DDC input/output point schedules.
- Update the building load calculation, energy analysis and energy budget.
- Submit with the stipulated progress submission all calculations for mechanical design and equipment selection. These calculations must be submitted in a three-ring binder with tabs.
- The calculations submitted will not necessarily be reviewed. They are required for record purposes and in some instances to assist in the understanding and interpretation of designs. They must be submitted in a format that is legible, neat and easily understandable.
- Specifications and an index of specification sections. Use the most recent version of the NMS. Use the sections specific to PWGSC, where applicable.

4.4.3 Electrical

- Provide drawings showing more detailed information on the following:
 - ❖ Single-line diagram of power circuits with their metering and protection, including
 - Power rating of connected equipment
 - Ratios and connections of CTs and PTs
 - The description of energy-smart sub-metering
 - Maximum short-circuit levels on which design is based
 - Identification and capacity of services
 - Connected load and estimated maximum demand on each load centre including that of the generator.
 - ❖ Electrical plans with
 - Floor elevations and identification of electrical, IT and telephony rooms
 - A legend of all symbols used
 - Identification of circuit numbers at outlets and control switches
 - All conduit and wire sizes except for maximum sizes, which should be stated in the specification
 - A panel schedule with loadings for each panel
 - Telephone/computing conduits system layout for ceiling/floor distribution
 - ❖ Riser diagrams for lighting, power, telephone and telecommunication cable systems, fire alarm and other systems
 - ❖ Distribution diagrams for fast-charging stations for electric vehicles
 - ❖ Elementary diagrams for control systems

- ❖ Schedule for motors and controls
- ❖ Complete lighting layout and fixture schedule clearly indicating methods of circuiting, switching and fixture mounting
- ❖ Electric heating layout and schedule
- ❖ Provide the following data:
 - Total connected load
 - Maximum demand and diversity factors
 - Sizing of standby load
 - Short-circuit requirements and calculations showing the ratings of the equipment used
 - Voltage drop
- ❖ The calculations submitted will not necessarily be reviewed. They are required for record purposes and in some instances to assist in the understanding and interpretation of designs. They must be submitted in a format that is legible, neat and easily understandable.
- ❖ Specifications and an index of specification sections. Use the most recent version of the NMS. Use the sections specific to PWGSC, where applicable.

4.4.4 Architecture and interior design

- Complete and coordinated drawings (plans, sections, elevations, details, etc.) showing the scope of the work and work location at the site.
- Furniture and equipment layout plans (see AS3).
- Signage plans (see AS3).
- Specifications and an index of specification sections. Use the most recent version of the NMS. Use the sections specific to PWGSC, where applicable.

4.4.5 Landscape architecture

- Complete and coordinated drawings showing the scope of the work and work location at the site: location, demolition and protection of plants, installation, levelling and drainage, planting, construction sections and details, granular infrastructure, etc.
- Specifications and an index of specification sections. Use the most recent version of the NMS. Use the sections specific to PWGSC, where applicable.

4.4.6 Civil engineering

- Complete and coordinated drawings showing the scope of the work and work location at the site.
- Specifications and an index of specification sections. Use the most recent version of the NMS. Use the sections specific to PWGSC, where applicable.

4.4.7 Structural engineering

- Complete and coordinated drawings showing the scope of the work and work location at the site.
- Specifications and an index of specification sections. Use the most recent version of the NMS. Use the sections specific to PWGSC, where applicable.

4.4.8 Building connectivity components (BCC)

- Collaborate with the BCC specialists to provide the infrastructure required to integrate their services.

4.4.9 Enhanced commissioning (see RS8)

- Commissioning plan including the required sections of Division 1 of the NMS.

RS 4.5 Deliverables

- The deliverables are similar at both stages (33%, 66% and 99%), except for the following:
 - ❖ A Class 'B' estimate (10% imprecision) (substantive) at the 66% progress mark, including a cost breakdown in which the amounts are clearly differentiated by funding source (breakdown for base building and each client department);
 - ❖ A Class 'A' final estimate (5% imprecision) (substantive) at the 99% progress mark and upon final submission.
- Completeness of the project development should reflect the stage of a submission.
- If the progress of documents is less than what is required, and/or if the documents are not coordinated across all disciplines, the Consultant must resubmit its work all while continuing to maintain the critical milestone dates.

4.5.1 99% presentation and submission

- Complete specification and working drawings.
- 99% commissioning plan and Systems Operations Manual.
- One copy of the complete colour schedules, including textures, sheens, super-graphics, colour chips and material samples.
- All the rooms on the plans issued at 99% completion should only be identified with room numbers. The consultant must provide a list to the Departmental Representative describing the use of the rooms according to the room numbers identified on the plans. (This list must not be published during calls for tenders).
- One copy of the site information, soil study report, geological cross-sections from the drilling report, etc.
- One copy of the concept, design and other criteria required by the Departmental Representative's Technical Services for final verification and archiving.
- One copy of the updated cost plan and project schedule.
- Updated energy analysis.
- Updated code study (refer to AS6).
- Final Total Cost Analysis studies and reports applied to major electrical and mechanical systems and the building envelope.
- Analysis report on maintenance costs for the assessed options.
- Update the communications and stakeholder management plan.
- Updated sustainable development accreditation checklist and LCA report.

4.5.2 Final submission

- This submission incorporates all revisions required by the review of the 99% submission. Provide the following:
 - ❖ Complete set of construction drawings (hard copy, PDF and DWG formats);
 - ❖ Complete set of specifications (hard copy, PDF and DWG formats);
 - ❖ Class 'A' cost estimate (5%), based on the overall summary format and detailed elemental breakdown in the Unifomat II standard;
 - ❖ Comprehensive plan for enhanced commissioning and decommissioning of existing equipment;
 - ❖ Complete Systems Operations Manual;
 - ❖ Complete set of original colour schedule;
 - ❖ Complete set of the soil study report along with any amendments;
 - ❖ Complete set of the hazardous substances study report (provided by the Departmental Representative).
 - ❖ Final list detailing the correspondence between room numbers and their uses.
- Coordinate the project schedule with the Construction Manager.
- Issue the documents as required to go to tender by construction packages.
- As a safeguard against loss or damage to the originals, keep a complete set of drawings in reproducible form and one copy of the specifications.
- Submission to the appropriate inspection services (i.e., Municipal Building Services).
- Submit the required plans and specifications to the appropriate inspection services for approval prior to the call for tenders (i.e., the Consultant assists the Construction Manager in applying for building permits, the cost of which will be paid by the Construction Manager).

RS 5 TENDERING, EVALUATION OF BIDS AND AWARDING OF CONSTRUCTION CONTRACTS TO SUBCONTRACTORS (BY PACKAGE)

RS 5.1 Purpose

The construction project will be carried out using the construction management model based on separate construction packages.

The purpose of this step is to obtain, through the Construction Manager hired by the Department Representative, bids from competent contractors to carry out the project in accordance with the bid documents. The Construction Manager will evaluate the bids and award the construction contracts.

If required, and with the approval of the Departmental Representative, the Construction Manager will inform the Consultant of the need to clarify and revise the tender packages and modify the sequencing to optimize the schedule.

The Consultant must

- Confirm with the Construction Manager and the Departmental Representative the intent and scope of each tender package;

- Provide the services described in this section for all tender packages, except for the purchasing and installation of furniture and signage, which are excluded from the Construction Manager's mandate (see AS3);
- Clearly indicate in the documents which components are non-contractual (furniture, signage, etc.);
- Obtain written authorization from the Departmental Representative before issuing each construction tender package.

RS 5.2 General

Scope of work

- Provide the Construction Manager with all documents required to conduct the tender call for contractors. This requires that all documents be complete and be coordinated across all disciplines. This is the responsibility of the Consultant. The bid forms will be prepared by the Construction Manager.
- Assist the Construction Manager at the information meetings for bidders for each separate construction package.
- Prepare addenda based on questions arising in such meetings for distribution by the Construction Manager.
- Provide, in addendum form, all information required by bidders to properly interpret the construction documents.
- Keep full notes of all inquiries during the bidding period and submit them to the Departmental Representative at the end of the period for placement in PWGSC's record.
- After any modifications issued as addenda, prepare a revised Class 'A' cost estimate for each construction package in order to update and cross-check the costs, and present them for revision by the Construction Manager.
- Conduct a cost analysis of the bids submitted by the Construction Manager for each construction package and make recommendations to the Departmental Representative.
- Assist in bid evaluation by providing advice on the following:
 - ❖ The compliance of the tender documents received;
 - ❖ The effect of alternatives and qualifications that may have been included in the bid;
- If the Construction Manager decides to launch a new call for tenders, provide the Construction Manager with advice and assistance through the Departmental Representative;
- Determine and report to the Construction Manager and the Departmental Representative any effect the addenda to the tender call or to the contract may have on the project cost and the project schedule;
- In the case of a cost overrun, revise and modify, at the Consultant's expense (unless the consultant can demonstrate that they are not responsible for the exceedance), the construction tender packages, the BIM mock-up and the technical characteristics, so that the cost falls below the stated limits;
- Determine and report to the Construction Manager and the Departmental Representative any effect that a new tender call may have on the project cost and the project schedule.

RS 5.3 Deliverables

- Originals of drawings and specifications;
- Electronic copies of drawings and specifications in DWG and PDF formats based on the structure provided by PWGSC;
- Furniture plans and moving plans;
- Moving specifications;
- Addenda where needed;
- Changes to the documents, if re-tendering is necessary;
- Updated cost estimates or project schedule.

RS6 CONSTRUCTION AND CONTRACT ADMINISTRATION AND POST-CONSTRUCTION WARRANTY REVIEW

The list below is incomplete and in no way limits the professional obligations of the Consultant, its sub-consultants and its specialist consultants.

RS 6.1 Intent

The construction project will be carried out using the construction management model based on separate construction packages.

The objective in this stage is to implement the project in compliance with the contract documents, to orient and provide direction for and to monitor all necessary or requested changes to the scope of work during construction.

RS 6.2 General

Scope of work

- During the implementation of the project, act on behalf of the Departmental Representative to the extent stipulated in this document;
- Incorporate the addenda into the drawings and specifications issued for bids and submit the for-construction drawings and specifications based on the structure provided by the Departmental Representative.
- Review the work at appropriate intervals to determine whether the work complies with the Contract Documents.
- Keep the Departmental Representative informed of the progress and quality of the work, and report any defects or deficiencies in the work observed during the course of the site review.
- Ensure compliance with the Commissioning Plan, and update the plan as necessary.
- Determine the amounts owing to the Construction Manager based on the progress of the work, and certify such payments to the Departmental Representative.
- Interpret the requirements in the Contract Documents.
- Provide cost advice during construction.
- Notify the Departmental Representative of all potential changes to the scope of the work during project implementation.
- Review documents submitted by the Construction Manager.

- Draft Contemplated Change Notices (CCNs) to be provided to the Construction Manager by the Departmental Representative, and justify them using directives.
- Submit a cost and delay estimates for each CCN to the Departmental Representative.
- Analyze the quotations submitted by the Construction Manager (both costs and delays) and negotiate with the Construction Manager, where necessary, within two (2) working days following receipt of the quotation.
- Provide the Departmental Representative with a recommendation for issue of Change Order (CO).
- Keep a record of CCNs detailing the history of each one until a CO is issued, and share it with the Departmental Representative.
- Maintain and share with the Departmental representative a register of shop drawings and technical sheets that must be submitted by the Construction Manager, detailing the history of their revisions
- Note any changes or material/equipment substitutions in the Record Documents.
- Prepare and post Systems Operating Instructions.
- Monitor construction by overseeing the technical applications of the checklists for the project's sustainable development and wellbeing certifications.
- Conduct the energy studies, analyses and simulations required to show that the sustainable development and wellbeing certification performance levels required for the project have been achieved.
- Approve the construction materials and systems based on the ecological criteria required in the tender documents. In addition, check the documentation provided by suppliers regarding the carbon footprint of concrete/cement materials.
- Perform quality control of the work to ensure that the Sustainable Development Strategy performance requirements are being met.
- Monitor the construction waste management plan, and start totalling the weights (provided by the Construction Manager) for the final report demonstrating 90% diversion of construction waste and the tonnage/m² generated. The final report must be submitted to the Departmental Representative with all of the associated weight data upon the completion of work.
- Verify commissioning during the construction period for all disciplines.
- Ensure that all end-of-project documents and manuals are complete and in compliance with contractual requirements before submitting them to the Departmental Representative.
- Finalize the Systems Operations Manual.
- Conduct a final warranty review.
- During the 12-month warranty period, investigate all defects and alleged defects, and issue instructions to the Construction Manager.
- Update the communications and stakeholder management plan.
- Update the energy analysis.
- Perform the final update of the code study.
- Coordinate and monitor the delivery and installation of furniture in consultation with all suppliers and the Construction Manager (refer to AS3).

RS 6.3 Details

6.3.1 Project schedule

- Once construction contracts are awarded, obtain from the Construction Manager the Project Schedule with detailed commissioning requirements shown separately and distribute it as appropriate.
- Verify that the construction work is being carried out in accordance with the approved schedule, take the necessary steps with the Construction Manager to ensure that the schedule is being followed, and submit a detailed report to the Departmental Representative concerning any delays, once a month.
- Keep accurate records of the causes of delays and the associated costs.
- Make every effort to assist the Construction Manager to avoid delays in the project schedule, in particular by acting proactively and providing clear, accurate answers that meet requirements.

6.3.2 Extensions

- Only the Departmental Representative can approve a request to extend a deadline.

6.3.3 Cost breakdown

- Obtain from the Construction Manager a detailed cost breakdown on a standard PWGSC form, and submit it to the Departmental Representative with the first Request for Progress Payment.

6.3.4 Subcontractor changes

- The Construction Manager is required to use the subcontractors named on the list provided following the bid opening, unless a change is authorized by the Departmental Representative. Changes are considered only when they involve no increase in cost. Review all requests for changes of subcontractors, and submit recommendations to the Departmental Representative.
- When subcontractors have not been listed on the tender form, obtain the list from the Construction Manager no later than 10 working days after the contract award date.

6.3.5 Labour requirements

- The Construction Manager is bound by the contract to employ qualified, experienced workers throughout the project and to comply with laws, regulations and obligations concerning working conditions. The Consultant must inform the Departmental Representative of any labour situations or working conditions that appear to require corrective action by the Construction Manager.
- The Consultant must ensure that a copy of the Working Conditions is posted in a prominent place at the site.

6.3.6 Compliance with regulations

- Ensure that construction complies with applicable statutes and regulations.

6.3.7 Construction safety

- The Construction Manager must comply with provincial occupational health and safety acts and regulations and with all directives pertaining to occupational health and safety on worksites issued by the provincial authority having jurisdiction.
- Fire safety measures during construction must comply with the version of the National Fire Code (NFC) used in the federal government and with the directives of the Montréal fire department.
- If applicable, ensure that the Construction Manager is authorized to coordinate, isolate, protect and reinstate the fire protection and suppression systems during construction. Notify the Property Manager whenever the fire protection and suppression systems are bypassed, and provide information on the estimated reinstatement time. Check that the Construction Manager is complying with the NFC.

6.3.8 Site visits

- Provide work inspection services at a minimum frequency of two (2) visits per week. Ensure compliance with the Contract Documents.
- Ensure that qualified persons providing services are fully aware of the project's technical and administrative requirements and have taken the General Occupational Health and Safety Course for Construction Sites and any other training required under the regulations or set out in the specifications. Ensure that the individuals comply with Occupational Health and Safety Regulations.
- Establish a written agreement with the Construction Manager as to what stages or aspects of the work are to be inspected before being covered up.
- Ensure that the work is performed in accordance with the plans and specifications. Assess the quality of the work, and report in writing to the Construction Manager and the Departmental Representative all defects and deficiencies observed at the time of such inspections.
- Prepare a Site Visit Note for every visit.
- Inspect materials and prefabricated assemblies and components at their source or assembly/fabrication plant, as necessary for project progress and work compliance.
- Submit any deficiency list, directive or clarification to the Departmental Representative in writing.

6.3.9 Monitoring of soil excavation work

Environmental monitoring of contaminated soil excavation work should be carried out by the Consultant or their sub-consultants. Environmental monitoring will cover the following elements, without being limited to:

- Monitoring of soil excavation work according to the degree of contamination.
- Monitoring of movements and volumes of soil and other materials moved on the site.
- Tracking of trucking (using transport manifests but also a GPS system) and off-site disposal of soil and other materials.
- Analysis of soils or other materials constituting the walls and bottoms of excavations.

- Analysis of soils or other materials temporarily piled, as needed.
- Analysis of excavation water, prior to its discharge into a sewer, ditch (or other discharge point) or disposal off site, as needed.
- Environmental quality control of outside materials imported to the site.
- Identification of soil disposal or treatment sites submitted by the Construction Manager.
- Weekly follow-ups of the Construction Manager's reports and the results of chemical analyzes of samples taken from the walls and bottoms of excavations (results tables and figures).
- Monitoring the dismantling of underground water observation wells present on the work site.
- A preliminary and final environmental monitoring report (with integration of the comments of the Departmental Representative) which will include all the compiled quantities and analytical results (including of the bottoms and walls), analytical certificates, etc., all in compliance with applicable standards, policies and regulations.

6.3.10 Clarifications

- Provide clarifications on plans and specifications or site conditions, as necessary to prevent delays in the project.
- Set up a question-and-answer system with the Construction Manager, and monitor it. Response times of two working days must be required of the Construction Manager.

6.3.11 Progress reports

- Report to the Departmental Representative regularly on the progress of the work. To that end, submit reports once a week summarizing the planned activities, detailing the activities carried out or not carried out, and evaluating the Construction Manager's employees on the site.

6.3.12 Work measurement

- If work is based on unit prices, measure and record the quantities for verification of monthly Progress Claims and the Final Certificate of Measurement.
- When a Contemplated Change Notice is to be issued based on unit prices, keep an accurate record of the work. Record dimensions and quantities.

6.3.13 Detail drawings

- Provide for the Departmental Representative's information any additional detail drawings as and when required to properly clarify or interpret the Contract Documents.

6.3.14 Shop drawings

- Review the shop drawings and technical data sheets submitted by the Construction Manager to ensure that they comply with the design, and

report to the Construction Manager on their compliance. Repeat the process until the documents are considered compliant.

- On completion of the project, forward three copies of the reviewed shop drawings to the Departmental Representative. Ensure that the shop drawings include the project number and are recorded in sequence.
- The shop drawings must be stamped "Checked and Certified Correct for Construction" by the Construction Manager and stamped "Reviewed" by the Consultant before they are returned to the Construction Manager.
- Ensure that the shop drawings are processed in a timely manner to avoid delays.

6.3.15 Inspection and testing

- Provide the Departmental Representative with a list of recommended tests, including on-site and factory testing.
- Ensure that all testing is detailed in the Commissioning Plan (RS8).
- Once the contracts are awarded, come to an agreement with the testing laboratories concerning the procedures (report content structure, report distribution, communication channels, etc.), to the satisfaction of the Departmental Representative.
- Review all test reports, and take necessary action with the Construction Manager when work is not in compliance with the Contract Documents.
- Immediately notify the Departmental Representative when tests fail to meet project requirements and communicate how the necessary corrective work will affect the work schedule and other factors.
- Check the accuracy of the invoices submitted for the services provided by the testing laboratories before submitting them to the Departmental Representative.

6.3.16 Training

- Provide the Departmental Representative with a list of recommended training.
- Ensure that all training is detailed in the Commissioning Plan (RS8).

6.3.17 Changes to the work

- The Consultant does not have the authority to change the work or the price of the Contract. However, the Consultant will prepare Contemplated Changes Notices.
- Changes that affect project cost, delays or the design concept must be approved by the Departmental Representative.
- All changes, including those not affecting project cost, must be described in Contemplated Changes Notices.
- Prepare Contemplated Change Notices (CCNs) and Change Orders (COs), to be provided to the Construction Manager by the Departmental Representative, and use directives to provide rationales for them.
- Upon the Departmental Representative's approval, obtain a detailed and analysable quotation from the Construction Manager. Review the quotation and promptly submit recommendations to the Departmental Representative. The clauses of the management contract attributable to changes in the work must be applied systematically and without compromise by the Consultant in the evaluation of proposals.

6.3.18 Progress claims by the Construction Manager

- Each month, the Construction Manager must submit a progress payment claim for work and materials, in accordance with the requirements of the construction management contract. Review progress payment claims and make appropriate recommendations.
- The claims must be prepared by the Construction Manager by completing the following forms, as applicable:
 - Progress Payment Claim
 - Cost Breakdown for Unit and/or Combined Price Contract
 - Cost Breakdown for Fixed-Price Contract
 - Statutory Declaration – Progress Claim
- Review, recommend and sign the forms and promptly forward them to the Departmental Representative for processing.
- The Construction Manager must submit the following with each progress payment claim:
 - Updated schedule of work progress
 - Photographs of work progress
 - Any other supporting document demonstrating the progress presented in the progress payment request to allow the consultant to analyze it.

6.3.19 Materials on the site

- The Construction Manager may claim payment for materials on the site that were not incorporated into the work.
- Materials must be stored in a secure place designated by the Departmental Representative.
- A detailed list of the materials with the supplier invoices showing the price of each item must be provided in the detailed cost section of the designated form to support the progress payment claim. The Consultant is required to verify this list.
- As materials are incorporated into the work, the cost of the materials must be removed from the materials list. The Consultant is required to monitor and check the list.

6.3.20 Acceptance Board

- The Consultant must inform the Departmental Representative when satisfied that the work (by sector) is substantially complete. The Consultant must ensure that its representative, the representative of its sub-consultants, resident on-site reviewer, the Construction Manager and the major sub-trades representatives are part of the Project Acceptance Board and attend all meetings arranged by the Departmental Representative.

6.3.21 Interim Inspection

- The Consultant must inspect the work and list all unacceptable and incomplete work (deficiencies) and assess their value on a designated form. The Consultant must accept the project as carried out by the Construction Manager subject to elimination of the deficiencies and completion of the uncompleted work listed and priced.

6.3.22 Interim certificates

- Payment requires completion and signing, by the parties concerned, of the following documents:
 - ❖ Certificate of Substantial Performance
 - ❖ Cost Breakdown for Fixed Price Contract
 - ❖ Cost Breakdown for Unit or Combined Price Contract
 - ❖ Inspection and Acceptance
 - ❖ Statutory Declaration – Certificate of Substantial Performance
 - ❖ Worker's Compensation Board Certificate
- The documents to be provided will be issued several times in accordance with the package-based construction delivery model.
- Verify that all items are correctly stated, and ensure that the completed documents and any supporting documents are submitted to the Departmental Representative for processing.

6.3.23 Building occupation

- The Departmental Representative or the client department may occupy the building after the date of interim acceptance of the building by the Acceptance Board. The acceptance date is normally that of the Interim Certificate of Completion issued by the Consultant. As of the acceptance date, the Departmental Representative or the client department (as the case may be) assumes responsibility for the following, as applicable:
 - ❖ Security of the work(s) (without releasing the Construction Manager from his health and safety obligations during the construction site)
 - ❖ Fuel and utility charges
 - ❖ Proper operation and use of the equipment installed in connection with the project
 - ❖ General maintenance and cleaning of the work(s)
 - ❖ Maintenance of the site (except any landscaping maintenance covered by the contract)

6.3.24 Operation and Maintenance Data Manual

- Operation and Maintenance Data Manual: 4 hard copies and 1 electronic (PDF) copy of each volume prepared by the Construction Manager in accordance with the project specifications sections and verified for completeness, relevance and presentation format by the architectural, mechanical, electrical and other consultants.
- The documents must be submitted to the Departmental Representative prior to interim acceptance or actual start of the work and the instruction period, whichever occurs first. The Construction Manager must retain one copy of each volume for its records and use during the instruction period.

6.3.25 Instruction of operating personnel

- Make necessary arrangements and ensure that the Departmental Representative's operating personnel are properly instructed on the operation of all services and systems, using the final manuals as reference.
- The Consultant must provide training sessions, as required, on the design intent and systems operation. Use the Systems Operation Manual for the training sessions.

6.3.26 Keys

- Ensure that all keys and safe combinations are delivered to the Departmental Representative and/or the client department as applicable.

6.3.27 Final inspection

- The Consultant must inform the Departmental Representative when satisfied that all work under the construction contract has been completed, including the deficiency items listed in the Inspection and Acceptance form following the interim inspection. The Departmental Representative then asks the Acceptance Board to carry out a final inspection of the project. If everything is satisfactory, the Board issues its final acceptance of the project completed by the Construction Manager.

6.3.28 Final Certificate of Completion

- For the final payment to be made, the parties concerned must fill out and sign the following documents:
 - ❖ Final Certificate of Completion
 - ❖ Cost Breakdown for Fixed Price Contract
 - ❖ Inspection and Acceptance
 - ❖ Statutory Declaration – Final Certificate of Completion
 - ❖ Cost Breakdown for Unit or Combined Price Contract
 - ❖ Workmen's Compensation Clearance Certificate
 - ❖ Hydro Certificate
- Verify that all items are correctly stated, and ensure that the completed documents and any supporting documents are submitted to the Departmental Representative for processing.

6.3.29 Take-over

- The official take-over of the project or parts of the project from the Construction Manager will be determined by the Departmental Representative's Project Team, which includes the Consultant and the client department. The dates of the Interim Certificates of Completion and the Final Certificates of Completion for the work (for the work completed after the Interim Certificates of Completion are issued) are consistent with the beginning of the warranty periods (12-month base warranty and extended warranties). The warranty periods will be staggered based on each construction package and will begin on the dates indicated on the various certificates, in accordance with the contract's General Conditions.
- Provide the Departmental Representative with the original copy of the Construction Manager's warranties for all material and work covered by an extended warranty or guarantee, according to the conditions of the specifications. Verify their completeness and extent of coverage.
- Investigate any execution deficiencies found by the Departmental Representative during the twelve (12) month warranty period, and convey the appropriate instructions to the Construction Manager and the Departmental Representative. Take part in six (6) official visits to the building along with the Construction Manager and the Departmental Representative. The parties must agree on the visit dates based on which packages are considered critical. Provide a visit report at the end of each inspection.

6.3.30 As-built and record drawings and specifications

Because the project will have multiple construction tender packages under the construction management model, for each construction tender package, the Consultant must

- Following take-over, obtain marked-up hard-copy as-built drawings from the Construction Manager, for each construction package, showing the following:
 - Significant deviations in construction from the original contract drawings, including changes shown on post-contract drawings and changes resulting from Change Orders or from on-site instructions.
- Verify all as-built records for completeness and accuracy, and submit them to the Departmental Representative.
- Produce record drawings, incorporating as-built information into the project drawings.
- Hard copies of the plans and specifications. Electronic copies of the drawings and specifications, in DWG and PDF formats, based on the structure provided by the Departmental Representative.
- Submit two hard copies and two electronic copies with drawings in compliance with the CADD standard and the BIM Management Plan (BMP) within eight weeks after final acceptance of the work.
- Provide a complete set of final shop drawings.

RS 6.4 Deliverables

- Originals of drawings and specifications issued for construction purposes;
- Electronic copies of drawings and specifications issued for construction purposes in DWG and PDF format, and the BIM model, based on the structure provided by the Departmental Representative;
- Written reports on site visits, including the names of the persons involved;
- Written reports on work progress and project cost at the end of each month;
- Final report showing the diversion of 90% of construction residues as well as the validation of the tonnage/m2 generated. Proof of weighings must be attached to the report;
- Detail drawings when required to clarify, interpret or supplement the Construction Documents;
- As-built and record drawings and specifications incorporating the as-built information;
- Interim and final certificates;
- Debrief of commissioning activities;
- As-built records;
- Warranty Deficiency List;
- Final Warranty Review Report;
- As-built drawings on CD, BIM model, PDF and DWG format, in conformity with PWGSC's CADD standard and the BMP for each discipline;
- As-built drawings in velum hard copy for each discipline;
- List of spare parts for units and apparatus used in the project;
- Updated energy analysis;
- Final update of the code study;

- Documentation (including submissions for verification) and final certification of sustainable development accreditations requested in RS11;
- See also RS12.

RS 7 RISK MANAGEMENT

RS 7.1 Intent

The Consultant must help the Departmental Representative identify risks throughout the project. See the documents “Doing Business with PWGSC – Documentation and Deliverables Manual v. 1.0 (January 12, 2018)” and “Doing Business with PWGSC – ADDENDA – Quebec Region v. 1.0 (June 1st, 2018)” for the risk management “Definitions” and “Checklist.”

RS 7.2 General

Scope of work

Risk management process:

- Identify risk events based on the Consultant Team’s past experience and using the proposed checklist or other available lists;
- Qualify/quantify the probability of risk events (low, moderate, high) and their impact (low, moderate, high), as well as the potential costs and / or delays to be considered;
- Give priority to risk events (i.e., concentrate efforts on risk events with high probability and moderate-to-high impact);
- Develop a risk response (i.e., evaluate alternatives for risk mitigation. This is the real value-added of risk management); and
- Implement risk mitigation measures.

RS 7.3 Deliverables

- The Consultant must create and maintain a project risk register (for all disciplines and specialties). The register must contain, for each potential source of risk, the risk description, the possible consequences, the initial risk profile (probability and impact), a risk response plan and/or mitigation measures, the final risk profile (probability and impact) and a monitoring methodology.
- The risk register must be updated monthly for the duration of the project.

RS 8 COMMISSIONING OF THE FACILITY

The construction project will be carried out using the construction management model based on separate construction packages. Commissioning must take this characteristic into account.

The Consultant must retain the services of a Commissioning Manager from a firm other than that of the Consultant and the engineering sub-consultants. This resource must not have been involved in the design of the project.

The Consultant must comply with the requirements of project-specific sustainable development certifications for commissioning.

The Commissioning Manager represents the interests of the Departmental Representative and the client departments. He or she is responsible for all commissioning activities during the project's development, execution and post-construction periods.

During this stage, in order to successfully complete the commissioning activities, the Commissioning Manager, the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent must work closely with the Consultant's design professionals to produce coordinated drawings, reports and manuals in accordance with Contract Documents.

RS 8.1 General Requirements

8.1.1 Composition, duties and responsibilities of the commissioning team

The project's Commissioning Team consists of the following:

- **PWGSC Commissioning Coordinator (Quality Assurance)**

The Coordinator supervises the execution of all commissioning activities so as to deliver a fully operational project. He or she is assisted by the PWGSC Design Quality Review Team, which will periodically inspect the site to observe work progress. His or her responsibilities include, but are not limited to, the following:

- Reviewing the commissioning documents from an operational perspective;
- Approving performance, reliability, durability of operation, accessibility, maintainability, and operational efficiency under all conditions of operation;
- Quality monitoring for commissioning activities, training supervision, approval of the commissioning documents.

- **Consultant's Commissioning Manager**

The Manager's responsibilities include, but are not limited to, the following:

- Organizing commissioning activities and meetings;
- Drafting the commissioning documents;
- Preparing the minutes of meetings and the commissioning report;
- Monitoring commissioning activities;
- Reviewing performance, reliability, durability of operation, accessibility, maintainability, and operational efficiency under all conditions of operation;
- Witnessing and certifying the accuracy of select reported results;
- Witnessing testing, adjusting and balancing operations and related testing, and selected certification;
- Approving the Building Management Manual;
- Drafting and implementing the final commissioning plan;
- Verifying the performance of installed systems and equipment;
- Approving the training plan.

- **Consultant's design professionals**

The design professionals' responsibilities include, but are not limited to, the following:

- Participating in commissioning activities and meetings;
- Assisting in the drafting of the commissioning documents;
- Reviewing performance, reliability, durability of operation, accessibility, maintainability, and operational efficiency under all conditions of operation;
- Certifying and approving selected reported results;
- Certifying testing, adjusting and balancing operations and related testing;
- Preparing the Building Management Manual in accordance with the instructions of the Commissioning Manager;
- Assisting in the development and implementation of the final Commissioning Plan;
- Assisting in verification of the performance of installed systems and equipment;
- Developing the training plan.

- **Construction Manager**

The Construction Manager's team includes its subcontractors and suppliers. The team must carry out construction and installation in accordance with the requirements in the Contract Documents. Its responsibilities include, but are not limited to, the following:

- Full collaboration and participation in commissioning activities;
- Testing;
- Performance of testing, adjusting and balancing operations;
- Performance of commissioning activities;
- Delivering commissioning training and submitting commissioning documents;
- Developing the Building Management Manual;
- Designating the Construction Manager's Commissioning Agent, who will work with the Commissioning Manager, the Consultant's design professionals, and the PWGSC Commissioning Coordinator on administration and coordination matters.

- **Construction Manager's Commissioning Agent**

Also known as a mechanical and electrical building systems agent, the Commissioning Agent carries out the commissioning activities indicated in the specifications. His or her responsibilities include, but are not limited to, the following:

- Organizing commissioning activities and required internal meetings;
- Implementing the final Commissioning Plan;
- Demonstrating the operation of equipment and systems;
- Implementing the training plan;
- Witnessing testing and certifying the accuracy of reported results;
- Testing;
- Witnessing testing, adjusting and balancing operations and related testing, and certification;
- Preparing and submitting test reports;
- Following up on static verification and performance control records with subcontractors;

- Drafting the Building Management Manual.

8.1.2 General instructions

- The Consultant's Commissioning Manager must
 - Provide commissioning services for the project to ensure that the planning, design, installation, testing, optimization, and operating and maintenance conditions of the finished work, systems and equipment are in accordance with project requirements, the Basis of Design and any other requirement set out in the Contract Documents for construction;
 - Assume general responsibility for commissioning, production of reports and commissioning documentation;
 - Compile the commissioning data and prepare a report for the PWGSC Commissioning Coordinator;
 - Regularly submit an update of the log of commissioning issues to the PWGSC Commissioning Coordinator;
 - Assemble the final commissioning documentation, submit the final Commissioning Plan and manual to the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent for review and acceptance, and recommend acceptance or rejection of the project's finished work, systems, equipment and assemblies.
- The designation of a PWGSC Commissioning Coordinator and a Commissioning Manager does not relieve the Consultant's design professionals of their professional responsibilities as outlined in the contract, including on-site supervision and reviews to ensure that the finished work conforms to the requirements, to the project's design intent and the Contract Documents, and to the applicable regulations, codes and standards.

8.1.3 Services required during the planning phase

- The Commissioning Manager must
 - Examine the documentation on the project requirements, including the commissioning requirements and Statement of Work document prepared for it and for the Construction Manager's Commissioning Agent by the Consultant's design professionals, as well as the Commissioning Plan and the commissioning specifications for the model/pre-design phase;
 - Make recommendations for improving functionality, efficiency, operability, maintenance capacity and savings;
 - Notify the Departmental Representative of all necessary special tests to be added to the project;
 - Examine the scope of commissioning with the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent;
 - Examine the project's operations and maintenance requirements and needs;
 - Support the Project Team and the Commissioning Team during inspections and when preparing the design and recommendation options.

8.1.5 Services required during the design phase

- The Commissioning Manager must

- Integrate the requirements and activities of the commissioning process, the Commissioning Plan and the commissioning specifications, and the commissioning forms;
- Examine operations and maintenance problems that need to be considered in the design phase;
- Prepare and review the project's Contract Documents to coordinate the required interfaces between systems, equipment and assemblies;
- Review or prepare the commissioning specifications.

The commissioning specifications must include detailed descriptions of the responsibilities of all parties, including the Construction Manager, subcontractors, manufacturers and testing contractors, for each of the commissioning activities; details on the commissioning process; and reporting and documentation requirements, including the required formats:

- alerts relating to coordination problems;
 - the commissioning issues log and a description of how shortcomings were resolved;
 - pre-functional checklists and start-up requirements;
 - the performance testing process;
 - the specific requirements and procedures of the performance tests;
 - requirements relating to test equipment and instrumentation;
 - the acceptance criteria for each applicable system, piece of equipment and assembly;
- Reply promptly to comments made by the commissioning team upon examination of the design (review of drawings and specifications) or when there are other issues;
- Draft or update the commissioning plan for the design phase. Submit it for review by the PWGSC Commissioning Coordinator and by the Construction Manager's Commissioning Agent. Incorporate the Commissioning Plan into section 01 91 13.13 of the specifications;
- Prepare the commissioning sections (017800, 017900, 017900.13, 019113, 019113.13, 019113.16, 019200) for all commissioned equipment;
- Ensure that the operation and maintenance of systems and equipment are described in detail in the project's Contract Documents to be sure that commissioning is properly applied and executed;
- Ensure that the project's design and contract documents include all devices, components and instruments required for the execution of commissioning and for satisfactory documentation of the operation of each applicable piece of equipment, system and assembly;
- Examine, and where necessary incorporate, comments made by the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent in reviews of the preliminary drawings and specifications;
- Ensure that all plans are to scale;
- Provide drawings in A2 format to the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent for the RS4 99% issuance and for construction;

- Submit the drawings and specifications to the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent or comment at each issuance. A minimum of 10 working days must be allowed for review;
- Inform the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent of any changes during the design/construction process (including Change Orders/change instructions).
- The PIPVF (Product Information and Performance Verification Form) test forms and installation checklists (ICL) must be prepared by the professional responsible for design, inserted in the specifications and adapted to the project. Coordinate with the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent for review and include all comments in the documents;
- Design commissioning forms specific to the project, systems, equipment and assemblies, including (as necessary)
 - pre-functional checklists,
 - start-up checklists,
 - procedures and report templates for functional performance testing, and
 - procedures and report templates for integrated systems testing.

These requirements apply to all project-specific systems and equipment that are new or have been modified, or have been connected to new or modified systems. Attach forms to the submissions under the specifications section (01 91 13.16) of the commissioning forms;

- Verify and confirm that the testing, adjusting and balancing (TAB) specifications and the specifications for performance and field quality control of other systems and equipment are satisfactory and complete;
- Ensure that the space requirements for maintenance are met, i.e.
 - a. Allow sufficient space to access the equipment for maintenance;
 - b. Safe access to equipment.
- Computerized Maintenance Management System (CMMS) requirements:
 - The Commissioning Manager must identify the CMMS numbers on equipment affected by the project and show them in the drawings.
 - Equipment must be labelled by the Construction Manager according to PWGSC standards and requirements for rating plates. CMMS standards, requirements and forms must be incorporated in the specifications by the Commissioning Manager;
 - Specify that labels produced must follow the rating plate standards. Include a copy of the standards in the specifications.
- Procedures for updating the single-line electrical diagrams (where applicable):

- The Commissioning Manager is responsible for ensuring that changes to single-line diagrams are made by the design professionals.
- The Commissioning Manager must recommend approval of the corrected final drawings to the Departmental Representative.
- The Commissioning Manager must ensure that the design professionals have incorporated the changes to the single-line diagrams in the CAD version.
- Training: The Commissioning Manager must ensure that the Construction Manager is responsible for providing training on the new facilities to operational personnel. Indicate all training sessions and the content of required training in the specifications. Indicate in the specifications that the Construction Manager must provide a training plan for prior approval. The Commissioning Manager must ensure that the design professionals have detailed the content of the training plan in their specifications.

8.1.6 Services required in the tendering, construction, acceptance and close-out phases

- The Commissioning Manager must
 - Attend the work assessment visit and the pre-bidding meeting. Present the project's commissioning process and requirements to the construction team. Answer questions about commissioning from the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent.
 - Coordinate and oversee commissioning activities in a logical, sequential and effective manner using standard protocols and forms, centralized documentation, clear and regular communications, and consultations with all necessary parties. Update time frames, schedules and technical expertise.
 - Coordinate commissioning with the Construction Manager and the Construction Manager's Commissioning Agent to ensure that commissioning activities are included in the Construction Manager's main schedule.
 - Where applicable, review the Commissioning Plan for the construction phase that was developed during design, including the scope of work and the schedule.
 - Review the submissions and applicable shop drawings of the Construction Manager from the perspectives of commissioning, integration, performance, operation and maintenance. Review the installation, operation and maintenance manuals, start-up directives and checklists, and any other relevant documentation from the equipment manufacturer. Identify issues or problems. Submit forms and comments from the shop drawings review to the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent.
 - Review, adapt and update the test procedures in the Commissioning Plan and the commissioning forms (pre-functional, start-up, functional performance tests and integrated systems tests) based on

modifications made to the system and equipment during the construction and acceptance phase, particularly those prescribed by inquiries, job site directives and change notices from the design professionals.

- Together with the Construction Manager, coordinate the integration of commissioning activities into the project's construction schedule.
- Organize a commissioning coordination meeting with the Construction Manager's Commissioning Agent, the Construction Manager, its subcontractors and others involved in the commissioning (contractor in charge of call-ups, testing, adjusting and balancing contractors, manufacturer's representatives, specialized testing contractor, and others as necessary) and the PWGSC Commissioning Coordinator.
- Chair the meetings and prepare and distribute the minutes.
- Visit and inspect the worksite to review component, equipment and system installations in preparation for the completion of the pre-functional and installation verifications and checklists.
- Monitor and evaluate the execution of inspections and pre-functional and installation tests by the Construction Manager. Ensure that pre-functional and installation test reports are accurate and complete.
- Identify any shortcomings and problems, and determine the corrective action required. Prepare checklists and final reports using approved forms, and confirm that equipment and systems are ready for start-up. Submit reports to the PWGSC Commissioning Coordinator for review and approval.
- Perform the following pre-functional tasks:
 - Witness sufficient pressure tests on piping and flushing to confirm that appropriate procedures have been followed. Include the test documentation in the commissioning files.
 - Ensure that installation checklists have been duly completed by examining their status on periodic site visits.
 - Ensure that registration forms for pre-functional systems tests have been duly completed by examining their status on periodic site visits.
 - Verify and comment on water balancing reports through selective job site inspections and by consulting final reports. Approval and final acceptance of these reports are the responsibility of the design professional.
- Monitor and witness start-up verifications of systems selected for commissioning by the Construction Manager, the manufacturer's representative or the specialized testing contractor, as the case may be. Ensure that start-up reports are accurate and complete. Identify any shortcomings and problems, and determine the corrective action required. Prepare final start-up reports using start-up reports, data, results and adjustments provided by the Construction Manager, and confirm appropriate operation or preparedness of equipment or systems for functional performance testing (FPT).
- Monitor and witness FPT and integrated systems testing (IST) of systems and assemblies carried out by the Construction Manager. Supervise and coordinate commissioning team members and

participants when tests are being carried out. Compile and verify all results, data and other relevant information generated by the testing. Prepare FPT and IST reports for commissioning using the approved forms. Document shortcomings and action to be taken in light of the FPT and IST. Recommend acceptance or rejection of the commissioning of each system or piece of equipment. Submit the duly completed FPT and IST reports to the commissioning monitoring coordinator for review and approval.

- Regularly examine the Construction Manager's drawings (annotated "as built") to verify their accuracy relative to the facilities. Report any discrepancy or problem to the PWGSC Commissioning Coordinator.
- Review and comment on the progress reports and log of commissioning issues.
- Review and comment on commissioning test reports, data and results. Confirm that the tests and their results conform to the project requirements, the Basis of Design, and the Contract Documents.
- Assist in the training of operation and maintenance personnel and/or users by presenting the project's conceptual design, Basis of Design, and operation and maintenance directives.
- Review, comment on and accept the Construction Manager's documentation (which may include as-built drawings, diagrams and schedules).
- Review and comment on the Construction Manager's data and its operation and maintenance manual. Review completeness, accuracy and updates, including changes made in the course of the project.
- Review equipment warranties to ensure that the responsibilities of operational personnel are clearly defined.
- Review and comment on the Commissioning Plan and the final commissioning manual.
- Validate the project's as-built drawings. Submit them to the PWGSC Commissioning Coordinator and the Construction Manager's Commissioning Agent for review and comment. The as-built drawings must be approved by the design professionals.
- Make a recommendation to the Departmental Representative for acceptance or rejection of the finished work.
- Prepare the final report on the commissioning process. The report must be organized as follows, and include
 - A summary report that includes a list of the team members for the commissioning process and the participants, duties and responsibilities, a brief description of the building and project, a summary of the project's requirements and the Basis of Design, and an overview of the scope and the commissioning and test methods. For each system and piece of equipment commissioned, the report must include an assessment by the Commissioning Manager concerning the adequacy of systems and equipment in conforming to the project requirements, the Basis of Design and the Contract Documents in the following areas:
 - Specifications of installed equipment;
 - Installation of equipment and systems;

- Operation of systems and equipment, functional performance, efficiency, and optimization;
- Adequacy of operation and maintenance, operational state;
- Documentation requested in the specifications relating to operation, maintenance, information and performance records, etc.
- Operator training documents and comments on their quality.
- Final update and status of logs of commissioning issues. All shortcomings, problems and non-conformities must be specifically classified. Each item must correspond to the test, inspection or specific trend log report for which it is identified and documented. Include recommendations for purposes of corrective action, upgrades and optimization of operational parameters of systems and equipment, performance and efficiency, future measures, changes in the commissioning/recommissioning process, etc.
- Assemble all final commissioning documents and prepare the final commissioning manual. Submit the manual to the PWGSC Commissioning Coordinator for review and approval. Documents related to the final commissioning manual must be assembled in viewable electronic format (PDF) and must include the following:
 - the final commissioning report;
 - the project requirements document;
 - the Basis of Design;
 - the design schematics;
 - the construction drawings;
 - the as-built or record drawings;
 - the single-line as-built diagrams;
 - the schedules of as-built products and equipment;
 - the commissioning specifications;
 - the commissioning reports (PF, S-U, TAB, FPT, IST, controls, DDC trend log reports, data logger reports, and others as applicable);
 - the operator training records;
 - the Computerized Maintenance Management System (CMMS) equipment forms;
 - any other report or correspondence relevant to the project;
 - the systems and equipment manuals:
 - a set of applicable shop drawings (including consignments and reviewed forms and approvals);
 - the installation, operation and maintenance manuals;
 - the performance indicator data records (amended to be considered commissioned, if necessary);
 - any other relevant document, brochure, data sheet or technical information from the manufacturer;
 - the equipment warranties; and
 - the system operation manuals/standard operating procedures (SOP).

- Notes regarding requirements for development and use of commissioning forms (PF, S-U, FPT, IST)
 - Pre-Functional (PF) Inspections/Verifications and Start-Up (S-U) Checklists
 - When available from equipment manufacturers, installation, operation and maintenance (IOM) instructions and the manufacturer's installation and start-up checklists are acceptable and must be used. As deemed necessary by the Commissioning Manager, supplemental verifications and additional data may be required for specific project conditions, and such verifications and data must be documented on same or separate forms. Functional Performance Testing (FPT) and Integrated System Testing (IST) The functional performance testing (FPT) shall include and cover operation of the system and components through each of the written sequences of operation, and other modes and sequences, including start-up, shutdown, unoccupied mode, manual mode, staging, miscellaneous alarms, power failure, security alarm when impacted and interlocks with other systems or equipment. The sensors and levellers must be calibrated during pre-functional verification by the construction contractors doing the installation, and spot-checked by the Commissioning Agent during the functional test.
 - If possible, testing of the HVAC equipment and systems must be conducted during seasons requiring heating and air conditioning. However, a few replacements of test values so as to simulate conditions are permitted. Functional performance testing must be done using conventional manual methods, control system trend logs and, where appropriate or required, data loggers. The FPT must be conducted in order to provide a high level of confidence in the system's operation, as deemed appropriate by the Commissioning Manager.
 - The functional performance test procedures and reports must allow for full inspection and analysis of performance, operational parameters and the systems and equipment sequence.

RS 8.2 Regulatory requirements

8.2.1 Requirements relating to codes, standards, policies, guidelines, design and construction documents

The Commissioning Manager is required to perform the work in accordance with all applicable codes, laws and regulations in effect at the time of project implementation. The Commissioning Manager is responsible for formally notifying the PWGSC Commissioning Coordinator if he or she receives any directive that contravenes a code, law, regulation, statute or any other mandatory or legal requirement in effect.

8.2.2 PWGSC Departmental Policy (DP) 039: Policy on the Use of the National Master Specification (NMS)

- The last update of the NMS must serve as the source document for drafting sections of the specifications dealing with commissioning in project manuals covering all future construction and renovation work performed by or for PWGSC.
- When preparing specifications sections concerned with commissioning, the Commissioning Manager must use the latest and most current release of the National Master Specification (NMS) to the maximum extent to which that version is applicable, in accordance with the departmental policy and subject to the Commissioning Manager's overriding responsibility for the content of the construction project specifications. The NMS must be amended or complemented as necessary to produce a project manual that is adapted to the particular circumstances of the project and free of any conflict or ambiguity.
- The Commissioning Manager is responsible for obtaining the NMS User's Guide from an authorized supplier, and an up-to-date version of the NMS specification sections needed to prepare the project specifications. The NMS User's Guide is also available from the NMS Secretariat.

8.2.3 Computerized Maintenance Management System (CMMS)

All work performed under the construction contract must meet the requirements set out in PWGSC's CMMS.

- CMMS inventory records must be provided for all major elements and systems.
- Before removing or replacing elements or systems as part of the project, note and submit their respective CMMS sequence numbers to the PWGSC Commissioning Coordinator.
- Collect and record all CMMS data for all new or moved equipment that is installed, replaced, removed or deactivated from an existing equipment inventory.
- Inventory records must include all data on the product, including its serial and model number, the description of the equipment, and its location.
- Provide the PWGSC Commissioning Coordinator with fully completed inventory data records for all new equipment two (2) weeks before requesting approval, so as to identify the proposed elements.
- All CMMS inventory records must be added to the operation and maintenance manual provided by the Construction Manager and its subcontractors.
- The CMMS is applicable to all major elements or systems. Minor components such as switches and thermostats need not be inventoried in CMMS. The PWGSC Commissioning Coordinator must reply to any requests for clarification from construction contractors.
- The specifications must hold the Construction Manager responsible for providing the PWGSC Commissioning Coordinator with all necessary CMMS data and inventory records.

RS 8.3 Requirements for Commissioning

8.3.1 Mechanical, electrical, architectural systems and accessibility

The commissioning program, services and documentation must comply with the following standards, policies and guidelines, if required by the scope of the work:

- CSA Z320-11 – Building Commissioning Standard and Check Sheets
- ASHRAE Guideline 0 – The Commissioning Process
- ASHRAE Guideline 1 – The HVAC Commissioning Process
- ASHRAE 202 – Commissioning Process for Buildings and Systems
- PWGSC Commissioning Manual, CP.1, 4th edition, November 2006
- PWGSC Commissioning Guidelines, CP.3 to CP.13
- BCA – Manual, samples and templates
- PECl – Commissioning Plan and specifications template
- PECl – Document templates and examples
- PECl – Sample functional tests and checklists
- CAN/CSA-B651-12 – Accessible Design for the Built Environment

8.3.2 Fire safety and protection

The commissioning program, services and documentation for systems fire safety and protection must also comply with the following standard:

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

RS 8.4 Variances

8.4.1 Table 1: Variances from CSA Z320-11

The scope of the Commissioning Manager's services must comply with CSA Z320-11, Building Commissioning, ASHRAE Standard 202-2013, Commissioning Process for Buildings and Systems, including the variances as listed in Table 1 below, and the reference guide LEED BD+C version V4, ongoing commissioning credit EA (obtaining of option 1: enhanced systems commissioning). Note that the section and subsection numbers indicated in Table 1 refer to sections and subsections in CSA Z320-11.

CSA Z320-11 Section	CSA Z320-11 Subsection	Variances
1.2 – Specific systems	1.2.1 General	In addition to the requirements listed in this section, commissioning applies to all built works, including bridges, dams and technical works. Commissioning is not limited to the building envelope.
3 – Definitions	Systems Operation Manual	An additional clarification should be added to the definition of Systems Operation Manual: The term “Systems Operation Manual” is equivalent to the PWGSC term “Standard Operating Procedure”.

CSA Z320-11 Section	CSA Z320-11 Subsection	Variances
3 – Definitions	Owner	<p>An additional clarification should be added to the definition of Owner:</p> <p>The Crown, or an entity representing the Crown, is considered to be the Owner.</p>
4.2 – Pre-design phase		In addition to the requirements listed in section 4.2, the Owner's Project Requirements shall meet all the requirements of Section 6.2.3, Commissioning Process for Buildings and Systems, of ASHRAE Standard 202-2013 (henceforth referred to as ASHRAE Standard 202).
4.2 – Pre-design phase	4.2.1 (b) Establishment of Basis of Design	In addition to the requirements of subsection 4.2.1(b), the Basis of Design must meet all the requirements of ASHRAE Standard 202 Section 8, Basis of Design.
4.2 – Pre-design phase	4.2.3 Commissioning Plan	<p>In addition to the requirements listed in section 4.2.3, include the following items in the Commissioning Plan:</p> <p>Identification of all systems and subsystems to be commissioned.</p> <p>Identification of all deliverables.</p> <p>The requirements of ASHRAE Standard 202 Section 7, Commissioning Plan.</p>
4.3 – Design phase	4.3.1 General	<p>Prepare commissioning specifications.¹</p> <p>Prepare a training plan.¹</p> <p>Prepare a preliminary commissioning manual.¹</p> <p>Carry out a design review based on the requirements of ASHRAE Standard 202, Section 10.</p>

CSA Z320-11 Section	CSA Z320-11 Subsection	Variances
4.4 – Construction phase	4.4.1 General	<p>In addition to the requirements listed in section 4.4.1, include the following item:</p> <p>Carry out a Commissioning Submittal Review based on the requirements of ASHRAE Standard 202, Section 11.</p>
4.4 – Construction phase	4.4.2 Pre-construction	<p>In addition to the requirements listed in section 4.4.2, include the following items:</p> <p>Prepare a commissioning schedule.¹</p> <p>Prepare installation/start-up checklists.</p>
4.4 – Construction phase	4.4.4 Static verification	<p>In addition to the requirements listed in section 4.4.4, include the following item:</p> <p>Obtain certificates of authenticity for equipment.¹</p>
4.5 – Functional performance testing	4.5.3 Implementation	<p>In addition to the requirements listed in section 4.5.3, include the following item:</p> <p>Functional performance tests must be documented in accordance with ASHRAE Standard 202, Section 13, Issues and Resolution Documentation.</p>
4.7 – Facility turnover activities	N/A	<p>In addition to the requirements listed in section 4.7, include the following item:</p> <p>Facility turnover activities are also required when a project rather than an entire facility is being turned over.</p>
4.9 – Final documentation	4.9.1 General	<p>In addition to the requirements listed in section 4.9.1, include the following item:</p> <p>The final documentation must be kept in a document record.¹</p>

CSA Z320-11 Section	CSA Z320-11 Subsection	Variances
4.9 – Final documentation	4.9.3 Additional commissioning documents	<p>In addition to the requirements listed in section 4.9.3, include the following items:</p> <p>Certificate of Interim Acceptance¹</p> <p>Final Certificate of Completion¹</p> <p>Deferred commissioning test reports¹</p> <p>System and environmental checks report¹</p> <p>Final commissioning report¹</p>
4.11 – Training and education	4.11.1	<p>In addition to the requirements listed in section 4.11.1, include the following item:</p> <p>Meet the requirements of ASHRAE Standard 202, Section 15.2, Training Requirements.</p>
4.13 – Record drawings (as built)	N/A	<p>In addition to the requirements listed in section 4.13, include the following item:</p> <p>Record drawings are required whenever the built work being commissioned is connected to or impacts the operation of the base building systems.</p>
4.14 – Manuals	4.14.2 Systems Operation Manual	<p>In addition to the requirements listed in section 4.14.2, include the following items:</p> <p>The Systems Operation Manual must cover both normal and emergency modes of operation.¹</p> <p>The Systems Operations Manual must include the Life Safety Compliance Report.¹</p>

CSA Z320-11 Section	CSA Z320-11 Subsection	Variances
5.1 – Architectural systems	5.1.3.4 Functional performance testing (interior spaces)	<p>In addition to the requirements listed in subsection 5.1.3.4, include the following item:</p> <p>The following additional system must be part of the commissioning process:</p> <ul style="list-style-type: none"> • Sound masking, as per the design documents¹
5.4 – Mechanical systems	5.4.3.4 Functional performance testing	<p>In addition to the requirements listed in subsection 5.4.3.4, include the following items:</p> <p>The following additional tests are to be carried out, as per the design documents:</p> <ul style="list-style-type: none"> • Duct pressure test • Duct leakage test • Indoor air quality test
Appendix A (informative) – General Guidelines	N/A	This appendix is adopted as a mandatory requirement.
Appendix B (informative) – Architectural Systems Guidelines (informative)	N/A	The architectural testing protocols listed in Table B.1 are the minimum mandatory testing requirements.

RS 8.5 Table of Commissioning Duties and Responsibilities

E: Execution A: Assisting/Participation V: Verified								
Lead	Departmental Representative	Design Quality Review Team	Commissioning Coordinator – Quality Assurance	Professionals	Commissioning Manager	Commissioning Officer	Construction Team	Property Manager
Organization	PWGSC	PWGSC – AES	PWGSC – TMS	Consultant	Consultant	Construction Manager	Construction Manager	PWGSC
Selection of:								
Design Quality Review Team	E		V					
Commissioning Coordinator - Quality Assurance	E							
General Work Progress:								
Follow-up		E						
Design:								
Commissioning meetings	A		A	A	E	A		
Commissioning risks	E		A					
Specifications - Commissioning Section			V	A	E			
Commissioning Planning								
Commissioning Organization			V		E	A	A	
Commissioning Plan			V		E	A		
Commissioning Schedule			V		V	E		
Commissioning:								
Commissioning activities	A		A		V	A	E	A
Performance and operation			A	V	V	R		
Testing			A	V	A	A	E	
Test Reports			V	V	V	E	A	
TAB Operations			V	V	A	A	E	
Building Management:								
Building Management Manual			V	V	V	A	E	
Training:								
Training Plan	A		V		E		A	
Training			A		V	A	E	A
Documentation:								
Commissioning documentation			V	V	A	A	E	
PI and PV Forms/Records			V		V	E	A	
Operations:								
Acceptance								E
Operation and Maintenance								E

RS9 COST ESTIMATING AND PLANNING

RS9.1 Cost Specialist

Delivering this project on time and within budget is an absolute priority. The Consultant must retain the services of an experienced, fully qualified cost estimating, cost planning and cost control team. This team will be referred to as the Cost Specialist in this section. The Cost Specialist can be a sub-consultant of the Consultant or be part of the Consultant's firm. Coordination of and responsibility for the Cost Specialist's work rests with the Consultant.

The construction project will be carried out using the construction management model based on separate construction packages. Cost estimating and planning must take these characteristics into account. See 9.3.4, Work session with the Construction Manager, for a description of the procedures to be followed for authorization to proceed to the next stage. The Cost Estimating and Planning Team must be led by a cost estimating and planning specialist who is a Construction Estimator Certified (CEC) or a Professional Quantity Surveyor (PQS) who is a member of the Canadian Institute of Quantity Surveyors (CIQS).

This Cost Estimating and Planning Team must be conversant with all aspects of construction cost estimating during the design stages, including the use of

elemental cost analysis, risk analysis, life cycle costing and value engineering/management techniques.

The purpose of cost planning and cost control is to help meet project cost objectives. It is a continuous and interactive process involving planning, action, measurement, evaluation and revision.

The key objective is to carry out the project in accordance with the authorized maximum budget (construction cost cap), by justifying the viability of and return on design choices with recognized conservation standards. This will be achieved through measures such as the following:

- A rigorous cost management system to both monitor and report on costs;
- Formal costing submissions for each construction tender package and for the overall project, in accordance with all Required Services (RS) and Additional Services (AS) sections;
- Design review for the work to maintain the construction cost cap (where required);
- Determination of budget reserves;
- Iterative and continuous design analysis and adaptation to meet cost objectives in collaboration with the PWGSC Cost Specialist;
- A strict, methodical change control system;
- Effective communications;
- Approval procedures;
- Management of risk fund.

Since the construction budget is fixed and because there is a construction cost cap, value engineering (VE) and appropriate design choices must be a continuous process throughout the project.

RS9.2 Scope of Services

The Consultant and the Cost Specialist must provide an interactive and continuous cost consulting service from the commencement of project design through to construction completion. It must prepare comprehensive estimates of costs for all disciplines, cost escalation, inflation and contingency costs.

The Cost Specialist must provide the Departmental Representative and the Consultant with a cost-advice and cost-monitoring/reporting service. It must be ready to submit estimates to the Departmental Representative and to justify them, as necessary.

RS9.3 Services – Basic Activities

The Cost Specialist must work with and advise the Consultant, its team and the Departmental Representative on the costs of individual building components and of various systems. Estimates must be presented in Unifomat II, be detailed and include cost summaries.

9.3.1 Reporting

Milestone reporting

At each deliverable hand in specified in this document, the Cost Specialist must provide a complete statement, which must include the required summaries as well as all supporting worksheets that clearly outline the process used for estimate preparation. The Departmental Representative will basically use the worksheets and the information they contain in reviewing the estimates. Worksheets must also include cost comparisons and cost reports identifying the differences between successive estimates, the reasons for the variances, and their effects on project costs.

In addition, the Cost Specialist must coordinate all estimates with project schedules and break down costs by steps (RS1 to RS6) and fiscal year.

A typical progress report will contain the following:

- A summary of project cost estimates;
- A summary of cost estimates by Uniformat II element;
- A cost breakdown that clearly differentiates amounts by source of funding (broken down for base building and each client department) at steps RS1 to RS4.
- Details supporting estimates:
 - Basic data used to calculate cost escalation, inflation and contingency costs; and
 - Detailed measurement and pricing.
- Narrative:
 - Outline description of estimate basis;
 - Description of information used in the estimates, including the date received;
 - List of elements included;
 - List of elements excluded;
 - List of high-risk items/aspects; and
 - Notes on the Cost Specialist's past and planned activities.
- Estimate reconciliation:
 - With the last submission;
 - With the Construction Cost Plan.

Any other relevant information should be included.

Monthly reporting

In addition to the progress reports, the Cost Specialist must produce monthly reports on the status of the last month's activities, sensitive aspects, new data, forecasts and proposed revisions to current estimates. The report must contain the updated Elemental Cost Summary:

- A summary of project cost estimates;
- Elemental Cost Summaries;
- Narrative:
 - Description of the basic elements of the estimate revision;
 - Description of the new data included in the estimate and indication of its date of receipt;
 - List of elements included;
 - List of elements excluded;
 - List of high-risk items/aspects; and
 - Notes on Cost Specialist's past and planned activities.

Variance Report

The Cost Specialist must provide continuous cost monitoring in order to quickly identify and report changes that affect or may affect the cost of construction.

If the estimate falls short of or exceeds the Construction Cost Limit because of the changes, the Cost Specialist and the Consultant Team must fully advise the Departmental Representative. The Cost Specialist and the Consultant Team must submit proposed alternative design solutions to the Departmental Representative. Then the most recent estimates must be revised.

A variance report will include sufficient description and cost details to clearly identify the following:

- Scope change: Identifying the nature, reason and total cost impact of all actual and potential project scope changes affecting the Construction Cost Estimate;
- Cost overruns and underruns: Identifying the nature, the reason and the total cost impact of all actual and potential cost variations;
- Options enabling a return to the Construction Cost Estimate : Identifying the nature and potential cost effects of all proposed options for returning the project to the Construction Cost Estimate and respecting the Construction Cost Cap.

9.3.2 Submission standards

Summary format

- Elemental Cost Analysis: All estimates must be summarized in an agreed and consistent elemental format. The Consultant and the Cost Specialist must use the general summary format and the detailed elemental breakdown format in the Uniformat II standard and the cost breakdown that clearly differentiates amounts by source of funding (broken down for base building and each client department).
- Discipline Summary: The use of discipline summaries adhering to the MasterFormat standard is preferred.
- Project Cost Breakdown: The costs of each construction package must be presented separately in the estimates. The anticipated costs for each package must be broken down.
- Cost breakdown for the base building and for each client department.

Time frame

The estimates associated with progress reports must follow the submission of the Consultant's documents **within five (5) working days**.

Use of all available information

The Cost Specialist is responsible for providing a complete cost estimate even if the information provided during the concept, design development and early working drawing stages is incomplete. In such cases, the Cost Specialist must make assumptions and, after verifying them with the Consultant, must either submit them as is or incorporate them into an outline specification that the Consultant will modify as necessary. The assumptions used must be identified in the Cost Specialist's reports.

9.3.3 Techniques

The Cost Specialist must be familiar with a wide range of techniques, especially the following:

Risk analysis

All construction estimates (except the final Pre-Tender Estimate) must include and identify design, estimating, inflation escalation and currency exchange allowances deemed necessary in light of currently available information. The Cost Specialist must provide a satisfactory explanation of the level and/or amount of all such considerations included in any estimate.

Sequencing

The Cost Specialist must provide the Consultant and the sub-consultants with the quantitative information, information on the building systems and other quantifiable parameters deemed appropriate for establishing a justified Project Schedule. The Consultant must assist the Cost Specialist by keeping the schedule of all design activities up to date and updating the tendering and construction schedules, which the Cost Specialist will include in the estimates in a timely manner.

Life cycle costing and value engineering

Life cycle costing is used to obtain the optimal economic performance of project components over their useful life, while minimizing their ecological footprint over their life cycle.

Value engineering is intended to meet the project's functional requirements at the best cost.

To guide the Consultant regarding best practices in cost estimating, the Cost Specialist must apply comparative methods in order to propose alternative solutions. The Cost Specialist must use the available resources to prepare a comprehensive cost profile that will be used for decision-making throughout the design and construction processes.

Continuing estimate process

A process of continual adjustment of previous estimates may be used in place of total re-measurement at each milestone reporting point. If the Cost Specialist chooses this approach, he/she must still submit, for each phase, a complete and current Elemental Cost Summary, including a separate, complete and detailed supporting file, as described earlier.

Project research

The Cost Specialist must obtain the necessary information from the Consultant regarding the condition, accesses and other elements of the proposed and alternative construction sites. For the purpose of determining price levels, he/she shall also analyze the local context regarding labour, procurement, tendering methods and competition.

9.3.4 Working session with the Construction Manager

1. Prior to the submission of each deliverable, the Consultant and the sub-consultants and specialists must confirm their agreement with all the information presented by signing the cover page of the deliverable in the space provided.
2. Each deliverable, when issued, will be reviewed and analyzed by the following entities and individuals:
 1. the Departmental Representative;
 2. Architecture and Engineering Services;
 3. PSPC's external cost estimating consultant;
 4. the Construction Manager's Site Manager; and
 5. the Construction Manager's cost estimator.
3. Within five (5) working days, the Construction Manager's Site Manager will convene and facilitate a workshop with the individuals identified in section 9.3.4.2 as well as the Consultant and the sub-consultants and specialists who prepared the deliverable. The purpose of this workshop will be to validate the deliverable received based on the scope of work applicable to this deliverable, the comments made by the individuals identified in section 9.3.4.2 and the comments about the project work provided by the Construction Manager.
4. Before receiving authorization to proceed from the Departmental Representative, the Consultant will adjust the deliverable based on the comments and conclusions made during the workshop and will issue the signed revised deliverable. Upon receipt of the revised deliverable, the Site Manager will confirm his/her agreement with all the information presented by signing the cover page of the deliverable in the space provided. Once all confirmations have been received, the Departmental Representative will authorize the Project Team to proceed to the next phase of the project design.

9.3.5 Fixed price option for the Construction Management contract

For the Departmental Representative to consider changing the basis of payment of the Construction Management contract to a fixed price, the Construction Manager's fixed price estimate must be analyzed and reviewed by the cost specialists and the Consultant, and an analysis report must be produced.

RS10 TIMELINE PLANNING, SEQUENCING AND CONTROL

RS10.1 Planning and sequencing requirements and implementation

Planning and sequencing are high priorities for all federal government projects. They should facilitate the achievement of project objectives through a continuous, interactive process of planning, intervention, measurement, evaluation and revision.

The Consultant must take the following into account in providing its services:

- The construction project will be carried out using the construction management model based on separate construction packages.
- The Construction Manager will be responsible for preparing and managing the master project schedule. At each stage and on a monthly basis, the Consultant must provide the Construction Manager with the data required to populate the portions of the master schedule that relate to design, review and authorization to proceed, and construction quality review.
- The Consultant must submit a detailed schedule of all tasks and activities identified as deliverables for the RSs and ASs.
- The Consultant must harmonize its schedule structure with the master schedule prepared by the Construction Manager and updated in accordance with the provisions described in section RS 10.6.1.

RS10.2 *Construction Manager's/consultants' project control system*

The Consultants must work with the Construction Manager to develop a project control system that uses network analysis techniques, such as the critical path method (CPM) to plan, schedule, monitor and report on the project.

The Construction Manager is responsible for establishing the schedule in MS Project format, in conjunction with the Consultant, and monitoring it regularly. MS Project (compatible with the 2013 version) must be used to plan the schedule. The structure shall cover at least five (5) levels: project, stages, elements, sub-elements and work packages. Elements with a direct impact on the schedule and the critical milestones must be identified, and mitigation measures must be planned and implemented to avoid all delays.

RS10.3 Personnel

The Consultant shall assign competent, experienced internal resources to the key positions in the process of developing and monitoring the project schedule. These resources must provide service from the beginning of the project study phase (RS1) to the end of construction (RS6). The Consultant shall also provide planning and sequencing services in accordance with the general and specific instructions.

RS10.4 Purpose

The following is a list of the main planning and sequencing tasks to be completed and coordinated with the Construction Manager during the design, plans and specifications, contract award and construction phases:

- Develop a work breakdown structure;
- Assist in developing the project objectives;
- Develop the project master network;
- Develop, monitor and maintain detail schedules, bar charts, and milestone lists;
- Define project activities;
- Attend meetings;

- Define the main elements, construction packages and work phases;
- Identify construction tendering and sequencing requirements;
- Identify design team coordination requirements;
- Identify the requirements for coordinating the work of the design team with the work of Shared Services Canada (SSC) and the security specialist;
- Prepare the required progress reports (monthly or as required);
- Prepare the pre-execution schedule;
- Prepare the pre-commissioning schedule.
- Analyze and comment on (in writing) the calendars produced by the Construction Manager.

RS10.5 Planning

10.5.1 Project work breakdown structure

Within twenty (20) business days of the Consultant contract award, reach agreement with the Construction Manager on a project work breakdown structure (PWBS). The PWBS is the tree structure of the services and other work in connection with the project. It is used to organize, define and present the project graphically. The PWBS must cover at least all of the following: project, stage, element, sub-element and work package.

10.5.2 Project master plan / cash flow projection

Within thirty (30) business days of the option being exercised, prepare, with the Construction Manager, a project master plan and corresponding cash flow forecast covering all major activities and cost items expected to be incurred in connection with the project.

This will involve confirming the validity of alternatives to the milestones initially identified in the proposed major milestone schedule.

The main phases of project execution are programming, concept design, design development, working drawings and specifications, tendering (by construction packages), sub-contract awards (by construction packages) and construction.

Unless otherwise specified in this section, durations expressed in days refer to working days, i.e. five (5) days per work week, less all statutory holidays (approximately 250 days per year).

The original master plan will be "frozen" to provide an original delivery or baseline schedule. This delivery schedule may be amended on instruction from the Departmental Representative, if circumstances require. All amended delivery schedules and cash flow projections will be reconciled with previous projections and schedules, to provide a continuous audit trail.

The Construction Manager will provide the Consultant and the Departmental Representative with the initial and subsequent master plans.

After fifteen (15) working days to review the above, the Consultant will meet with the Construction Manager and the Departmental

Representative to agree on a project master plan and cash flow forecast acceptable to all parties.

RS10.6 Sequencing

10.6.1 Detail schedules – Design, drawings, tendering and contract award

Preparation of the detailed schedule

A detailed schedule of architectural and engineering (A&E) services and deliverables (design schedule):

- The Consultant must, within twenty (20) working days of the option being exercised, provide a detailed schedule of A&E services and deliverables. It must include all project activities, including concept design and preliminary study stages and all necessary reviews and approvals.

Detailed Master Schedule (Master Timeline):

- The Detailed Master Schedule will be developed and managed by the Construction Manager. The Consultant will provide the Construction Manager, on a regular basis, with the information required to update the information regarding the Detailed Schedule of A&E Services and Deliverables for inclusion in the Master Schedule.

Detailed schedules should include, but not be limited to, the following:

- All types of reviews and the review periods thereof for each deliverable
- Target dates for receiving approval to proceed with subsequent stages
- Reviews and authorizations to proceed by third parties
- Approvals (shop drawings, technical data sheets, samples)
- Testing
- Enhanced commissioning steps (testing, training, reporting dates, etc.)
- IDP meetings
- BIM meetings
- Project reviews
- Milestones for furniture;
- Milestones for the move-in of both clients;
- Etc.

Working drawing and specification activities broken down into construction packages, leading through the key milestones of SR4 66% and 99% approvals, must also be shown.

This will be followed by coordination and review activities broken down into construction packages, leading to final tender documents (100%), and then by a description of the tendering process leading to contract award.

Prior to the completion of the bid documents, the initial construction and commissioning activities included in the main project schedule shall be further broken down to confirm the validity of the approaches adopted for these stages. The descriptions shall be detailed enough to show the sequence and interdependence of all contract tasks and to facilitate the coordination and control of all project activities.

The schedule shall be detailed enough to be used to ensure proper planning and monitoring of work progress. It is also recommended that **activity durations should not exceed five days**. The specific activities must always relate to the milestones developed and approved in the Master Project Schedule.

To the extent possible, activities with no float (i.e., activities that start and finish on their early calculated dates), which form the "critical path," must be calculated and clearly indicated on the logical network as being, wherever possible, a continuous sequence of activities from the beginning to the end of the project. No more than 25 percent of the project's activities can be critical or near-critical. Near-critical activities are those with a float of one to five working days.

Each Detailed Master Schedule issue must include time contingencies for tasks for which fixed dates cannot be identified.

Review and approval of the detailed schedule

The Consultant must allow one week for review of the proposed detailed schedule by the Construction Manager and the Departmental Representative.

Following the review, all required amendments must be submitted to the Departmental Representative no later than one week after the request is made.

The Consultant must, at the request of the Departmental Representative and at no additional cost, provide any additional information that the Departmental Representative deems necessary to assess the practicality of the proposed schedule.

Compliance with the detailed schedule

The Consultant must follow the approved detailed schedule. The Consultant must also guide its sub-consultants by helping them to plan and coordinate on the basis of this schedule.

10.6.2 Project progress monitoring

The Consultant must work with the Construction Manager to regularly update the detailed schedule.

10.6.3 Tendering and construction schedule requirements

Construction and commissioning periods

As design progresses and the scope of construction work becomes more clearly defined, the Consultant must work with the Construction Manager to develop more detailed schedules and cash flows to illustrate the

sequencing of work as it relates to activities and/or constraints in other contracts. This work will help

- confirm or challenge the duration and staging already established for the work and develop more precise cash flow projections for the work;
- identify coordination needs and/or potential sources of conflict;
- review and assess the financial implications of the schedule established by the Construction Manager using the critical path method.

The Consultant must produce section 01 32 16.16 *Construction Progress Schedule – Critical Path Method (CPM)* of the specifications to be included in the Contract Documents for planning and sequencing the work, submit it for review by the Departmental Representative and the Construction Manager, and discuss with them how it can be broadly aligned with the other relevant contract administration requirements.

RS10.7 Project monitoring during construction

10.7.1 Role of the Consultant

The Consultant must

- Verify that planning and sequencing are consistent with the specifications;
- Provide the Construction Manager with the information to be included in the master plan;
- Review the Construction Manager's submissions for completeness, accuracy and treatment;
- Determine in detail client departments' travel;
- Assist in developing the commissioning schedule;
- Provide advice on and prepare variance analysis reports.

The Construction Manager must prepare the required planning and sequencing documents in accordance with the instructions in section 01 32 16.16 *Construction Progress Schedule – Critical Path Method (CPM)* of the NMS.

Within thirty (30) working days following the contract award, the Consultant and the Departmental Representative must meet with the Construction Manager to review the scope of the work and the construction package implementation methods. This meeting is an opportunity to emphasize the importance of meeting the planning and sequencing requirements set out in the contract documents.

Within five (5) working days following receipt of the master plan and initial cash flow prepared by the Construction Manager, the Consultant must verify the appropriateness and accuracy of these documents by comparing them with the construction schedule prepared by the Consultant.

The Consultant must formally submit its findings and recommendations to the Departmental Representative for discussion with the Construction Manager.

Once accepted by the Departmental Representative, the initial master plan is preserved in its original version and becomes the baseline work schedule.

Within ten (10) working days following receipt of the detailed schedule and cash flow prepared by the Construction Manager, the Consultant must verify that the activity dates and costs match what is shown in the master plan. The Consultant must submit its findings and recommendations to the Departmental Representative and the Construction Manager.

Upon receipt of the monthly status report, the partial payment claim and the electronic storage medium containing the updated project schedule from the Construction Manager, the Consultant must verify its contents as follows:

- Assess overall progress to date; and
- Compare the current status of the detailed schedule and cash flow with the status in earlier documents.

The Consultant must provide the Departmental Representative, when the latter so requests (approximately every three months), with a detailed written report on the results of its analysis of the following documents provided by the Construction Manager:

- initial and monthly updates of the master plan and cash flow, as well as the detailed schedule and associated cash flow.

RS11 SUSTAINABLE DEVELOPMENT

Sustainable development includes, but is not limited to, the following:

- Delivery of a project based on integrated design principles;
- Meeting or exceeding applicable PWGSC standards and commitments for green sustainable buildings;
- Not being limited to the rating system or performance target design strategies of the desired certifications;
- Taking a realistic, timely life-cycle approach;
- Building on best practices and innovative, sustainable, low-carbon solutions;
- Incorporating sustainability objectives and innovative strategies throughout the project;
- Assessing the environmental, social and economic impacts in each decision-making process in the project;
- Promoting smarter, healthier, more productive workplaces;
- Providing the facility with high-performance, efficient and flexible components, technologies and systems that meet current and future operational and functional requirements.

RS11.1 Description of services

11.1.1 LEED v4 BD+C Platinum certification

- The project must receive LEED v4 BD+C Platinum certification.
- The Consultant must engage the services of a LEED specialist to
 - be part of the Project Team from the beginning of the design process and for the duration of the project;

- work on the file in LEED Online to allow the Project Team to track the certification process in real time;
- take charge of the entire certification process, including audits (if required), including payment of registration fees (but not certification fees), as well as, but not limited to: preparing documentation, submitting LEED certification applications, following up on them and obtaining certification;
- coordinate with the Consultant once the work begins to complete the LEED Checklist and determine which credits to target for Platinum certification;
- Identify the Innovation credits to target;
- collaborate with the Consultant and save the necessary documentation in the file;
- make recommendations to the Departmental Representative regarding the credits to target, favouring measures with the lowest costs or the quickest return on investment, required to meet government commitments.

11.1.2 WELL v2 Silver Certification

- The project must receive WELL v2 Silver certification.
- The Consultant must engage the services of a WELL specialist to
 - be part of the Project Team from the beginning of the design process and for the duration of the project;
 - take charge of the entire certification process, including payment of the project registration fee (but excluding the payment of the certification cost), up until certification;
 - coordinate with the Consultant once the work begins to complete the checklist and determine which credits to target for Silver certification;
 - collaborate with the Consultant and save the necessary documentation in the file;
 - recommend to the Departmental Representative which credits should be targeted;
 - prepare documentation, submit applications for WELL certification, follow-up and obtain certification.

11.1.3 Carbon neutrality

- The Consultant must engage the services of a carbon-neutral design specialist to
 - be part of the Project Team from the beginning of the design process and for the duration of the project;
 - collaborate with the Consultant throughout the design to ensure that the objectives of the Greening Government Strategy to ensure that any new federal building is constructed to be carbon-neutral are applied to this project. The objective of carbon neutrality must be based on the Treasury Board Secretariat's definition with the emission factors of Quebec's Ministère de l'Environnement et de la Lutte aux changements climatiques;
 - monitor the carbon footprint throughout the project and issue a compliance report at the end of commissioning.

11.1.4 EIA report mitigation measures

- The Consultant must spot-check the implementation of mitigation measures identified in the EIA report.

11.1.5 Energy-saving measures

- The energy feasibility study identified potential energy-saving measures. The Consultant must confirm whether those measures are appropriate, based on the final geometry of the building and the mechanical systems concept selected, or develop alternative ways for the proposed concept to achieve the energy performance target, as demonstrated by the Life Cycle Assessment.
- Decisions will be based on a 25-year Life Cycle Assessment, taking into account initial costs, operating costs, maintenance costs, one-time replacement costs and residual value at the end of the analysis period. However, the construction cost cap and project budget must be respected, which the energy feasibility study showed was possible.
- Plan for a few ad hoc assessments of particular systems, which may be required during the design phase to optimize the choice of energy efficiency measures or test new ones.
- The Consultant must design a building that will achieve minimum energy savings of 28% and operating cost savings of 37% over requirements set out in the National Energy Code for Buildings – Canada 2011, when the reference building is equipped with heat pumps.

11.1.5.1 Energy modeller

- The Consultant must engage the services of an energy model specialist who has performed energy model simulations for complete buildings with design assistance tools, for the following purposes:
 - Identify and evaluate energy efficiency measures;
 - Determine the proposed models' energy balance and consumption;
 - Take into account life-cycle costs and GHG impacts in order to find carbon-neutral solutions.
- The specialist must be ASHRAE BEMP-certified as an energy modelling professional or registered as an experienced modeller by the CaGBC.
- The software used must comply with the ASHRAE 140 standard. A simulation has already been performed with IES VE 2019 and may be made available. However, it was done before the final geometry was determined.
- The energy model specialist must
 - have experience in modelling large commercial buildings using advanced software and have produced energy models;
 - attend ten (10) one-day intensive multidisciplinary integrated design (IDP) workshops;
 - contribute to design decisions by producing precise modelling and detailed models of selected building components, in addition to a model of the entire building.
- The modeller must develop and submit an energy model and an NECB 2011 compliant building model for comparison at the following three (3) stages:

- At the end of RS2, based on the data for the option selected to be developed in RS3, perform the simulation to confirm the geometry of the building and the choice of electromechanical systems proposed by the designer. More than one option may be considered at this stage. (Plan for five (5) iterations.)
- At the end of RS3, in order to fine-tune the more detailed design choices, test other energy-saving measures (modify measures or propose new ones) and make sure the objectives are still achievable, update the simulation before initiating RS4, and prepare tender documents for each construction package.
- At RS6, perform the final update of the simulation for submission to CaGBC and uploading to the LEED file, following receipt of the revised shop drawings.

These simulations are in addition to what is required by LEED for the integrated design credit (water and energy analyses).

11.1.7 Management of construction, renovation and demolition (CRD) waste

- Construction, renovation and demolition (CRD) waste management: The target for this project is to divert at least 90% by weight of all construction waste. The percentage of diversion must be calculated in relation to the overall weight of the construction waste/residue generated.
- The Consultant must
 - take into account the objective of recovering CRD waste from the beginning of the design and for the entire duration of the project;
 - establish an initial diagnosis with evaluation of the types of waste and mass quantification of waste. The report must demonstrate the target achievement forecast with the appropriate calculations and audit trails. The report will be submitted at step RS1A and will be revised if required at steps RS2 and RS3. The *PWGSC WASTE AUDIT WORKSHEET FOR CONSTRUCTION, DEMOLITION AND RENOVATION PROJECT* file is to be used to calculate the project's potential performance.
 - The diagnosis should include a detailed and activity-based assessment of the quantities (by mass) for each type of waste that will be reused/repurposed, recycled, recovered or landfilled and the expected diversion percentage for each type of waste.
 - A prediction of 90% landfill diversion must be demonstrated with appropriate calculations.
 - The objectives for the Construction Manager's waste management plan are included in the tender documents;
 - During the RS6 stage, monitor the Construction Manager's waste management plan;
 - Coordinate the submission by the Construction Manager of a final report with weight data demonstrating that the target has been met.

- The Construction Manager must provide a waste management plan. The Construction-Demolition Waste Management and Disposal section in the National Master Specification (NMS) is a reference to be consulted and used. The Construction Manager must produce a final report with evidence (weight tickets, etc.) supporting the reported performance. The tonnage of waste generated/m² must also be calculated in the final report.

11.1.8 Low carbon footprint materials (concrete/cement)

The Consultant must incorporate into the design an option for concrete with a lower carbon footprint (over its life cycle) than traditional concrete and add as a criterion, in the construction specifications and documents, the carbon content that the material shall not exceed (in kgCO₂e/m³). The Consultant must follow up with the Construction Manager, before and during construction, to obtain the carbon data for the concrete.

11.2 BUILDING LIFE CYCLE ASSESSMENT (LCA)

11.2.1 Description of services

The Federal Courts construction project requires a full life cycle assessment (LCA) of the building to obtain three credits in the LEED certification process. The first life cycle analysis must be done for a reference building with the same number of storeys as planned for the NMJC, and the second for a proposed building of the same type in the Montréal area.

The goal of conducting the two analyses is to improve the life cycle impacts of the proposed building by 10%, compared with a reference building, for three out of six classes of environmental impacts (including global warming) and demonstrate this using life cycle assessment software such as Athena Sustainable Material Institute or equivalent.

The software and its databases must provide the ability to evaluate solutions using materials with recycled content or materials with specific data.

It is important to note that no impact class can increase by more than 5% over the baseline.

ISO standards 14040 and 14044 are to be used to produce the life cycle analyses of the reference and proposed buildings. The system limit is a cradle-to-grave study, and the life span of the building is 60 years.

LCAs must include the following iterative phases: definition of LCA objectives and scope, life cycle inventory, life cycle impact assessment and life cycle interpretation.

As a first step, a reference building must be identified. To facilitate comparisons with the proposed building, the Consultant must use the same design as the future building.

The results of the analysis of the reference building will help to determine the project's hot spots and find solutions to improve the building's life cycle and achieve the objective.

Once this initial study is completed, the Consultant must present the results to the design team and the Departmental Representative at a design meeting.

For that meeting, the Consultant must have prepared impact reduction scenarios based on the following principles:

- Optimize and reduce the mass of the actual building (of any studied part of the building);
- Modify the building structures and design, including spacing, floor-to-ceiling heights, and changes in the use of beams and columns;
- Identify opportunities to make design changes using local, lower-impact materials or introduce specific products with quantified life cycle impacts, or use waste from federal assets as alternative or raw materials (e.g., waste from the Champlain Bridge);

As a next step, the life cycle analysis of the proposed building must be conducted to quantify the potential footprint reduction and validate attainment of the associated LEED credit.

The incremental costs of the various proposals to reduce the environmental footprint must also be assessed.

The following environmental impacts must be considered in the life cycle analyses of the reference and proposed buildings.

- Fabrication of materials, including resource extraction and recycled content, transportation, production and everything applicable from raw material extraction to the finished product for building materials (cradle to gate);
- Transportation of materials to the construction site;
- Method of construction/installation: Energy use by construction equipment and the production, transport and disposal of waste during construction;
- Use of the building: Emissions of materials during use of the building;
- Maintenance, repair, replacement and renovation: The production and transportation of the replacement materials and the transportation and disposal of the replaced materials;
- Regional variation in building energy consumption: Energy extraction, transmission, distribution and combustion/energy use;
- Water consumption for building operations;
- Type of building and expected life span;
- Deconstruction/demolition: Energy used by demolition/deconstruction equipment;
- Transportation: Transport of demolition/deconstruction waste;
- Treatment of construction/demolition waste: Energy used for end-of-life handling and treatment of the waste;
- Disposal: Effects of burial/incineration activities.

The structural and envelope elements to be taken into account for the studies include the following:

- Foundations

- Floor tiles
- Basement walls
- Floor construction
- Roof Construction
- Exterior walls
- Exterior windows
- Exterior doors
- Roof covering
- Roof openings
- Partitions/dividers
- Interior doors
- Staircase construction
- Staircase finishing
- Wall finishing
- Floor finishing
- Ceiling finishing
- Insulation
- Wall framing and elevation

When this second study is completed, the Consultant must present the results to the design team and the Departmental Representative at a design meeting.

These two design meetings must be conducted and coordinated by the Consultant for the RS3 50% stage.

A final report must be written to describe the LCA results for the reference and proposed buildings that are analyzed and described in the final report. The costs of the proposed scenarios versus the project costs must also be evaluated and listed. Lastly, the life cycle analysis of the proposed building must demonstrate the achievement of a 10% reduction in footprint, compared with a reference building, for three out of six classes of environmental impacts (including global warming). This report must be completed and coordinated by the Consultant for the RS3 99% stage and must be updated as necessary at later stages.

RS12 BUILDING INFORMATION MODELLING (BIM)

For this project, BIM is a building design representation tool used in the Integrated Design Process (IDP); it structures the work of all stakeholders around the concepts and options presented and the analyses of all project data. The data assembled in the digital models is used to document design decisions and visualize the future structure in three dimensions. BIM brings together all of the project's players throughout the design process, the tendering period (for all packages) and the construction period, in collaboration with the Construction Manager.

The Consultant is responsible for the full coordination of the BIM work.

BIM must play the following roles, among others, in the project:

- Serve as a design support and concept validation tool for monitoring client functional requirements by synchronizing data between modelling and the functional and technical requirements deliverable (FTP);
- Serve as a communication and visualization tool during the integrated design workshops and design review workshops to stimulate discussions and optimize decision-making;
- Serve as an interdisciplinary coordination tool throughout the design process until the construction tenders are issued, and during the construction period to identify potential conflicts between components specified by various design disciplines in their contract documents;
- Produce the plan specifications required at the various stages of the project;
- Address the other objectives outlined in the BIM Management Plan (BMP); see Appendix 1 of the Project Brief.

The working methods of the various stakeholders, including the primary Consultant and its sub-consultants, are documented in the BMP. The Senior BIM Manager must submit the BMP to the Consultant, who must then read, understand and improve it at the project's BIM management meetings. These methods must be adjusted to the project requirements so that the BIM brings real value-added to the work of the Consultant and the Construction Manager. The BMP will establish the collaboration methods, the level of modelling detail (LOD 300 at least) and the objectives to be achieved for the success of the project.

The Consultant must assist the Senior BIM Manager and participate actively and in close collaboration with all stakeholders involved and with the Construction Manager in the meetings described in this document, in order to meet the design requirements arising from the objectives.

The Consultant must also:

- Designate a BIM manager for each of the disciplines, who will serve as the main contact with the Senior BIM Manager for the planning and implementation of the BIM approach.
- Implement and ensure compliance with the BIM approach within the team in accordance with the BMP; refer to the preliminary BMP presented in this section.
- Provide the Construction Manager and its subcontractors with design models to optimize the constructability analysis, which includes such things as systems coordination and work planning and monitoring;
- Plan 2D (AutoCAD) and 3D (Revit) renderings in RS2, RS3 and RS4, and plans and specifications for submission. Between each rendering, the Departmental Representative will provide feedback that must be incorporated into the models produced;
- All plans and specifications issued must be submitted in 2D format (AutoCAD). These plans and specifications must comply with CADD standards.

- The professionals must produce signed and sealed plans for submission and construction (2D). 2D documents must be extracted directly from the BIM mock-ups and submitted in both paper format and PDF. These documents will be the contract documents. The 3D models will be used for design only. Specialized contractors will be able to refer to them for a better understanding when submitting their bid. If there are conflicting elements, the 2D documents take precedence over the mock-ups.
- Participate in meetings to prepare the BMP based on the requirements in section B.13.
- Participate in BIM coordination and management meetings as required under section B.13.

12.1 SENIOR BUILDING INFORMATION MODELLING (BIM) MANAGER

12.1.1 General

The Consultant may use an external firm or an in-house resource as the Senior BIM Manager. However, this resource must be a person other than the Consultant's BIM manager or the BIM managers of its sub-consultants. The Senior BIM Manager must, as part of the project, set up a reference framework based on the BIM objectives established in the PRELIMINARY BIM MANAGEMENT PLAN (BMP), ensure its application and perform quality control throughout the project development process, in collaboration with the Departmental Representative.

He/she must also produce a general schedule of activities and implementation steps within 20 working days following the contract award.

In addition, during this mandate, the Senior BIM Manager will collaborate with and assist the Departmental Representative, providing advice on PWGSC's internal BIM approach and on the management tools for the implementation of the BIM approach at PWGSC. Plan therefore for three (3) specific three-hour meetings.

The Senior Consultant must provide the necessary staff to carry out this work. At a minimum, it must designate a Senior BIM Manager who will assume the following responsibilities and tasks.

12.1.2 Roles of the Consultant's Senior BIM Manager

The Senior BIM Manager is responsible for developing the BIM Management Plan (BMP) for the project, coordinating the implementation of the BIM approach, and supporting the project teams for its implementation.

He/she must have at least 10 years of experience in the field of consulting in the construction industry, including over the past five (5) years as senior BIM manager for projects involving the construction of institutional, public or parapublic buildings.

Purpose

- Ensure optimum implementation of the BIM approach;

- Ensure that the BIM approach adds value to the various implementation activities and supports the Integrated Design Process (IDP), and that its implementation enables the achievement of the project objectives;
- Provide quality control to ensure that the work and deliverables of the project teams comply with the BMP.

Duties and responsibilities

- Develop (produce and draft) a BMP, in accordance with the BIM objectives and the project objectives, and supervise its overall implementation and updating;
- Produce a work plan (a BIM implementation plan [BIP]) that determines how the objectives of the BMP will be achieved;
- Review the BIPs of the various stakeholders;
- Develop and define the various modelling strategies with each discipline's BIM manager;
- Coordinate the BIM component of the coordination meetings (based on the requirements of section B.1, Coordination Meetings, under Required Services [RS]);
- Coordinate the BMP drafting meetings (including the kick-off meeting) as required under section B.13;
- Coordinate BIM coordination and management meetings as required under section B.13;
- Coordinate the work of the BIM managers of the various disciplines;
- Supervise and validate compliance of the mock-ups with the BMP;
- Supervise the choice of BIM tools and ensure the interoperability of all data created and software used by the design professionals;
- Monitor the availability and capacity of BIM resources required to achieve the project objectives;
- Upload the most recent version of the virtual mock-up weekly to the file-sharing site provided by the Construction Manager;
- Coordinate and monitor the achievement of objectives;
- Act as a main point of contact for BIM-related issues.

12.1.3 BIM Management Plan (BMP) – see Appendix 1 of the Project Brief

The purpose of these provisions is to establish rules and terms and conditions for the development, use, transmission and exchange of digital data for the project, including for the creation and management of digital data, the production of digital mock-ups, and coordination throughout the BIM process.

The parties agree to integrate these rules and terms into their relationships with other stakeholders involved in the project's BIM approach who may make use of this digital data. Before transmitting or allowing access to digital data, a party to the BIM agreement may require another party involved in the BIM approach to provide reasonable and tangible evidence that it has incorporated these rules and terms into any contractual agreement with a subcontractor or third party involved in the project.

The Consultant is required to deliver a mock-up with a level of development that will be defined in the information exchange matrix and an appropriate level of information with the objective of reducing change requests during the delivery phase. The working methods of the various stakeholders are documented in the BMP. The Consultant must then read it, understand it and improve it in the project's BIM management workshops (see section B.13 under Required Services [RS]). These methods must be adjusted to the needs of the project so that the BMP provides real value-added to the work of the consultants and the Construction Manager and to the project deliverables (including those in this contract).

During the period prior to the BIM agreement: If a party to the BIM agreement receives a digital mock-up or model before the BIM agreement is signed, that party must use, transmit or rely on such digital data with caution. In this context, any use or transmission of such a model or mock-up is carried out without liability to the communicating party, nor to its consultants, subcontractors, agents and employees. Upon signing the BIM agreement, each of the signatories must take the appropriate steps to adjust the digital data created and processed in advance in accordance with the rules and procedures set out in the BIM agreement.

During the period following the BIM agreement: After the BIM agreement has been signed, if a party to the BIM agreement uses or relies on a digital mock-up or model for any purpose other than the authorized uses identified in the BIM agreement, such use is at the risk of the receiving party. A party to the BIM agreement may rely on a model or mock-up only in accordance with the level of development (LOD) identified in the BIM agreement, depending on the progress made in the project, even if the content of a model or mock-up component includes data that exceeds that LOD.

ADDITIONAL SERVICES (AS)

The Additional Services task list is incomplete and in no way limits the professional obligations of the Consultant, its sub-consultants and its specialist consultants to perform the required tasks for the purpose of completing the project work.

These additional services include the following:

- AS 1 Bilingual Construction Documents
- AS 2 Enhanced Site Supervision Services
- AS 3 Interior Design Services
- AS 4 Integrated Design Process (IDP)
- AS 5 Wind and Snow Study
- AS 6 Code Study

AS1 BILINGUAL DOCUMENTS

- 1.1 Further to SC2, the Consultant must submit all tender documents in both official languages. In particular, this requirement applies to the plans, specifications, questions, answers, addenda and any other documents required and produced by the Consultant for all tender calls for this project. At the end of each call for tenders, if the Consultant decides to produce a single set of drawings with written notes in French and English, it must continue with the bilingual sets of drawings until the as-built drawings are issued.
- 1.2 Official languages requirements:
 - Both official languages are considered to be on an equal footing, and neither shall be considered a translation of the other.
 - The Consultant is responsible for the accuracy and comprehensiveness of the texts, as well as consistency within documents. Both versions of the plans and specifications (French and English) must be sealed and signed by the Consultants.
 - The current practice is to produce a single set of drawings with notes written in French and English, and separate documents in each language for the specifications, the addenda and all other documents needed for tendering reasons, such as archive drawings and documents dealing with operations, maintenance and the like.

AS2 ENHANCED SITE SUPERVISION SERVICES

2.1 Description of services

The purpose of enhanced supervision services is to

- ensure the full-time presence of the Consultant's Site Representative to coordinate inspection and testing with other consultants as well as to inspect and monitor all aspects of the work during construction. This supervision complements and completes the site visits planned for the required services (RS6).
- Provide liaison with the Construction Manager, the Departmental Representative and other agencies. More than one person may be required to cover the hours of construction.
- The Consultant's Site Representative must

- Provide full-time (including overtime) inspection services for all aspects of the project and maintain daily records of all construction work in progress;
- Ensure communication between the Departmental Representative, the design sub-consultants, the construction manager and the regional fire commissioner.
- The Site Representative reports directly to the Consultant. He/she is required to become familiar with and master the following:
 - All Contract Documents;
 - The National Building Code of Canada 2015;
 - All federal, provincial and municipal standards for the health and safety of construction sites;
 - The requirements of the Consultant's Project Brief and other stakeholders' project responsibilities that relate to these services.

NOTE: The Consultant must plan for optimum use of these hours, based on site requirements. The Departmental Representative may terminate these continuous site inspection services at any time.

2.2 Specific duties and responsibilities

The Site Representative shall provide full-time on-site inspection, coordination and monitoring services during the construction work and be responsible to the Consultant. In addition, the Departmental Representative may delegate additional responsibilities subject to the Consultant's agreement.

The Site Representative is required to update his or her construction files on a daily basis and communicate with the Consultant and its sub-consultants, specialized consultants, the Construction Manager and the Departmental Representative.

The Site Representative shall coordinate the activities of and provide any necessary instructions to an assistant (where necessary) approved by the Departmental Representative.

In case of emergencies, the Site Representative is empowered to stop the work, or give orders to ensure the safety of the workers and to protect Crown property.

2.3 Inspection and reporting

It is the responsibility of the Site Representative to inspect all work in progress and identify any discrepancies between site conditions, contract documents and accepted construction procedures. Following validation with the Consultant and the Departmental Representative, he/she must notify the Construction Manager of the discrepancies observed and the corrective measures to be taken. He/she must keep a daily log of his/her inspections and submit a weekly written report to the Consultant, both for distribution, in the form directed. The Site Representative is to prepare any other reports or surveys as may be requested by the Departmental Representative through the Consultant.

2.4 Interpretation of the Contract Documents

Interpretation of the Contract Documents is the responsibility of the Consultant. However, the Consultant may have the Site Representative provide him/her with pertinent information regarding implementation conditions and may require him/her to relay day-to-day instructions to the Construction Manager.

The Site Representative will assist the Consultant and inform the Consultant of any anticipated problems that may delay the progress of the work.

2.5 Changes in the work

The Site Representative may not authorize or order any change in the work that will constitute a change in design or in the value of the contract, except as delegated by the Departmental Representative.

The Site Representative assists the Consultant, upon request, in assessing the changes to be made to the work, as he/she is the only person qualified to describe the implementation conditions at the site.

2.6 Communication and liaison

The Site Representative must

- Convey the instructions regarding the required standards of workmanship to the Construction Manager;
- Identify defects or work that does not conform to drawings and specifications and notify the Consultant. Obtain instructions from the latter regarding the corrective measures to be taken and forward them to the Construction Manager. The Site Representative must not deal directly with foremen or tradespeople or influence the progress of the work in any way;
- Communicate formally with the Construction Manager in memorandum form only. When such a document is issued, the Site Representative must immediately submit copies to the Departmental Representative and the Consultant;
- Contact the Consultant immediately when it is apparent that information or action is required of him or her, e.g., general instructions, clarifications, sample of shop drawing approvals, requisitions, contemplated change orders, site instructions, details, and drawings;
- Accompany the Departmental Representative on inspections and report requirements, comments or instructions from the Departmental Representative to the Consultant. Note that the Site Representative should encourage the provision of such requirements, comments or instructions in writing;
- Consider and evaluate any suggestions or modifications to the documents advanced by the Construction Manager and immediately report these to the Consultant with comments;
- Ensure that the Departmental Representative and the Consultant are notified promptly when key pieces and/or components of materials and equipment are delivered, so that these parties can arrange for the appropriate personnel to have an opportunity to inspect same prior to installation;
- The Site Representative must investigate, schedule and approve in writing all temporary or permanent connections into any of the buildings' systems prior to the work being done; and

- The Site Representative must provide forecasts and advise the Departmental Representative of any interruption of normal building services with a minimum of twenty-four (24) hours' notice prior to the work being undertaken, where this work cannot be done during silent hours.

2.7 Daily log

The Site Representative must keep a daily log of the following:

- number of workers on the site, their functions or trades, and their number of hours on the site if they are not there for the whole work day;
- weather conditions, particularly unusual weather relative to construction activities in progress,
- major material and equipment deliveries;
- daily activities and major work done,
- start, stop or completion of activities,
- presence of inspection and testing firm employees, tests taken, results, etc.;
- unusual site conditions experienced;
- significant developments, remarks, etc.;
- special visitors on site;
- authorities given to the contractor to undertake certain work or hazardous work;
- environmental incidents; and
- reports and instructions from appropriate authorities regarding emergency response actions.

Note: The log is the personal property of the Site Representative. Copies of the log must be provided to the Departmental Representative and the Consultant at the end of the project.

2.8 Weekly records

The Site Representative must prepare weekly reports for the Consultant in the form directed, including the following:

- Progress relative to the schedule,
- Major activities commencing or completed during the week; main activities in progress;
- Major deliveries of materials and/or equipment;
- Difficulties that may cause delays in completion;
- Materials and labour required immediately;
- Cost estimates for work completed and materials delivered (cost plus contracts);
- Outstanding information or action required by the Consultant or the Departmental Representative;
- Labour;
- Weather;
- Remarks;
- Accidents on site; and
- Life safety or building hazards caused by the work, the Construction Manager or his/her agents.

2.9 Worksite records

The Site Representative is to maintain orderly and updated files at the worksite for the use of the Departmental Representative and the Consultant and for his/her own use as follows:

- Contract documents and tender documents;
- Approved shop drawings;
- Approved samples,
- Samples;
- Site instructions;
- Contemplated Change Notices;
- Change Orders;
- Memoranda;
- Test and deficiency reports;
- Correspondence and minutes of meetings; and
- Names, addresses and telephone numbers of the representatives of the client, the Consultant and all contractors and of sub-trades key personnel associated with the Contract; including home telephone numbers in case of emergency.

In addition, the Site Representative must maintain an updated progress schedule. A reproduction of the original contract drawings shall be carefully preserved and shall be kept marked up to date with all memoranda, Change Orders, site instructions, details, as-built conditions, etc., issued subsequent to the contract award.

2.10 Inspection of the work

The Site Representative must make on-site observations and spot-checks of the work to determine whether the work, material and equipment conform to the contract documents and supplementary conditions. The Site Representative must advise the Construction Manager of any deficiencies or unapproved variances by memorandum, and report immediately to the Consultant and the Departmental Representative any issue which the Construction Manager is being slow to correct or refuses to correct.

The Site Representative must arrange for the Consultant's architectural, structural, mechanical engineering, electrical engineering and other sub-consultants to make the periodic inspections required under the Contract entered into with the Consultant, and for these inspections to be made in a timely manner with respect to the progress of the work.

The Site Representative must also report whether materials and equipment are being incorporated into the project prior to approval of related shop drawings or samples.

The Site Representative must assist in the preparation of all deficiency reports, interim, preliminary and final, in collaboration with the Departmental Representative and the Consultant's representative.

The Site Representative is responsible for the measurement of all work to be done on a unit cost basis.

2.11 Site meetings

The Site Representative must attend all job-site meetings.

2.12 Inspection and testing

The Site Representative must see that the tests and inspections required by the contract documents are conducted, and must observe these tests and report the results in the daily log.

The Consultant must be notified if the test results do not meet the specified requirements, or if the Construction Manager does not have tests undertaken as required.

2.13 Emergencies

In the case of an emergency where safety of persons or property is concerned, or work is endangered by the actions of the Construction Manager, to safeguard the interests of PWGSC, the Site Representative must immediately notify the Construction Manager in writing of the potential hazard. The Site Representative has the authority to stop the work or order corrective measures. He/she must immediately contact the Consultant for instructions.

2.14 Limitations

The Site Representative must not

- Authorize deviations from the Contract Documents;
- Conduct tests;
- Approve shop drawings or samples;
- Advise the client in any matter without first obtaining guidance from the Consultant;
- Accept any work or portions of the building;
- Infringe on the Construction Manager's responsibilities;
- Stop the work unless convinced that an emergency exists as noted above.

2.15 Hazardous construction operations

It is the duty of the Site Representative to examine all site conditions and methods to be used by the Construction Manager undertaking hazardous operations. The Construction Manager must provide work plans, examination reports, and any other document required in the specifications to ensure adequate preparation for hazardous construction work. The Site Representative must give written authority to the Construction Manager to undertake hazardous operations when fully satisfied that all necessary precautions and actions have been taken by the Construction Manager to safeguard the life safety of the workers and building occupants and Crown property. This written authority must be countersigned by the Construction Manager to acknowledge that the latter is aware of the Site Representative's instructions and requirements. Both parties will retain copies of the authority document jointly signed by them.

The Site Representative will inspect the areas where hazardous work is under way to ensure that the Construction Manager is maintaining the agreed safety standards. Any infractions may result in the Site Representative stopping the work. All infractions or work stoppages must be reported in writing and verbally to the Consultant and the Departmental Representative.

2.16 Building security

Special precautions must be taken at all times to prevent unauthorized entry into the building.

The Site Representative must ensure that all Construction Manager-made openings and means of access are firmly secured when the Contractor leaves the site.

The Site Representative must liaise closely with the Construction Manager and the Departmental Representative on all security and/or safety problems that may arise because of the Construction Manager's operations.

AS 3 INTERIOR DESIGN SERVICES (PREPARATION OF FURNITURE PURCHASE FILE, SIGNAGE AND RELOCATION)

3.1 General

The person responsible for the design of the space arrangements (lead designer) assigned according to the provisions of the required services (RS), will be assigned by the Consultant to the provision of Additional Services (AS3). The Additional Services will be provided by a senior interior designer, responsible for the design and supervision of the design team.

3.1.1 Furniture (SA)

The Government of Canada Furniture Supply Arrangement (SA) is a mandatory procurement instrument (tool) for furniture, which is governed by strict and specific rules that do not correspond to the procurement process for furniture used in private-sector projects.

PWGSC's Procurement Service is responsible for the procurement process with respect to the publication of calls for tenders for the SA and is responsible for opening and verifying bids.

It should be noted that the acquisition process is a lengthy process. Please refer to the document on the duration of the purchasing process, which will be given to you at the SA start-up meeting.

3.1.2 Furniture (non-SA)

Non-SA furniture includes all furniture items that are not governed by the Supply Arrangement (SA). The bidding process for non-SA furniture requires the production of a comprehensive specifications document.

PWGSC's Procurement Service is responsible for the procurement process with respect to the publication of tenders for the non-SA and is responsible for the opening and verification of tenders.

In the case of non-SA furniture, the Consultant must, to the extent possible, green the furniture procurement contracts by choosing more eco-friendly products than traditional ones. To do so, the Consultant will work with PWGSC to identify ecological and social criteria that can be incorporated into the tender documents.

3.1.3 Signage

Signage and evacuation signage (bilingual) must be ordered through a dedicated supply tool (standing offer). PWGSC will provide the Consultant with a standard template for the preparation of the technical documents required for orders. The supplier will provide and install the signage and evacuation signage.

3.1.4 Relocation

The relocation includes personal effects, employee files and common equipment.

3.2 Description of services

3.2.1 Furniture (SA)

The Consultant's lead designer will select, acquire and coordinate the installation of the furniture. The services to be provided include, but are not limited to, the following:

- Sign the confidentiality agreement concerning the elements of the furniture SA.
- Review the SAs for the purchase of furniture.
- Attend a four-hour training session and four (4) meetings (as per requirements), required to understand and assimilate the furniture purchasing process (use of SA) and define the content of the documents to be produced. The training will be provided by PWGSC's procurement division and design resource.
- Attend regular coordination meetings (as required) to ensure the smooth running of the project for the acquisition of furniture. Meetings will be held with PWGSC's procurement division and design resource. The Consultant must plan to attend fifteen (15) meetings.
- Establish with PWGSC's procurement division the procurement strategy, phasing and schedule, based on the scope of the project and the products to be procured. Obtain prior written approval from the procurement division.
- Develop and prepare furniture tender documents in both official languages in accordance with SA requirements, including but not limited to:
 - Selection of furniture finishes;
 - Specific plans for the purchase of furniture;
 - Excel files and any other documents required for publication by PWGSC's procurement division;
- Define all furniture delivery and installation requirements in the Construction Manager's tender documents;
- Answer suppliers' questions by producing the replies while the furniture tenders are open;
- Attend the kick-off meeting with suppliers and the Departmental Representative;
- Manage, coordinate and receive furniture deliveries and supervise installation on the site;

- Identify deficiencies and follow up on corrective actions.

3.2.2 Furniture (non-SA)

The Consultant's lead designer will select, acquire and coordinate the installation of the furniture. The services to be provided include, but are not limited to, the following:

- Attend regular coordination meetings (as required) to ensure the smooth running of the project for the acquisition of furniture. Meetings will be held with PSPC's procurement division and design resource. The Consultant must plan to attend fifteen (15) meetings.
- Establish with PWGSC's procurement division the procurement strategy, phasing and schedule, based on the scope of the project and the products to be procured. Obtain prior written approval from the procurement division.
- Develop and prepare furniture tender documents in both official languages in accordance with the clients' and PWGSC requirements, including but not limited to:
 - Selection of furniture finishes;
 - Specific plans for the purchase of furniture;
 - Descriptive specifications (generic requirements statement) for non-SA furniture;
 - Excel files and any other documents required for publication by PWGSC's procurement division;
- Define all requirements for relocations, deliveries and installation in the Construction Manager's tender documents;
- Answer suppliers' questions by producing the replies while the furniture tenders are open;
- Attend the kick-off meeting with suppliers and the Departmental Representative;
- Manage, coordinate and receive furniture deliveries and supervise installation on the site;
- Identify deficiencies and follow up on corrective actions.

3.2.3 Signage

The services to be provided by the Consultant's lead designer include, but are not limited to, the following:

- Primary, secondary and tertiary signage;
 - Preparation of drawings indicating positions and types of signage, coordinated with stakeholders;

- Preparation of order documents;
- Coordination of installation.
- Evacuation signage:
 - Preparation of drawings indicating positions and types of signage, coordinated with stakeholders, as required by the client departments;
 - Preparation of order documents;
 - Coordination of installation.

3.2.4 Relocation

The services to be provided by the Consultant include, but are not limited to, the following:

- Planning and preparation of relocation documents for calls for tenders by others:
 - Preparation of the origin plans (existing building), including plans of the original furniture in their existing location, and the survey of the existing condition, updating of the existing furniture holdings and preparation of the equipment list;
 - Numbering of items between origin plans (existing building) and destination plans (new building), including common equipment;
 - Development of phasing plans (origin and destination);
 - Preparation of specifications;
 - Coordination meetings and correspondence.
- Assist the Construction Manager during the tender process.

AS4 INTEGRATED DESIGN PROCESS (IDP)

4.1 General

See PD 5.2 Integrated Design Process (IDP) in section PD5 IMPLEMENTATION STRATEGY.

The IDP method is used to establish a collaborative strategy that includes the following requirements:

- Take into account the life cycle of the building in all analyses of the building's design, construction and occupancy;
- Engage users and other stakeholders early on in the project in order to develop and realize a common vision, performance priorities and clearly defined functional, environmental and economic goals and objectives;
- First develop holistic strategies, identifying the interrelationships and interdependencies of the various components that influence the achievement of the project objectives and the building's technical installations, and then gradually integrate the details that result in optimal, integrated solutions;
- Oversee the building design analyses and design recommendations of the design architect, based on the priorities and the common project vision to allow an objective evaluation by the project stakeholders of the quality

of the concept presented by the design architect to meet or not meet the project's objectives and vision.

Integrated project delivery includes, but is not limited to, the following:

- A partnership and open communications between all members of the Project Team and stakeholders throughout the project's design and delivery processes;
- Meticulous quality assurance reviews during the design and construction phases and commissioning of facilities;
- A meticulous quality management plan to address and correct, in a timely and effective manner, all issues as they arise. The plan must address the technical aspects of the project. The performance of components and systems must be tested according to expected performance and life cycle analyses;
- Consultant services include the production and delivery of all documents and ensuring that there is a continuity of key personnel working in the integrated design team for the entire duration of the project;
- Construction management based on a series of tenders and construction activities, in continuous collaboration with the Construction Manager;
- The use of best and professional practices in the management of budget, schedule, quality and scope at all stages of the project;
- The implementation of a continuous risk identification and management program based on effective methods. The program must ensure the safety of construction work and minimize claims;
- The continuous and comprehensive documentation of the project at all stages of project implementation

The following paragraphs describe the process, duties and responsibilities of the various stakeholders involved in the IDP.

For the sake of clarity, a full description of the services is provided in this section. It is important to note that the services to be provided are to be distributed as follows:

- The services to be provided by the Senior Consultant, its staff, sub-consultants and specialized consultants fall under the Required Services (RS);
- The services to be provided by the IDP Specialist are covered in this section.

4.2 Integrated design process (IDP) workshops

See B.13, Integrated Design Process Workshops (IDP Workshops), in section B, Meetings, under Required Services (RS). Workshops must include, but will not be limited to, the following:

- Obtain a consensus quickly around the main issues and within the time constraints of the various decision-making levels;
- Foster from the outset a collaborative and multidisciplinary design process in which all stakeholders are called upon to participate and present the constraints, concerns, issues and challenges of their areas of specialization and ensure that these factors are taken into consideration when presenting design options for analysis;

- Define the functional, environmental and economic objectives applicable to the project over the useful life of the facilities;
- Identify, address and resolve the inherent conflicts in a building design process synergistically and as early as possible;
- Generate better efficiency and integrated, optimal, innovative and sustainable solutions.

The Consultant must retain the services of an IDP specialist to ensure the logistics and smooth running of the workshops.

The IDP specialist must

- Develop the overall IDP action plan and workshops, present them and have them approved;
- Update the action plan;
- Prepare the detailed agenda and objectives for each workshop in collaboration with the Consultant and the Departmental Representative;
- Identify the required workshop participants, designers, the Construction Manager, PWGSC representatives, occupant departments, etc., and define their duties and responsibilities, in collaboration with the Consultant and the Departmental Representative;
- Identify the inputs and preparatory work, including analyses and data validation models, necessary for the smooth running of the IDP workshops;
- Prepare, chair, facilitate and lead the workshops;
- Ensure that the workshops achieve their objectives;

Ensure that consensus and action items are known (for the report to be prepared by the Senior Consultant);

The expected number of workshops is as follows:

- One (1) half-day start-up workshop at step RS1 to present the key stages of the IDP action plan and to develop a common understanding;
- Ten (10) one-day intensive multidisciplinary IDP workshops as part of the IDP program. The workshops will be spread across steps RS1 to RS3.

Without limitation, the following elements of the Required Services (RS) are the responsibility of the Consultant and its team:

- Actively participate in the workshops;
- Develop a communications management plan that includes the IDP;
- Assist the IDP specialist in the preparation of the workshops;
- Provide the information and inputs necessary for the smooth running of the workshops (including BIM mock-ups);

- Play a leading role, along with its staff members, sub-consultants and specialized consultants at the above-mentioned workshops, in all discussions related to potential design options for building components and systems in order to identify potential solutions based on project objectives;
- Prepare reports on the meetings and distribute copies to all participants within 48 hours.

Follow up on the actions required between workshops and the integration of the decisions made at the workshops.

AS5 WIND AND SNOW STUDY

5.1 General

The Consultant must obtain the expertise of a laboratory specializing in simulations and studies of the effects of wind and snow to ensure, among other things, that exhaust gases are not captured in the building's air intakes and that snow accumulation is not amplified in critical areas by the geometry and orientation of the future construction.

This study should include the production of several three-dimensional simulations that will be required during the IDP as it will be an important input in the choice of the building design.

5.2 Description of services

The study must cover, but is not limited to, the following:

- Check for wind-induced snow accumulation around the building and in pedestrian and vehicular access routes. Make recommendations to avoid problems such as obstructions in front of building entrances and exits, and windows;
- Check for possible snow accumulation on roofs (of the project and on neighbouring roofs) to avoid problems with overloading, blocked air supply and exhaust, obstruction of skylights, formation of icicles, patches of ice during ice storms, etc. Make appropriate recommendations on these issues;
- Verify the effect of wind on the location of air supply and exhaust systems, determine the optimal height of exhaust to ensure that effluent dispersion in the atmosphere complies with applicable laws, regulations and standards;
- Wind impact of the building on pedestrians and surrounding structures.

The study must include and explain the following:

- A methodological approach;
- A wind conditions analysis;
- Proposed modelling to address desired elements;

- The wind impact of the project;
- Snow accumulation;
- A conclusion with recommendations;
- Relevant appendices containing tables, drawings, plans, simulations and other data to support the study.

AS6 CODE STUDY

6.1 Description of services

The Consultant and its sub-consultants, in their Required Services (RS), must ensure that their design complies with building regulations. They must take into account the recommendations and comments made at each stage by the firm specializing in code and fire safety studies and incorporate the study into the design documents.

The Consultant must engage the services of a firm specializing in code design and fire safety to perform the following services.

6.1.1 Architectural design analysis report

The specialist will analyze the architectural design selected at the end of step RS2 and will produce a report incorporating the regulatory requirements to be met and the list of non-conformities identified in its analysis. The report will address, but not be limited to, the following topics:

- Applicable regulations
- Alternatives to be considered (as required)
- Construction requirements
- Communicating areas (as required)
- Facade protection
- Means of evacuation
- Elevators
- Fire safety measures
- Firefighting measures
- Fire detection and alarm system
- Barrier-free access
- Sanitary fixtures

The specialist will update the report at the end of RS3, RS4 and RS6 (as built).

6.1.2 Verification of design documents

At RS3, RS4 and RS6, the specialist will analyze the design documents and prepare a report listing the non-conformities identified during the analysis.

His/her analysis at RS4 will be limited to the packages with fire safety issues such as:

- Fire protection
- Fire detection and alarm
- Evacuation signage
- Hardware and access to exits
- Etc.

6.1.3 Final inspection

The specialist will conduct a final inspection to verify compliance of the code study elements with the design and operating criteria. He/she will prepare a report listing the non-conformities found during the inspection. To that end, he/she will validate on site the compliance of elements such as:

- The integrity of the fire-resistant compartments
- Hardware and access to exits
- Fire alarm components and their location
- Location of sprinklers and fire safety components
- Other.

APPENDIX 1

BIM MANAGEMENT PLAN (BMP)



Au service du
GOUVERNEMENT,
au service des
CANADIENS.

Serving
GOVERNMENT,
serving
CANADIANS.

BIM Management Plan

Professional and Technical Services Centre of Expertise

PROJECT: NMJC

| VERSION: V1.0
| April 2020

By signing below, the stakeholders involved in BIM within this project agree to the adoption of this BIM Management Plan (BMP), dated [DATE], and commit to implementing the BIM approach within the professional services provided during the project's start-up, planning and delivery phases.

Stakeholder Signatures

[illegible]

RECORD OF AMENDMENTS TO THE BIM MANAGEMENT PLAN (BMP)

[illegible]

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1. CONTEXT OF THE BMP

The BIM Protocol of the Professional and Technical Services Centre of Expertise of Public Works and Government Services Canada (PWGSC) consists of two documents: the BIM Management Plan (BMP) and the BIM Implementation Plan (BIP).

1.1 BIM Management Plan (BMP)

The BMP serves as a roadmap for all parties involved in the development of BIM mock-ups for a project delivered according to the BIM (“Building Information Model”) process, for the duration of the project.

It describes the intentions of the PWGSC Professional and Technical Services Centre of Expertise with respect to the use of the BIM process in the current project.

This BMP is the result of the collaboration of all project stakeholders for the optimal deployment and successful implementation of the BIM approach in this project. It defines the objectives to be achieved as well as the implementation and monitoring strategy for the BIM processes deployed throughout the project.

This BMP (BIM Agreement) is a living document and will be modified and/or improved throughout the project based on the needs raised by the various stakeholders. Any request for adjustments, modifications, improvements or other requests must be submitted to the Senior BIM Manager for analysis. If the request is accepted, the BMP will be amended by the Senior BIM Manager in collaboration with the discipline BIM managers, and the revised version will be circulated to all project stakeholders.

In the event of an amendment changing the scope of the BIM approach in the project, the BMP will have to be revised, commented on and signed by all stakeholders concerned by the BIM Agreement.

1.2 BIM Implementation Plan (BIP)

Each discipline BIM manager is responsible for producing a BIM Implementation Plan that must include all the elements and modelling principles preferred by his or her team for the implementation of the BIM deployment strategy defined in this BMP. This document should follow the common guidance jointly developed by all stakeholders involved in the BIM approach and be made available to all so that the other disciplines can refer to it.

Each party is responsible for drafting, in collaboration with the relevant stakeholders, the sections of the BIP that concern it. **A single BIP for all suppliers during the design and construction phase is required.** Collaboration and coordination between supplier parties in the design phase is therefore essential. Senior design and construction BIM managers are responsible for preparing and maintaining the BIPs.

The construction BIP must be linked to the design BIP in order to maintain consistency between project processes. Thus, all processes presented in the construction BIP that share elements of the processes used in the design must refer to the appropriate section of the design BIP. Contractors required to prepare models to refine the level of detail of the professionals' mock-ups (e.g., steel structure, curtain walls, electromechanical

systems, wrought metals) must be identified and participate in the development and adherence to the general contractor's or Construction Manager's BIP. Common processes (validation, communications, etc.) with engineers must be clearly identified and described.

1.3 Ownership of digital data

All digital data created during the project will be provided to the PWGSC Professional and Technical Services Centre of Expertise for building management and operations activities and future projects. This data, including all copyright therein, will become, in its entirety and without reservation, the exclusive property of Public Works and Government Services Canada (PWGSC).

1.4 Scope of digital data

Digital mock-ups and centralized databases are tools for collecting and collating project information. They are used to develop the design and construction documents required to complete the project. All communicating parties must provide other project stakeholders with authorization to use this information in the activities required to carry out the project.

1.5 Definitions

BIM: BIM is a digital representation of the physical and functional characteristics of a building. It is a shared resource of knowledge about a facility that can be used to make decisions about the building throughout its life cycle. (Definition taken from the National Building Information Modeling Standard [NBIMS]).

Quality control of digital mock-ups: Quality control of digital mock-ups is a process to ensure that all BIM mock-ups produced in the project comply with the standards set out in the BMP.

Quality control of digital mock-ups is a continuous process carried out by all professionals involved in the BIM approach. The BIM expert will carry out an independent quality control in order to guarantee the quality of the BIM deliverables required by the client.

Interference detection: Interference detection is an automated analysis performed on federated models that identifies interference between different elements or modelled systems.

BIM model: A BIM model, in native format, developed by each of the disciplines involved (architecture, structural, plumbing, electrical and mechanical).

Federated model: A digital BIM model that combines, with dead links, all the BIM models produced by the design and construction teams. This model is produced and updated by the BIM expert on key dates defined in the coordination schedule. This model will be used for interference detection, design tracking, visualization and centralization of information for reference.

Integrated model: A digital BIM model that combines, with live or dead links, all the BIM models produced by the design and construction teams. This model is created and used by the professionals for their internal coordination.

Design model: Any 3D digital model produced by design professionals during the entire life cycle of the project.

Construction model: During the construction phase, the Construction Manager is responsible for producing construction models from the design models produced by the design professionals.

It is the contractor's responsibility to forward the construction models to trade contractors and manufacturers.

Level of development (LOD): The LOD defines the level of development of an object in the digital model.

Level of detail (LOd): The LOd defines the level of geometric precision relative to an object in the digital model.

Level of information (LOi): The LOi defines the level of information contained in each object of the digital model. This allows optimal use of the model for the 4D, 5D and 6D.

Information exchange matrix (LOD): The BIM expert is responsible for setting up an LOD exchange matrix. This indicates the level of detail and information needed to achieve the objective throughout the project life cycle.

Risks and opportunities matrix: The BIM expert in collaboration with the discipline BIM managers will set up a Risk Matrix, which is based on qualitative criteria to identify possible risks and potential consequences. The risk analysis matrix also identifies the mitigation measures to be taken to exploit the opportunities arising from the change.

Shared parameters: All parameters created and shared by one or more disciplines. They can be used in several models or families. The creation of shared parameters makes it possible to structure the information contained in the models.

BMP: BIM Management Plan (this document and all its appendices)

BIM Implementation Plan (BIP): BIM managers in each of the disciplines (architecture, structural, civil, mechanical, electrical and construction) will be responsible for producing a BIP that will include all the modelling elements and principles preferred by their discipline within their respective mandates. This manual must be made available to all concerned.

Collaboration platform: A virtual workspace for centralizing all information and activities related to a project or organization. The collaborative platform provides, among other things, efficient document management that is accessible to all stakeholders in a project or organization.

Coordination platform: A virtual workspace for centralizing all information and activities related to the coordination of the project or an organization. The coordination platform provides, among other things, an efficient and accessible “issue” management of interferences for all stakeholders in a project or organization.

Revit phasing: Revit phasing is a feature of Revit that allows the classification of project phases, such as existing and new construction. By applying phase filters to views and schedules, you can display the project according to these various stages.

Construction phase: Tasks and steps related to the construction timeline.

Construction packages: Specialty packages and contracts for the delivery stage.

Project breakdown structure (WBS): The project breakdown structure comes from the term “work breakdown structure” (WBS). It is intended to help structure the project and modelling to meet the needs of the project.

The WBS is used to code elements using an occurrence parameter, to enable classification, tracking and viewing of information based on the specific needs of a task.

3. PROJECT DESCRIPTION

3.1 PROJECT IDENTIFICATION

Client	
Project name	
Project number	
Project address	
Project description	

3.2 Project Approach

The BIM approach developed by all parties concerned must take the components of the project approach into account and be planned and managed appropriately to ensure that project objectives are achieved.

3.3 Stakeholders concerned with the BIM

ORGANIZATION	ROLE	NAME	EMAIL	TELEPHONE
CLIENT				
Public Works and Government Services Canada (PWGSC)				
BIM EXPERT TEAM				
	Senior Manager			
	BIM Integrator(s)			
	BIM Coordinator(s)			
ARCHITECTURAL				
	Project Authority			
	Senior Designer			
	BIM Manager			
MECHANICAL				
	Project Authority			

	Senior Designer			
	BIM Manager			
STRUCTURAL				
	Project Authority			
	Senior Designer			
	BIM Manager			
CONSTRUCTION TEAM (CONSTRUCTION MANAGER OR GENERAL CONTRACTOR)				
	Project Authority			
	Foreperson			
	BIM Manager			
OTHER SPECIALIZED RESOURCES				
	Constructability Analyst			
	Estimates			
	Sustainable Development			
	Commissioning			

** For other stakeholders, see the list of project stakeholders.

3.4 Project schedule and stages

Refer to the project schedule with key deliverable dates.

3.5 Communication matrix

Communications regarding BIM within projects should be addressed to the appropriate persons in accordance with the following principle:

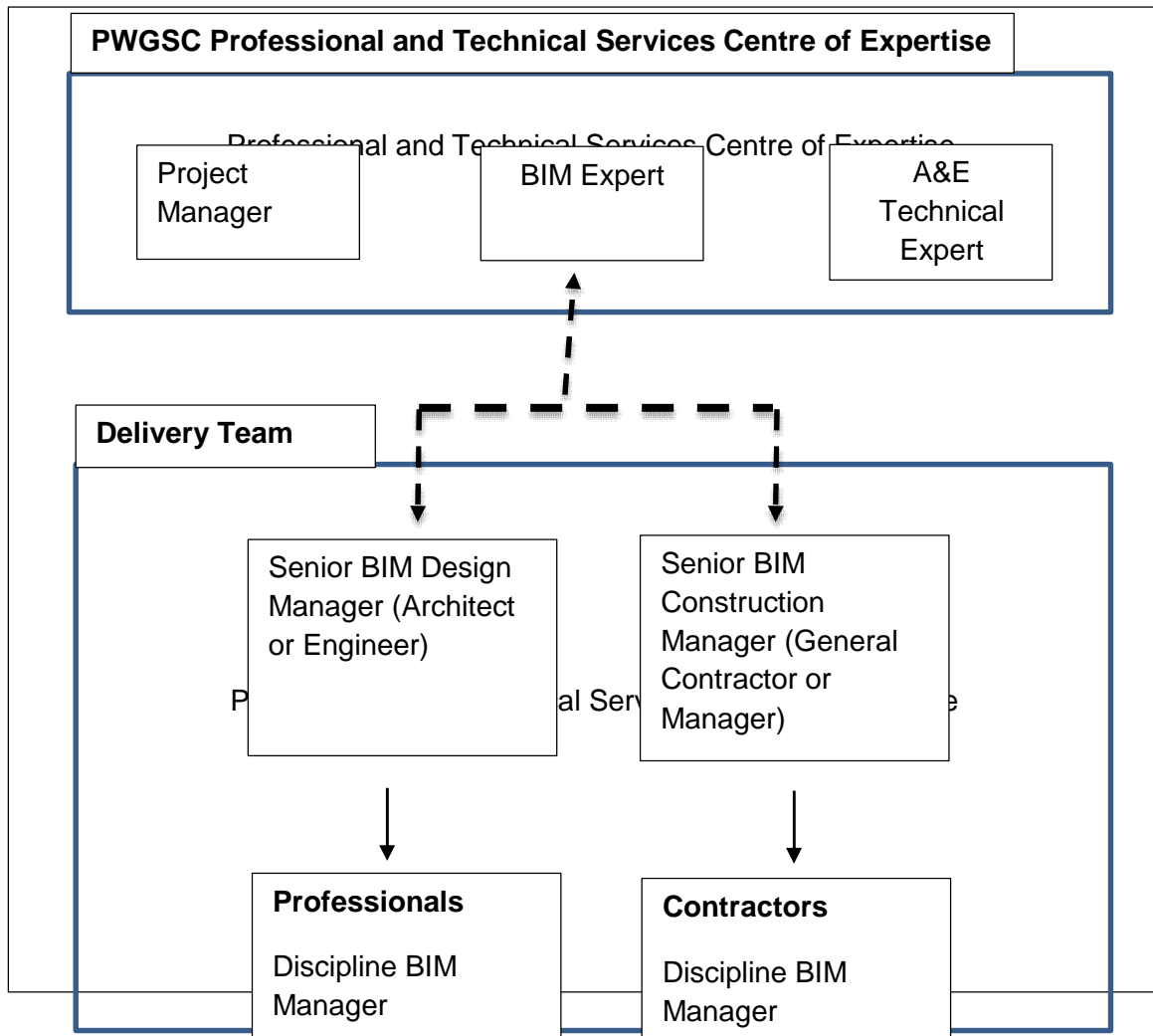
Any project management communication impacting BIM must be primarily addressed to project managers with a cc to BIM managers (discipline and senior). However, any questions regarding the BIM process should be directed to the BIM managers (discipline and senior) with a cc to the Project Authority(ies).

SUBJECT	TO	CC
BIM-specific	BIM managers (discipline and senior; PWGSC BIM Expert)	Project officers; Departmental Representative
Project management impacting BIM	Project officers; Departmental Representative	BIM managers (discipline and senior; PWGSC BIM Expert)

4 DUTIES AND RESPONSIBILITIES

4.1 Organization chart

The organization chart below identifies the **BIM-specific** authority relationships. Relationships in the form of dotted lines are relationships supporting the oversight of the Departmental Representative, while relationships represented by solid lines represent relationships of immediate authority.



4.2 Scope of responsibilities

General responsibilities are described in the contract documents. Each team must be able to meet all required responsibilities.

4.2.1 BIM Expert

The BIM Expert's mandate is to act as the BIM representative for PWGSC. His/her primary role is to act as a liaison between PWGSC, the Project Team and the discipline BIM managers (Architecture, Mechanical, Electrical, Plumbing [MEP] and Civil/Structural Engineering). The BIM Expert must ensure that BIM goals, objectives and use requirements are met.

4.2.1.1 Responsibilities

- Implement, maintain and monitor the BIM approach in the project in order to meet the identified BIM objectives and uses. Act as a specialist in the planning, implementation and coordination of the BIM approach in collaborative and integrated mode;
- Oversee the development of the BMP, based on the goals and objectives defined by APAC;
- Update the BMP on an ongoing basis, as the project evolves, by collecting all requests for changes to the BMP from the various stakeholders, analyzing their relevance and advising the PWGSC project manager of any impact these change requests may have on the project. Inform all stakeholders in a timely and effective manner of any changes to the BMP;
- Ensure, in collaboration with the stakeholders concerned by the BIM approach, that BIM models adequately meet the modelling needs of the various uses implemented by carrying out quality control of the models and federated models;
- Produce reports on the quality of the models being prepared by professionals.

4.2.2 Senior Design BIM Manager

The mandate of the Senior Design BIM Manager is to act as the BIM representative for the design team.

4.2.2.1 Responsibilities

- In conjunction with discipline BIM managers, create and manage the design BIP;
- Create and manage the overall quality assurance plan and incorporate it into the BIP;
- Assist the discipline BIM managers in BIM planning and implementation for the project;
- Structure and coordinate the design BIM processes and uses required to meet PWGSC's objectives for the project;
- Establish, in collaboration with Project Managers and discipline BIM managers, the schedule for interference detection reviews;
- Organize and lead BIM management meetings to coordinate the internal process within the design team, prepare minutes for follow-up and distribute copies to all participants within 48 hours;
- Ensure that modelling requirements are met by the team of professionals;
- Upload the most recent version of the virtual model weekly to the file-sharing site provided by the Construction Manager;
- Ensure that PWGSC standards are met;

- Define a sequence of intervention with discipline BIM managers for the numbering of spaces for MEP professionals;
- Coordinate the placement of rooms and spaces between professionals in order to ensure that two different professionals do not name the same space not covered by a room in two different ways, for example;
- Coordinate the numbering of equipment in the models in relation to PWGSC requirements;
- Validate 3D coordination through visual inspections and perform automatic interdisciplinary conflict detection for client review, if required.

4.2.3 Senior Construction BIM Manager

The mandate of the Senior Construction BIM Manager is to act as the BIM representative for the construction team.

4.2.3.1 Responsibilities

- Assist discipline BIM managers in BIM planning and implementation for the project, and in defining their discipline's quality assurance plan;
- Structure and coordinate the construction BIM processes and uses required to meet PWGSC's objectives for the project;
- Establish, in collaboration with Project Managers and discipline BIM managers, the schedule for interference detection reviews;
- Using the template provided and in conjunction with the discipline BIM managers, draw up and manage the construction BIP;
- Draw up and manage the overall quality assurance plan and incorporate it into the BIP;
- Organize and lead BIM management meetings that are useful for coordinating the internal process within the construction team and draft the minutes to ensure follow-up;
- Ensure that modelling requirements are met by the contractor or subcontractor team;
- Ensure that PWGSC standards are met;
- Validate 3D coordination through visual inspections and perform automatic interdisciplinary conflict detection for client review, if required;
- Coordinate the transfer of asset information for operation and maintenance according to PWGSC requirements;
- Carry out 4D simulation of the projected construction schedule;
- Plan the construction work.

4.2.4 Discipline BIM Manager

The mandate of the discipline BIM manager is to act as the BIM representative for the design and construction modelling team

4.2.4.1 Responsibilities

- Act as an interface with BIM managers and BIM modellers from other disciplines (Architecture, Mechanical, Electrical, Plumbing [MEP] and Civil/Structural Engineering) in order to achieve the project's BIM objectives;
- Identify the BIM capability of own team;
- As required, coordinate the training required by own team based on the identification of BIM capacity and the planning of training offered by the BIM team;
- Identify the need for common shared parameters across disciplines;
- Prepare and maintain the section of the BIP related to own discipline;
- Monitor the quality of BIM deliverables in own discipline to ensure compliance with the BIP and the BMP;
- Ensure compliance of deliverables with the BMP and its appendices;
- Monitor the creation of new models for own discipline;
- Ensure that the models for own discipline are in accordance with the modelling requirements and that the required information is modelled at the required time;
- Manage the creation of BIM content related to own responsibilities;
- Manage own firm's BIM team;
- Carry out intra-disciplinary quality control prior to submission to the Project Team in accordance with the BMP;
- Ensure intra-disciplinary 3D coordination before sharing information with the Project Team;
- Proactively submit proposals for the implementation of modelling standards for the project;
- Establish, in conjunction with the Senior BIM Manager, the schedule for interference detection reviews;
- In conjunction with the Discipline Project Authority, follow up on the resolution of detected interference between professionals in own discipline;
- Ensure the sharing of own team's models and the recovery of models from other disciplines;
- Supervise and coordinate the updating of the models during the construction phase based on change orders and actual conditions for continuing the work;
- If anomalies or problematic discrepancies are detected, perform a review of the models provided by contractors by overlay and visual inspection;
- Verify that the models for which he/she is responsible are properly filed in the document management platform;
- Adhere to the schedule for own team's deliverables;
- Manage changes to the master file based on the responsibilities defined with the Project Team and the progress of the project;
- Ensure integration and coordination of part numbers/spaces based on PWGSC requirements;
- Ensure integration and coordination of equipment codes based on PWGSC requirements;
- Ensure the transfer of asset information for operation and maintenance based on PWGSC requirements.

5. GOALS OF USING BIM

The goal of the Professional and Technical Services Centre of Expertise is to integrate the BIM process into its projects in order to take advantage of the various models and information that will be developed during the design process and the development of tender documents. These BIM models and the information they contain, combined with the various work processes developed and to be developed by the stakeholders, will be used to produce projects that are properly coordinated among stakeholders, comply with the standards set by the Professional and Technical Services Centre of Expertise and stay within the defined budgets.

To that end, the Professional and Technical Services Centre of Expertise has developed specific objectives to serve as a reference throughout the project. Those objectives are described below.

6. BIM OBJECTIVES AND USES

The project's BIM objectives are mandatory. They are listed in the table below. Each of the objectives is based on an expected benefit. BIM usage is the activity carried out using a BIM tool to achieve the goal.

By using BIM in this project, PWGSC hopes to achieve the following BIM objectives and uses.

6.1 Table of BIM Objectives and Uses

BIM Objectives	BIM Uses
Project documentation	<ul style="list-style-type: none">• 2D documentation• 3D modelling• Updating of models• Updating of the object library
Compliance with functional requirements	<ul style="list-style-type: none">• Integration and validation of program data/client needs• Design review
Compliance with technical requirements	<ul style="list-style-type: none">• Integration and validation of technical requirements• Design review
Documents retrievable by the client for quality control and operation	<ul style="list-style-type: none">• Updating of models• Updating of the object library
Cost estimating and analyses	<ul style="list-style-type: none">• Quantity takeoff (5D) and cost estimate
Understanding of design intentions	<ul style="list-style-type: none">• 3D design• Visualization• Design review
Interdisciplinary and intra-disciplinary coordination	<ul style="list-style-type: none">• Visualization• Design review• 3D coordination• Visual coordination• Interference detection
Concept constructability	<ul style="list-style-type: none">• 4D timeline

	<ul style="list-style-type: none"> • Work planning
Design model issued in the tenders	<ul style="list-style-type: none"> • Model for tendering
Accurate modelling of existing conditions	<ul style="list-style-type: none"> • Modelling of existing conditions
Develop an optimized implementation hypothesis	<ul style="list-style-type: none"> • Design review • Work planning
Sustainable development	<ul style="list-style-type: none"> • Energy efficiency • Design review

Note: BIM objectives and usage may not apply during project delivery. BIM objectives and uses that will not apply must be mentioned in the BIM implementation plan and validated by the BIM Expert.

6.2 Table of targets and performance indicators

The target is used to determine the strategy for achieving the objective. The performance indicator is used to measure the achievement of the objective and track the expected benefits.

BIM Objectives	Targets	Performance Indicators
Project documentation	<ul style="list-style-type: none"> • Produce the required plan specifications for various stages of the project; • Produce bid documents enhanced by interdisciplinary coordination, communication and visualization; • Serve as a tool for auditing weekly and contract progress; • Have (updated) models at the end of the project. 	All drawings are produced directly from the various BIM models.
Compliance with functional requirements	<ul style="list-style-type: none"> • Tracking the functional requirements and the surface areas and their characteristics planned for the project; • Track the functional areas planned in the program and the net/gross ratio of projected spaces; • Serve as a design support and concept validation tool for tracking client functional requirements by 	The design models are an accurate representation of the functional needs of client departments entered in the FTP.

	synchronizing data between modelling and a centralized database of functional requirements.	
Compliance with technical requirements	<ul style="list-style-type: none"> • Track the technical requirements and their characteristics planned in the project; • Serve as a design support and concept validation tool for monitoring client functional requirements by synchronizing data between modelling and a centralized database of technical requirements. 	The design models are an accurate representation of the technical needs of client departments entered in the FTP.
Documents retrievable by the client for quality control and operation	<ul style="list-style-type: none"> • Updating of the models and the object library; • Upon completion of the work, provide representative models of actual conditions for use in future projects. 	Models retrievable for quality control and operation
Cost estimating and analyses	<ul style="list-style-type: none"> • Support for cost estimates to be produced. The estimates must comply with the Uniformat II - ASTM E1557 standard; • Bill of materials for building components and systems from the BIM models, based on their state of maturity and the LOD matrix. 	At each stage of the project, the various professionals refer to the BIM models to ensure that the project is on budget.
Understanding of design intentions	<ul style="list-style-type: none"> • Support the various implementation hypotheses; • Serve as a communication and visualization tool during the integrated design workshops and other quality workshops (value engineering, design audits, sustainable development, standardization of rooms, etc.) to stimulate discussions and optimize decision-making; • Support presentation of the project to obtain authorizations and permits from authorities; 	Obtain a federated BIM model for review of design intentions and informed decision-making.

	<ul style="list-style-type: none"> • Provide contractors with design mock-ups to optimize the constructability analysis (e.g., systems coordination, planning and work monitoring). 	
Interdisciplinary and intra-disciplinary coordination	<ul style="list-style-type: none"> • Carry out interference detection analyses and model reviews, and follow-up on them (3D). 	No major or critical interference that could have an impact during the project's construction phase is detected.
Concept constructability	<ul style="list-style-type: none"> • Design review • 3D coordination • Timeline planning • Cost monitoring • Statement of quantities • 4D simulation of worksite progress 	Compliance with and optimization of budget envelope costs and timeline
Design model used in calls for tenders	<ul style="list-style-type: none"> • Provide the contractors with design models to optimize the constructability analysis (e.g., systems coordination, planning and work monitoring); • Model for use in calls for tenders. 	A complete, coordinated model enabling the contractor to bid on and carry out the work based on the design models
Accurate modelling of existing conditions	<ul style="list-style-type: none"> • Create reliable and accurate input data that adds value to the work of the designers. 	<ul style="list-style-type: none"> • Reduced survey effort for validation of input data; • Decrease in the number and value of change orders (COs) on the work site due to existing conditions observed during the work.
Develop an optimized implementation hypothesis	<ul style="list-style-type: none"> • Site analysis • Work planning 	The selected hypothesis is optimized, taking into account project functionality and alignment with the built environment.

Sustainable development	<ul style="list-style-type: none"> List of deliverables required to meet energy performance and certification objectives 	Obtained when the criteria are met
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6.3 BIM uses

The BIM uses are the processes to be applied in order to meet the BIM objectives and requirements. For each of the BIM objectives described below, one or more BIM uses are assigned.

Use	Description
2D documentation	Process by which the various 2D drawings used to document a work are produced directly and solely from various BIM models. The 2D documents generally include plans, elevations, sections, details and various tables, as well as legends.
3D modelling	Process consisting of using various BIM models in order to validate the conformity of stated design criteria and enable various stakeholders to provide their feedback on multiple aspects of the design. The aspects may include the aesthetic aspect, constructability validation, and compliance with the FTP.
Integration and validation of program data/client needs	<p>Process by which the models are used to ensure that the concept developed complies with the needs stated in the program. BIM models can be linked bi-directionally with the program's database. Information from various BIM models for the spaces will be exported as a database (Access or Excel) and submitted to the Departmental Representative.</p> <p>This process is also used to produce detailed colour plans of the standardized spaces by space categories and sub-categories.</p>
Integration and validation of technical requirements	The process of creating an object-oriented content library for technical requirements and incorporating it in the model. The validation process will compare the technical requirements with the designers' design proposal.
Concept/design review	Process consisting of using various BIM models in order to validate the conformity of stated design criteria and enable various stakeholders to provide their feedback on multiple aspects of the design. The aspects may include the aesthetic aspect, constructability validation, and compliance with the FTP.
Updating of the models and the object library	<p>The design models are updated throughout the work in order to incorporate the COs and contractors' annotated plans.</p> <p>The construction models are an accurate representation of actual conditions after the work is completed.</p>
Quantity takeoff (5D) and cost estimate	Process that involves directly extracting the various quantities from the BIM models, based on their state of

	<p>development according to the LOD information-sharing matrix, in order to ensure that all phases of the project are on budget.</p> <p>Depending on the estimation approach required by the client (Unifomat II), the information extracted from the models may be areas, materials, construction systems, equipment, etc. Apart from budget validation, the estimate may be used to compare various design options.</p>
3D design	<p>Process whereby 3D modelling software and analysis applications are used to develop BIM models that are rich in information, based on specified design criteria. The use of this process and various tools enable a design to be developed and to be analyzed and verified through iterations. It also helps communicate design intentions and use the information to extract data on quantities, costs, time frames, etc.</p>
Visualization	<p>Process by which the 3D models are generated or enhanced to communicate the visual, spatial or functional qualities of the project or parts of the project through perspectives, renderings, overviews, etc.</p>
3D coordination	<p>Process by which the various BIM models are used to coordinate works for the various disciplines involved in the project. May be carried out visually by navigating through various models or by automating certain tasks at coordination meetings.</p>
Visual coordination	<p>Process that involves using BIM models from the various disciplines to detect interferences between the works of these disciplines.</p>
Interference detection	<p>Process that involves using BIM models from the various disciplines to detect interferences between the works of these disciplines with the software.</p>
4D timeline	<p>Process whereby the model is used to simulate the construction work.</p>
Work planning	<p>Process whereby the model is used to sequence the construction work, including site preparation, temporary work, moves and any other activity related to site operations that impacts the timeline.</p>
Model for use in calls for tenders	<p>Process by which the model is used to produce the tender documents in 2D. The model is also provided as a reference when tenders are issued. Contractors will be able to use them for a better understanding when submitting their bid.</p>
Modelling of existing conditions	<p>The process of using tools, such as laser scan surveys, to create project input data; Use of geo-referencing for optimum integration into planning and delivery</p>
Energy efficiency	<p>Process by which the various models are used to calculate the project's environmental impact. In this case,</p>

	calculations are carried out to meet the energy performance targets for LEED certification.
Sunlight, wind and snow analysis	Process by which the model is used to carried out sunlight/shadow area studies on the building and/or site.

6.4 BIM Objectives and Uses – Implementation Strategies

The following table shows the BIM uses defined to support the achievement of project objectives and their applicable stages. Implementation strategies for each discipline must be detailed in **the** respective BIPs and coordinated and aligned.

Required Services

RS1	Analysis of the Project Brief
RS2	Concept Design
RS3	Design Development
RS 4	Construction Documents
RS 5	Tenders, Bid Evaluation and Construction Contract Award
RS 6	Construction and Contract Administration
RS 7	Risk Management
RS 8	Commissioning

BIM Objectives/ Uses	RS1	RS2	RS3	RS4	RS5	RS6	RS8	Responsibility	Tools
Project documentation									
<i>2D documentation</i>								Designer, Contractor	Revit, DWG, PDF
<i>3D modelling</i>								Designer, Contractor	Revit
<i>Updating of models</i>								Designer, Contractor	Revit
<i>Updating of the object library</i>								Designer, Contractor	Revit
Compliance with functional requirements									
<i>Integration and validation of program data/client needs</i>								PWGSC, Designer	Revit, Database
<i>Design review</i>								PWGSC, Designer	Revit, Database

Compliance with technical requirements									
<i>Integration and validation of technical requirements</i>								PWGSC, Designer, Contractor	Revit, Database
<i>Design review</i>								PWGSC, Designer	Revit, Database
BIM Objectives/ Uses	RS1	RS2	RS3	RS4	RS5	RS6	RS8	Responsibility	Tools
Documents retrievable by the client for quality control and operation									
<i>Updating of models</i>								PWGSC, Designer	Revit
<i>Updating of the object library</i>									
Cost estimate and analyses									
<i>Quantity takeoff (5D) and cost estimate</i>								PWGSC, Designer, Contractor	Revit, Database
Understanding of design intentions									
<i>3D design</i>								PWGSC, Designer, Contractor	Revit, Revizto, PDF
<i>Visualization</i>								PWGSC, Designer, Contractor	Revit, Revizto, PDF
<i>Design review</i>								PWGSC, Designer, Contractor	Revit, Revizto, PDF
Interdisciplinary and intra-disciplinary coordination									
<i>Visualization</i>								PWGSC, Designer, Contractor	Revit, Revizto, PDF
<i>Design review</i>								PWGSC, Designer, Contractor	Revit, Revizto, PDF

<i>3D coordination</i>								Designer, Contractor	Revit, Revizto, PDF, Navisworks
<i>Visual coordination</i>								PWGSC, Designer, Contractor	Revit, Revizto, PDF, Navisworks
<i>Interference detection</i>								Designer, Contractor	Revit, Revizto, PDF, Navisworks
BIM Objectives/ Uses	RS1	RS2	RS3	RS4	RS5	RS6	RS8	Responsibility	Tools
Concept constructability									
<i>4D timeline</i>								Designer, Contractor	Revit, Revizto, PDF, Navisworks
<i>Work planning</i>								Designer, Contractor	Revit, Revizto, PDF, Navisworks
Design model used in the tenders									
<i>Model for use in tenders</i>								Designer	Revit, Revizto, PDF,
Accurate modelling of existing conditions									
<i>Modelling of existing conditions</i>								PWGSC, Designer, Contractor	Laser, Revit, DWG Surveys
Develop an optimized implementation hypothesis									
<i>Design review</i>								PWGSC, Designer, Contractor	Revit, Revizto, PDF

<i>Sunlight, wind and snow analysis</i> The development of this aspect at RS3 appears to be late. Validate.								Designer	Revit, Revizto, PDF
<i>Work planning</i>								Designer, Contractor	Revit, Revizto, PDF, Navisworks
Sustainable development									
<i>Energy efficiency</i>								Designer	Revit, Revizto, PDF
<i>Design review</i>								PWGSC, Designer, Contractor	Revit, Revizto, PDF

7. QUALITY ASSURANCE AND CONTROL

7.1 Quality Control Procedure

For this project, the Senior Design and Construction BIM Manager is responsible, in collaboration with the discipline BIM managers, for the development of quality control procedures covering the implementation of BIM in the project. The overall quality control procedure and the specific procedures for the various project teams will be incorporated into the BIM Implementation Plan (BIP).

A discipline that identifies a problem in the models must promptly notify the author of the problem item and the BIM Coordinator, regardless of project progress. Once notified, the author of the element must act quickly to resolve the conflict or problem. The Coordinator will then be able to follow up on the resolution of the problem at the next design review.

Before each file transfer for sharing, the models must be reviewed in accordance with the quality control strategy described in the BIP to reduce the risk of problems.

7.2 Types of Quality Control

The following is a summary list of the types of quality control applicable to model tracking in this project.

Type of Control	Definition	Lead	Project Stage
Standards and good practices	Ensuring compliance with the standards and procedures set out in the BMP	BIM Expert Senior BIM Manager (design and construction) Discipline BIM managers	Design and delivery
Visual	Ensure that the models do not contain unnecessary elements or duplication.	BIM Expert Senior BIM Manager (design and construction) Discipline BIM managers	Design and Delivery
LOD	Ensure that the models meet the required level of development (LOD) and that they contain the information required by all stakeholders.	BIM Expert Senior BIM Manager (design and construction) Discipline BIM managers	Design, execution and completion of the work
Interference detection	Ensure that models are coordinated and that major	Senior BIM Manager (design and construction)	Design and delivery

	conflicts are resolved.	Discipline BIM managers	
[Additional monitoring]			

7.3 Information Exchange Matrix

Levels of development (LOD) are tracked with reference to the project's Information Exchange Matrix (LOD) (also called PxP Matrix) in the BIP. This document defines the status of the model at different stages of the project, as well as the scope of modelling, the level of graphical detail, and the level of informational detail (non-graphical parameter).

This tracking is important to ensure that the digital models can meet each BIM use requirement established in the project.

The establishment of the Information Exchange Matrix will be the responsibility of the Senior Design BIM Manager and the discipline BIM managers.

Tracking is based on the American reference document entitled "Level of Development Specification" issued by BIMForum, and on the BIM team's experience with local BIM practices. The following tracking points are used directly to validate compliance with the Information Exchange Grid (IEG) issued with the BMP.

- Level of development (LOD)
- Scope of modelling
- UNIFORMAT coding

8. COLLABORATION

8.1 Types of Data

8.1.1 Digital project data (shared)

- Any information that can be used for implementation, validation, coordination, analysis, and communication;
- Any information including, but not limited to, drawings, models, analyses, specifications or other documents, as created for the project in digital form;
- All information that can be used for validation, coordination and analysis must be kept within the project's collaborative tools (database, models, analysis tools, etc.);
- No data or information should ever be processed or extracted in temporary documents;
- All project data or information should be available on an ongoing basis.

Examples:

- Mock-ups
- Specifications
- Discussion papers
- Reports

8.1.2 Confidential digital data (shared exclusively for project use)

Digital data containing confidential information belonging to the communicating party.

8.1.3 Sensitive data (with restrictions)

Documents requiring special permission and/or guidance before release.

Depending on the type of data, their availability may be restricted or limited to a group of users based on the governance model.

Discipline BIM managers are responsible for establishing the type of data that will be subject to particular restrictions (sensitive data), making a request to the Senior BIM Manager, and providing reasons and/or documentation to explain the purpose of the restrictions to be applied.

Examples:

- Letter
- Spreadsheet.
- Estimate

9. BIM DELIVERABLES

9.1 Format of Deliverables

9.1.1. Paper deliverables

At each stage of the project, when plans are officially issued, the various professionals must produce the number of hard copies determined by the Project Manager based on the Contract Documents.

9.1.2. Electronic deliverables

9.1.2.1. Revit native format

At each stage of the project, when the plans are officially issued, all the models in .rvt format (including federated models) will be retrieved by the BIM Expert and submitted to the Professional and Technical Services Centre of Expertise for archiving.

If necessary and as requested by the Professional and Technical Services Centre of Expertise, models in .rvt format may be provided to third parties for information.

9.1.2.2. Navisworks format

At each stage of the project, at the end of the interference detection process, all models in .nwc and .nwf format (including federated models) will be retrieved by the BIM Expert and archived.

9.1.2.3. PDF format

At each stage of the project, when drawings are officially issued, the various professionals must produce deliverables in .pdf format. Each drawing sheet will be done independently, except for uploading for submission, where the documents must be combined by discipline.

9.1.2.4. dwg format

At each stage of the project, when drawings are officially issued, the various professionals must produce deliverables (plans, sections and elevations) in .dwg format.

9.1.2.5. ifc format

The .ifc format is a standardized object-oriented file format (ISO 16739 standard) used by the building industry to exchange and share information between software applications. At each stage of the project, when drawings are officially issued, the various professionals must produce deliverables in .ifc format.

9.1.2.6. Other formats

At each stage of the project, when drawings are officially issued, the architecture BIM manager must ensure that the database of functional requirements, areas and net/gross ratios, including tables in Excel format, is submitted.

9.2 BIM Deliverables – Start-up Stages

BIM Deliverables	Leads	Status	Format	Notes
BIM Management Plan	BIM Expert	In progress	PDF	
Geo-referenced general site data	PWGSC	Forthcoming	.rvt	Models of existing condition survey data
Implementation model of the reference hypothesis	PWGSC	Forthcoming	.rvt	Volumetric model representing the site layout constraints

9.3 BIM Deliverables – Design Stages

BIM Deliverables	Leads	Status	Format	Notes
BIM Management Plan	BIM Expert Senior BIM Manager	Forthcoming	.doc / .PDF	
Models of existing conditions	Design professionals	Forthcoming	.rvt	Mock-ups for modelling existing conditions to meet the needs of the project
Design models	Design professionals	Forthcoming	.rvt .nwd .ifc	See the Information Exchange Grid (LOD) to ensure that the models contain all the required information.
2D drawings issued for calls for tenders	Design professionals	Forthcoming	.pdf	Plans extracted directly from the models.

Design model used in the call for tenders	Design professionals	Forthcoming	.rvt .ifc	Extracted directly from the models.
Interference detection	Senior BIM Manager (Design)	Forthcoming		Document produced by the Senior BIM Manager during the interference analysis and distributed to the design professionals for coordination

9.4 BIM Deliverables – Delivery Stages

BIM Deliverables	Leads	Status	Format	Notes
BIM Management Plan	BIM Expert Senior BIM Manager	Forthcoming	.doc / .PDF	Update for construction
Design models issued for construction	Design professionals	Forthcoming	.rvt	Design models including addenda
Construction models	Contractors	Forthcoming	.rvt .nwd .ifc	See the Information Exchange Grid (LOD) to ensure that the models contain all the required information.
Shop drawings (construction models)	Contractors	Forthcoming	.rvt .pdf .ifc	Plans extracted directly from construction models
Design model used in the tenders	Design professionals	Forthcoming	.rvt pdf .ifc	Extracted directly from the models.
Interference detection reports	Senior BIM Manager (Construction)	Forthcoming		Document produced by the Senior BIM Manager during the interference analysis and distributed to the design professionals for coordination
Updated design models	Design professionals	Forthcoming	.rvt .pdf .ifc	Design models updated during the work and "updated" plans extracted directly from the models
Construction models representative of actual conditions	General Contractor	Forthcoming	.rvt .pdf .ifc	Construction models updated during the execution of the work and "updated" plans extracted directly from the models

9.5 BIM Deliverables Timeline

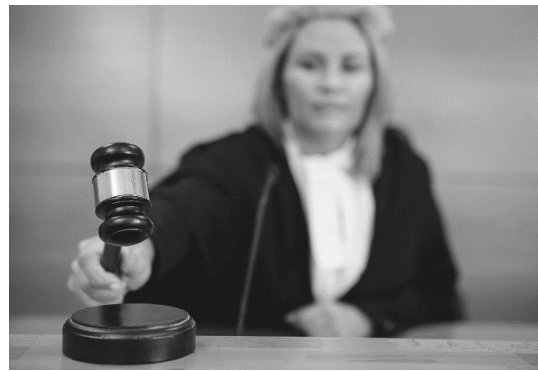
	RS	BIM Deliverables	DURATION Month	START DATE	END DATE
		BIM Management Plan			
STAGE 1		Models of existing conditions			
		Design models			
		Design models			
		3D coordination reports; conflict detection			
STAGE 2		Design models issued for construction			
STAGE 3		Design model used in the call for tenders			
		2D drawings issued for calls for tenders extracted from the design models issued in the calls for tenders			
		Integrated model for site management and construction monitoring			
		3D coordination reports; conflict detection			
		Integrated model and 4D simulation			
		Updated design models			
		Construction models representative of actual conditions			
ALL STAGES		Risk management			
		Cost management			
		Schedule management			
		Sustainable development			
		BIM			
		Waste management			

APPENDIX 2

FUNCTIONAL PROGRAM

(Insert:)

Functional and Technical Program



PSPC

New Montréal Judicial Complex

PSPC file No.: R.090448.001
BFAD file No.: 190808

Volume 1 – Functional program – Version 4

September 3, 2020

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1. Functional Program

1. GENERAL

1.1 Organization of the FTP

The FTP is issued in three volumes:

- Volume 1: the Functional Program;
- Volume 2: the Technical Program;
- Volume 3: the Appendices.

1.1.1 Structure of the texts in the functional program

- a. **Part 1, General Data.** This part sets out the main data and information related to the programming exercise. It includes information on the organization of the document, the methodology used, the participants and other, similar topics.
- b. **Part 2, Presentation of CAS, ATSSC and PSPC.** This part presents the three administrative units are involved in the project. Their missions, activities, personnel and organization are presented in texts and graphics aimed at familiarizing the designer with each of these services.
- c. **Part 3, Project Level.** This part addresses the project's objectives and general principles. A list of standards and regulations is also presented, as well as a list of related documents and appendices.
- d. **Part 4, Project Data and Analyses.** This part serves to familiarize the designer with all the analyses, assumptions, issues and decisions underlying the design guidelines. For the Project Owner, this part is the culmination of the programmatic approach taken in the course of this project.
- e. **Part 5, Layout and Design Guidelines.** This part is primarily addressed to the designer and provides complete design specifications. These specifications are supplemented by Volumes 2 and 3.
- f. **Part 6, Budget and Schedule.** This part presents the budget estimate for the project in Unifomat II, Level 3 format and provides the first work breakdown structure (WBS) for the construction of the building.

1.1.2 Structure of texts in the functional program

Each of the functional program's texts is identified by an alphanumeric code. In order to facilitate communication between project stakeholders, it is recommended to use this reference system for written and verbal communication or debriefing on the FTP. The system is as follows:

1. Part number
- 1.1 Section title
- 1.1.1 Article title
- 1.1.1.1 Paragraph title (or paragraph number following the article title)
 - a. Letter of the item (either for the article title or for the paragraph number).
 - or • A listing
 - iv. Sub-item

Therefore “1.1.1.1 a.” refers to item a. of paragraph 1.1.1.1, article 1.1.1, Section 1.1, Part 1 of the document.

1.1.3 Structure of the texts in the technical program

- a. The technical program is organized and codified according to UNIFORMAT II Levels 1, 2, 3 and/or 4, as appropriate. All articles are identified by an alphanumeric code to facilitate identification, communication between disciplines and instructions from the Project Owner. The document is structured as follows:

LEVEL	ALPHANUMERIC CODE	DESCRIPTION
1	A; B; C; D; E; F; G	Major group elements
2	A10; B10; C10, etc.	Group elements
3	A1010; B1010, C1010, etc.	Individual elements
4	A101001; B101001, etc.	Sub-elements
-	.1; .2; .3, etc.	Paragraphs
-	a. b. c. d., etc.	Articles
-	i. ii. iii. iv.	Items

- b. The texts in the Technical Program are organized under the UNIFORMAT II system (Levels 1 to 4) as follows:

A1010 Item title

.1 Paragraph number (text of the paragraph relating to article A1010).

a. Article number

- c. Therefore “**A1010.1a.**” refers to article a. in paragraph .1 of A1010 Standard Foundations. Professionals will use this reference system when communicating in writing or reporting on the technical program.

1.2 Summary presentation of the FTP

1.2.1 Project

In accordance with the national strategy for housing federal courts and tribunals, developed by Public Services and Procurement Canada (hereinafter referred to as PSPC) in collaboration with the CAS and the ATSSC, the Government of Canada has agreed to have a new building erected, to be owned by the Crown and located in Montréal on land bordering Notre-Dame Street and Saint-Jacques Street. The new building, with an area of 13,100 square metres (gross), will house the Courts Administration Service (hereinafter referred to as the CAS) and the Administrative Tribunals Support Service of Canada (hereinafter referred to as the ATSSC), as well as provide premises for the building manager.

1.2.2 Programming mandate

Public Services and Procurement Canada (PSPC) has given a mandate to Bisson Fortin Architecture + Design to produce a functional and technical program (hereinafter referred to as the FTP) for the realization of the New Montréal Judicial Complex. The purpose of the FTP is to provide a clear order to the design professionals on the content of the project, while ensuring that the future building meets the government's needs for years to come.

1.2.3 Functional and technical program

- 1.2.3.1 Among other things, functional and technical programming aims to enable the Project Owner to express its functional and technical needs accurately and precisely and to document its analyses and conclusions with respect to the scope and characteristics of said needs.
- 1.2.3.2 As a result of technological change and the specialization of businesses and human organizations, the purchase order requires a better definition.
- 1.2.3.3 An FTP is the preferred tool for clearly defining and formulating the scope and scale of the functional, operational and technical requirements of the project to be carried out.
- 1.2.3.4 An FTP is the result of work by a multidisciplinary team consisting of practitioners and institutional users, supervised by an architectural programming consultant and supported by engineering consultants.
- 1.2.3.5 An FTP enables the Project Owner, for the purpose of carrying out the project, to agree to and establish the requirements for the functional, operational and physical organization of the premises with the managers and staff members of the services affected by the project.
- 1.2.3.6 For the project design team, the FTP represents the reference document for the project's design and construction. The more precise and well-documented the FTP is, the better will be the solution developed by the design team to meet the expressed needs.
- 1.2.3.7 For the project manager, the FTP becomes a management and monitoring tool that is used at each development stage. As the drawings and specifications are developed, the manager will be able to evaluate and control the solutions developed by the design team based on quality, cost and schedule objectives.

1.2.3.8 **In summary, functional and technical programming:**

- Supports the Project Owner's functional and technical needs through appropriate documentation;
- Sets the scope and content of the project;
- Is the result of work performed by a multidisciplinary team;
- Allows the Project Owner to reach a consensus among its representatives on what the project will be;
- Facilitates communication between the various technical stakeholders involved in the project by serving as a reference document between the Project Owner and its professionals regarding the design and construction of the building;
- Promotes an efficient design process by dealing with time, cost and project content, making it the Project Manager's preferred management tool;
- Allows evaluation of the solutions put forward by the design team based on the targeted objectives and expressed needs.

1.2.4 **Functional programming**

Functional programming provides a detailed analysis of project functions, organization and operations. It allows for a clear identification of the objectives to be met by the design, while taking into account anticipated changes in objectives and structures that will have an impact on the layout. In addition, the functional program includes analyses that will allow the professionals and the Project Owner to adjust to the context of the project, so that they can quickly become familiar with the planning provisions of the FTP.

1.2.5 **Technical programming**

The general aim of technical programming is to translate the requirements of the functional programming into systemic performance criteria, taking into account the specific needs of building technology in order to inform the technical design and establish a realistic cost plan for the project.

1.3 **Methods**

Functional programming is based on the premise that the building is primarily a private facility whose purpose is to serve the **functions** of the Project Owner. Therefore, the programming exercise will seek to ensure that the resulting building will optimally "serve" these functions. In this context, "function" refers to any activity of the Project Owner's organization, as well as any strategic plan, mandate, constraint, project and other element that derives from the organization's mission.

1.3.1 **Three basic concepts**

- a. **The project aims to meet the NEEDS of the Project Owner.** Needs are dissatisfactions behind the creation of the product.
- b. **The programming analyses the FUNCTIONS of the Project Owner** in order to delineate the needs. Functions are formulations of the product through needs.
- c. **The object of the design is the PRODUCT.** It is something concrete that responds to the need by satisfying the functions.

1.3.2 Functional analysis

In order to express the needs in the form of functions, the programmer will use a collaborative contracting authority/programmer technique known as “**functional analysis**,” which is applied in the context of the planned project and attempts to optimize the functional characteristics of the product. Then, working closely with other members of the team, he or she will translate the functional analysis in terms of performance and characteristics, thus delineating the entire project in terms of:

- Content (physical organization, service and performance);
- Cost (construction cost, life cycle cost); and
- Time (service life, maintenance, modifications, expansions).

1.3.3 Responsibilities

- a. The Project Owner will be responsible for providing the programmer with all relevant organizational data and for ensuring that any required organizational representatives collaborate in the production of the FTP.
- b. The programmer is responsible for assisting the Project Owner in compiling data on the organization and the project and interpreting the data in terms of content, time and costs.
- c. The FTP will translate into architectural terms only what is **project-specific and/or unusual**, on the assumption that the standard professional practices will normally take care of the rest.

1.3.4 Architectural creativity

Lastly, the FTP will seek to frame and delineate the needs in such a way as to give complete freedom to the professional architects and engineers in charge of the design/construction of the work.

1.4 Programming team

The following multidisciplinary team is in charge of functional and technical programming:

- Altus (budget estimates and scheduling)
- Bisson Fortin Architecture + Design (project management and architectural programming)
- BPA (analysis and programming of operational security and physical security)
- EXIM (vertical transportation programming)
- EXP (electrical, mechanical, structural and civil engineering programming - sustainable development)
- Gil Goyette Architecture Conseil (management of FTP method and content)
- Technorm (code analysis)

In memory of Lyse M. Tremblay, LEED and Sustainable Development Specialist

1.5 List of participants

The FTP has been produced through a multi-disciplinary effort of analysis and knowledge sharing by the representatives of PSPC, CAS and ATSSC as well as consultants.

NAME	TITLE
PSPC:	
Frédéric Boily	- Project Manager
Jimmy Rondeau	- Senior Project Manager
David Savard	- Project Management Coordinator
Stéphanie Helen Tremblay	- Project Manager, Customer Service Team - Security
Marc Gagné	- Senior Project Manager
Mario Pelletier	- Senior Project Manager (replaced by Marc Gagné)
Luc Morin	- Senior Project Manager (replaced by Marc Gagné)
David Sokolic	- Customer Service Manager
Thi Binh Lieu	- Project Manager
Laure Gérard	- PWGSC-TMS (technical and maintenance services)
Marc Petitclerc-Fafard	- PWGSC-TMS (technical and maintenance services)
Laure Girard	- PWGSC-AES, Environment and Sustainable Development
Ginette Picotte	- PWGSC, Principal Architect, Architecture
Christian Rosu	- PWGSC, Mechanical Eng., Architecture and Engineering Services
Gabriel Samrai	- PWGSC, Electrical Eng., Architecture and Engineering Services
Alexandre Lupien	- PWGSC, Mechanical Eng., Architecture and Engineering Services
Éric Guy	- PWGSC-AES, IT
Terry Caetano	- PWGSC-AES, IT
Stéphane Dion	- PWGSC-AES, IT
Julien Harvey-Vaillancourt	- PWGSC-AES, Energy
Jonatan St-Laurent	- Safety Officer
Geneviève Cusson	- Property and Facility Manager

NAME	TITLE
ATSSC:	
Jean-Daniel Tardif	- Regional Director and Registry Officer
Pauline Roy	- Director and DSO
Sonja Lishchynski	- Manager, Security Program
Kim Laforge	- Interim Manager, Facilities Management and Occupational Health and Safety (space planning)
Shawn Anderson	- Strategic Advisor

NAME	TITLE
Robert Legault	- IT Programmer Analyst (Montréal office)
Éric Massé	- Telecommunications/IT Services (national)

NAME	TITLE
CAS:	
Claude Laflamme	- Director General, Facilities Management and Admin. Services
Vicky Lefebvre	- Regional Director General, Eastern Region
Nathalie Gagnon	- Senior Project Manager
Jean-Pierre Poggi	- Regional security agent, Eastern Region
Jessica Saviotti	- National Coordinator, Emergency Management & Business Continuity, Corporate Security
Sandy Doyon	- Agent, Real Estate Services and Facility Management
Mélanie Bilodeau	- Supervisor, Administrative Services
Kathleen Wheely	- Interim Regional Director General (Registry Service)
Luciano Bentenuto	- Director General, Security Services
Jean-Pierre Poggi	- Regional Security Officer – Eastern Region
Laurendeau-Fitzpatrick, Pierre	- Security Officer
Brigitte Patry	- Director General of Investment and Project Management
Minh Tran	- Director, Management Services
Alain Dernek	- Senior Registry Officer
Nancy Deslauriers	- Senior Registry Officer
David Lemieux	- Telecommunications/IT Services (national)

NAME	TITLE
COST AND SCHEDULE SPECIALIST - ALTUS:	
Sergio Callocchia	- Project Manager
Michael Attela	- Cost & project management
Liliane Nawfal	- Cost & project management

NAME	TITLE
ENGINEERING - EXP:	
Martin Bourbonnais	- Senior Project Manager
Philippe Lamothe	- Structural Engineer
Victor Dominguez Torres	- Electrical Engineer - IT Audiovisual
Jimmy Rheault	- Mechanical Engineer
Patrick Belzile	- Energy Efficiency Engineer
Manuelle Croft	- Energy Efficiency Engineer
Kateri Héon	- Energy Efficiency Engineer
Hughes Buteau	- Urban Infrastructure Engineer (Civil)
Louise Berthiaume	- Administrative Assistant, Mechanical and Electrical Services
Louis-Jacques Fortier	- Telecommunication and Security Engineer (IT)
Max Colombié	- Telecommunication and Security Engineer (IT)

NAME	TITLE
SECURITY SPECIALIST - BPA:	
Carlos Luna	- Project Manager
René Canuel	- Security Consultant
Patrick Fiorelli	- Security Consultant
Hugo Bourcier	- Security Consultant

NAME	TITLE
VERTICAL TRANSPORTATION - EXIM	
Yannick Pépin	- Engineer, Project Manager

NAME	TITLE
CODES & REGULATIONS - TECHNORM	
Claude H. Laurin	- Architect, Technical Advisor

NAME	TITLE
SUSTAINABLE DEVELOPMENT - EXP	
Geneviève Beaudoin-Lebeuf	- Sustainable Development Engineer

NAME	TITLE
FTP SPECIALIST - GIL GOYETTE ARCHITECTURE CONSEIL	
Gil Goyette	- Senior Programming Architect
France Beauregard	- Graphic design and texts

NAME	TITLE
ARCHITECTS - BISSON FORTIN ARCHITECTURE + DESIGN	
Danielle Bisson	- Architect, Senior Project Manager
Patrice McInnes	- Architect
Khadija El Mourabt	- Intern Architect
Laurence Lelièvre	- Architect
Cathy Gagné	- Architect
Eric Milton	- Manager, BIM

1.6 Program and expertise

Although the FTP has been produced by an external firm, PSPC, ATSSC and CAS continue to be the only experts on the program's subject matter and its content. The programmer's responsibility is limited to translating the functional requirements of the NMJC into technical architectural terms, as well as collecting and presenting the Project Owner's needs and requirements in this regard.

1.7 Definitions, abbreviations and symbols

AMP	Administrative monetary penalties
ATSSC	Administrative Tribunals Support Service of Canada
BFAD	Bisson Fortin Architecture + Design
BIM	Building information modelling
CART	Canada Agricultural Review Tribunal
CAS	Courts Administration Service
CCEEBC	Canadian Cultural Property Export Review Board
CGW	Canadian government workplace
CHRT	Canadian Human Rights Tribunal
CIRB	Canada Industrial Relations Board
CITT	Canadian International Trade Tribunal
CMAC	Court Martial Appeal Court of Canada
CT	Competition Tribunal
CTX	Computed Tomography eXplosive detection
DEMARC	Demarcation
ECCC	Environment and Climate Change Canada
EPTC	Environmental Protection Tribunal of Canada
FAST	Function Analysis System Technique
FC	Federal Court
FCA	Federal Court of Appeal
FTE	Full-time equivalent
FP	Functional program
FTP	Functional and technical program
FPSLRB	Federal Public Sector Labour Relations and Employment Board
IDP	Integrated design process
I.T.	Information technology
LC	Law Clerk
MTR	Main telecommunications room
PO	Project Owner
PSDPT	Public Servants Disclosure Protection Tribunal
PSPC	Public Services and Procurement Canada
PWGSC	Public Works and Government Services Canada
RFP	Request for proposals
SDB	Site design brief
SCTC	Specific Claims Tribunal Canada
SOC	Security operations centre

SPS	Special-purpose space
SSC	Shared Services Canada
SSTC	Social Security Tribunal of Canada
TATC	Transportation Appeal Tribunal of Canada
TCC	Tax Court of Canada
TI	Telecommunications and information technology
TRA	Threat and risk assessment
WBS	Work breakdown structure

1.8 Measurement convention

1.8.1 General provisions

- a. When measuring the gross area of the building, where the area of an exterior wall consists for at least fifty percent (50 %) of glass (based on a ceiling height of at least 2 600 mm), the measurements shall be taken from the interior surface of the glass.
- b. If glazed surfaces are sloped or otherwise arranged irregularly, measurements shall be taken from the glass surface closest to the interior finish of the exterior wall of the “building.”

1.8.2 Definitions and methods used

To validate the areas mentioned in the FTP, the designer will verify areas as follows:

1.8.2.1 Interior gross area

Interior gross area is the defined area within the predominantly internal portion of the exterior walls of a floor, without deducting the space occupied by columns, structural elements or enclosures along the perimeter of the “building,” or near it, that house heating, ventilation and air-conditioning equipment. This area is calculated to the wall or glass according to the general provisions set out above in paragraph (a) of Article 1.8.1.

1.8.2.2 Leasable area

From the “interior gross area” are extracted the “building service areas” described below, which are required to operate the “building.” This gives the “leasable or rentable area.” The building service areas include the perimeter walls and comprise the following items:

- Fire cabinets;
- Atriums;
- Other, similar through-the-floor elements;
- Elevator shafts;
- Boiler rooms;
- Chimneys;
- Smoke ducts;
- Vertical ducts;

- Showers and changing rooms (serving the entire “building”);
- Air conditioning and ventilation equipment;
- Public staircases;
- Main entrance hall;
- Housekeeping equipment storage room (serving the entire “building”);
- Machinery room;
- Service elevator;
- Vertical penetrations;
- Loading dock (serving the entire “building”);
- Janitor and security stations;
- Skylights;
- Pipe shafts;
- Service rooms;
- Mail routing system (serving the entire “building”);
- Fire tower;
- Ground-floor elevator lobby.

1.8.2.3 Usable area

Based on the “leasable or rentable area,” the “common and ancillary area A” described below are removed to obtain the “usable area.” The “common and ancillary area A” consists of the common-use areas, including their perimeter walls, except when they are adjacent to service areas, in which case the wall area is already measured as part of the service area of the “building.” The “common and ancillary space A” includes the following:

- Main circulation areas (common corridors);
- Perimeter and interior structural elements (columns);
- Protruding elements, such as convectors, window sills;
- Water fountains;
- Rooms containing electricity, telephone and telecommunications equipment;

- Janitor closets;
- Restrooms (serving the floor);
- Emergency exits and fire refuge areas governed by law;
- Secondary exits;
- Elevator lobbies other than on the ground floor.

1.8.2.4 Net area

Areas dedicated to circulation and fixed partitions are removed from the usable area to obtain the net area. The area requirements of the spaces and rooms shown in the summary tables are presented in net square metres. The area of movable partitions is included in the net area of the spaces they serve. If two spaces share the same movable partition, 50% of the movable partition shall be allocated to each of the said spaces.

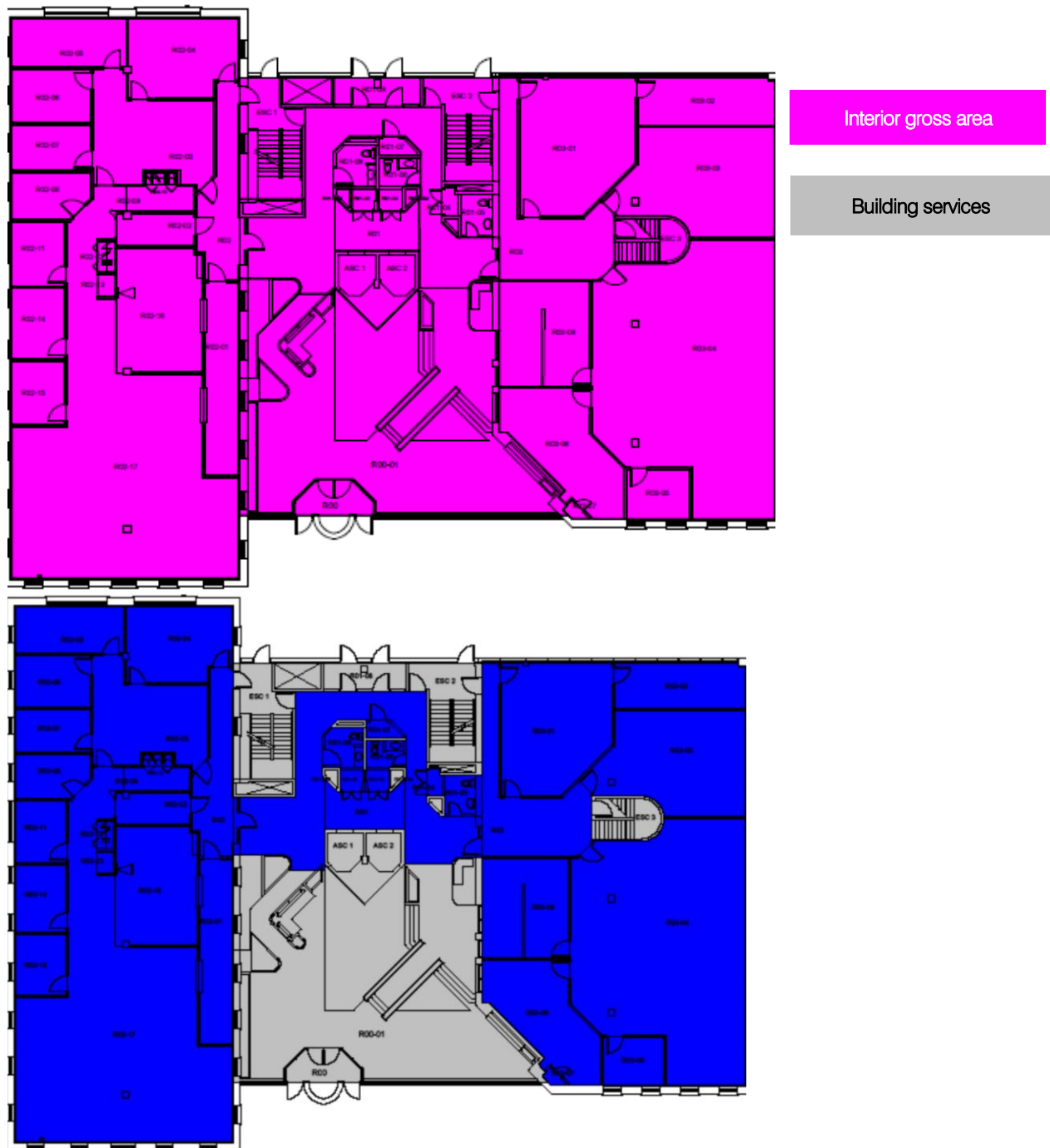
1.8.3 Presentation of drawings illustrating the measurement convention

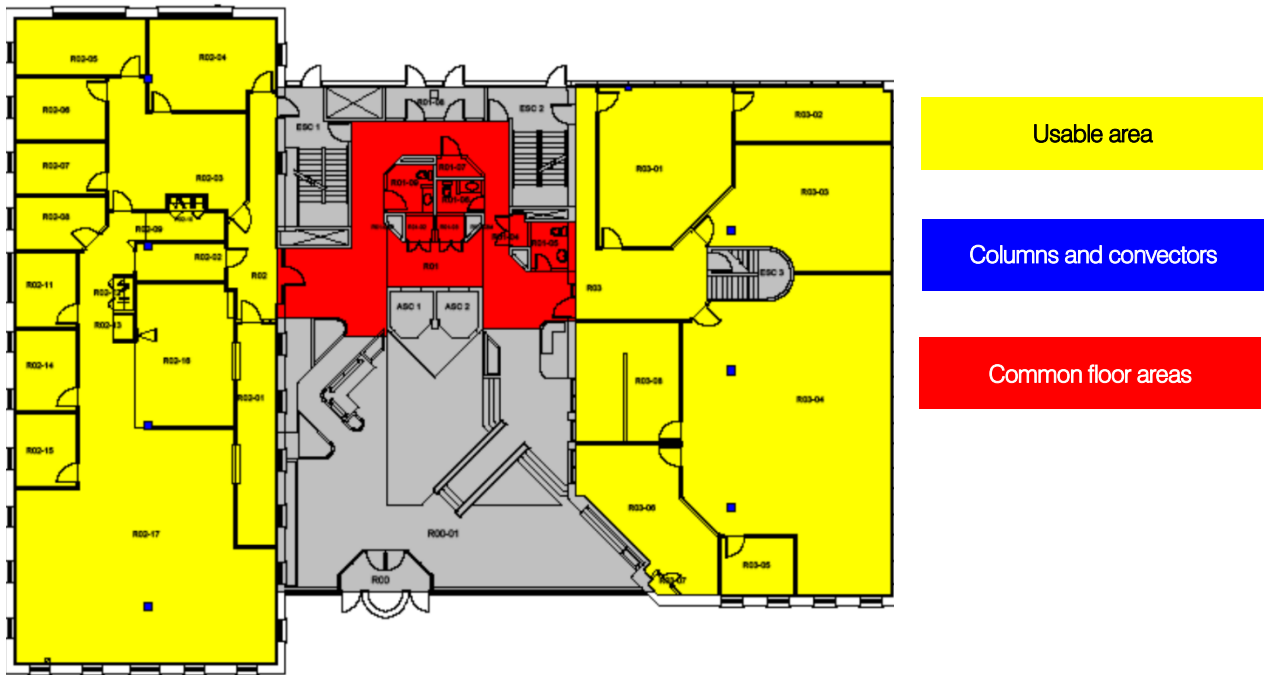
Each floor plan shall be presented in such a way as to accurately identify each type of space. The floor plan shall clearly indicate graphically, using colour codes, the outline or area for each space.

TYPE OF GRAPHIC PRESENTATION - SPACE	COLOUR CODE
Polyline – Interior gross floor area	Magenta
Area – Building services	Grey
Area – Common and ancillary space A	Red
Zone – Columns and convectors	Blue
Zone – Usable area	Yellow

1.8.4 Examples of floor plans illustrating the expected result

“For information purposes only”





1.9 Governance of the FTP

1.9.1 Data management

- a. PSPC is responsible for managing the data, analyses and requirements of the FTP.
- b. Any apparent contradiction in the FTP and any contradiction between the programming documents and instructions from a public body or other authority shall be identified by those responsible for project design/implementation and submitted to PSPC for a decision.
- c. All requests for changes shall be addressed to the PSPC Project Manager. A change request will only become binding once it is incorporated into the FTP according to the protocols established by PSPC's Project Manager.

1.9.2 Additions and changes

- a. Any changes to this document will be made in writing by way of a program change order. Any requests for additional information will be handled through "additional FTP Instructions." Once these documents are issued, they become an integral part of the programming documents.
- b. All questions from someone responsible for project design/construction shall be addressed to the PSPC Senior Manager, who will ensure that they are resolved with the responsible authorities.

1.9.3 Documents – Appendices

The FTP has been produced following several months of interviews, analyses, visits and decisions, some of which are not published here. However, project management may provide a copy, if required, upon written request from the applicant.

2. PRESENTATION OF CAS, ATSSC AND PSPC

2.1 Mandates and missions

2.1.1 Presentation of the CAS (the Courts Administration Service)

The Courts Administration Service (CAS) was established in 2003 under the *Courts Administration Service Act* to provide services to Canada's four Federal Courts. The Act gives CAS a mandate to provide judicial, registry and ministerial services to four superior courts: the Federal Court of Appeal, the Federal Court, the Court Martial Appeal Court of Canada and the Tax Court of Canada, thereby enabling them to maintain their independence from the Government of Canada.

2.1.1.1 Mission

The mission of CAS is to provide timely and accurate judicial, registry, and corporate services to the four superior courts and to their clients in the most innovative and effective manner, while promoting a healthy workplace and encouraging employees' ongoing contribution to excellence in service delivery.

2.1.1.2 Services

The CAS carries out function such as:

- Providing litigants and their counsel with services relating to court hearings;
- Informing litigants on rules of practice, court directives and procedures;
- Maintaining court records;
- Processing documents filed by or issued to litigants, and registration all proceedings;
- Serving as a depository to allow for the enforcement of decisions made by the courts and federal administrative tribunals, such as the Canada Industrial Relations Board and Canadian Human Rights Tribunal;
- Providing judges, prothonotaries and personnel with a wide array of direct support services, including library services; and
- Providing judges, prothonotaries and personnel with appropriate facilities and security.

2.1.1.3 Federal Court of Appeal

- a. The Federal Court of Appeal has jurisdiction to hear appeals from judgments of the Federal Court, certain statutory appeals and appeals from judgments of the Tax Court of Canada. Among other things, the Court has exclusive jurisdiction to hear and determine applications for judicial review of the decisions of the 14 federal boards, commissions and tribunals listed in section 28 of the *Federal Courts Act*. Parties to a proceeding in the Federal Court of Appeal may be granted leave, or permission, to appeal the Federal Court of Appeal decision to the Supreme Court of Canada when a case involves a question of public importance.

- b. The FCA has three basic roles:
 - to ensure that federal law is applied consistently throughout Canada;
 - to conduct judicial reviews of specified federal decision makers, as listed in section 28 of the Federal Courts Act; and
 - to provide an avenue of appeal from decisions of the Federal Court and the Tax Court of Canada.

2.1.1.4 Federal Court

- a. Access to a zone with a given level of security shall, as far as possible, be from a zone with the previous level of security so as to create graded levels of protection.
- b. The Federal Court is a court of first instance. It has original, but not exclusive, jurisdiction over cases by and against the Crown, appeals under approximately 110 federal statutes and proceedings involving admiralty law, intellectual property law, aboriginal law and national security.
- c. The disputes submitted to the Federal Court include:
 - claims against the Government of Canada;
 - civil suits between private parties in federally-regulated areas; and
 - reviews of decisions of most federal tribunals.
 - The Federal Court's jurisdiction includes:
 - interprovincial and many federal-provincial disputes;
 - immigration and refugee matters;
 - intellectual property lawsuits (e.g. copyright);
 - citizenship appeals;
 - cases under the *Competition Act*;
 - cases involving Crown corporations or departments of the Government of Canada.
- d. The Court also has exclusive jurisdiction to hear and determine applications for judicial review of the decisions of all federal boards, commissions and tribunals other than those over which the Federal Court of Appeal has jurisdiction (see above). This jurisdiction includes, in particular, applications for judicial review of decisions of the Immigration and Refugee Board.

2.1.1.5 Court Martial Appeal Court of Canada

The main function of the Court Martial Appeal Court of Canada is to hear appeals from courts martial, which are military courts established under the *National Defence Act* that hear cases under the Code of Service Discipline found in Parts III and VII of that Act. These tribunals try cases under the Code of Service Discipline, which is found in Parts III and VII of the *National Defence Act*.

2.1.1.6 Tax Court of Canada

The Tax Court of Canada has exclusive original jurisdiction to hear appeals and references under 12 different Acts of Parliament. Most of the appeals made to the Court relate to income tax, the goods and services tax, or employment insurance. While many appeals are subject to procedures similar to those of the Federal Court, appeals under what is known as the “informal procedure” are heard as informally and expeditiously as circumstances and considerations of fairness permit.

2.1.2 Presentation of the ATSSC (Administrative Tribunals Support Service of Canada)

The ATSSC was established with the coming into force on November 1, 2014, of the *Administrative Tribunals Support Service of Canada Act*. The ATSSC is responsible for providing support services and facilities to 12 federal administrative tribunals by way of a single, integrated organization. The Minister of Justice and Attorney General of Canada is responsible for this organization.

2.1.2.1 Mission

The ATSSC is responsible for providing the tribunals it serves with the support services and the facilities that are needed to exercise their powers and perform their duties and functions in accordance with their statutory responsibilities. However, the tribunals preserve their independence by making decisions of a judicial nature related to the cases. The tribunals continue to guide the work of the dedicated ATSSC personnel and are constantly involved in the day-to-day operational work that ensures that they are able to deliver on their priorities and mandates.

2.1.2.2 Services

The ATSSC provides efficient and effective services which support tribunal chairs and members in exercising their statutory responsibilities and ensure that their independence is protected in a manner which promotes Canadians’ confidence in the federal tribunal system. Internal Services refer to the activities and resources of ten distinct services that support program delivery in the organization, regardless of the Internal Services delivery model in a department. These services are:

- Management and Oversight Services
- Communications Services
- Registry Services
- Legal Services
- Human Resources Management Services
- Financial Management Services
- Information Management Services
- Information Technology Services
- Real Property Management Services
- Materiel Management Services
- Acquisition Management Services

2.1.2.3 Tribunals served by the ATSSC

- Canadian Cultural Property Export Review Board (CCPERB)
- Canadian International Trade Tribunal (CITT)
- Social Security Tribunal (SST)
- Specific Claims Tribunal Canada (SCT)
- Environmental Protection Tribunal of Canada (EPT)
- Canada Industrial Relations Board (CIRB)
- Canada Agricultural Review Tribunal (CART)
- Canadian Human Rights Tribunal (CHRT)
- Competition Tribunal (CT)
- Public Servants Disclosure Protection Tribunal (PSDPT)
- Federal Public Sector Labour Relations and Employment Board (FPSLREB)
- Transportation Appeal Tribunal of Canada (TATC)

2.1.3 Presentation of the administrative tribunals

2.1.3.1 Role of the administrative tribunals

- a. The interpretation and implementation of government policies and legislation would be difficult, if not impossible, if not for the administrative tribunals. They have an essential function and a unique status in the justice system. They resemble courts of law, but they are not part of the judicial system.
- b. This situation stems from the separation of the administrative and judicial authorities resulting, among other things, from the French Revolution. In 1790, legal texts began prohibiting the judicial courts from disturbing in any way whatsoever the operations of administrative bodies and from hearing administrative proceedings of any kind whatsoever.
- c. Administrative justice flows from administrative law, one of the three fundamental sources of public law. The other two are constitutional law and criminal law. The main function of this branch of law is to ensure that laws are implemented and enforced in a fair and reasonable manner. It is based on the principle that action by the state, in all its forms, is lawful, and that citizens aggrieved by unlawful acts of the State may avail themselves of effective remedies.
- d. Administrative tribunals play a dual role as instruments of government policy and instruments of justice. This is their defining feature. The Supreme Court of Canada aptly describes them as straddling the constitutional dividing line between executive and judiciary power.

2.1.3.2 Powers of the administrative tribunals

These tribunals have multiple powers. They can regulate, among other things, various sectors of the economy such as energy, transportation, financial markets and agricultural markets, as well as relations between the state and its employees. They can set rates, order the payment of compensation, order the cessation of a situation, overturn or confirm decisions made by government agencies, and grant, suspend or revoke licences. Most have the power of an investigating commissioner, which gives them greater latitude to intervene in the proceedings and gather evidence essential to the fair resolution of a dispute or application.

2.1.3.3 Chairs and members

- a. The chairs and members are “(...)best placed to bring about a preventive effort in government administration, and to develop administrative law that is not only concerned with an *a posteriori* control of poor administration, but also with promoting good administration. They know better than anyone the impact of government policies on the lives of citizens.” [translation]
- b. Since the administrative tribunals are specialized, their members normally have specific skills and experience related to the tribunal on which they sit. Therefore, while some members are lawyers, others are notaries, psychologists, physicians, psychiatrists, social workers, chartered appraisers, veterinarians, engineers, accountants and economists. Prior to their appointment, they have practised in fields as varied as economics, engineering, agriculture, education, communications, energy, immigration, or any other field specific to the Tribunal's specialization.

2.1.3.4 Rules and procedures

- a. Administrative justice is often the gateway to the justice system. Moreover, the administrative tribunals are not bound by the same rules of procedure as law courts. This allows the administrative tribunals to manage cases more flexibly and expeditiously than courts of law.
- b. The various administrative tribunals have provided simple rules for a citizen to make a request and be heard. In general, the citizen who appears before an administrative tribunal will hear plain and simple language. When required, administrative tribunals will provide assistance to citizens, particularly when they are unrepresented.

2.1.3.5 Alternative methods

- a. One particular feature of this form of justice is that it promotes alternative methods of conflict resolution based on conciliation and mediation. It is not uncommon for some administrative tribunals' cases to be settled without a hearing.
- b. “The role of administrative judge goes far beyond the decision rendered. The first function of a judge is not to judge, but rather to listen, and his or her decision is not based solely on the judicial decision from above, but also very often on the mediation that he or she constantly proposes between the parties.” [translation]

2.1.4 Presentation of Canada's 12 federal administrative tribunals

2.1.4.1 Canada Industrial Relations Board (CIRB)

- a. The Board promotes constructive labour-management relations in the federally regulated private sector by overseeing the acquisition and termination of bargaining rights; resolving unfair labour practice complaints through mediation or adjudication; and assuring the continuity of services necessary to protect public health and safety in the event of a labour dispute. The Board also administers the *Status of the Artist Act*.
- b. The Canada Industrial Relations Board (CIRB or the Board) is an independent, representational, quasi-judicial tribunal responsible for the interpretation and application of Part I (Industrial Relations), certain provisions of Part II (Occupational Health and Safety), and Part III (Standard Hours, Wages, Vacations and Holidays) of the Code. The CIRB is also responsible for the interpretation and administration of Part II (Professional Relations) of the *Status of the Artist Act* and appeals under the *Wage Earner Protection Program Act*.
- c. The Board's mandate is to contribute to and promote a harmonious industrial relations environment in the federally regulated sector and to contribute to the enforcement of labour and occupational health and safety standards through the impartial, effective and appropriate administration of the rules of conduct applicable to employees, unions and employers under the *Canada Labour Code*, the *Status of the Artist Act* and the *Wage Earner Protection Program Act*.
- d. In order to fulfill its mandate, the CIRB provides a variety of dispute resolution services. It adjudicates matters where necessary, but it also focuses on providing mediation assistance at all stages of a proceeding to proactively seek a resolution of matters that best meets the needs of the parties. Through this approach, the CIRB supports labour and management as well as artists and producers in improving their workplace and professional relationships.
- e. The Board is composed of: a Chairperson, who holds office on a full-time basis; two or more Vice-Chairpersons, to hold office on a full-time basis, and any other Vice-Chairpersons, to hold office on a part-time basis, that the Governor in Council considers necessary to discharge the responsibilities of the Board. There are not more than six other full-time members, of which not more than three represent employees and not more than three represent employers, any other part-time members, representing, in equal numbers, employees and employers, that the Governor in Council considers necessary to discharge the responsibilities of the Board, as well as part-time members that the Governor in Council considers necessary to assist the Board in carrying out its functions under Part II.

2.1.4.2 Canada Agricultural Review Tribunal (CART)

- a. An independent, quasi-judicial tribunal that reviews agricultural and agri-food administrative monetary penalties issued to persons who have allegedly contravened federal rules pertaining to: the import of animal and plant products; the humane transport of livestock; the use of pesticides; or the inspection of plants, animals and meats.
- b. The Canada Agricultural Review Tribunal (Tribunal) is an independent quasi-judicial body established by Parliament pursuant to section 4.1 of the *Canada Agricultural Products Act* (the CAP Act).

- c. The Tribunal's primary role is to provide independent oversight, through the exercise of its review jurisdiction, of federal agencies' use of administrative monetary penalties (AMP) in relation to agriculture and agri-food. These AMP systems form part of several federal agencies' "escalating scale of enforcement" providing a non-punitive means to promote regulatory compliance. Alleged violators have the right to seek a review of any AMP violation before the Tribunal. Three agencies - the Canadian Food Inspection Agency, the Canada Border Services Agency and the Pest Management Regulatory Agency - currently fall under the Tribunal's review jurisdiction.
- d. The Tribunal maintains an independent, quasi-judicial, arm's length relationship with Agriculture and Agri-Food Canada and its Minister, as required by the provisions of the *Canada Agricultural Products Act* (the CAP Act) and the *Agriculture and Agri-Food Administrative Monetary Penalties Act* (the AMP Act). Subsection 4.2 (1) of the CAP Act provides that no member of the Tribunal may concurrently hold employment in the federal public administration. Pursuant to subsection 8(1) of the same Act, the Tribunal is a court of record and has an official seal that is subject to judicial notice.
- e. This legislative framework for the constitution and operation of the Tribunal demonstrates Parliament's intention for a cooperative relationship between the Minister of Agriculture and Agri-Food and the Tribunal, and one that is, all the while, mindful of the necessity for safeguarding the integrity and independence of the Tribunal to carry out its mandate. The Tribunal is responsible to Parliament through the Minister of Agriculture and Agri-Food.

2.1.4.3 Canadian Human Rights Tribunal (CHRT)

- a. The Canadian Human Rights Tribunal is an independent, quasi-judicial tribunal that enquires into allegations of prohibited discrimination under the Canadian Human Rights Act. The CHRT determines whether a discriminatory practice has occurred in respect of employment, or the provision of goods, services, facilities and/or accommodation. The CHRT dismisses the matter if without merit, or if the complaint is substantiated, it may provide remedial relief to the victim. The Tribunal's role is much like that of a court. It hears evidence and witnesses about complaints of discrimination; decides whether discrimination has occurred; and, if so, determines an appropriate remedy.
- b. The Tribunal can only hear complaints of discrimination filed against federally regulated employers and service providers. These include:
 - federal government departments, agencies and Crown corporations (including the Canadian Forces and the RCMP);
 - chartered banks;
 - airlines;
 - television and radio stations;
 - interprovincial communications and telephone companies;
 - interprovincial transportation companies;
 - First Nations governments and some other First Nations organizations.

- c. The Tribunal is composed of a full-time Chairperson and Vice-Chairperson, and up to 13 full or part-time Members who are appointed for terms up to five years.
- d. When a case is referred to the Tribunal, the Chairperson assigns either one or, in certain cases, three Members to hear the case.

2.1.4.4 Competition Tribunal (CT)

- a. The Competition Tribunal is an independent specialized tribunal that combines expertise in economics and business with expertise in law. The Tribunal is strictly an adjudicative body that operates independently of any government department.
- b. The cases it hears deal with matters such as business mergers; abuse of dominant position; agreements between competitors; refusal to comply; price maintenance; other restrictive trade practices; deceptive marketing practices; specialization agreements; delivered pricing; foreign judgments, law and directives that adversely affect economic activity in Canada; and refusals to supply by foreign suppliers.
- c. Matters before the Tribunal are usually of national interest and large in scope and complexity, and can involve significant financial stakes and directly impact on the competitiveness of private enterprise and industry.
- d. The Competition Tribunal has jurisdiction to hear and dispose of all applications made under Parts VII.1 and VIII of the *Competition Act* and any related matters. It also hears references filed pursuant to section 124.2 of the *Competition Act*.
- e. Part VII.1 (sections 74.01 to 74.19) of the *Competition Act* deals with deceptive marketing practices. Part VIII (sections 75 to 107) deals with restrictive trade practices including refusal to supply, price maintenance, exclusive dealing, tied selling, market restriction, abuse of dominant position, delivered pricing, foreign judgments and laws, foreign suppliers, specialization agreements, and mergers.
- f. The Competition Bureau, headed by the Commissioner of Competition, is responsible for the administration and enforcement of the *Competition Act*, and other acts. The Bureau investigates complaints and decides whether to proceed with the filing of an application to the Competition Tribunal.
- g. All proceedings before the Tribunal are dealt with as informally and expeditiously as the circumstances and considerations of fairness permit.
- h. The Tribunal consists of five judicial members appointed from among the judges of the Federal Court, one of whom is the Chairperson of the Tribunal, and six part-time non-judicial members. The composition consists of not more than six judicial members appointed from among the judges of the Federal Court and not more than eight other members. They are appointed for a fixed term of not more than seven years and may be reappointed for a further term.

2.1.4.5 Public Servants Disclosure Protection Tribunal (PSDT)

- a. The Tribunal was established to enhance public confidence in the integrity of public servants. Its mandate is to hear reprisal complaints referred by the Public Sector Integrity Commissioner.
- b. The Tribunal can grant remedies in favour of complainants and order disciplinary action against persons who take reprisals.

- c. The Tribunal's mission is to contribute to the enhancement of an ethical culture in the public service through the impartial and timely disposition of cases. This includes:
 - ensuring that processes are fair and transparent;
 - ensuring that parties are treated fairly and impartially;
 - rendering decisions that are sound and well-reasoned;
 - informing key stakeholders and Canadians about its role and mandate; and
 - providing public access to the Tribunal's decisions.

2.1.4.6 Federal Public Sector Labour Relations and Employment Board (FPSLRB)

- a. The FPSRB administers the collective bargaining and grievance adjudication systems in the federal public service and for the institutions of Parliament, for the Royal Canadian Mounted Police (RCMP) members and reservists. Under the *Public Service Employment Act*, it also resolves complaints related to internal appointments and lay-offs in the federal public service.
- b. The Commission offers two main services:
 - adjudication - hearing and deciding grievances, labour relations complaints, and other labour relations matters and dealing with staffing complaints related to internal appointments, layoffs, the implementation of corrective measures ordered by the Board, and revocations of appointments;
 - mediation - helping parties reach collective agreements, manage their relations under those agreements, and resolve disputes and complaints without resorting to a hearing.
- c. The FPSLREB is an independent quasi-judicial statutory tribunal established by the *Federal Public Sector Labour Relations and Employment Board Act* (the PSLREBA), which came into force on November 1, 2014. The FPSLREB is responsible for administering the collective bargaining and grievance adjudication systems in the federal public service and in Parliament. It is also responsible for the resolution of staffing complaints related to internal appointments and layoffs in the federal public service. It can also receive complaints about appointments that were made to comply with an order in a previous FPSLREB decision, as well as revocations of internal appointments. The FPSLREB is also responsible for dealing with pay equity complaints filed by, or on behalf of, groups of employees pursuant to the *Canadian Human Rights Act*.
- d. The FPSLREB is the creation of a merger of the Public Service Labour Relations Board (PSLRB) and the Public Service Staffing Tribunal (PSST). The FPSLREB deals with matters that were previously dealt with by those former tribunals under the *Federal Public Sector Labour Relations and Employment Board Act* and the *Public Service Employment Act*, respectively.
- e. The Board is composed of a Chairperson, up to three Vice-Chairpersons and other commissioners, full-time and part-time, as required. They are appointed by the Governor in Council for terms of no longer than five years and may be re-appointed any number of times.

2.1.4.7 Transportation Appeal Tribunal of Canada (TATC)

- a. The Transportation Appeal Tribunal of Canada is a quasi-judicial body established in 2003 pursuant to the *Transportation Appeal Tribunal of Canada Act*. The Tribunal replaced the Civil Aviation Tribunal, which was established under Part IV of the *Aeronautics Act* in 1986. In addition to aviation, its jurisdiction extends to the marine, railway, motor vehicle, and international bridges and tunnels sectors.
- b. The Tribunal provides a recourse mechanism to the national transportation sector regarding administrative actions taken by the Minister of Transport and the Canadian Transportation Agency under various pieces of federal transportation legislation. The Tribunal holds review and appeal hearings at the request of those affected by these administrative decisions.
- c. The Tribunal's jurisdiction is expressly provided for under the *Aeronautics Act*, the *Canada Shipping Act, 2001*, the *Canada Marine Act*, the *Marine Transportation Security Act*, the *Railway Safety Act*, the *International Bridges and Tunnels Act*, the *Canada Transportation Act*, the *Motor Vehicle Safety Act*, and the *Navigation Protection Act*.
- d. The Tribunal has a commitment to openness and cooperation and is mandated to conduct informal, expeditious and fair hearings. It is led by two full-time members and comprises part-time members, appointed by the Governor in Council, who render decisions on cases referred to the Tribunal. All members are Canadian citizens from across the country who have expertise in one or more modes of transport within the jurisdiction of the Tribunal. Members are supported by a staff of twelve public servants working from its headquarters in Ottawa, Ontario.

2.1.4.8 Specific Claims Tribunal Canada (SCTC)

- a. This tribunal is a specialized tribunal whose mandate is to decide issues of validity and compensation relating to specific claims of First Nations.
- b. The Specific Claims Tribunal is part of the Federal Government's Justice at Last policy and a joint initiative with the Assembly of First Nations aimed at accelerating the resolution of specific claims in order to provide justice for First Nations claimants and certainty for government, industry and all Canadians.
- c. For the first time in Canadian history, First Nations will now have a choice to file a claim with the Tribunal - an independent adjudicative body comprised of up to 6 full-time federal judges appointed from Provincial Superior Courts across the country.
- d. The term "specific claims" generally refers to monetary damage claims made by a First Nation against the Crown regarding the administration of land and other First Nation assets and to the fulfillment of Indian treaties that have not been accepted for negotiation or that have not been resolved through a negotiated settlement within a specified time frame.

- e. The Tribunal consists of no more than six full-time members; or any number of part-time members, or combination of full-time and part-time members, so long as the combined time devoted to their functions and duties does not exceed the combined time that would be devoted by six full-time members. The Governor in Council establishes a roster of six to eighteen superior court judges to act as members of the Tribunal. The Chairperson and other members are appointed from the roster by the Governor in Council. Each member is appointed for a term not exceeding five years and holds office so long as he or she remains a superior court judge. Each member, on the expiry of the first term of office, is eligible to be reappointed for one further term.

2.1.4.9 Canadian Cultural Property Export Review Board (CCPERB)

- a. The Board is an independent decision-making body that reports to the Minister of Canadian Heritage and Official Languages. CCPERB determines whether cultural property is of outstanding significance and national importance with a view to protecting and preserving our artistic, historic, and scientific heritage in Canada and making it accessible to the public.
- b. Cultural property refers to artistic, historic, or scientific objects that may fall into any of the following categories:
 - objects recovered from the soil or waters of Canada (archaeological objects, fossils and minerals);
 - objects of ethnographic material culture (including Aboriginal, Métis and Inuit objects);
 - military objects;
 - objects of applied and decorative art;
 - objects of fine arts;
 - scientific or technical objects;
 - textual records, graphic records and audio-visual recordings (archival material including documents, photographs, maps, sound recordings and films);
 - musical instruments;
 - audiovisual collections (film, video, new media, including digital).
- c. CCPERB meets four times per year in order to:
 - review applications for refused cultural property export permits;
 - determine the amount of a fair cash offer for an institution or a public authority to purchase cultural property;
 - certify cultural property for income tax purposes.
- d. CCPERB consists of a Chairperson and up to nine other members appointed by the Governor in Council on the recommendation of the Minister of Canadian Heritage, and reports to Parliament through the Minister of Canadian Heritage.
- e. Members are selected for their expertise in a range of fields relating to cultural property, including professional expertise gained at art galleries, museums, archives, libraries or other collecting institutions in Canada, or as dealers in or collectors of art, antiques or other objects that form part of the national heritage.

2.1.4.10 Canadian International Trade Tribunal (CITT)

- a. The Tribunal adjudicates trade remedy, customs, excise tax, and federal procurement cases. The CITT also inquires into tariff and commercial matters for the Minister of Finance.
- b. Canada is a trading nation, and international trade makes a significant contribution to Canada's economic well-being. The Canadian International Trade Tribunal (the Tribunal) plays a central role in administering some of the important international and Canadian rules that govern trade.
- c. The Tribunal is an independent quasi-judicial body that reports to Parliament through the Minister of Finance.
- d. The Tribunal is mandated to act within five key areas:
 - i. Anti-dumping injury inquiries
 - To inquire into and decide whether dumped and/or subsidized imports have caused, or are threatening to cause, injury to a domestic industry.
 - ii. Procurement inquiries
 - To inquire into complaints by potential suppliers concerning procurement by the federal government and decide whether the federal government breached its obligations under certain trade agreements to which Canada is party.
 - iii. Customs and excise appeals
 - To hear and decide appeals of decisions of the Canada Border Services Agency made under the Customs Act and the Special Import Measures Act (SIMA) and of the Minister of National Revenue made under the Excise Tax Act.
 - iv. Economic and tariff inquiries
 - To inquire into and provide advice on such economic, trade and tariff issues as are referred to the Tribunal by the Governor in Council or the Minister of Finance.
 - v. Safeguard inquiries
 - To inquire into complaints by domestic producers that increased imports are causing, or threatening to cause, injury to domestic producers and, as directed, make recommendations to the Government on an appropriate remedy.
- e. The Tribunal has the powers of a superior court; some of its rules and procedures are similar to those of a court of law. At the same time, however, the Tribunal applies its rules and procedures in a less formal manner to promote accessibility, transparency and fairness.
- f. The Tribunal provides individuals and businesses with the opportunity to submit their evidence and views and to respond to other parties before it makes a final decision. It often uses requests for information and questionnaires to gather information during its proceedings.

- g. Frequently, the Tribunal holds hearings to allow parties to call witnesses and explain their points of view and present arguments. Hearings are open to the public and are usually held at the Tribunal's offices in Ottawa, Ontario, but may be held elsewhere in Canada depending on the specific circumstances of a given case. The Tribunal may also base its decisions solely on the written information filed before it or collected during the proceedings.
- h. The Tribunal has the power to subpoena witnesses and require parties to submit information, even if it is commercially confidential. Access to companies' confidential information is strictly controlled. Protecting confidential information against unauthorized disclosure is of utmost importance to the Tribunal.
- i. The Tribunal has little control over the volume and complexity of its workload and faces tight statutory deadlines for most of its cases.
- j. The Tribunal may be composed of up to seven full-time members, including a Chairperson, who are appointed by the Governor in Council for a term of up to five years. In addition, temporary members may be appointed.

2.1.4.11 Social Security Tribunal (SST)

- a. The Tribunal is an independent administrative body composed of a General Division and Appeal Division that makes quasi-judicial decisions on appeals related to the *Canada Pension Plan*, the *Old Age Security Act* or the *Employment Insurance Act*.
- b. The Governor in Council appoints full-time members for a 5-year term and part-time members for a 2-year term. However, the length of each term can be shorter.

2.1.4.12 Environmental Protection Tribunal of Canada (EPTC)

- a. The Environmental Protection Tribunal of Canada (EPTC) is comprised of group of expert adjudicators (referred to as "reviewers") who carry out review hearings of administrative monetary penalties (AMPs) and compliance orders issued by Environment and Climate Change Canada (ECCC) enforcement officers. The EPTC, formerly known as Environmental Protection Review Canada, is completely independent of the ECCC.
- b. Environment and Climate Change Canada enforcement officers have the authority to issue AMPs under the *Environmental Violations Administrative Penalties Act* and the *Environmental Violations Administrative Monetary Penalties Regulations*. AMPs may be issued in relation to designated violations under the following Acts: the *Antarctic Environmental Protection Act* and its regulations, the *Canada Wildlife Act* and its regulations, the *Canadian Environmental Protection Act, 1999* and its regulations, the *Greenhouse Gas Pollution Pricing Act* and its regulations, the *Migratory Birds Convention Act, 1994* and its regulations, the *International River Improvements Act* and its regulations, and the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* and its regulations.
- c. Anyone who has received an AMP may request an independent review by a reviewer. The reviewer is authorized to determine whether the person committed the violation and whether the amount of the AMP was calculated correctly. Reviewers' decisions regarding AMPs are final and, except in cases of judicial review under the *Federal Courts Act*, are not subject to appeal.

- d. Environment and Climate Change Canada enforcement officers also have the authority to issue orders to prevent a violation, stop an ongoing violation, or request that violations be corrected under the following legislation: the *Antarctic Environmental Protection Act*, the *Canadian Environmental Protection Act, 1999*, the *Canada Wildlife Act*, the *Greenhouse Gas Pollution Pricing Act*, the *International River Improvements Act* and the *Migratory Birds Convention Act, 1994*.
- e. Any person who has received a compliance order may request its independent review by a reviewer. The reviewer is authorized to confirm or cancel an order. The reviewer may also change, suspend, add or remove any provision or condition of an order. A reviewer's decision on orders can be appealed to the Federal Court — Trial Division.

2.1.5 Presentation of Public Services and Procurement Canada (PSPC)

2.1.5.1 Mission and role

- a. "Public Services and Procurement Canada (PSPC) is a key provider of services for federal departments and agencies. It supports them in the achievement of their mandated objectives as their central purchasing agent, linguistic authority, real property manager, treasurer, accountant, integrity adviser, and pay and pension administrator.
- b. The department's vision is to excel in government operations, and its strategic outcome and mission is to deliver high-quality, central programs and services that ensure sound stewardship on behalf of Canadians and meet the program needs of federal institutions."
- c. This statement is taken from PSPC's website. To complete the presentation, the reader may wish to refer to the "Mandate Letter" addressed to the Minister of PSPC and signed by Mr. Justin Trudeau, Prime Minister of Canada.

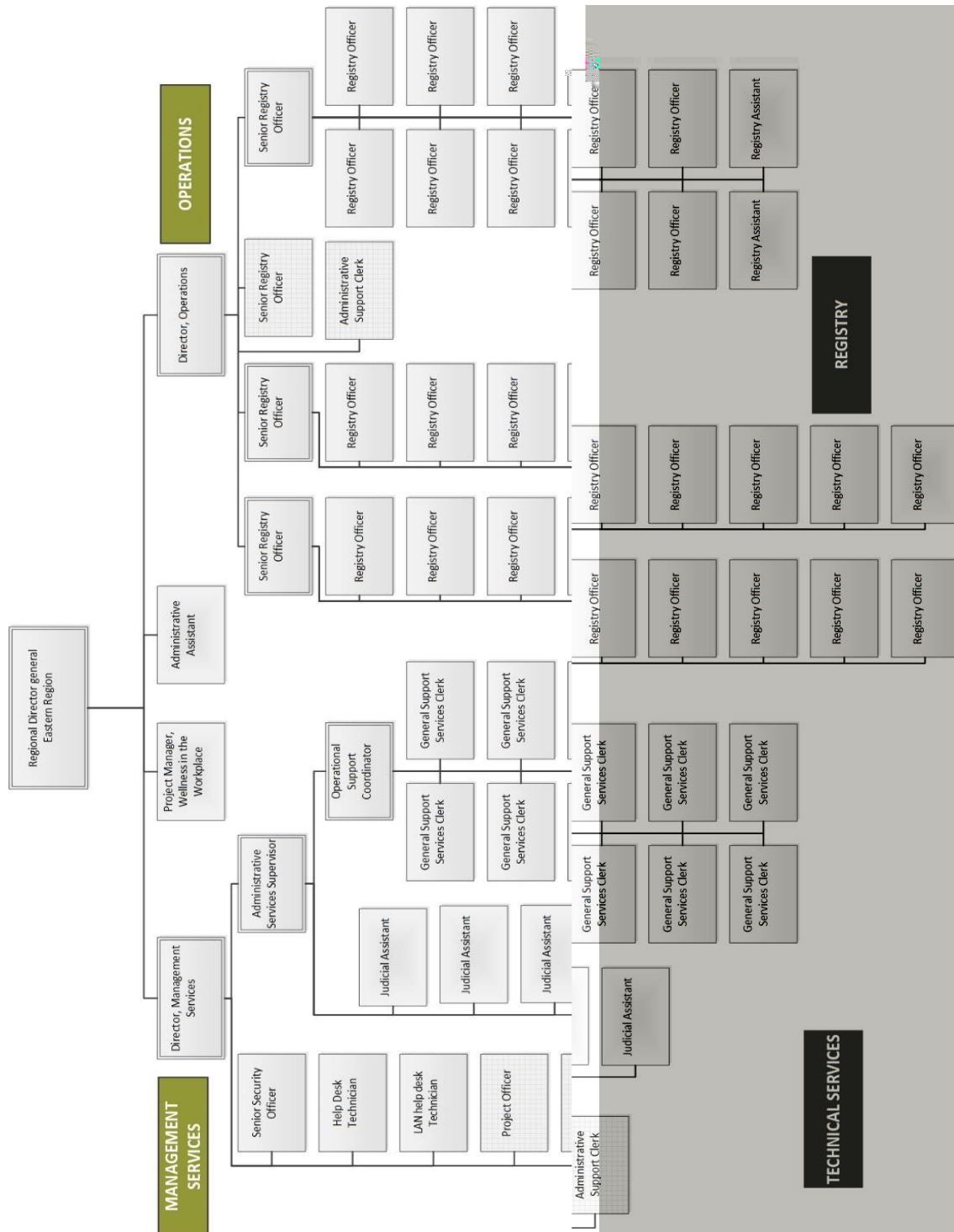
2.1.5.2 Real property

- a. PSPC manages one of the largest and most diverse portfolios of real estate in the country and is the Government of Canada's real estate expert.
- b. As such, Public Services and Procurement Canada (PSPC) has developed, in collaboration with CAS and ATSSC, a national strategy for housing federal courts and tribunals. The objectives and parameters of this strategy include:
 - relocating this type of facility to state-owned buildings;
 - improving the management of assets under PSPC's custodianship;
 - greening government operations, reducing the environmental footprint and improving sustainability;
 - PSPC's responsibility to provide accommodation to federal courts and tribunals, carrying out the real property component of this mandate through the Real Property Program - Real Property Services. The strategy will provide innovative, creative, cost-effective and timely solutions to real property needs. In addition, it will help improve access to justice, strengthening and supporting Canada's justice system and enhancing transparency;

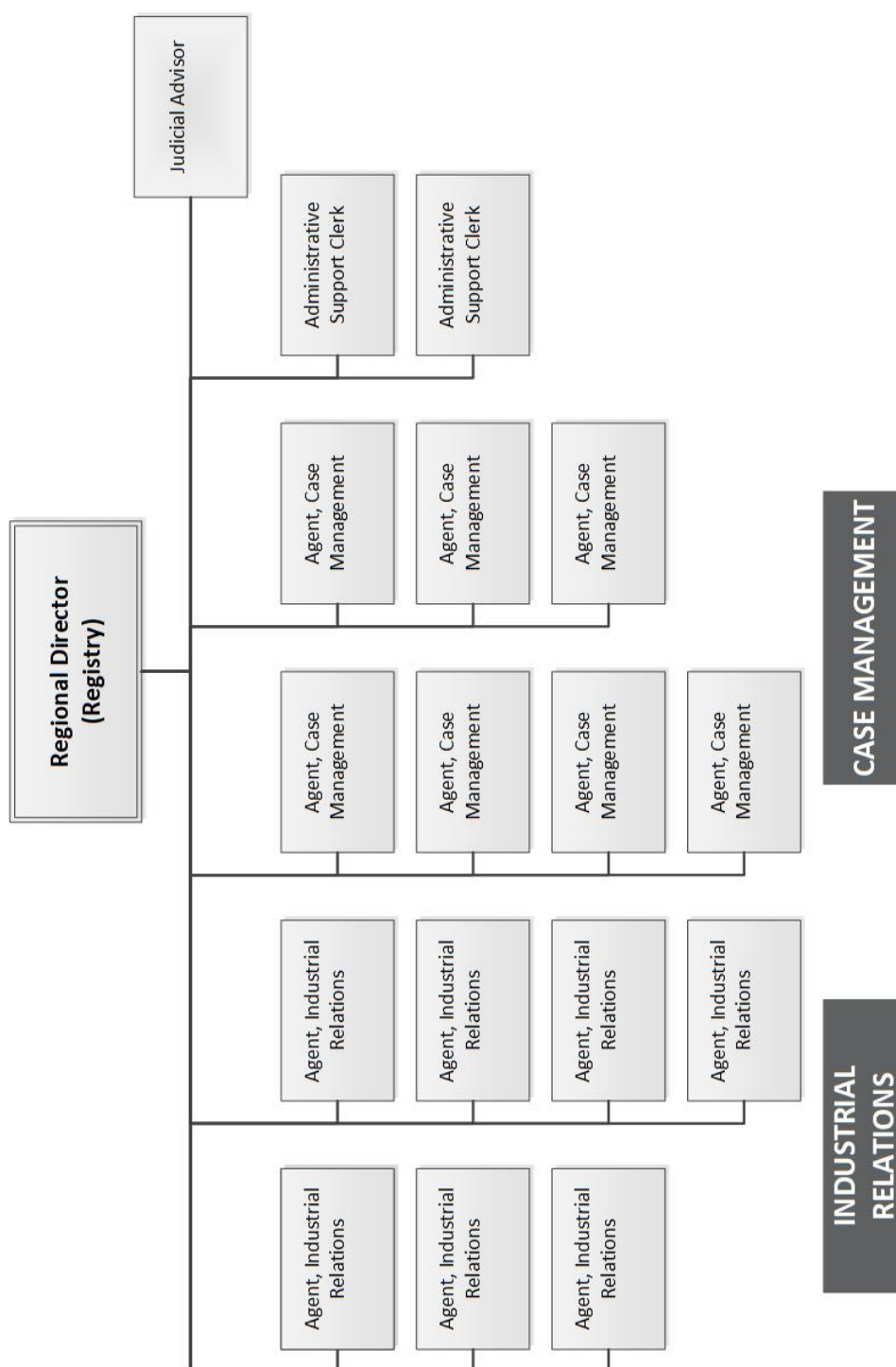
- support for the gradual digital shift for Canada's future in terms of facilities and the fitting up of office space, as well as long-term sustainable investments. The strategy will also serve to strengthen security in support of service continuity for citizens, facilitate the delivery of federal court and tribunal programs, and ensure the sustainability of the space and facilities provided by PSPC;
- in summary: enhanced security, sharing of common resources, a digital shift, technology and information security, easy access, perceived independence, flexible office space and facilities, functional and financial efficiency, sustainability and environmental friendliness.

2.2 Organizational structure

2.2.1 CAS Montréal organization – April 2020



2.2.2 ATSSC Montréal organization chart – April 2020



2.3 Functions and FAST

2.3.1 Overview

2.3.1.1 This section describes the functions of the organization in terms of people and the types of jobs involved in judicial and/or quasi-judicial processes. They are presented as follows:

- Registry;
- Management;
- Interpreters;
- Bailiffs;
- Law clerks;
- Judges/ member;
- Applicant;
- Defendant;
- Witnesses;
- Public.

2.3.2 Registry

2.3.2.1 Registrars are, in a way, the masters of the judicial (and quasi-judicial) process: they ensure that all the actions of the parties are coordinated and carried out at the right time. The duties of the registrar vary according to the court and the practices of the courthouse where he or she works. The following information relates to the duties of the Court Registrar, who is sometimes referred to as a court clerk.

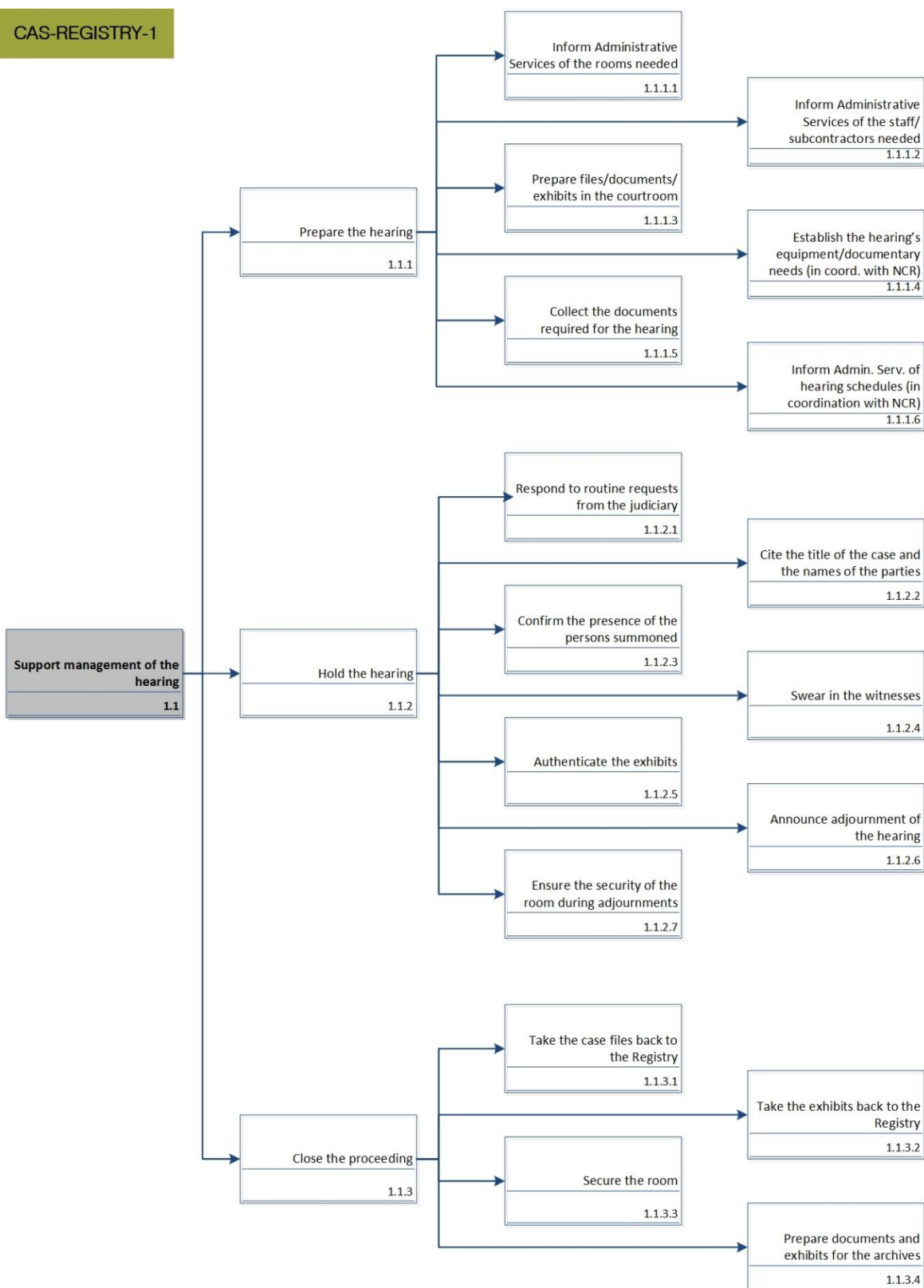
2.3.2.2 The following FAST diagram presents the main functions of the Registry before, during and after a trial or hearing.

2.3.2.3 Methods and procedures may vary, depending on the Court that the registry will serve. Significant differences exist between the federal courts, the federal courts of appeal and the Tax Court of Canada. However, these differences are mainly related to content and some specific procedures: the FAST diagrams are general enough to adequately illustrate the functions of the registry, regardless of the Court it serves.

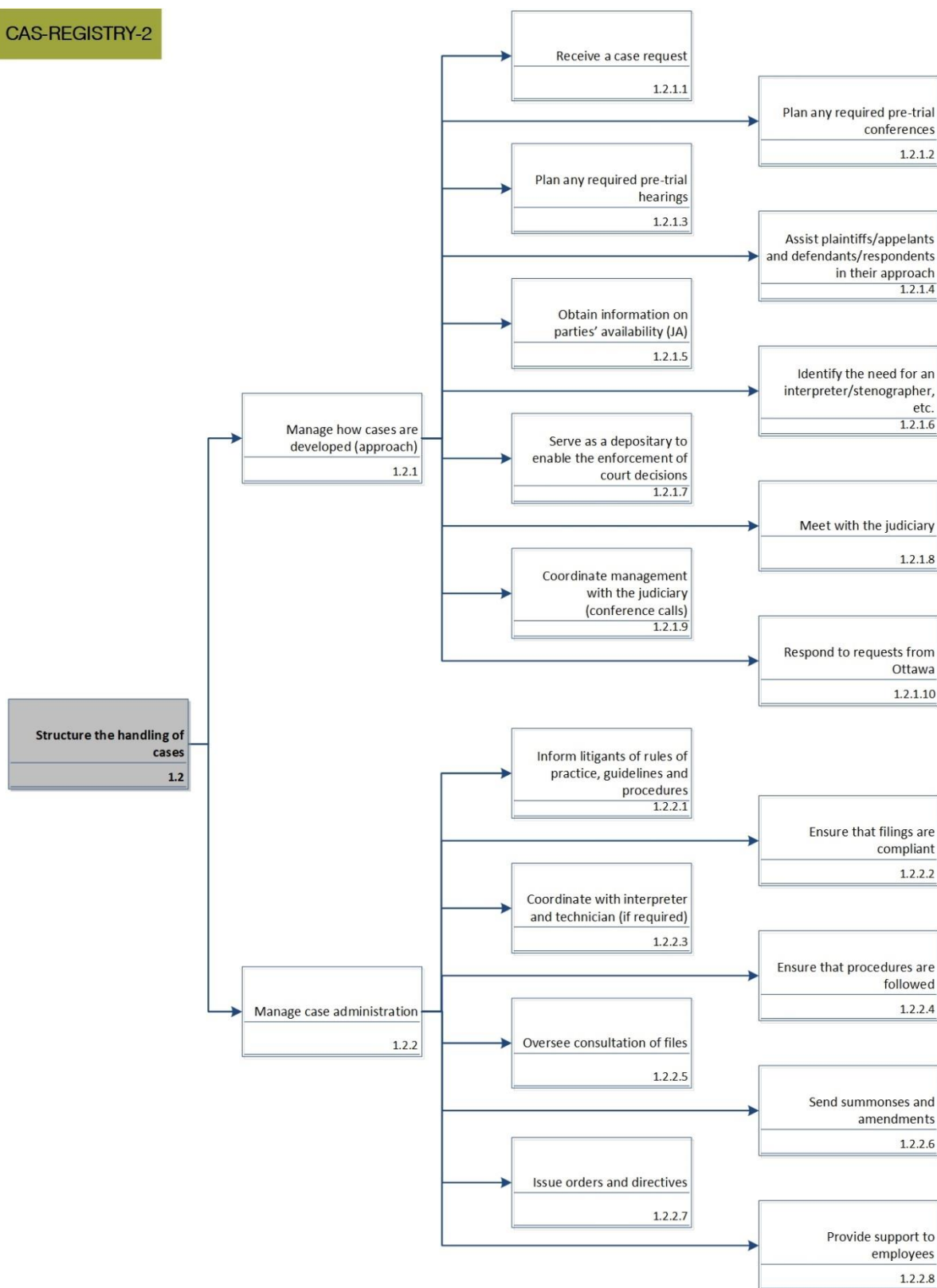
2.3.2.4 The CIRB has a registrar in the person of its regional director. The other administrative tribunals that occasionally hold hearings in Montréal will have their registrar(s) with them.

2.3.2.5 The Registry, as the master of the process, will be required to assist the public in the preparation and management of the hearing file, as illustrated by FAST “Registry 3.” A section of the NMJC will be dedicated to these functions.

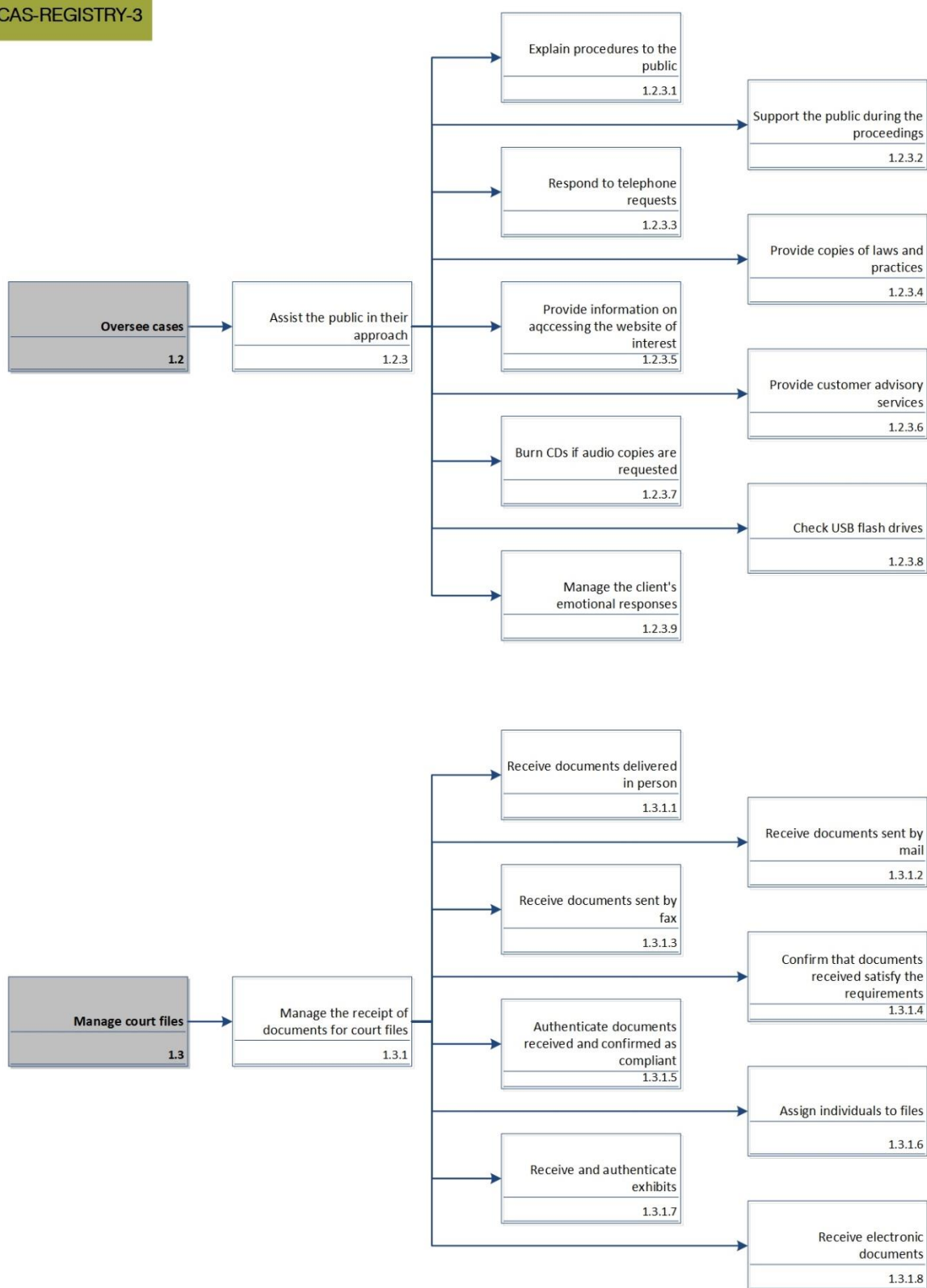
2.3.2.6 Generally, there is no specific training required to become a registrar. The NMJC therefore provides training to its registrars. Theoretical training for this purpose will take place on the premises of the NMJC, and practical training will be provided in the form of shadow training, under the supervision of a Senior Registry Officer.



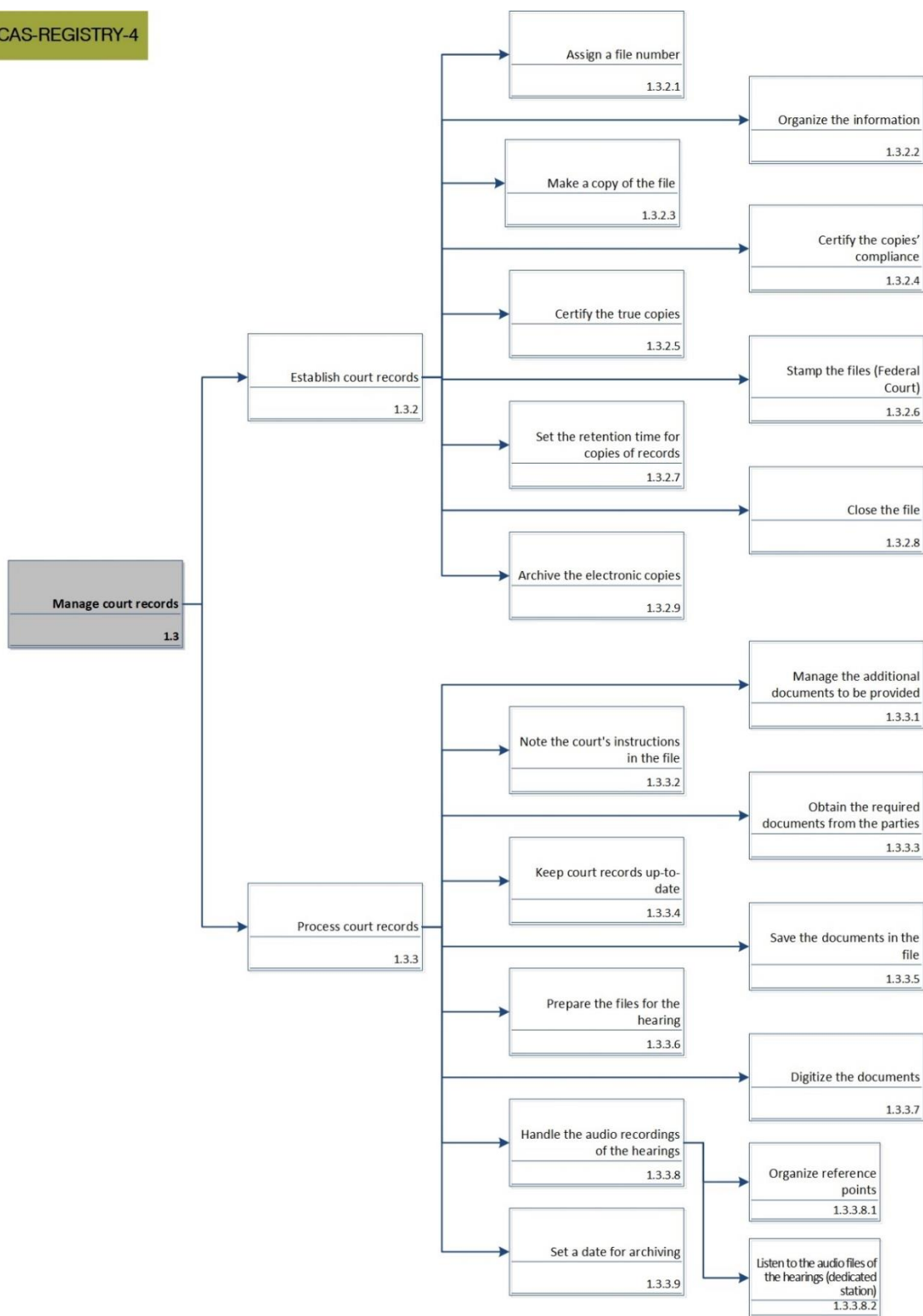
CAS-REGISTRY-2

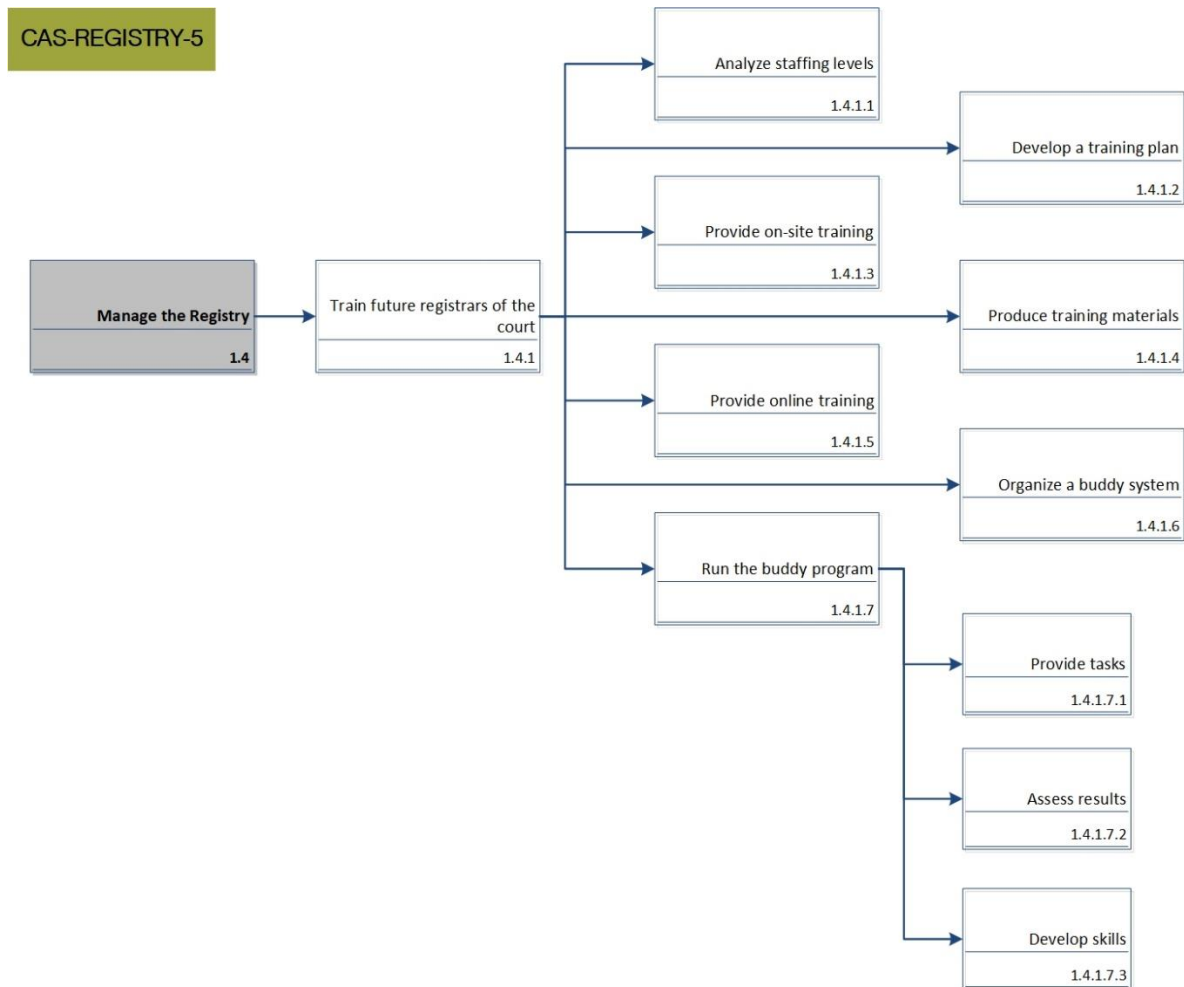


CAS-REGISTRY-3



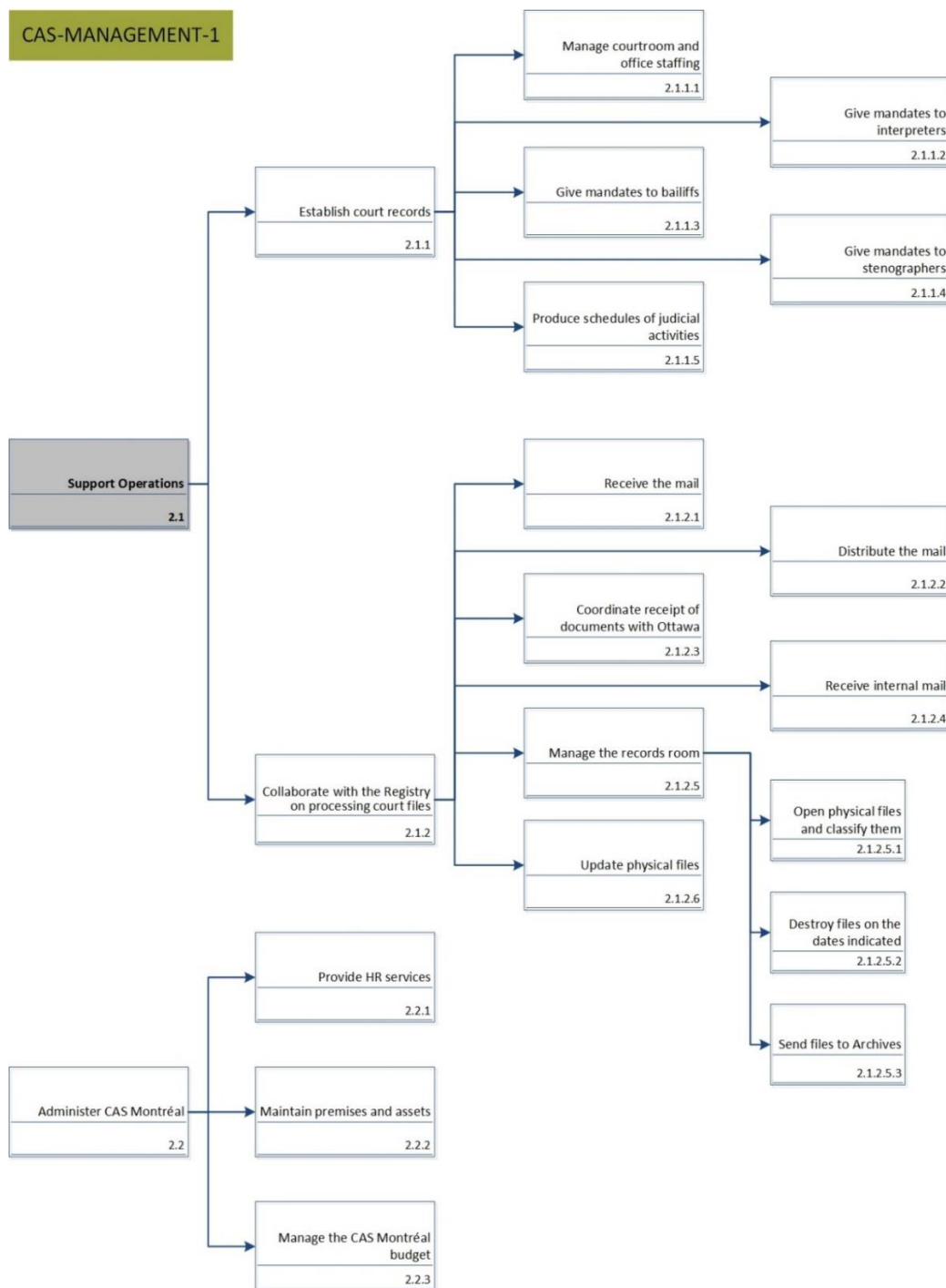
CAS-REGISTRY-4





2.3.3 Management (CAS)

Management constitutes, among other things, the executive of the Project Owner. While the Registry plans the needs of the trial in terms of time, resources and space, it is Management that will reserve the required spaces, commit the required resources, and manage the logistics of the hearing. In addition, the day-to-day administrative services are provided by Management.



2.3.4 Interpreters

- 2.3.4.1 The Courts operate in both official languages. When required, a hearing may provide simultaneous translation services. The interpreters will be contractual employees hired by the NMJC and will always be accompanied by a technician responsible for operating the equipment used by the interpreters.
- 2.3.4.2 Other languages may be used at a hearing, whether it is that of a newcomer to Canada or that of a First Nations representative. If interpretation is required in a language other than one of the two official languages, the requesting party shall arrange for such services accordingly. The process will be called “consecutive interpretation” and will be conducted directly from the floor of the hearing room.

2.3.5 Court ushers (CAS)

- 2.3.5.1 The main functions of a court usher are:
- Preparing the courtrooms;
 - Opening the hearing;
 - Receiving witnesses;
 - Enforcing the rules of conduct in the courtroom;
 - Accompanying and assisting the judge when he or she moves from one place to another.
- 2.3.5.2 Before the judge arrives, the court usher checks that everything is in place for the hearing to run smoothly. Is the room ready? Is the equipment required by the judge available? Have the legal counsel arrived? The court usher is also the one who escorts the judge from his or her office to the courtroom. In addition, the court usher will be at the judge's service during the hearing: for example, at the judge's request the court usher will make photocopies of documents.
- 2.3.5.3 During the hearing, the court usher ensures that everyone in the room behaves properly. He or she is asked to accompany witnesses.
- 2.3.5.4 Court ushers are contractual employees hired by the NMJC.

2.3.6 Law clerks (CAS)

- 2.3.6.1 The law clerk is a member of the CAS personnel and serves the judiciary. The law clerk is usually assigned to a judge for a period of one year.
- 2.3.6.2 The law clerk, working under the administrative authority of his or her immediate superior and the functional authority of the judge, provides administrative support arising from judicial activity and as required for the proper functioning of the office of the judge.

2.3.6.3 In this capacity, the law clerk designs, drafts and revises administrative documents related to judicial activity in connection with the judge's subpoenas and communications with lawyers and other members of the judiciary. The law clerk assists the judge in drafting adjudications and makes suggestions as required. In certain types of adjudications, the law clerk prepares draft adjudications based on standardized templates, using the information in the documents on file and validating the points to be covered, while bringing certain issues to the judge's attention. The law clerk manages the judge's agenda, organizes his or her travel, screens telephone calls, welcomes visitors and handles all the correspondence received.

2.3.6.4 The law clerk also performs various functions related to the activities of the court, particularly when the judge is sitting in court. The law clerk verifies the nature and relevance of an application before submitting it to the judge. The law clerk assists the judge in preparing the files entrusted to him or her, ensuring that relevant information and documents are on record and taking care of the logistics of management sessions, where applicable.

2.3.7 Judges and members

2.3.7.1 All members of the judiciary in Canada, regardless of the court, are drawn from the legal profession. Judges appointed by the federal government are required to have been a member of a provincial or territorial bar for at least ten years.

2.3.7.2 The independence of the judiciary in Canada is guaranteed both explicitly and implicitly by different parts of the Constitution of Canada. This independence is understood to consist in security of tenure, security of financial remuneration and institutional administrative independence. One exception to security of tenure is the retirement age of 75 years.

2.3.7.3 Cases before the federal courts require the presence of one judge for TCC and FC hearings and three judges for Courts of Appeal (both Federal and Martial). In addition to hearing cases, the judges:

- conduct certain mediation sessions;
- participate in national and regional judicial conferences;
- interpret the law, assess the evidence before them;
- control the conduct of the hearings, inquiries and trials before them.

2.3.7.4 The government appoints the chairpersons and members of administrative tribunals. Appointments are for a specified term that varies in length depending on the tribunal's enabling legislation, the preference of the minister, and, in some cases, the preference of the individual. Appointments can be for full-time or part-time positions. Chairpersons and members preside, hear cases and render judgment on the same basis as the Canadian judiciary. Cases before the CIRB require the presence of 3 sitting members.

2.3.8 Applicants and defendants

2.3.8.1 The Canadian justice system is what is known as an adversarial system of justice – legal cases are contests between opposing sides, which ensures that evidence and legal arguments will be fully and forcefully presented.

2.3.8.2 The hearing will adopt a course of events in which plaintiff and defendant will present and argue evidence and arguments sequentially and in turn before the magistrate.

- 2.3.8.3 Both the plaintiff and defendant are usually represented by attorneys. In some cases, 4 to 6 attorneys may represent each of the two parties. In addition, it is not uncommon for a party to represent himself or herself without the assistance of an attorney.
- 2.3.8.4 The parties are responsible for preparing their case, assembling their documentation, evidence, excerpts of evidence, witnesses, etc., in order to make their case. They will come to the NMJC with all the required documents, objects and persons. In some cases, the documentation and/or elements of evidence may be voluminous: we are talking here about several boxes of documents (often dozens), several boxes of evidence and large items of evidence. For very large items of evidence, it is accepted that the Court will move to the location of the evidence during arguments about it.
- 2.3.8.5 Cases vary in length, ranging from a few hours to several weeks. In cases lasting more than a few hours, the parties will attend the NMJC daily to:
- work on developing the case;
 - consult with their witnesses;
 - consult with their client(s) on certain issues and anticipated developments;
 - eat lunch and dinner if the hearing continues into the evening;
 - communicate with external parties (a firm, etc.); and
 - temporarily store personal effects and accessories.
- 2.3.8.6 It is required by the decorum of the courts that legal counsel come to court dressed in a robe, white shirt and collar and dark clothing.

2.3.9 Witnesses

- 2.3.9.1 Both applicant and defendant may present witnesses at the hearings. Witnesses will appear at the NMJC according to the schedule assigned to them by their counsel. They are called and directed to the witness stand, they provide their testimony and they withdraw once it has been given.
- 2.3.9.2 Some testimony can take up a good part of a hearing and go through the break periods taken in the hearing. The court will then make special arrangements with the witness to ensure the authenticity of the testimony.
- 2.3.9.3 Some witnesses will provide testimony remotely (i.e., from outside the NMJC). The procedure and rules for giving evidence will be maintained. The NMJC will use video-conferencing technology for this purpose.

2.3.10 Public

Unless they are held in camera, hearings in the courts and tribunals are open to the public. The number of seats is limited and is governed by the rules in the building codes concerning the occupancy of public rooms: in this instance, the maximum occupancy of a courtroom is 60 persons, representing an occupancy of between 40 and 50 members of the public, once the court personnel and legal counsel have been counted.

2.4 Characterization of the main functions

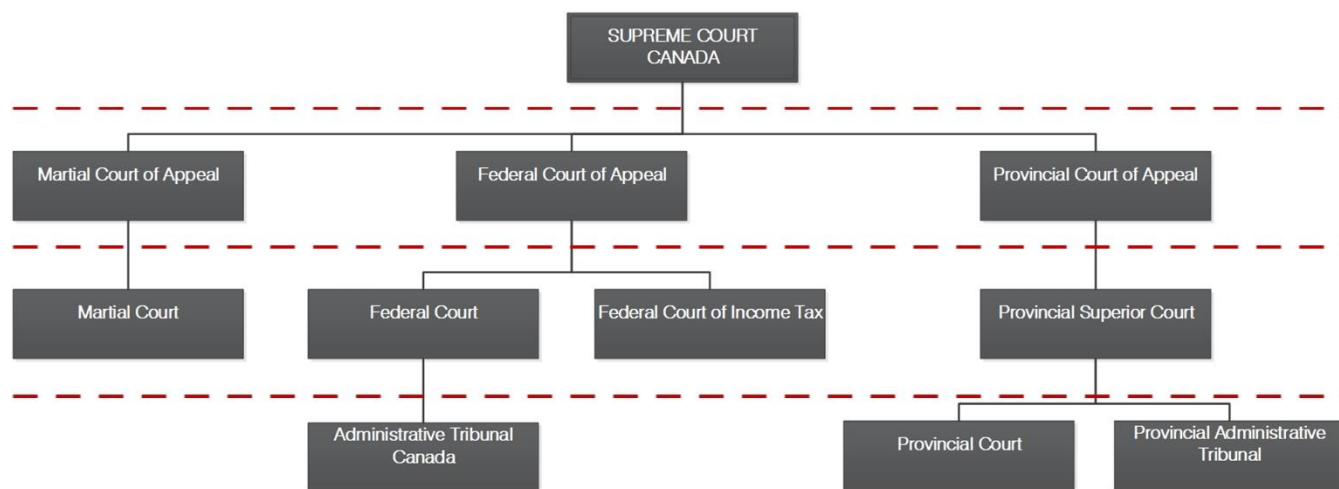
The management and conduct of both the CAS and the ATSSC are based, among other things, on having the characteristics described below.

2.4.1 Judicial independence

- 2.4.1.1 Judicial independence is defined as the state in which the members of a body are free to decide the disputes brought before them, in accordance with the law, being free from any undue influence and without fear of any negative consequences for them that might result from their decisions.
- 2.4.1.2 Judicial independence is based, among other things, on the separation of legislative and executive powers from the judiciary. In practice, judicial independence is based on the judges' financial security and security of tenure, as well as on the administrative independence of the judiciary, with this being the *raison d'être* of the CAS for the judiciary.
- 2.4.1.3 Although not formally part of the Canadian judicial system because they are not officially "courts," administrative tribunals are an integral part of the system created in Canada by the government to resolve disputes. However, the principle of judicial independence does not fully apply to administrative tribunals: the members and chairpersons of the tribunals do not profit from the same conditions that Canada accords to the Canadian judiciary. In addition, the Executive, in the person of the Minister of Justice and Attorney General of Canada, is the head of the ATSSC.
- 2.4.1.4 Accordingly, the operations of the CAS will be separate from those of the ATSCC and vice versa, so as not to compromise judicial independence. Furthermore, there can be no "appearance" of a link between the two operations. The general public, plaintiffs and defendants, employees and contractors will therefore be required to unequivocally understand the difference between judicial processes and administrative tribunal processes.

2.4.2 Judicial system

- 2.4.2.1 The Canadian judicial system is organized as follows:



- 2.4.2.3 Like judicial independence, the impartiality of the judiciary rests, among other things, on it being impossible for a magistrate of first instance to influence a magistrate of second instance who is hearing an appeal in a case presided over by the former. So operations are compartmentalized between the different levels. This will be particularly true of the Federal Court of Appeal, as it operates alongside the Federal Court and the Tax Court of Canada. As for the Court Martial Appeal Court, it will be housed in the NMJC with the military courts all located elsewhere.
- 2.4.2.4 The previous article deals extensively with the separation of the Administrative Tribunals from the Judicial Courts, so that there is no need to develop the subject further.
- 2.4.2.5 Lastly, it is customary to express the above-mentioned levels “physically,” by assigning the top floor of a building to the Federal Court of Appeal, then assigning the floor below it to the Federal Court and ending with the Tax Court of Canada on the lowest floor.

2.4.3 Centralization of services - regionalization

- 2.4.3.1 The majority of services offered by both the CAS and the ATSSC are provided from Ottawa. Headquarters in the National Capital is responsible for providing most safety/security, finance, human resources, records management and archiving, information technology, property management, materiel management and procurement services, and in some cases it provides all such services.
- 2.4.3.2 The NMJC will therefore house the Regional Offices for Montréal, Eastern Canada. The personnel shown in Section 2.2 - Organizational Structure therefore generally represents the staff members assigned to the regional offices responsible for Operations and Management.
- 2.4.3.3 Judges (CAS) are required to elect Ottawa as their place of permanent residence. Their offices are therefore at the headquarters in the National Capital. The “judges’ offices” that will appear in the project summary tables are therefore temporary workplaces assigned to members of the judiciary when they are in Montréal on business. For this purpose, they will be considered special-purpose spaces (SPS) for the purposes of the FTP.
- 2.4.3.4 One exception is the Canada Industrial Relations Board (CIRB), inasmuch as the Board is headquartered in Montréal. Therefore the NMJC will house the workspaces (offices) of the four members of the Board.
- 2.4.3.5 In addition, seven administrative tribunals in addition to the CIRB occasionally sit (when required) in Montréal. They are: the CART, the CHRT, the TC, the PSDPT, the FPSLRB, the TATC and the SCTC. With their respective headquarters located in Ottawa, these tribunals essentially require space in Montréal for hearing and/or media purposes. Currently, given the lack of space available at the CIRB, these tribunals rent meeting space elsewhere in the Montréal market. One of the intentions in this project is therefore to rectify this situation and to provide the NMJC with the space required to repatriate the activities of these tribunals and to stop renting space externally.

2.4.4 Back-up role

Both the CAS's and the ATSSC's IT departments are planning to build a server-based IT infrastructure capable of providing full redundant server back-up in their respective head offices in Ottawa.

2.4.5 Decorum

2.4.5.1 Rules of conduct

- a. Court personnel and all attorneys are required to wear the prescribed attire.
- b. The public must be properly dressed. Coats, hats and seasonal items are not permitted.
- c. No food or drink is permitted. Water will be provided to court personnel and to the applicant and defendant.
- d. Reading newspapers, taking photographs, filming, broadcasting, television, and the use of cellular telephones and pagers are prohibited during hearings.

2.4.5.2 Position of magistrates versus position of chairpersons or members

- a. Magistrates of the Federal Courts will occupy a podium. The podium is for their exclusive use, and it may not be approached by anyone without the judge's permission.
- b. The chairpersons and members of the administrative tribunals occupy the "floor" of the hearing room on the same basis as the legal counsel and personnel. The disposition of the parties on the floor will reflect the conciliatory and mediation attitude that characterizes these Tribunals.

2.4.6 Witnesses

2.4.6.1 Both the applicant and the defendant will present witnesses at the hearings. The rules of the Court require that witnesses do not learn about the proceedings before testifying, in order to ensure that their testimony is not influenced by the proceedings.

2.4.6.2 In addition, if there is a break in the testimony, the witness will be isolated from others until his or her testimony can resume, to prevent external influence.

3. THE PROJECT

3.1 Project guiding principles and objectives

3.1.1 Departmental mandate

Incorporate the objectives set forth in the Prime Minister's letter "Minister of Public Services and Procurement Mandate Letter" (see Appendix 3) in terms of procurement, transparency, respect for the practices of Indigenous peoples, clean energy, etc.

3.1.2 Brand image

Ensure, through the design of the building, the expression of an institutional image representing the symbol of the Canadian judicial system and the values of the judicial clients, while respecting client needs and requirements (security, program, etc.).

3.1.3 Stakeholder buy-in

Obtain buy-in on the design from the various internal and external government stakeholders (PSPC, CAS, ATSSC), the City of Montréal, the Government of Quebec's *Ministère de la Culture et des Communications*, the *Ordre des architectes du Québec*, other potential interest groups, and the public. Participate in interviews, presentations and agreements with the City of Montréal.

3.1.4 Optimal and exemplary architectural quality

Ensure that the building concept is of optimal, exemplary and integrated architectural quality, given the context of the heritage district of Old Montréal and while meeting the demanding federal requirements, and help build the heritage of Québec's major metropolitan area. Adhere to sustainable development principles, in particular programs such as LEED, WELL, carbo-neutrality, life-cycle analyses, and exemplary energy management programs. Ensure that the project is well integrated into its urban and heritage contexts, and that it enhances them.

3.1.5 Sound management of public funds

Meet project timelines and respect PSPC's approval processes, while ensuring sound and transparent management of public funds by focusing on long-term investment value.

3.1.6 Safety and security

Through the building's design, provide the physical and operational security required by the judicial institution.

3.1.7 Judicial independence and judicial impartiality

Propose facilities that comply with the presumptions of *judicial independence* by providing for exclusive circulation areas and occupancies, the controlled sharing of spaces, in order to reduce the presumption of independence as much as possible. Propose facilities that comply with the principles of *judicial impartiality* by organizing circulation spaces for the judiciary and by zoning spaces and services according to their occupancy, in order to reduce the presumption of independence as much as possible. Standardize and harmonize judicial areas.

3.1.8 Sharing of spaces

Provide for flexible space-sharing arrangements that can accommodate judicial activities and the specific needs of the various organizations.

3.1.9 Changes in occupancy requirements

Allow for future changes in occupancy requirements (increases in personnel and utilization rates) by planning flexible and adaptable spaces.

3.1.10 Fostering a paperless environment

Foster a paperless environment by developing the entire project in a fully digital mode of operation.

3.2 Site and urban environment

3.2.1 Land

3.2.1.1 The project site is located in the heart of Old Montréal, on lot 1 180 954 of the Quebec cadastre. The surface area of the lot is approximately 2,060 m² and the geographic coordinates of the site are 45° 30' 20.69" (latitude) and 73° 33' 23.87" (longitude). The land is irregular in shape and its surface is relatively flat, at the same level as the surrounding properties. The site, which is currently being used as a municipal parking lot, is 95 % covered in asphalt with the other 5 % in grass, and it has 53 parking spaces. There is a small reception building (guard house) in the centre of the site.

3.2.1.2 The property is located approximately 350 metres west of the St. Lawrence River. Underground water is expected to flow eastward, i.e., toward the St. Lawrence River. There are no potable water supply wells listed in MELCC's hydrogeological information system within a one-kilometre radius of the site. The district is served by a municipal water supply, but the site studied is not currently connected to it because it is being used as a parking lot.

3.2.1.3 With regard to the City of Montréal's zoning of the site, it is located in Zones 0128 and 0390, category M.7 (see the zoning information provided in Appendix 4). This includes residential uses as well as retail, service and light industrial establishments characteristic of downtown Montréal, as well as community and institutional facilities. The zoning of the site is therefore mixed (residential and commercial). The planned use of the site for the new judicial complex project would be classified as a commercial use. (See the land use map and the excerpt from the *Règlement sur les plans d'implantation et d'intégration architecturale* (PIIA) in Appendix 4 for the various uses authorized in category M.7 (available in French only).

3.2.2 Certificate of location

3.2.2.1 The following text refers to the certificate of location (in French only) in Appendix 2. The study revealed the presence of numerous walls and vestiges of walls along the lot lines. In the event that these structures cannot be demolished without weakening the adjacent buildings, agreements for their use and maintenance will need to be reached with the owners of the adjacent sites.

3.2.2.2 There are various encroachments on the site (walls, ladder, stoop, sign and wooden box), and they shall be analyzed in the event that they are to be removed, or if permissions or servitudes are to be granted. Ventilation openings, windows and a glass door will also need to be analyzed as they may need to be blocked off, or if tolerance, view and/or access servitudes are to be granted.

3.2.2.3 In the passage on the ground floor of the building erected on the adjacent site (to the northeast) and designated as Lot 3 482 703, a servitude of view and of right-of-way has been granted in favour of several lots, including Lot 1 180 954 (the subject of this project). A servitude of right-of-way for pedestrian passage on Lot 1 180 954 has been granted in favour of Lot 1 180 955 in order to allow access to Saint-Jacques Street or Notre-Dame Street West from the rear of the building erected on Lot 1 180 955 (there is a door in the northwest wall of this building). The site of this right-of-way servitude is at the discretion of the owner of the servient land (lot 1 180 954). The right of way is subject to a minimum width of 1.1 m and a minimum height of 2.1 m.

3.2.3 Urban and heritage context

3.2.3.1 This section presents a summary of the results of our verifications and of various studies that have been conducted. They can be found in the appendices in their full or excerpted versions:

- a. Archaeological excavation at the site, prepared by Arkéos inc. in 2007 (excerpts) - see Appendix 9;
- b. Archaeological supervision of geotechnical boreholes, prepared by Arkéos inc. in 2020 (excerpts) - see Appendix 9; and
- c. Analysis of the Presentation of Heritage, prepared by PSPC in 2020 (complete version) - see Appendix 10.
- d. Another excavation and archaeological study, for a parcel of land that had not been studied, remains to be completed in the summer of 2020.

3.2.3.2 The land acquired by PSPC for the NMJC project is located within the perimeter of Montréal's declared heritage site (Old Montréal), whose heritage value and defining characteristics are recognized at the municipal and provincial levels. This district has been associated with the administration of justice since the 18th century. Three buildings in the area still bear witness to historic and current judicial activities: the Old Courthouse, the Ernest-Cormier Building and the Montréal Courthouse. The NMJC will complement this identity by adding the federal courts.

3.2.3.3 The most striking buildings on this city block are located near Place d'Armes: the New York Life Insurance Building and the Aldred Building are the most important, but the other buildings also bear witness to changes in the built environment from the 1860s to the 1930s.

3.2.3.4 The vicinity of the project site is characterized by:

- a. Residential buildings, restaurants and shops, and the Montréal Courthouse to the north and northeast;
- b. Residential buildings, restaurants and shops, the Société des Alcools du Québec to the east and south-east (across Notre-Dame Street West);
- c. Residential buildings, restaurants and boutiques, a hotel and a dance studio and the Notre-Dame Basilica of Montreal to the south and southwest;

- d. Apartment buildings, office buildings, restaurants and shops to the west and north-west (across Saint-Jacques Street).

3.2.3.5 The following table describes the neighbouring properties within a 100 metre radius and their environmental impact on the site.

Table 3. Description of Neighbouring Properties

Direction	Description	Risk of environmental impact
North and northeast	Residential and commercial: <ul style="list-style-type: none"> - Residential buildings - Restaurants and boutiques - Montréal Courthouse - Judicial services 	Negligible: the research and visits did not identify any activities or facilities that represent a risk to the studied site.
East and southeast	Residential and commercial: (other side of Notre-Dame Street West) <ul style="list-style-type: none"> - Residential buildings - Restaurants and boutiques - Société des Alcools du Québec - Notre-Dame Basilica 	
South and southwest	Residential and commercial: <ul style="list-style-type: none"> - Residential buildings - Restaurants and boutiques - Hotel - Dance studio 	Average: the research and visits did not identify any activities or facilities that represent a risk to the studied site.
West and northwest	Residential and commercial: (other side of Saint-Jacques Street West) <ul style="list-style-type: none"> - Residential buildings - Restaurants and boutiques - La Presse newspaper 	Negligible: the research and visits did not identify any activities or facilities that represent a risk to the studied site.

(Table taken from the Akifer report - See excerpts in Appendix 7.6)

- 3.2.3.1 Part of the land was occupied by three houses, in succession, from 1651 until around the 1900s, by various factories, shops (selling shoes, church ornaments, briefcases, school equipment, etc.), offices and, since the 1950s, by a parking lot.
- 3.2.3.2 Although the land itself does not have a heritage designation, it is of historical interest because of its location, and its archaeological interest was confirmed in several excavations in the 2000s. The various occupancies of the site reflect the major phases in the development of Old Montréal, for which there is documentary and archaeological evidence.
- 3.2.3.3 See Appendix 4 for a full analysis of the site and its heritage.

3.2.4 Study of the site's archaeological potential

- 3.2.4.1 Two archaeological inventories were conducted in 2002 and 2003 on the site of the future NMJC. In 2002, nine exploratory trenches were dug in areas that could contain vestiges of the old building along Notre-Dame and Saint-Jacques Streets, as well as in the courtyard areas located in the centre of the site. The 2003 inventory consisted of a more in-depth examination of the northern part of the site along Saint-Jacques Street. Two trial excavations were dug in the cellars of the more recent buildings, in search of older vestiges.
- 3.2.4.2 The archaeological inventory carried out in 2002 was a direct result of the recommendations made in a study of the site's potential. This exercise allowed an initial assessment of three areas:
- The northern zone at the site of the former building along Saint-Jacques Street was considered to have little to no potential;
 - The southern zone, at the site of the former building along Notre-Dame Street, presented an undetermined potential;
 - The central zone, at the location of the backyards, presented a high potential.
- 3.2.4.3 Eleven archaeological trenches, dug in 2002 and 2003, revealed that the archaeological soils are still in place in the central area of the site.
- 3.2.4.4 The central area of the site is of major archaeological interest: architectural vestiges and artefacts associated with the operation of an ice house (the Gervaise ice house) or latrines from the 18th century. However, some developments associated with the first half of the 20th century (such as underground conduits or oil tanks) have disturbed the integrity of the archaeological soils. It is recommended that an archaeological excavation be carried out of this part prior to any development of the site.
- 3.2.4.5 The western part of the core area is of minor archaeological interest, as developments in the first half of the 20th century are likely to have significantly disturbed the soils. As a result, no recommendations have been made for additional archaeological interventions in this part of the property.
- 3.2.4.6 All the test pits drilled in the right-of-way of the buildings located along Notre-Dame and Saint-Jacques Streets indicate the presence of deep basements that have completely eradicated all traces of architectural remains and soils from occupations prior to the second half of the 19th century.

3.2.4.7 The following table illustrates the various areas of archaeological potential on the site.

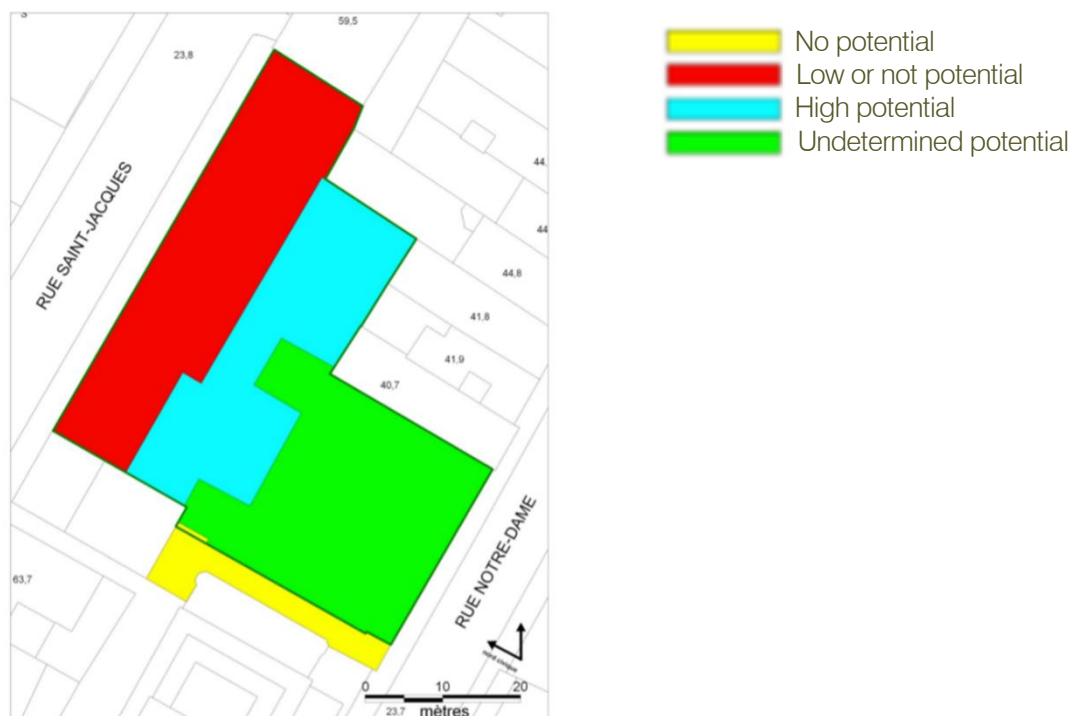


Figure 2: Lot 4B (BjFj-119) – Identification of areas of archaeological potential

3.2.4.8 Refer to Appendix 9 for more detailed excerpts from the relevant archaeological excavation reports.

3.2.5 Presentation

3.2.5.1 As part of the process by which the federal government acquired the land, the City of Montréal expressed expectations in terms of the integration and presentation of archaeological heritage. This represents a commitment to the City. The project shall therefore present all the data on the site's past:

- The design of the NMJC shall take into account the location of the site within the perimeter of the declared heritage site of Montréal (Old Montréal);
- The evidence (both documentary and archaeological) shall be presented to foster a better understanding and greater appreciation by the public of the heritage of previous generations:
 - At a minimum, a portion of the presentation project should be accessible to the general public (subject to the security requirements described in section 5.9);
 - Another part of the presentation project will target the building's users. Three categories are suggested: exhibition, integration into the design, and artistic initiatives;
 - At least part of the project should include exhibition strategies, with the intention of explicitly communicating the heritage significance of the site and interpreting its meaning through visual media. However, the project may combine concepts from all three categories;

- The content to be presented first and foremost is that of the Gervaise ice house and the interpretation subjects that flow from it, but other subjects could also be incorporated; and
- It is possible to combine approaches or subjects, with the goal of reaching various audiences and different communication targets.

3.2.5.2 The report entitled Analysis of the Presentation of Heritage, prepared by PSPC in 2020 and attached as Appendix 10, provides a more detailed description of the heritage data and the presentation principles and proposals.

3.3 Standards, codes and reference documents

3.3.1 General

The project, at the various stages of its development (feasibility study, FTP, design, construction) will seek to comply with the following regulations, standards and policies:

- See the list in Appendix 11.

3.3.2 Competent authority

Given that the property and the new building will belong to the Crown, they will be under federal jurisdiction and therefore will not be subject to municipal by-laws. However, the government will try to comply with the by-laws as much as possible. In addition, PSPC has indicated that it would, to the extent possible, comply with the City of Montreal's administrative processes as a good neighbour. In this context, steps will be taken with the municipal authorities to establish a consensus and ensure that all stakeholders support the project, which represents a major contribution to the City, Old Montréal and the legal sector.

3.3.3 Municipal by-laws

The following requirements are for the future building and are related to the *Règlement sur les plans d'implantation et d'intégration architecturale* (PIIA, from: *Codification Administrative au règlement d'urbanisme de l'arrondissement de Ville-Marie 01-282*) May 22, 2019 version, see Appendix 4. Note: the requirements presented here are unofficial translations of the original French documents.

3.3.3.1 Placement of the new building between two existing buildings

The height, in metres and floors, of a building located between two adjacent buildings in the same sector of height in metres and floors shall not be less than the height, in floors, of the lowest adjacent building that is in within the prescribed height limits; and shall not be greater than the height, in floors, of the highest adjacent building that is in compliance with the prescribed height limits, nor shall it exceed the height in metres of that building by more than 1 metre.

3.3.3.2 The building as a property of interest

The design of the future building shall:

- Protect the unique and distinctive character of the buildings or site and preserve each of their parts or architectural features;
- Maintain the dominant features of the urban landscape;

- Respect the existing pattern of development;
- Enhance the existing buildings, marks of previous land use and natural elements of interest still in the district or section of road;
- Take into consideration its effects on neighbouring buildings in such a way as to preserve or enhance the overall character of the surrounding district;
- Take into consideration the characteristics of neighbouring constructions, such as the type of building, dimensions, site layout parameters, cladding, roof types, openings, accesses and projections, in order to blend in with the environment;
- Incorporate materials and architectural details of equal or better quality than those of neighbouring constructions and be compatible with them, and the future building itself will also be of equal or better quality;
- Help reduce irregularities in height and alignment between buildings based on the dominant alignment and general height profile of the buildings located on either side of the section of the public road where the project is located as well as the characteristics of the buildings having the most architectural or urban interest among the buildings located on either side of the section of the public road where the project is located; and
- Contribute to the consistency of the city block, intersection, street or surrounding district according to its use, its visibility and the significance it may have in the city.

3.3.3.3 The building as it overlooks the Notre-Dame commercial artery (CA)

The work shall try to achieve the following characteristics:

- Use of the property to the limit of the public road right-of-way;
- A cubic volume with a flat roof;
- A tripartite architectural composition, including a ground floor that is more than 50 % open, a distinct building body and crowned with a parapet;
- The ground floor separated from the upper floors with an entablature and supporting the commercial sign;
- Openings with vertical proportions covering a minimum of 20 % of the facade area and a maximum of 40 % of the facade area on the upper floors;
- Vertical subdivisions emphasizing the regular rhythm of the lots on the street (in the case of facades containing several original lots);
- Cladding of brick or grey natural stone;
- Slate shingles or metal roofing on any visible roofs; and
- When the building includes a balcony on the facade, it shall be embedded in the main volume of the building or project by no more than 0.5 m.

3.3.3.4 The building as a part of Old Montreal (OM)

The future building shall have with the following characteristics:

- Use of the property to the limit of the public road right-of-way;
- Use of original materials when they still exist or have been documented;
- Unity and coherence of the facade on Notre-Dame Street;
- Use of grey natural stone as a cladding material;
- Use of slate shingles or metal roofing on any visible roofs;
- Openings with vertical proportions covering a minimum of 20 % of the facade area and a maximum of 40 % of the facade area on the upper floors;
- A cubic volume with a flat roof; and
- A tripartite architectural composition incorporating horizontal cut-outs and culminating in a continuous cornice or parapet.

3.3.3.5 Other considerations intrinsic to the program

This program includes safety, operational and other requirements. It is highly likely that some of the requirements under municipal regulations cannot be applied. The designer will need to comply with them as much as possible, but as mentioned in 3.3.2, the designer will be required to meet with municipal authorities to discuss and establish the design premises, taking into account all the project requirements.

3.3.4 Building characteristics

3.3.4.1 The main characteristics of the building, according to the 2015 NBC (preliminary data, to be confirmed during the modeling of the program) are as follows:

ITEM	DESCRIPTION
Characteristic	
Building height (number of storey(s))	8 storeys
Height between grade and the floor level of the top storey	Approximately 32.5 m
Storeys below ground	1 level
Building area	± 1,630 m ²
Type de construction	Noncombustible required
Number of streets	2 streets
Building occupancies	
Building function	Judicial centre
Major occupancies	<ul style="list-style-type: none"> • Group A, Division 2 (meeting rooms) • Group D (business)
Minor occupancies	<ul style="list-style-type: none"> • Group F, Division 3 (parking garage)
Fire safety equipment	
Sprinkler system	Required
Fire alarm system	Required
Voice communication system	Required The floor level of the top storey is more than 36 m above grade.
Standpipe system	Required
Specific items	
High building	No
Interconnected floor space	Undetermined (defined in the design stage)
Firewall	No
Connections to other buildings	None
Spatial separation and exposure protection	Subsection 3.2.3 applies
Emergency crossover access to floor areas	Article 3.4.6.18 applies
Exposing building faces	To be determined later

3.3.4.2 Classification of the building

The building is subject to the following articles in subsection 3.2.2 of the NBC 2015:

Major occupancy	Article 3.2.2.	Limitations	Type of construction	Sprinkler protection	Fire separation, floors	Mezzanine FRR	Roof FRR	Loadbearing members, FRR
A, Div.2	3.2.2.23.	Any height, any area	Noncombustible	Required	2 hr.	1 hr.	None	Floors: 2 hr. Mezzanine: 1 hr. Roof: none
D	3.2.2.55.	Any height, any area	Noncombustible	Required	2 hr.	1 hr.	None	Floors: 2 hr. Mezzanine: 1 hr. Roof: none

3.4 Sustainable development

3.4.1 General

- 3.4.1.1 Sustainable development is one of the key concepts for the NMJC project, so the project was developed using the various sustainable development criteria applicable to it and provided by the client. These criteria were consulted and met as the project was developed and in the Functional Program as written.
- 3.4.1.2 In order to meet these expectations and apply these guidelines, various green building certifications were considered: Leadership in Energy and Environmental Design (LEED) environmental performance certification; Fitwel and WELL certifications, which are focused on the health and well-being of occupants; and Zero Carbon Building (ZCB) certification.
- 3.4.1.3 Following a feasibility study and discussions among the various stakeholders, it was decided to target LEED Platinum certification. In addition, a study comparing the other certifications mentioned above was submitted to the client. Then a feasibility study was conducted on pursuing WELL certification and the parties reached an agreement on the subject. As a result, the project will target WELL Silver certification.
- 3.4.1.4 The detailed analysis tables are shown in Appendix 14, LEED Tables and Appendix 15, WELL Table.
- 3.4.1.5 In addition to these green building certifications, it should be noted that various measures are being implemented that will have a positive impact on sustainable development, in particular in information technology to eliminate the use of paper in the new building.
- 3.4.1.6 For health and wellness certification, it was decided that WELL certification would be preferable to Fitwel certification. Since WELL certification is better suited to projects of new construction and represents more stringent criteria, it was agreed that WELL would be the most suitable certification for the project.

3.4.1.7 It was initially planned to seek Zero Carbon Building (ZCB) certification in its first version. However, renewable energy production would have been required on the site, and this was not compatible with the location of the building, given that there is a 90 m high building on the immediate south side, limiting the amount of sunlight that would fall on the roof for much of the day. A second version of the ZCB certification, issued in the spring of 2020, does not require on-site energy production. However, the effort required to achieve the Thermal Energy Demand Intensity (TEDI) required in the context of this project would have been too great, so this certification is not being considered at this stage of the project. However, the project is intended to move toward becoming carbon neutral, i.e. to aim for exemplary energy performance, and to use only electricity for power and heat production. Québec's energy mix consists of mostly hydroelectricity, which has much less environmental impact than conventional fuels.

3.4.2 LEED certification

The level of LEED certification sought is platinum. The requirements for this certification consist of various components. A summary description of the actions required for each is presented below.

3.4.3 Integrated Design Process (IDP)

The project team strives to integrate good practices from the Integrated Design Process (IDP) in, among other things, studies of energy and water systems.

3.4.4 Location and transportation

The project is located in a historic, high-density neighbourhood on a site that is already developed. This is conducive to good performance in this category. The location is close to several bus stops, a subway station, a bicycle path, and several types of services. This encourages active travel and travel by public transit, thereby reducing greenhouse gas (GHG) emissions. To encourage the use of bicycles, bike racks are planned in the building as well as showers and lockers for building occupants. The installation of electric recharging stations is also planned.

3.4.5 Ecological site development

This category emphasizes the conservation and restoration of flora and fauna. As the project is located in a densely populated area leaving no opportunity to plan green spaces on the ground, a green roof may be considered for all levels of the roofs planned for the project, including the shelter for mechanical equipment. A catch basin could be installed under the substrate to collect rainwater. For safety reasons, the green roof must not be accessible to building occupants, but access to the roofs is required for maintenance purposes. Should the green roof not be considered for certain spaces, heat-island effects could be mitigated through the use of light-coloured roofing and an alternative strategy could be established for rainwater management. Reducing light pollution is also possible, by modifying the building's exterior lighting accordingly.

3.4.6 Efficient water management

A green roof will allow for the good storm-water management by reducing the usually rapid return of storm water to the sewers. The chosen vegetation will need to be native and not require irrigation, or that the rainwater collected is used for this purpose in the event of a drought, in order to maximize the points awarded under this category. Consideration could be given to reusing the rainwater accumulated in the retention basins in the building's toilets, by planning a water treatment system on the roof and a separate mechanical system for this water. The use of low-flow plumbing equipment could also be considered. In addition, in order to have information on the building's water consumption, water meters are required for both hot water and reclaimed water. Cooling towers are not planned for this project, which slightly reduces the efficiency of the mechanical equipment but reduces water consumption.

3.4.7 Energy and atmosphere

Consideration could be given to having an independent expert improve building operations. The energy performance study showed that a 41.5 % reduction in energy use compared to the baseline scenario could be achieved, which would give the 15 required points. In order to limit the building's impact on the ozone layer, the project could include the elimination of chlorofluorocarbon (CFC)-based refrigerants, a heating, ventilation and air conditioning (HVAC) system with a refrigerant impact of less than 100 and a peak management strategy with short-term thermal storage. Since thermal storage is an innovation for which there are few practical examples to draw inspiration, discussions are underway with Hydro-Québec to develop a partnership and obtain subsidies for this type of equipment.

3.4.8 Materials and resources

A strategy be developed for the reduction, planning and sound management of construction waste may be considered, as well as the credit requiring the conduct of a building life cycle analysis and a 5 % or 10 % reduction in environmental impacts (depending on LEED V4.1 or V4). Materials will also need to be carefully selected in order to receive the three "building product disclosure and optimization" credits. Each professional shall ensure that he or she is aware of and integrates the concepts of these credits into their design criteria (e.g., purchasing products with recycled content and local products, products that comply with environmental criteria and have an environmental product declaration or sustainable development certification, etc.).

3.4.9 Indoor environmental quality

The project could target strategies for achieving and maintaining good air quality, such as the use of MERV 13 filters. Other recommended strategies will be identified in the Technical Program. The materials selected shall also be low-emitting. Special attention will need to be paid to lighting, thermal comfort and acoustics in order to contribute to both good environmental performance and occupant comfort. These issues are dealt with in more detail in the WELL certification.

3.4.10 Innovation

In terms of innovation, the designers could consider using low-mercury devices, cleaning with environmentally friendly products, adding a measure for obtaining some Innovation credits for an enhanced indoor air quality strategy and for having a management plan for the exterior environment.

3.4.11 Regional priority

The objective of this category is to target environmental issues specific to a given region. The following issues have been identified for additional points: rainwater management, water and energy consumption, and heat islands.

3.4.12 WELL certification

The project is targeting the Silver level of WELL certification. This certification consists of 10 categories plus an innovation category, each with prerequisite and optional criteria. The components are described below, along with a summary of the measures that could be considered for the project.

3.4.12.1 Air

This concept addresses the air quality of the building, to limit the impact on occupants. The building's air quality will be tested to ensure that it meets the prerequisites for certification. Measures will be taken to ensure good air quality during construction. As set out in the *Tobacco Control Act*, no smoking is permitted inside the building and within 7.5 m of its entrances. The plan is also to apply the most restrictive of standards ASHRAE 62.1-2010 and 2017 to the mechanical ventilation system. It also includes having CO₂, NO₂, and CO sensors, display the results for the occupants, and monitor the ventilation system to ensure that it does not exceed 900 ppm CO₂. As mentioned above, the technical program will target additional air quality improvement strategies, in addition to using MERV 13 filters. Combustion reduction could also be considered, for both energy appliances and vehicles waiting in the building.

3.4.12.2 Water

Tests, water quality monitoring and a Legionella management plan are required. Consider testing to determine certain parameters and posting the results for the occupants: in particular, the results on lead, since this contaminant is an issue in Montréal. In addition, access to water could be facilitated, with water fountains and stations where bottles can be filled in sufficient quantities. Special attention could also be paid to humidity and leaks inside the building during the building's operation to prevent such problems from occurring.

3.4.12.3 Nutrition

No food will be offered on the site, so most of the criteria for the nutrition category do not apply. However, if there is a change, such as if the occupants organize a convenience store, vending machines are installed, etc., a minimum of prerequisites will need to be met. Small kitchenettes are currently being considered on some floors, and they could comply with the related WELL criteria. A point is also given when a space is provided that can seat more than 25 % of the building's occupants. In addition, nutrition-related information could be posted in the kitchenettes to promote healthy eating habits. A grocery store is located 600 m from the project, such that occupants will have nearby access to fresh fruits and vegetables.

3.4.12.4 Light

The safety and security issues associated with the building's intended purpose may require that there be no windows or fewer windows in some areas. If this is the case, the designers will need to adjust lighting levels to compensate for this lack of natural light, for example by aiming to achieve the suggested Equivalent Melanopic Lux and thereby respecting the circadian rhythm of the occupants. We also recommend implementing strategies for managing daylight and lighting reflections, including attention to surface brightness. Lastly, occupants could be granted control of lighting levels approved by the Services and additional lighting could be provided when requested.

3.4.12.5 Physical activity

As mentioned above, bike racks, showers and lockers will be available to encourage people to travel to and from the NMJC by bicycle. Several points are also awarded for the location of the project, which facilitates travel by active transportation and public transit and encourages physical activity. To promote movement and good ergonomics, all screens and chairs should be adjustable, and 25 % of the desks should be adjustable for use in a standing position.

3.4.12.6 Thermal comfort

To provide for the thermal comfort of occupants, it is necessary to comply with the good practices of ASHRAE standard 55-2013 and to monitor temperature, relative humidity and air velocity. Other measures such as radiant heating, a dedicated outdoor air system (DOAS), and maintaining relative humidity in a range of 30 % to 60 % at all times could be considered. Occupants could also be given access to controls for maximizing their comfort.

3.4.12.7 Acoustics

Prerequisites include demonstrating, using plans, the expected ambient sound level, the performance of walls, partitions, etc., and identifying noisy, quiet and mixed areas. Other measures may be used to ensure a quiet environment, such as sound barriers, automatic door bottoms and soundproof doors.

3.4.12.8 Materials

Asbestos and lead are banned from the project. It is also necessary to limit mercury, volatile organic compounds and other contaminants in materials. Therefore, the professionals must pay particular attention to these issues. These guidelines are also compatible with the objectives of LEED certification. Since the building will be new, the precautions that must be taken with respect to hazardous materials when renovating do not apply. Hazardous waste management strategies are also encouraged. Two points may be obtained if the work includes decontaminating the site. Banning the use of pesticides on the green roof should also be considered in order to limit exposure to contaminants. As mentioned above, the use of chemical-free cleaners in

maintenance activities is being considered. It is also desirable to use several products that comply with environmental criteria and feature an environmental product declaration or sustainable development certification.

3.4.12.9 Mind

Certification will require the distribution of mental health information and the addition of reminders of nature in the design. Subsequently, several measures are possible. They will need to be validated with the client, as some of them could overlap with existing policies, such as the psychological support offered at work, insurance covering various mental health-related services, plans and programs for managing stress, etc.

3.4.12.10 Community

Certification will require promoting and distributing health and wellness information and applying an integrated design approach focused on occupant satisfaction, teamwork and health. Other measures have already been implemented, such as parental leave upon the birth of a child under the Québec Parental Insurance Plan program and incorporation of universal accessibility through design. Certain measures are also possible in accordance with the client's existing policies, such as support for employees during various events. A breastfeeding room is planned for members of the public. Occupants are required to prepare an emergency plan, which is probably already being considered in view of building safety and security issues.

3.4.12.11 Innovation

Innovation measures, if any, may be defined during the design phase. Points may also be awarded if LEED certification is obtained and a project team member has WELL accreditation.

3.5 Universal accessibility

3.5.1 General

The NMJC will serve all Canadians, and must therefore provide opportunities to everyone, without discrimination, to work, to receive the services provided and even to attend hearings there. As a result, all of the project's spaces and equipment (with the exception of the technical spaces) will need to meet the needs of people in wheelchairs and people with physical, hearing, visual and other disabilities.

3.5.2 Reference standards

CSA standard B651-18HB, "Accessible Design for the Built Environment," shall be considered and applied throughout the entire development process. In addition, beyond the requirements of the above standard, PSPC has developed a list of additional best practices in the document entitled "*Améliorer l'accessibilité des bâtiments – Stratégie à court terme*" (name of English document to follow). The new project will need to incorporate at least two (2) of the proposed measures.

3.5.3 Key principles

The following key principles, adopted during programming, design and implementation, will ensure achievement of the project's universal access objectives:

- An optimal layout of the building that complies with standards and statements;

- A building that is clear and simple in its general design, which will help everyone understand how it is organized and move around in it;
- Facilities that are integrated and optimally functional;
- General premises which, along with their layout and signage, can be easily perceived by all; and
- A building and facilities that are safe and secure.

3.6 Documentation

3.6.1 Other reference documents

The documents listed below are not cited in the document, but were consulted and/or prepared in the process of developing the functional program. Some of them are available in French only. Subject to PSPC authorization, they may be made available to the successful bidder in the future.

- Technical Reference for Office Building Design, PSPC 2017;
- Judicial Fit-up Standards (excerpts);
- Nouveau complexe judiciaire Fédéral de Montréal – Mode de fonctionnement / Paramètres et principes directeurs, SPAC (name of English document to follow);
- Government of Canada (GC) Workplace Fit-up – Special Technical Standard Guidelines (section A4);
- GCworkplace – Survey report – March 2020;
- GCworkplace Space Planning Workbook 2020;
- GCworkplace Design Vision - Bilingual – PPT document;
- Guide 101 de la programmation fonctionnelle du milieu de travail GC (name of English document to follow);
- GCworkplace – Guide de l'animateur (name of English document to follow);
- Final GCworkplace General Office Workshop – Guide de l'animateur (name of English document to follow);
- GCworkplace – Atelier sur les exigences relatives aux locaux à usage particulier du Milieu de travail GC;
- Milieu de travail GC – Sensibilisation et discussion MTGC-MTAA –PPT document (name of English document to follow);
- Measurement instructions;
- Stratégie nationale de logement des cours et des tribunaux fédéraux, PSPC 2020 (name of English document to follow);
- National Courthouse Strategy, ATSSC – PPT document;
- Tableaux d'assignation des salles et bureaux SATJ (name of English document to follow);
- Statistiques salles prêtées 2019 de SATJ (name of English document to follow);
- E-Courts Room Specs;
- CAS Boardroom Equipment Specifications;
- Rapport d'estimation de Legico CHP (name of English document to follow);

- Ligne directrice – Méthode d'analyse des options liées à la réduction des émissions de gaz à effet de serre dans le cadre des projets, PSPC (name of English document to follow);
- Archaeological excavation report, Arkéos 2007 / complete version;
- Archaeological supervision of geotechnical boreholes, Arkéos 2020 / complete version;
- Environmental studies by Akifer, ABS and Sol-Roc / complete versions;
- Functional and technical program, Birtz Bastien Beaudoin Laforest architectes 2015;
- CAS's plans of its Toronto facilities;
- Video presentation of the rehabilitation of the West Memorial Building in Ottawa;
- Old Montréal – Protection and presentation plan, Patrimoine Montréal;
- Revue du Barreau – Manuscript on judicial independence;
- Feasibility study (SR1A-1) PSPC- New Montreal Judicial Complex; R.09448.001; Bisson Fortin architecture + design- Multidisciplinary team;
- NMJC LEED v4 arguments for platinum vs. gold certification, EXP April 2020;
- TAB-MTR399072_NCJM Évaluation de la faisabilité des certifications DD.pdf (name of English document to follow);
- RAP-MTR400980_Faisabilité WELL NCJM.pdf (name of English document to follow);
- NMJC feasibility study WELLv2 Silver, EXP June 2020;
- All reports on interviews with CAS, ATSSC and PSPC;
- Facility security assessment and authorization, May 2020.

4. PROJECT DATA AND ANALYSES

4.1 Impartiality and independence

4.1.1 General

- 4.1.1.1 It is a principle of law that, since the parties to a dispute are engaged in adversarial debate, the judge is the sole party to judge the case, that his or her judgment is expressed without being under the constraint or influence of anyone or anything, and that his or her judgment does not entail any personal consequences.
- 4.1.1.2 Security of tenure and the financial and administrative independence of the judiciary are important parts of Canada's arrangements for ensuring judicial independence and thus the "impartiality" of the judiciary.
- 4.1.1.3 While the foregoing provisions ensure judicial independence from Canadian society, other steps shall be taken to ensure that no internal influence betrays the principle referred to in 4.1.1.1.
- 4.1.1.4 Moreover, an appearance of bias could be as damaging as an avowed bias. As a result, additional steps will need to be taken to ensure that the facilities do not create an appearance of collusion or undue influence.

4.1.2 Independence from outside influence

- 4.1.2.1 The federal courts have judicial independence to the extent that security of tenure and the financial and administrative independence of the judiciary is ensured. CAS sees to administrative independence, among other things. As such, the NMJC could be seen as another step toward complete independence, as the building will be owned by the Crown and through these new premises CAS will no longer be subject to market forces.
- 4.1.2.2 The Canada Industrial Relations Board (CIRB), the Canada Agricultural Review Tribunal (CART), the Canadian Human Rights Tribunal (CHRT), the Public Servants Disclosure Protection Tribunal (PSDPT), the Federal Public Sector Labour Relations and Employment Board (FPSLRB), and the Transportation Appeal Tribunal of Canada (TATC) are quasi-judicial institutions that enjoy “limited” judicial independence to the extent that, among other things, the principle of immutability does not apply. However, the existence of the ATSSC provides administrative independence insofar as it oversees the management and administration of the Tribunals.
- 4.1.2.3 The Competition Tribunal (CT) and the Specific Claims Tribunal Canada (SCTC) are largely chaired and represented by judges from the Canadian judiciary (federal/provincial). They are appointed by the Governor in Council for a term of either 5 or 7 years. Unlike the other quasi-judicial tribunals identified in 4.1.2.2, they are at the same level of the Canadian judiciary as the federal courts, and therefore any appeal from one of their cases will be directed to the Federal Court of Appeal.
- 4.1.2.4 In order to maintain clarity of principles, the operations of the federal courts will be entirely separate from those of the administrative tribunals. This includes not only hearings, but also day-to-day management and administrative and public operations.

4.1.3 Independence from inside influence

- 4.1.3.1 A superior court should not be subject to the influence of a lower court. Since it is possible for one of the parties to appeal a judgment by a lower court to a higher court, the judiciary of the former must not be in a position to influence the judiciary of the latter.
- 4.1.3.2 The most common solution is to partition the functions of one superior court vis-à-vis another. The following table is therefore an illustration of the partitioning required within the NMJC. It should be noted that:
- Both the SCTC and the CT are at the same level as the FC. However, the principle of judicial independence invoked in 4.1.2 will force partitioning between the FC and these two tribunals;
 - All the other administrative tribunals will be partitioned from the FC, since the latter will hear appeals from these tribunals;

- The FCA will be partitioned from the FC and the TCC; and
- The CMAC has no relationships with other courts and tribunals.

		SCTC	CT	TATC	FPSLR	PSDPT	CHRT	CART	CIRB	CMAC	TCC	FCA	FC
Federal Court	FC	●	●	●	●	●	●	●	●			●	
Federal Court of Appeal	FCA	●	●	●	●	●	●	●	●		●		
Tax Court of Canada	TCC	●	●	●	●	●	●	●	●				
Court Martial Appeal Court	CMAC	●	●	●	●	●	●	●					
Canada Industrial Relations Board	CIRB	●											
Canada Agricultural Review Tribunal	CART	●											
Canadian Human Rights Tribunal	CHRT	●											
Public Servants Disclosure Protection Tribunal	PSDPT	●											
Federal Public Sector Labour Relations and Employment Board	FPSLRB	●											
Transportation Appeal Tribunal Canada	TATC	●											
Competition Tribunal	CT												
Specific Claims Tribunal Canada	SCTC												

- Partitioning of the two courts' required functions

4.1.4 Personnel

- 4.1.4.1 No member of the personnel (registrar, administration, bailiff, law clerk, etc.) is deemed subject to influence the principle of judicial independence.

4.2 Shared and sharable spaces

4.2.1 Table of shared spaces

- 4.2.1.1 The following table presents how space will be shared at the NMJC. It illustrates the spaces that will be shared by CAS and ATSSC tenants, as well as the spaces that they potentially can share.

4.2.1.2 The table does not indicate modes of sharing, i.e. whether a particular space is “loaned” by one of the services to the other or if it is part of a bank of spaces that is made available to both organizations.

4.2.1.3 In general, it should be noted that:

- Spaces for hearings and mediation can be shared;
- IT/AV spaces cannot be shared, given the nature of the networks and their independence;
- Workspaces cannot be shared at the same time, given the principles of judicial independence. Accordingly, if hearing spaces are shared, the required adjoining workspaces will need to be shared in addition to the regular workspaces; and
- Base building services will be shared, except for common corridors and areas as well as elevators. The E.2.1 support spaces will be shared, except for common corridors and areas as well as elevators. All other service spaces (such as restrooms) will be for exclusive use.

4.2.1.4 In the following table, the term “shared” means that the space serves both CAS and ATSSC simultaneously, without limitation.

DESCRIPTION	SHARED	CAS	ATSSC		
		SHAREABLE	EXCLUSIVE	SHAREABLE	EXCLUSIVE
JUDICIAL AREAS					
COURTROOMS/HEARING ROOMS					
Courtroom / hearing room		●		●	
Future courtroom / hearing room			●		
Judicial chamber			●		
Caucus				●	
Consultation room for courtroom / hearing room		●		●	
Interpreter's booth		●		●	
Room for IS technician		●		●	
IT technical room			●		●
Storage room for courtroom / hearing room		●		●	
Business centre			●		●
Work area			●		
DESIGNATED ROOMS AND AREAS					
Videoconference room			●		●
Training room		●			
Formal conference room			●		●
Mediation rooms		●		●	
Room for IT/AV technician			●		●

DESCRIPTION	SHARED	CAS	ATSSC		
		SHAREABLE	EXCLUSIVE	SHAREABLE	EXCLUSIVE
Interpreter's booth for mediation room		●		●	
Mediation waiting area		●		●	
Adjoining break-out rooms		●		●	
JUDICIAL OFFICES			●		
CLOAKROOMS FOR LEGAL COUNSEL			●		
SUPPORT AREAS					
Bailiffs' area - Security guard			●		
Courtroom / hearing room service area		●		●	
Cloakrooms for visitors		●		●	
Judicial library			●		
Communications closet			●		●
WORK AREAS					
WORKPLACES					
CAS workplace			●		
ATSSC workplace					●
ATSSC business centre					●
Communications closet - Server room			●		●

SPS – WORKPLACE					
CAS SPSs (unless otherwise noted)			●		
ATSSC SPSs (unless otherwise noted)					●
Mailroom		●		●	
SECURITY					
SECURITY					
Main reception desk - Lobby		●		●	
Security desk		●		●	
Security station		●		●	
Surveillance room	●		●		
Search/control area		●		●	
Security control and registration		●		●	
ATSSC REAL PROPERTY MANAGEMENT AREAS					
BASE BUILDING					
Parking for the judiciary			●		
ATSSC Grand Entrance Hall			●		●
CAS Grand Entrance Hall			●		●
Buffer space	●				
Recycling	●				
Lockers and showers	●				
Shared circulation, restrooms and lobbies			●		●
Technical services (stairs, services)	●				
Elevators			●		●
Lockers and showers	●				
Manoeuvring area - Reception	●				
Goods in transit	●				
Manoeuvring area - Shipping	●				
Refrigerated compost room	●				
Waste	●				
Recycling	●				
Janitorial and maintenance	●				
ELECTRICAL & MECHANICAL AREAS	●				

4.3 GCworkplace

4.3.1 General

- 4.3.1.1 The current workplace for CAS and ATSSC personnel is traditional, based more or less on the MT-2.0 standard.
- 4.3.1.2 New federal standards on new workplaces are now in force. These standards, entitled “GCworkplace Fit-up Standards” dated May 2019 (PSPC), provide for a major overhaul of the physical organization of the workplace, such that the current fit-up provisions for both CAS and ATSSC are no longer valid.
- 4.3.1.3 In addition, the new standard assumes a collaborative workplace supported by technologies that will, among other things, allow the personnel to work with minimal use of paper documentation. However, this is not currently the case for either CAS or ATSSC. Both of them make extensive use of paper in their day-to-day work, as well as for the work of the tribunals.
- 4.3.1.4 According to the information collected from the IT departments of both CAS and ATSSC (CAS in particular), both the courts and the administrative tribunals are in the process of adopting digital technologies for the purposes of the work of the courts and tribunals as well as in the course of their day-to-day work. At best, it is hoped that within five years most court and tribunal files will be in digital form. CAS already has “e-Courts” in Toronto and Montréal.
- 4.3.1.5 According to the information gathered from the services covered by the FTP, the current pandemic is prompting an in-depth review of the organization of work. The use of remote communication methods, supported by a shift to computers, will make “presence in the office” less necessary, hence there is a high probability that workplaces will not be assigned.
- 4.3.1.6 The adoption of a paperless environment also depends on the public participating in the new paperless approach. Law firms are expected to quickly follow the lead of the courts. However, many cases are represented by citizens who will not be using legal counsel and who will not have the technological skills required for applying this approach.
- 4.3.1.7 The FTP will therefore take as its working hypothesis:
- That the workplace will be of a hybrid nature when the NMJC opens: this environment will allow a significant use of paper files and will feature assigned workstations as long as paper files will take precedence. However, its infrastructure will be GCworkplace and therefore the workplace will be ready to be transformed into an electronic environment;
 - That the fit-outs will be such that major changes can easily be made as the workplace goes paperless and workstations are no longer assigned; and
 - That once CAS and ATSSC are operating on digital platforms, the NMJC will provide document digitization and computer processing services to those who cannot afford to present cases using the required document formats.

4.3.2 CAS attributions

- 4.3.2.1 The following table proposes workplace space allocations for CAS. The first column shows alphanumeric room codes and the second provides space unit names.
- 4.3.2.2 The following three columns are the result of applying the GCworkplace table entitled “GC Workspace Planning Workbook 2020_EN,” produced by CAS and dated April 2020. These columns are followed by the FTP proposal under the heading “Net Hybrid.”
- 4.3.2.3 The last column, entitled DELTA, shows the difference between the pure calculation based on the GCworkplace table and the FTP calculation.

CODE	DESCRIPTION	Net GCworkplace			Net Hybrid			DELTA
		Un.	Qty	Total	Un.	Qty	Total	
B1	WORKPLACE			411.2			599.0	187.8
B1.1	Operations		33	112.0		34	187.0	75.0
B1.1.1	Director of Operations	4	1	4.0	5.5	1	5.5	1.5
B1.1.2	Administrative Clerk - Support	3.5	1	3.5	5.5	1	5.5	2.0
B1.1.3	Chief Registry Officer	3.5	4	14.0	5.5	4	22.0	8.0
B1.1.4	Registry Clerk	3.5	25	87.5	5.5	25	137.5	50.0
B1.1.5	Registry Officer	1.5	2	3.0	5.5	3	16.5	13.5
B1.2	Management Services		19	56.5		25	137.5	81.0
B1.2.1	Regional Director General	4	1	4.0	5.5	1	5.5	1.5
B1.2.2	Administrative Assistant	3.5	1	3.5	5.5	1	5.5	2.0
B1.2.3	Director of Management Services	4	1	4.0	5.5	1	5.5	1.5
B1.2.4	Administrative Clerk - Support	3.5	1	3.5	5.5	1	5.5	2.0
B1.2.5	Project Manager	3.5	2	7.0	5.5	2	11.0	4.0
B1.2.6	Supervisor, Administrative Services	4	1	4.0	5.5	1	5.5	1.5
B1.2.7	Coordinator, Operational Support	4	1	4.0	5.5	1	5.5	1.5
B1.2.8	Clerk, Operational Support	1.5	6	9.0	5.5	10	55.0	46.0
B1.2.9	Law Clerk	3.5	2	7.0	5.5	4	22.0	15.0
B1.2.10	Chief Security Officer	3.5	1	3.5	5.5	1	5.5	2.0
B1.2.11	Regional IT Network Technician	3.5	1	3.5	5.5	1	5.5	2.0

CODE	DESCRIPTION	Net GCworkplace			Net Hybrid			DELTA
		Un.	Qty	Total	Un.	Qty	Total	
B1.2.12	LAN Service Technician	3.5	1	3.5	5.5	1	5.5	2.0
B1.3	Collaboration			91.0			89.0	-2.0
B1.3.1	Discussion area	1	3	3.0				-3.0
B1.3.2	Enclave	1	8	8.0	8.0	3	24.0	16.0
B1.3.3	Team area	1	15	15.0	15.0			-15.0
B1.3.4	Work room	1	15	15.0	15.0	1	15.0	
B1.3.5	Project room	1	20	20.0	20.0	1	20.0	
B1.3.6	Meeting room(s) - medium	1	30	30.0	30.0	1	30.0	
B1.4	Support spaces			151.7			185.5	33.8
B1.4.1	Quiet room	5.0	2	10.0	5.0	2	10.0	
B1.4.2	Active workstation	5.0	1	5.0				-5.0
B1.4.3	Telephone booth	5.0	4	20.0	5.0	4	20.0	
B1.4.4	Concentration room	7.5	5	37.5	7.5	5	37.5	
B1.4.5	Kitchenette	15.0	1	15.0	15.0	1	15.0	
B1.4.6	Waste sorting island				2.0	5	10.0	10.0
B1.4.7	Lounge	1.0	20	20.0	20.0	1	20.0	
B1.4.8	Changing room for personnel	0.5	70	35.0	0.5	70	35.0	
B1.4.9	Business centre (paper, equipment)	5.0	1	5.0	7.0	4	28.0	23.0
B1.4.10	Shared storage	4.2	1	4.2	10.0	1	10.0	5.8

4.3.2.4 Remarks

- a. Contrary to the GCworkplace standard, the project will include 59 assigned workstations. They are assigned mainly because the use of paper is still the prevailing mode of organizing the work. However, these stations are expected to eventually become a layout of 52 unassigned workstations as the use of paper disappears. They are considered “stand-alone” according to the GCworkplace table. The difference of 156 m² (i.e. B1.1 plus B1.2) will be used to absorb an eventual workforce expansion of approximately 13 FTEs (full-time equivalents) since, according to the standard, one FTE requires approximately 12 m².
- b. There is no difference for Group B1.3 - Collaboration. The only difference is that collaborative work is performed in small groups, so a team area is of questionable usefulness. However, Group B1.3 will grow as the number of employees increases. The area required for expansion is included in B1.1 and B1.2.
- c. There is a difference of approximately 34 m² for Group B1.4. This is due to the application of the WELL program, which requires sorting space and possibly the need to provide the public with digitalization services.

4.3.3 ATSSC attributions

4.3.3.1 The following table is similar to the previous one, but this time for ATSSC.

CODE	DESCRIPTION	Net GCworkplace			Net Hybrid			DELTA
		Un.	Qty	Total	Un.	Qty	Total	
B1	WORKPLACE			176.5			252.0	83.5
D2.1	Work stations		19	118.5		19	147.0	28.5
D2.1.1	Office – Regional Manager (Registrar)	3.5	1	3.5	14.0	1	14.0	10.5
D2.1.2	Office – Legal Counsel	10.0	1	10.0	10.0	1	10.0	
D2.1.3	Administrative Assistant workstations	3.5	2	7.0	5.5	2	11.0	4.0
D2.1.4	Industrial Relations Officer workstations	10.0	7	70.0	10.0	7	70.0	
D2.1.5	Case Management Officer workstations	3.5	7	24.5	5.5	7	38.5	14.0
D2.1.6	IT office	3.5	1	3.5	3.5	1	3.5	
D2.2	Support spaces			58.0			105.0	55.0
D2.2.1	Reception and waiting area				10.0	1	10.0	10.0
D2.2.2	Enclave	8.0	1	8.0				
D2.2.3	Meeting room	15.0	1	15.0	15.0	1	15.0	
D2.2.4	Videoconference room							
D2.2.5	ITS server room	10.0	1	10.0	12.0	1	12.0	2.0

CODE	DESCRIPTION	Net GCworkplace			Net Hybrid			DELTA
		Un.	Qty	Total	Un.	Qty	Total	
D2.2.6	Business centre				10.0	1	10.0	10.0
D2.2.7	Archives and mail corner				35.0	1	35.0	35.0
D2.2.8	Storage				10.0	1	10.0	10.0
D2.2.9	Kitchenette	15.0	1	15.0	5.0	1	5.0	-10.0
D2.2.10	Waste sorting island				2.0	4	8.0	8.0
D2.2.11	Locker space	0.5	20	10.0				-10.0

4.3.3.2 For the D2.1 workstations, the difference is due to the allocation of “paper” modules to personnel workstations. In addition, industrial relations officers have an exemption for their workstations, allowing them to use an enclosed space.

4.3.3.3 The position of Regional Manager requires, in theory, separating individual work functions from meeting functions and accommodating it all in two spaces (D2.1.1 and D2.2.2) but, given the size of the group, this will lead to no gain in space or efficiency.

4.3.3.4 The difference in support spaces (D2.2) is required to accommodate the “paper” world of ATSSC until it is replaced by its digital equivalent. However, once this transformation is complete, the space can be redeveloped to allow for an increase in personnel equal to 4 FTEs.

4.3.3.5 The videoconferencing room is not listed in the table. This space is an SPS.

4.3.4 Additional note

4.3.4.1 CAS has approximately 400 m² (net) of space allocated to the filing, processing and storage of paper files. Although there is no expectation that none of this space will be required as the courts move into the digital age, it is nevertheless expected that a good portion of this space can be converted to accommodate other functions. For example, given the increasing number of cases before the courts, CAS will need to hire more personnel. Assuming that 66 % of this space becomes available, CAS could eventually accommodate over 20 more FTEs.

4.4 Security



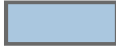


4.4.1 Zone definitions

- 4.4.1.1 One effective method of ensuring physical security through building design is to compartmentalize the building into various zones. The Operational Security Standard on Physical Security sets out baseline requirements for physical security to counter threats to employees, assets and service delivery, and provides consistent safeguarding for the Government of Canada. The standard identifies the five main types of zones and the baseline security requirements for each type of zone.

Security level	Definition of the security level	Example
Public Zone	Where the public has unimpeded access and generally surrounds or forms part of a government facility	The grounds surrounding a building, or public corridors and elevator lobbies in multiple occupancy buildings
Reception Zone	Zone where the transition from a public zone to a restricted-access area is demarcated and controlled	This zone is typically located at the entry to the facility where initial contact between visitors and the department occurs; this can include such spaces as places where services are provided and information is exchanged. Access by visitors may be limited to specific times of the day or for specific reasons.
Operations Zone	Access is limited to personnel who work there and to properly-escorted visitors.	Typical open office space
Security Zone	Access is limited to authorized personnel and to authorized and properly-escorted visitors.	An area where secret information is processed or stored
High Security Zone	Access is limited to authorized, appropriately-screened personnel and authorized and properly-escorted visitors.	An area where high-value assets are handled by selected personnel

4.4.1.2 Security zones and diagrams

For indication and identification purposes, all graphics and diagrams in the functional program will use the following colour codes to indicate the level of security used.

	High Security Zone
	Security Zone
	Restricted Zone (operations)
	Reception Zone
	Public Zone

4.4.2 Building security

4.4.2.1 Security analyses are presented for each building component, respectively – i.e. PSPC (base building), CAS and ATSSC – as if each were separate.

4.4.2.2 However, with respect to the design of the building, the programming will assume that the most restrictive requirements will apply to the entire building and all of its parts, regardless of who occupies it.

4.4.3 Base building security

The base building will maintain a basic security program containing the following:

4.4.3.1 Access control - General

- Provide all access points to the building with heavy-duty commercial hardware locks connected to a central access control system.
- Provide each exterior entrance door that can be used to access the building outside of normal working hours with an intercom, a camera and an electronic access card reader.
- The vertical circulation routes giving access to various parts of the building from the public zone will include controls on elevators or stairways at ground level. Provide for six (6) elevators serving the building, including four (4) public elevators.
- Provide building tenants with access to the service elevator from the loading dock. This access will be controlled by card readers on the outside and the inside of the cabin, to ensure secure calls from landings and controlled access to floors at all times.
- Provide physical separations to create barriers between the public areas and the restricted areas.
- The building will have controlled access to the general service and technical areas of the base building.
- Emergency exit routes shall not pass through any high-security area.
- Secure base building areas with alarms.

- i. Visitors will be required to report to a guard station. There will be one guard station at each public entrance. Each such station will be equipped with metal detection equipment and an X-ray machine for controlling visitors' personal belongings (i.e. briefcase, backpack, purse, etc.). The X-ray machine will also be used for various delivered packages (i.e. Fedex, UPS). Equip the delivery dock with a guard station that has all the equipment required to operate a reception guard station. The delivery dock will also be the place where any contractor who needs to perform maintenance or other work must report. Under the security procedure, the contractor will need to temporarily park his or her vehicle in the dock, unload all tools so that they can be checked by security, remove the vehicle from the dock and park it off-site and, lastly, report in person to the delivery dock or the main entrance to receive authorization to enter the building.
- j. Only magistrates shall have access to the indoor garage.

4.4.3.2 Mechanical/electrical/telecommunications/elevator rooms

Access to these rooms will be controlled by high-security card readers or locks. Access will be restricted.

4.4.3.3 Cleaners/contractors

- a. Cleaning company personnel will be certified to the appropriate level.
- b. An access control log will be used to control the coming and going of contractors. Contractors will have the appropriate level of accreditation to work in the complex. Contractors will be escorted into high-risk areas.

4.4.3.4 Key control

An electronic key box is required near the guard station.

4.4.3.5 Guard services

The building's guard services will operate 24/7/365.

4.4.3.6 Alarm system / Closed circuit television

- a. An access control system is required to control the doors of the building.
- b. An electronic intrusion system is required for perimeter intrusion detection.
- c. A video surveillance system is required for this building.

4.4.3.7 Fire detection system, equipment and monitoring

Provide a fire alarm system in the building. A two-stage system with voice communication is required.

4.4.3.8 Identification of assets

Tenant's assets include key personnel, sensitive information, key service operations, office equipment and service vehicles.

4.4.3.9 Tenant operations

The tenants' operations will influence the threats faced by the building. Some cases heard in the NMJC may be controversial, attract media and public attention and lead to public demonstrations in front of the building. Clients visiting the building may become frustrated or angry, or they may still be in custody. Tenants will have their own security services.

4.4.3.10 In addition to basic security, other measures are also recommended, such as:

- a. Provide an emergency response plan for the base building. This may require some coordination with tenants;
- b. Provide a business continuity or recovery plan for the base building;
- c. Provide an up-to-date procedures manual for the security guards. Ensure that the incident response procedures include coordination with other response agencies;
- d. Protect the building perimeter from accidental or deliberate damage. This includes installing bollards at building entrances and concrete planters along the perimeter where the building is exposed to vehicular traffic; and
- e. Ensure that the video surveillance provided at all points of entry is able to monitor and identify people entering and exiting the building.

4.4.4 Security and ATSSC

4.4.4.1 In addition to the base building security, some independent aspects of security are specific to ATSSC. These include:

- a. It is not anticipated that the floors occupied by ATSSC will have enhanced security due to the nature of the tribunals' work, although some security measures are still required;
- b. ATSSC's premises will still require an access control system and an independent video surveillance system that will be relayed to ATSSC's offices in Ottawa; and
- c. Should security personnel be required in the event of an emergency or crisis, ATSSC will rely on the base building security services for assistance.

4.4.4.2 The following additional recommendations also need to be considered for ATSSC spaces:

- a. The parking spaces allocated shall be reserved for tribunal members: for their enhanced personal security and to maintain an appropriate space for their judicial independence, members should only park in the parking garage;
- b. Tribunal members shall have reserved elevator access while in transit: while traveling between the parking garage and the upper floors, the elevator shall not stop at other floors to pick up anyone else (employees or visitors). This is to ensure members' security and reduce the risk of their judicial independence being compromised; and
- c. Equip each of the members' and registrar's podiums in the hearing rooms with a distress button: panic buttons, connected to the base building security service as well as to ATSSC's security offices in Ottawa, shall be discreetly installed on podiums so that they can call for help in the event of a crisis.

4.4.5 Security for CAS

- 4.4.5.1 Due to the activities of CAS and the courts, a higher level of security is required, above and beyond base building capacity.
- 4.4.5.2 The areas to be used by CAS will require security devices that are independent of the building's security. These systems shall include a video surveillance system, an access control system for the premises, an intrusion alarm system for the premises, and distress buttons in the courtrooms and judges' offices.
- 4.4.5.3 CAS is responsible for the security of their premises. This security service will be responsible for operating the security operations centre in the building, responding to emergencies in the courtrooms, ensuring that the video surveillance and access control system is independent of the base building system, and protecting CAS employees.
- 4.4.5.4 In order to address the risks identified in the TRA, it is also recommended to implement other measures, such as:
 - a. The parking spaces allocated to CAS shall be reserved for judges: the judges should only park in the parking garage, to enhance their personal security and maintain an appropriate space for their judicial independence;
 - b. Judges shall have reserved elevator access while in transit: while traveling between the parking garage and the upper floors, the elevator shall not stop at other floors to pick up anyone else (employees or visitors) so that the judges' security is maintained and to reduce the risk of judicial independence being compromised;
 - c. Install exterior windows that adequately protect the judges against ballistic attacks;
 - d. Provide appropriate sound dampening in the judges' offices to maintain the integrity of confidential information;
 - e. Build the judges' and clerks' podiums in the courtrooms with adequate protection against ballistic attacks;
 - f. Equip each of the judges' and clerks' podiums in the courtrooms with a distress button;
 - g. Equip each of the Registrars' offices that are accessible to the public with a window separating them from the public and made of vandal-resistant glass;
 - h. CAS shall have the equipment required to conduct a secondary personal search of an individual before he or she enters the courtroom;
 - i. Provide the security operations centre (SOC) with adequate protection against ballistic attacks;
 - j. The SOC shall be located in a high-security/low activity zone;
 - k. The SOC shall not be located in an area that is easily accessible or visible to the public;
 - l. The SOC shall have adequate backup equipment in the event of a power, computer or telephone failure, and this equipment shall be independent of the base building;
 - m. Provide emergency ventilation to respond to a chemical or biological incident inside the building; and





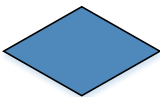
- n. Provide an emergency method for shutting off air supply into the building in the event that a chemical or biological incident occurs outdoors.

4.5 Flow diagrams

4.5.1 General

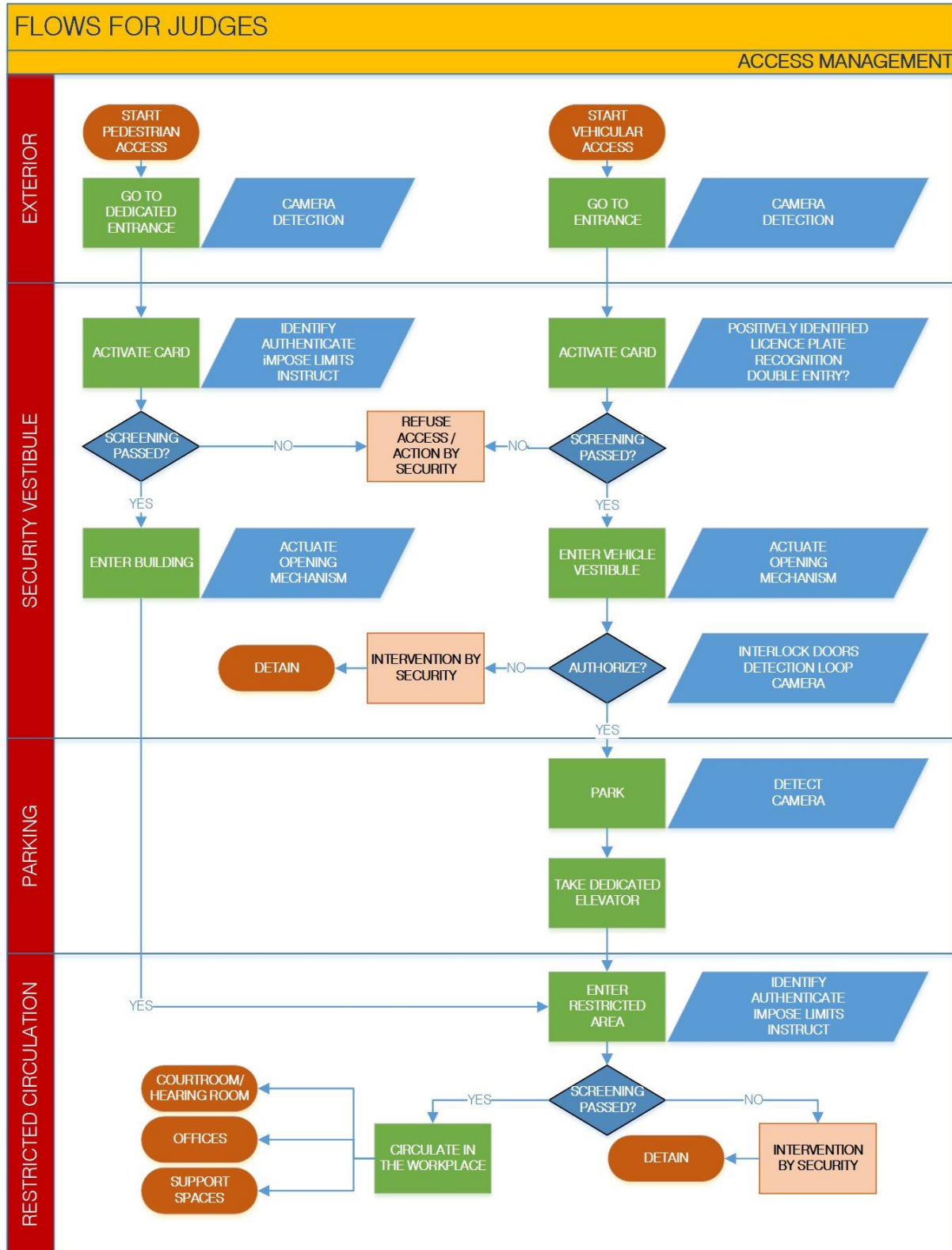
- 4.5.1.1 The following five flow diagrams address building access and have been produced in accordance with the TRAs and the design guidance provided by both Operational Security and Physical Security, as expressed in the Design Brief.
- 4.5.1.2 They have been designed to help the Project Owner the assess risks and determine the means required to mitigate them, and for the design professionals to be able to plan physical arrangements that will ensure that the building will support the safety principles put forward in the FTP.
- 4.5.1.3 It should be recalled that the fundamental objective of Operational Security is to ensure that all persons, goods, property and equipment that have passed through the security entry post are “sterile” and do not reasonably pose a risk to the personnel, the judiciary, subcontractors, the public and legal counsel.
- 4.5.1.4 Notwithstanding the above, certain additional measures are to be taken to counter exceptional situations (e.g. the adoption of restricted circulation). These additional measures will be described in more detail in Part 5 of the Functional Program.
- 4.5.1.5 The flow diagrams are to be applied, in an identical manner for each of the five types considered, to all the organizations present, i.e. PSPC, CAS and ATSSC. It should be noted that subcontractors with a security rating that is recognized at the appropriate level will follow employee circulation routes, while those without such a rating will follow public circulation routes. All equipment, materials and tools entering the building will need to follow the provisions set out in 4.5.6 – Circulation of Merchandise.

4.5.1.6 Legend for flow diagrams

	Beginning/end
	Process
	Data
	Sub-process
	Decision

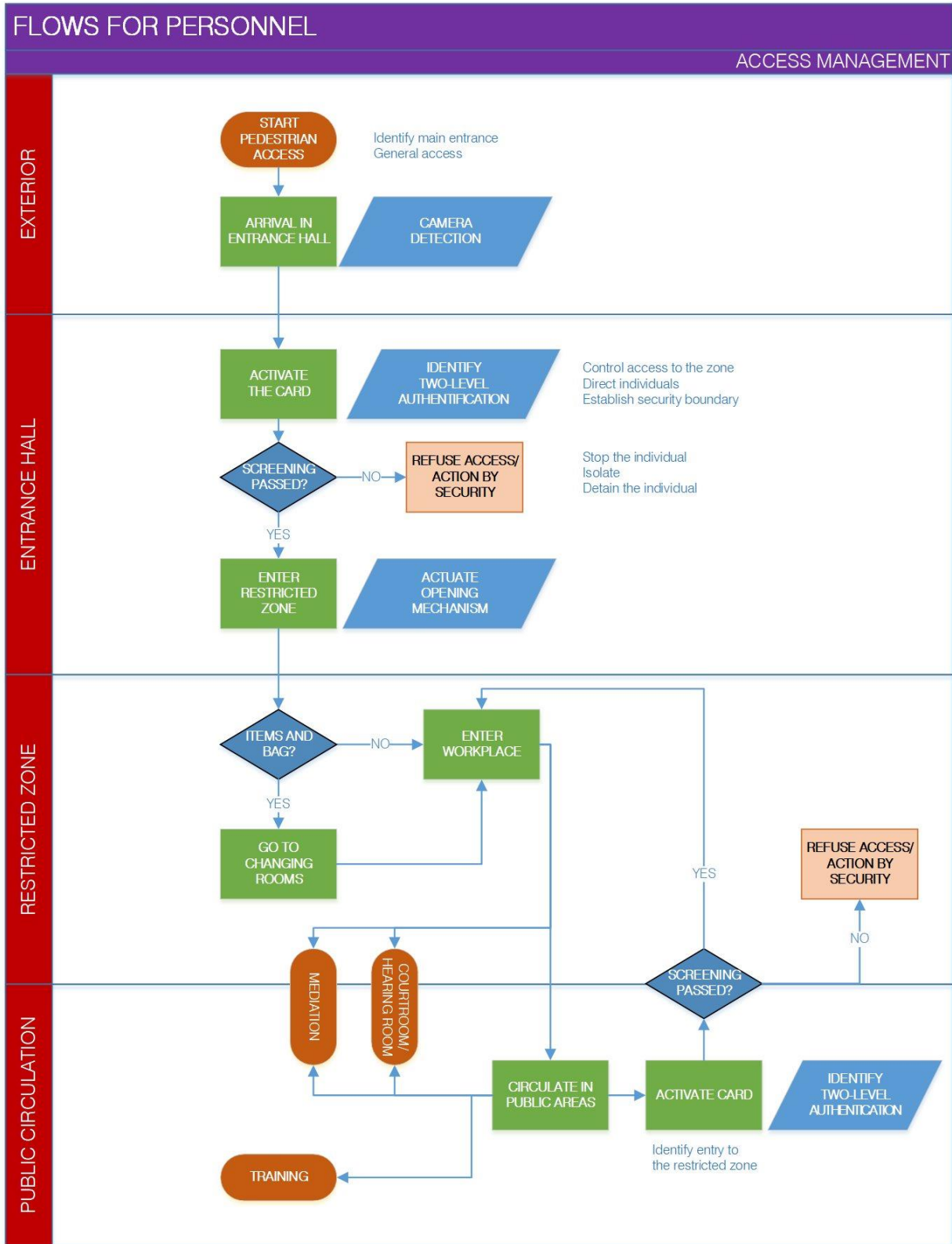
4.5.2 Circulation of judges

- 4.5.2.1 The functional program assumes that judges will not always be escorted when they leave the NMJC. When they return, they will be required to use a dedicated access, which should normally be at a good distance from the public entrances.
- 4.5.2.2 Much of the security concerns revolve around ensuring that only the magistrate has access to the driveway or garage and that any “piggyback” entries will be intercepted and resolved.
- 4.5.2.3 Pedestrian access shall lead as directly as possible to restricted circulation areas.
- 4.5.2.4 There is no other elevator reserved for magistrates than the one leading to their parking lot. Any other elevator with restricted access shall be used by both judges and personnel.
- 4.5.2.5 Judges will never use public circulation areas on their way to a space intended for them.
- 4.5.2.6 The chairs and members of administrative tribunals are considered members of the personnel (see 4.5.3).



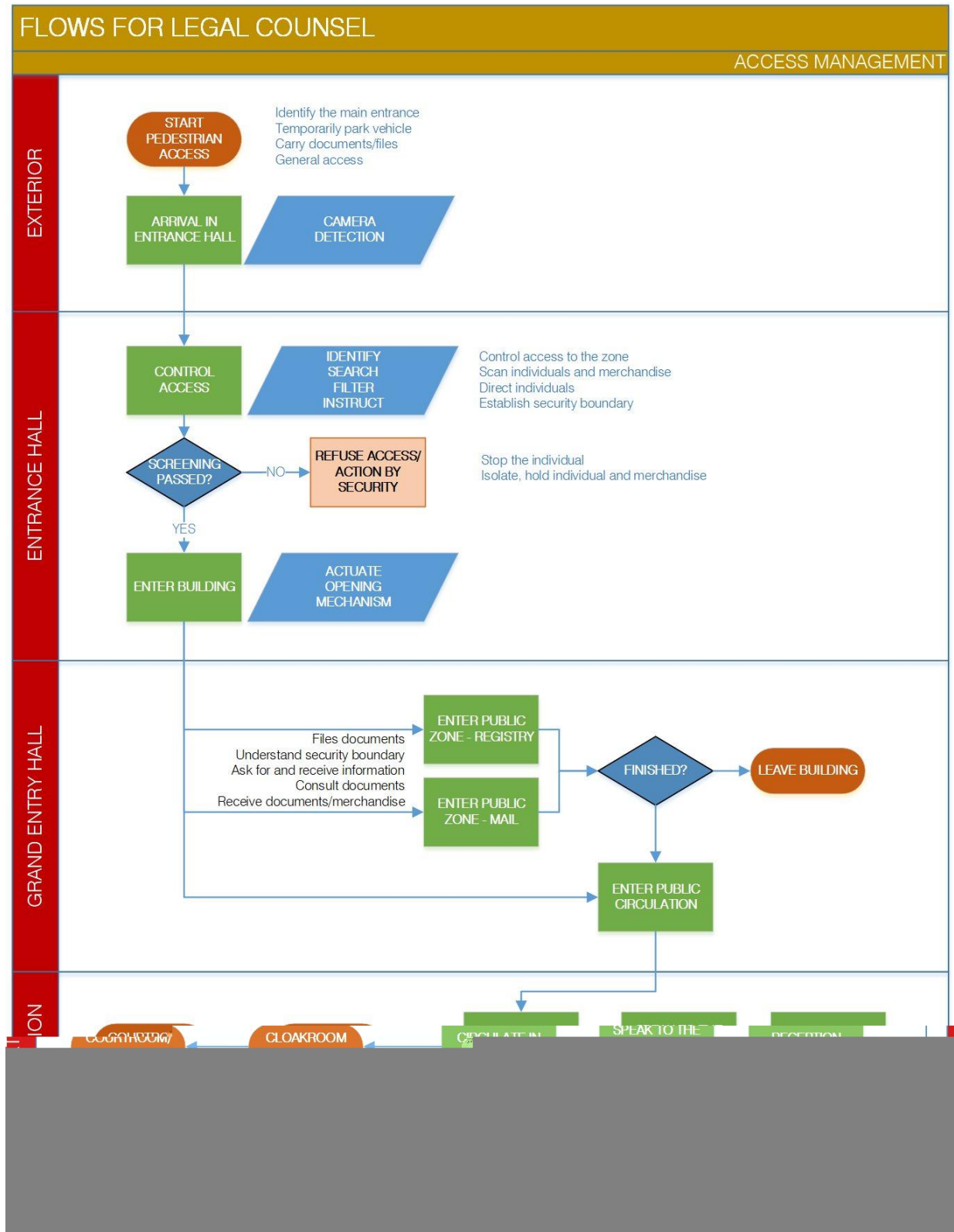
4.5.3 Circulation of personnel

- 4.5.3.1 Personnel will use the main entrances to the building. Upon entry, they will be distinguished from members of the public and will be directed to a dedicated card-based access equipped with two-level authentication.
- 4.5.3.2 Access to the restricted area shall be as immediate as possible. In addition, at the beginning of the working day, building personnel will first use the changing rooms (lockers) to take possession of their work kits.
- 4.5.3.3 Access to public circulation (PC) areas from restricted circulation (RC) areas and the return to RC areas shall require compliance with the respective security levels: from RC to PC without an identity check, from PC to RC with two-level authentication.
- 4.5.3.4 Courtrooms, hearing rooms and mediation rooms will have dual access, i.e. from both RC and PC areas. RC access shall have the required access controls except when bailiffs are present, in which case they will be able to override any automatic access control.



4.5.4 Circulation of legal counsel

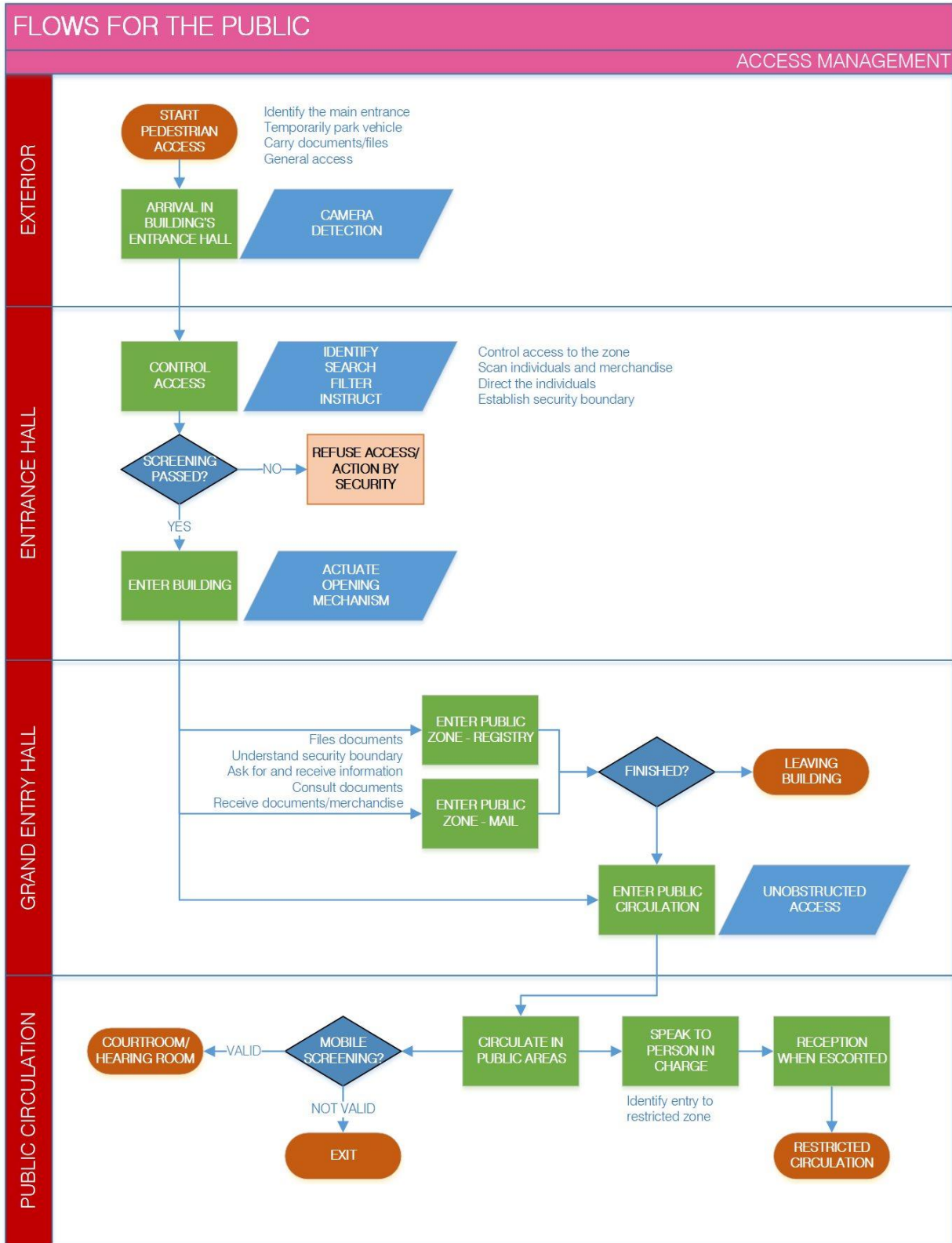
- 4.5.4.1 Legal counsel and the public follow the same path from the NMJC's entrance to the public circulation areas. Provision shall be made for them to be able to park their vehicles temporarily at the entrance in order to drop off people and equipment.
- 4.5.4.2 Entry screening and searches are intended to "sterilize" the individual as well as the goods, merchandise and equipment they have with them.
- 4.5.4.3 Access to the "Registry and mail" areas is required for both CAS and ATSSC. However, these areas are not similar for these two services.
- 4.5.4.4 Access to the cloakrooms is only required for CAS, which requires that legal counsel wear formal attire, whereas the Administrative Tribunals only require civilian attire.
- 4.5.4.5 Movement in restricted areas will only be allowed with an escort.



4.5.5 Circulation of members of the public

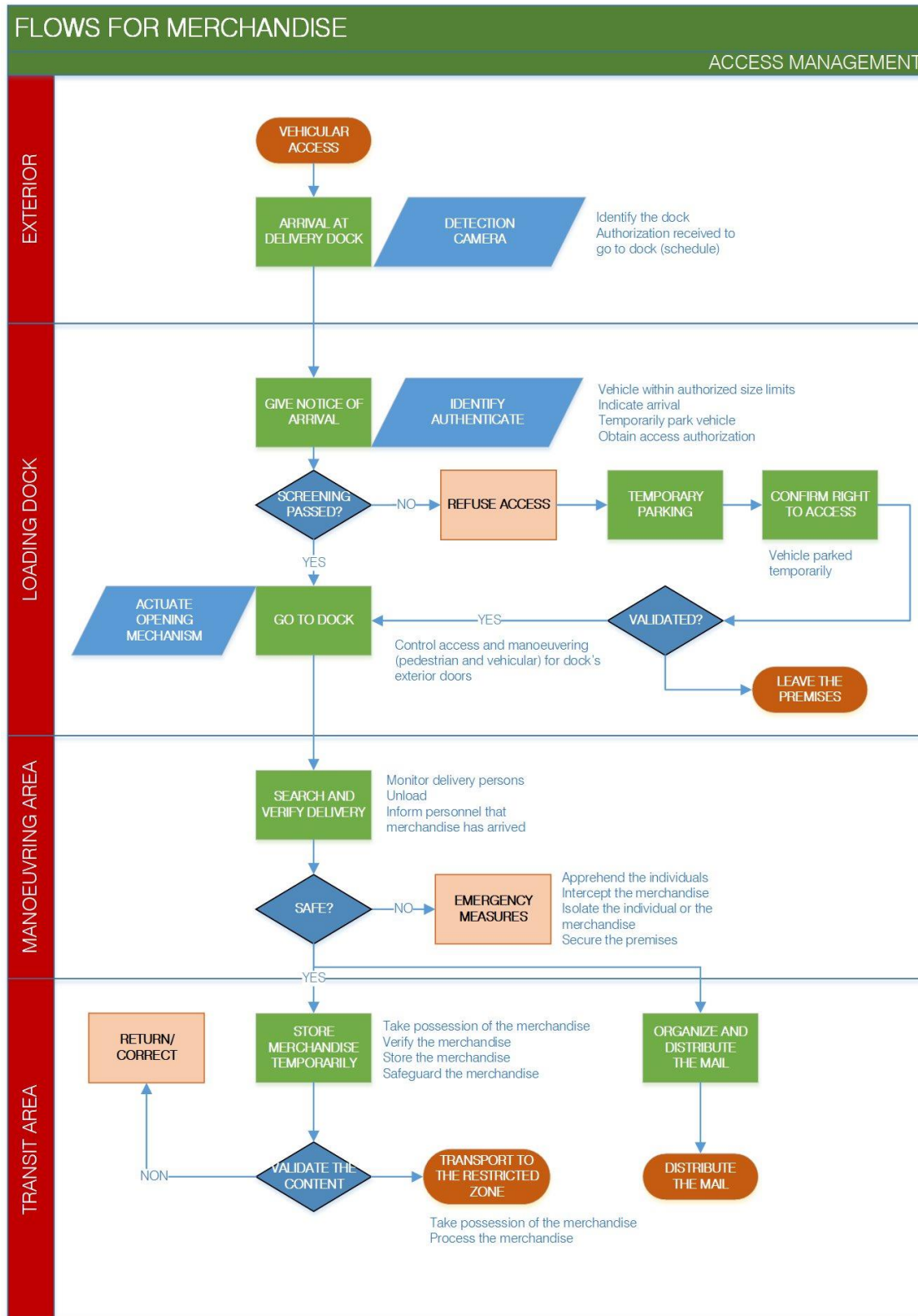
- 4.5.5.1 Provision must be made for certain vehicles belonging to members of the public to be able to park temporarily at the entrance to drop off people and equipment.
- 4.5.5.2 Entry screening and searches are intended to “sterilize” the individual as well as the goods, merchandise and equipment they have with them.
- 4.5.5.3 Access to the “Registry and mail” areas is required for both CAS and ATSSC. However, these areas are not similar.
- 4.5.5.4 Depending on the sensitivity of the case and operational security assessments, mobile entry controls may be positioned at the entrance to a hearing room in order to provide an additional level of security. All members of the public seeking access to the courtroom will be subject to controls.
- 4.5.5.5 Any movement through restricted areas shall take place only under escort.
- 4.5.5.6 On occasion, both CAS and ATSSC lend (or rent) their spaces to external organizations (such as the *Ordre des ingénieurs du Québec*) or to administrative tribunals other than CIRB. Access and circulation will be considered “public” for all such participants.¹

¹ An exception is made for members of the administrative tribunals in the mixed zone.



4.5.6 Circulation of merchandise

- 4.5.6.1 Deliveries will generally be made by appointment. Ad hoc deliveries by FedEx, etc. will be made at the main entrances.
- 4.5.6.2 The delivery dock is a covered outdoor area. The vehicle may be subject to prior inspection if deemed necessary for operational security.
- 4.5.6.3 If the paperwork or other required items are not in order or are ambiguous, the vehicle may be moved to a temporary parking area while the situation is being resolved.
- 4.5.6.4 The first action taken in the manoeuvring area will be a systematic CTX (computerized tomography explosive protection) or equivalent search of all contents to be admitted to the NMJC. Identification of a hazardous material will automatically trigger emergency measures.
- 4.5.6.5 CAS and ATSSC personnel will be admitted to the site once the search is complete. The equipment is placed in "transit" or deemed compliant and allowed inside the building. Mail is taken to the mailroom for sorting and classification. Each tenant will be responsible for distributing its own mail.



4.6 Systems characterization - IT and Multimedia

4.6.1 Basic data

4.6.1.1 Provide for all telecommunications and multimedia items, equipment and requirements needed for the construction of the new NMJC building, including its exterior configuration within the lot boundaries, as well as everything requested in all the documents. This includes a statement on the new IT requirements for each of the workstations, technical rooms, training rooms, conference rooms and copy rooms in order to cover all the systems for each of the departments' premises.

4.6.1.2 Below are preparatory tables for the distribution of requirements by room and by department. This information will need to be reviewed and revalidated with the departments in order to prepare the blocking plan.

4.6.1.3 Four tables are provided below: the first is for the Courts Administration Service (CAS); the second is for the Administrative Tribunals Support Service of Canada (ATSSC); the third is for mixed zones, where the needs will be for CAS, ATSSC and the public; and the last is for Public Services and Procurement Canada (PSPC).

4.6.1.4 TABLE 1: Courts Administration Service (CAS)

	CAS WIFI	CAS WIRELINE	PUBLIC WIFI	AUDIO MULTIMEDIA	VIDEO MULTIMEDIA		CAS WIFI	CAS WIRELINE	PUBLIC WIFI	AUDIO MULTIMEDIA	VIDEO MULTIMEDIA
Courtroom	■	■	■	■	■	Clerk, Operational Support	■	■			
Antichamber						Law Clerk	■	■			
Interpreter's booth	■			■		Chief Security Officer	■	■			
IS technician's room	■			■	■	Regional IT Network Technician	■	■			
IT/AV technical room		■		■	■	LAN Service Technician	■	■			
Waiting area			■			Meeting room(s) - medium	■	■			
Consultation room			■			Enclave	■	■			
Judges' office	■	■		■	■	Work room	■	■			
Judges' room	■			■	■	Project room	■	■			
Judges' kitchenette	■					Quiet room(s)	■	■			
Judges' lounge	■					Kitchenette	■				
Business centre	■	■				Lounge	■				
Work area	■	■				Changing room for personnel	■				
Storage room for courtroom						Business centre	■	■			
Videoconference room	■	■		■	■	Concentration room	■	■			
Training room	■	■	■	■	■	Telephone booth	■	■			
Formal conference room	■	■		■	■	Shared storage					
Mediation rooms (ADR)		■	■			Registry	■	■	■		
Adjoining break-out rooms			■			Photocopy area – Registry	■	■			
Cloakrooms for legal counsel			■			Open work stations	■	■			
Judicial library	■		■			File consultation room	■			■	
Director of Operations	■	■				File service area	■				
Administrative Clerk - Support	■	■				Administrative file storage	■				
Chief Registry Officer (supervisor)	■	■				Document processing area	■				
Registry Officer	■	■				E-copy station	■	■			
Registry Clerk	■	■				Storage - Active files	■				
Regional Director General	■	■				Storage - Inactive files	■				
Administrative Assistant	■	■				File review area	■				
Director of Management Services	■	■				Vault for classified files					
Administrative Clerk - Support	■	■				Mailroom	■				
Project Manager	■	■				Mail counter	■				
Supervisor, Administrative Services	■	■				Drop-off area					
Coordinator, Operational Support	■	■				General stationery					
						ITS server room			■		

4.6.1.5 TABLE 2: Administrative Tribunals Support Service of Canada (ATSSC)

	ATSSC WIFI	ATSSC WIRELINE	PUBLIC WIFI	AUDIO MULTIMEDIA	VIDEO MULTIMEDIA
Hearing room	■	■	■	■	■
Interpreter's booth	■			■	
IS technician's room	■			■	■
IT/AV technical room		■		■	■
Waiting area			■		
Consultation room			■		
Members' office	■	■			
Mediation rooms (ADR)		■	■		
Break-out rooms			■		
Regional Director's office (Registrar)	■	■			
Office - Legal Counsel	■	■			
Administrative assistant workstations	■	■			
Industrial relations officer workstations	■	■			
Case management officer workstations	■	■			
IT office	■	■			
Reception and waiting area	■	■	■		
Meeting room	■	■	■		
Videoconference room	■	■		■	■
ITS server room	■	■			
Business centre	■	■			
Archives and mail corner	■				
Storage					
Kitchenette	■				
Waste sorting island					

4.6.1.6 TABLE 3: Mixed zones

	CAS WIFI	CAS WIRELINE	ATSSC WIRELINE	ATSSC WIRELINE	PUBLIC WIFI	AUDIO MULTIMEDIA	VIDEO MULTIMEDIA
Courtroom / hearing room	■	■	■	■	■	■	■
Antichamber							
Interpreter's booth	■		■			■	
IS technician's room	■		■				
IT/AV technical room		■		■		■	■
Waiting area					■		
Consultation room					■		
Judges'/members' office	■	■	■	■			
Judges' kitchenette	■		■				
Judges' lounge	■		■				
Business centre	■	■	■	■			
Work area	■	■	■	■			
Storage room for hearing room							
Service area	■	■	■	■			
Mediation rooms (ADR)	■	■	■	■	■		
Adjoining break-out rooms					■		
Kitchenette	■		■				
Business centre	■	■	■	■			
Caucus	■	■	■	■			

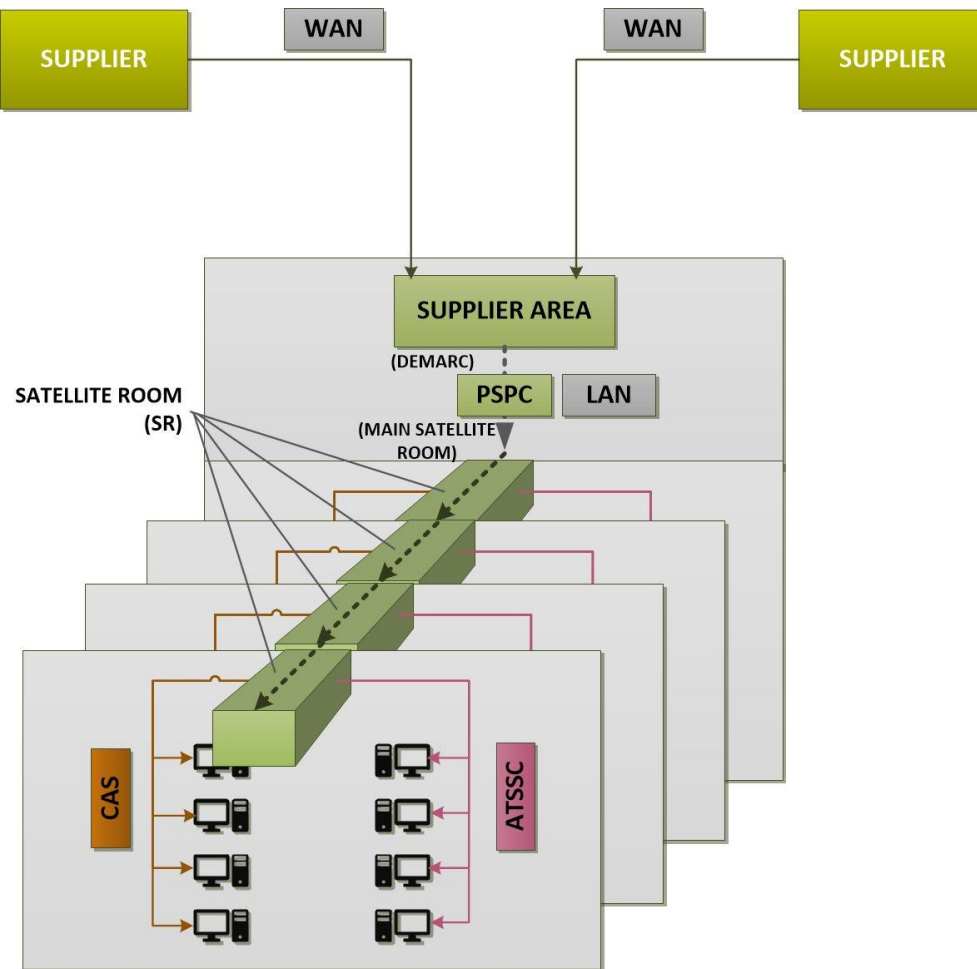
4.6.1.7 TABLE 4: Public Services and Procurement Canada (PSPC)

	PSPC WIFI	PSPC WIRELINE	PUBLIC WIFI	AUDIO MULTIMEDIA	VIDEO MULTIMEDIA		PSPC WIFI	PSPC WIRELINE	PUBLIC WIFI	AUDIO MULTIMEDIA	VIDEO MULTIMEDIA
Offices	■	■	■			ELECTRICAL & MECHANICAL					
Meeting and collaboration room	■		■	■	■	Main electrical room	■		■		
Workshop	■					Generator room	■		■		
Lockers & showers_RPM chang. r'ms						Adjoining HQ substation	■		■		
IT suppliers' rooms		■				Electrical room	■		■		
Storage space						Drinking water entry room	■		■		
Kitchenette	■					Fire pump room	■		■		
Waste sorting island						Diesel reservoir room					
Magistrates' parking						Ventilation	■		■		
Shared circ., restrooms and lobbies						Secondary mechanical room	■		■		
Technical services (stairs, services)		■				Ventilation/plumbing shafts					
ATSSC Grand Entrance Hall	■		■			Main mechanical room	■		■		
CAS Grand Entrance Hall	■		■			Thermal storage					
Elevators						Mechanical smoke flue-vent					
Lockers and showers						Vertical ducts					
Mailroom						IT relay (satellite)	■	■	■		
Manoeuvring area - Reception	■	■	■			Control centre					
Merchandise in transit						Main reception desk - Lobby	■	■			
Manoeuvring area - Reception						Security station	■	■		■	■
Refrigerated local compost						Security Operations Centre (SOC)	■	■		■	■
Waste						Room for security personnel	■	■		■	■
Recycling						Lockers & showers _Chang. rms (SOC)					
Janitorial and maintenance						Kitchenette	■				
						Waste sorting island					
						Search/control area	■	■			

4.6.1.8 Design the telecommunications and multimedia service environments based on the same premises and in close coordination with all the other specialties, taking into account the following criteria: security, durability, accessibility, sustainable development, energy efficiency and ease of operation and maintenance.

4.6.1.9 After identifying and confirming the new requirements, a strategy will need to be agreed upon with PSPC's IT project authority in order to properly orchestrate how the data on the plans is interpreted and develop a basic scheme for the IT structure. Several meetings will be needed with the stakeholders involved in each department in order to validate, satisfy and confirm each of the needs (see the service tables and the sketch of the IT framework) by room, by space and by location in the building. It will be important to produce a report and sketches to present the entire proposal, and to produce the calculations needed to design the technical rooms (electrical, mechanical, etc.), including the room for the providers of wireline services (demarcation), the main telecommunications room (MTR) and the satellite telecommunications (ST) rooms for the distribution of services.

4.6.2 Initial sketch of the IT framework



- 4.6.2.1 With the collaboration of SSC's IT manager, issue a blocking plan for the voice and data service networks for users as well as the multimedia environments for the conference, training and meeting rooms for the entire building. The blocking plan shall also reflect needs and services for classrooms and security environments as well as any other needs that CAS and ATSSC may have planned. The blocking plan shall enable the production of drawings and specifications signed and sealed by one or more engineers who are members of the *Ordre des ingénieurs du Québec*.
- 4.6.2.2 As mentioned above, provide several rooms in order to meet the building's multimedia and telecommunications (IT) needs. Provide a room for service providers to allow separation (demarcation) from the departmental equipment, including that of SSC and PSPC. Plan to obtain approvals for two service entrances from two streets, as shown in the basic sketch above. The demarcation room will also be used for connections for the elevators, generator, and all the mechanical environments of the building.

- 4.6.2.3 Provide a main telecommunications room (MTR) will be required for CAS equipment that will provide telecommunications and multimedia services for CAS, ATSSC and others (e.g. public WIFI). This room will allow coordination with the satellite telecommunications (ST) rooms on each floor and within a 90-metre radius, for the distribution of voice, data and multimedia services. There will be ST rooms for routing and service distribution. During the design period, validate the relevance of having separate ST rooms for CAS and ATSSC and to have mixed rooms (example: for courtroom and hearing room needs).
- 4.6.2.4 Based on the information in the tables, design all the service distribution for all building users and services, including: security; maintenance; the cafeteria; court, hearing, training, conference and meeting rooms; and other rooms and/or potential rooms.
- 4.6.2.5 The distribution network will be designed as a certified structured cabling network to guarantee the installation, cables and cabling components.
- 4.6.2.6 Design the services with support from the PSPC Project Manager and the PSPC IT Project Coordinator. These individuals have a mandate to support and provide quality control in all information technology (IT) requirements. They will work closely with you for the purposes of this section.
- 4.6.2.7 Wireless (Wi-Fi) technologies will also be used. The design shall provide for the possibility of promoting Wi-Fi deployment in several parts of the building as set out in the four tables. Wireline and Wi-Fi services are expected to be used together to achieve a better transition to the new procedures.
- 4.6.2.8 The multimedia section includes video and audio services for the rooms, as indicated in the four tables mentioned above. Your design must include a technical explanation of each of the solutions for each room, including: the solution for video-conference presentations; audio translation; video recordings; video and/or audio replay; external communications; and any other requests.

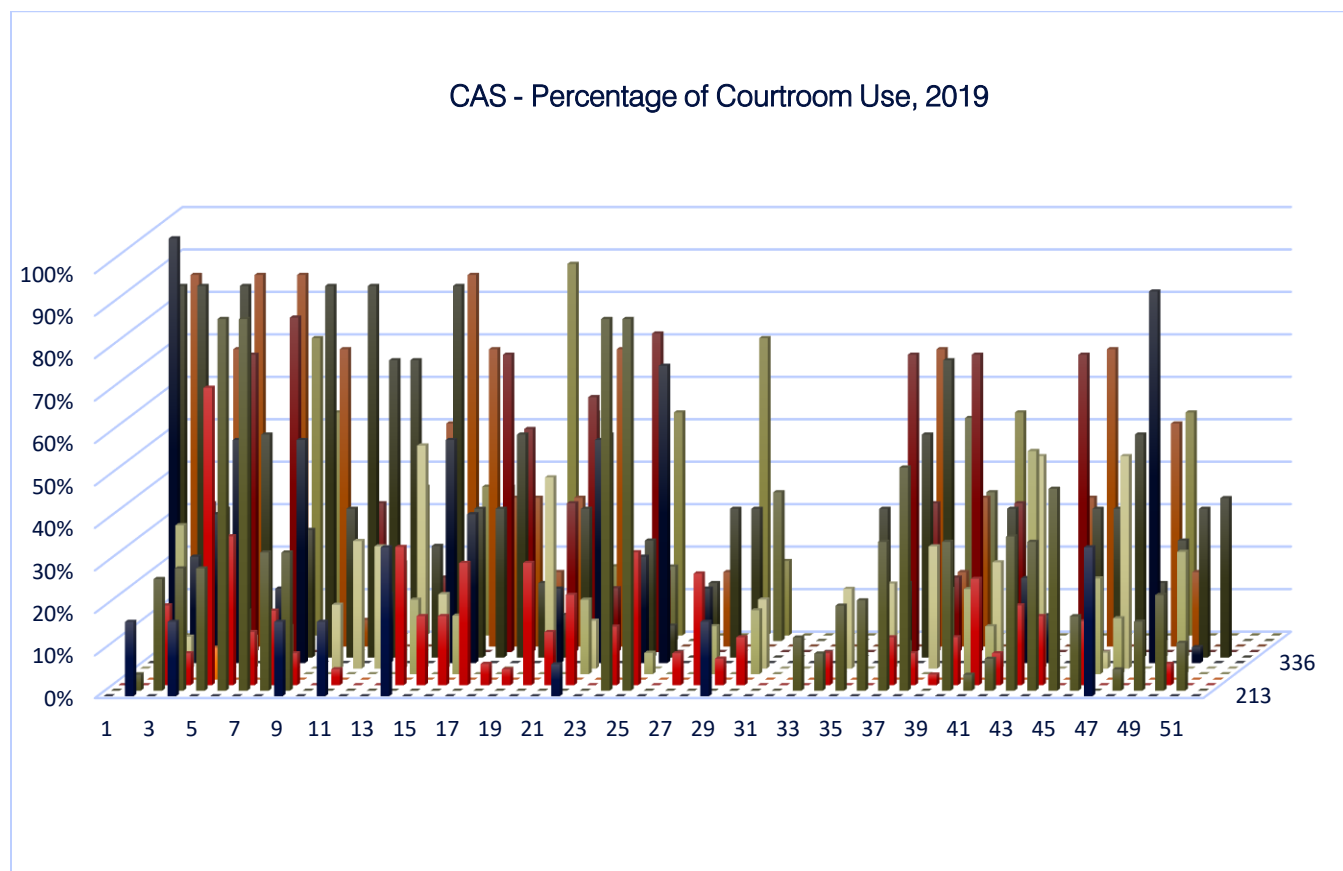
4.7 Courtroom, hearing room and mediation room use analysis

4.7.1 CAS occupancy

4.7.1.1 The following data is derived from the survey of the use of courtrooms, hearing rooms and related spaces in the 30 McGill Street judicial complex in Montreal, for the period from January 1 to December 31, 2019.

4.7.1.2 The *Stratégie nationale de logement des cours et des tribunaux fédéraux* (title of English document to follow), produced by PSPC at the beginning of 2020, reports that court space was used at a rate of around 20 %. This is supported by the analysis carried out by the programming team.

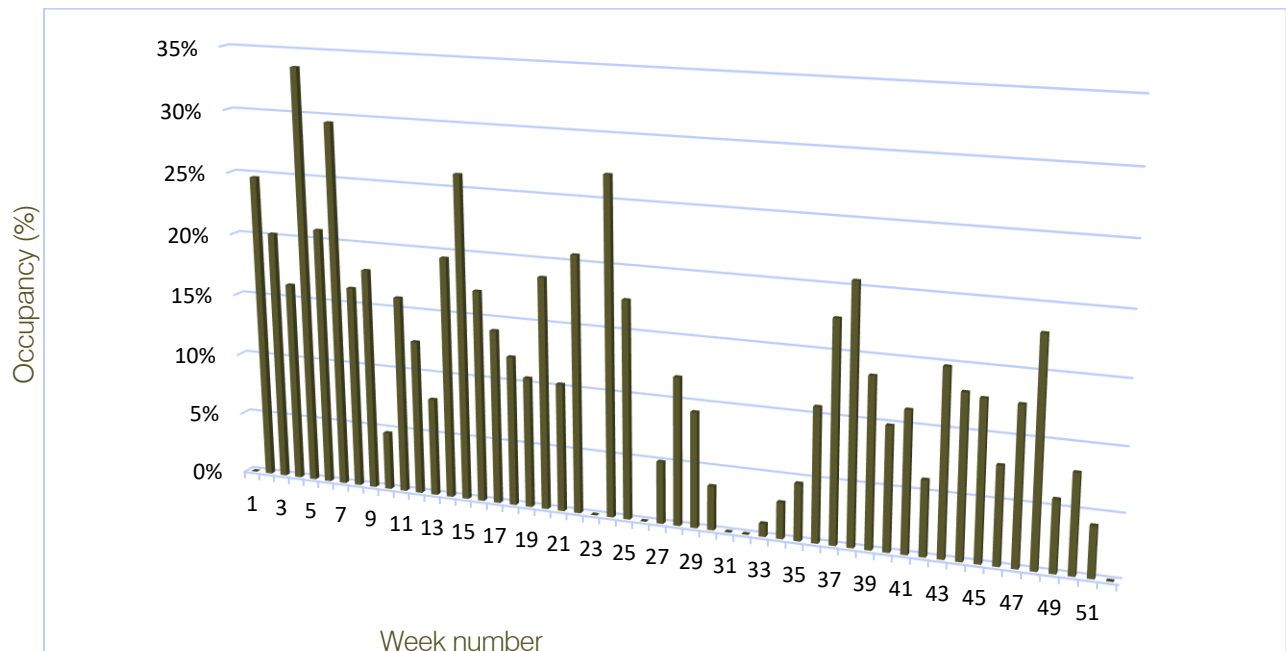
4.7.1.3 According to the survey results provided, the courtrooms and hearing rooms (i.e. rooms 213, 306, 309, 319, 320, 334, 336, 406, 409, 410, 446 and 447) were used as follows:



4.7.1.4 The following table shows the overall occupancy rate. It is worth noting that:

- The rate never exceeds 33 %;
- Winter is the busiest period. Furthermore, if the distribution during this period were normalized, the average occupancy rate would be 18 %;
- Weekly occupancy of one specific room may reach as high as 100 % during a specific week;
- Some rooms appear to be preferred by users over others. For example, Room 406 was used for 37 weeks at rates ranging from 8 % to 88 %, while Rooms 306 and 410 had annual rates of 23 % and 30 %, respectively; and
- The FCA has no choice in which courtroom to use, due to the special conditions required.

CAS - Percentage of Courtroom Use, 2019



4.7.2 ATSSC occupancy



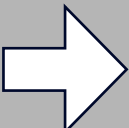







- 4.7.2.1 An estimate of current hearing room and mediation room occupancy was obtained from each of the administrative tribunals planned for Montreal, with the exception of the SCTC. The following table is therefore a compilation of the data obtained. It needs to be validated by the service's central administration to ensure that the arrangements to be made in the FTP are viable.
- 4.7.2.2 Assuming an availability of 175 days/year (i.e. 46 weeks/year, at 75 % maximum use/week for the diversity factor), the current need would be for three hearing and mediation rooms.

ATSSC: Projected Occupancy of Hearing/Mediation Complexes			
TRIBUNAL	Number of Hearings	Average length (days)	Total Required (days)
CIRB	106	3	318
CART	2	1	2
CHRT	5	5	25
CT / PSDPT	1	20	20
FPSLRB	53	3	159
TATC	15	1	15
SCTC	Unknown	Unknown	?
		TOTAL:	539
		Number required:	3.08

4.8 Prospective analysis

4.8.1 Diagram

- 4.8.1.1 The following diagram illustrates rising and falling trends in the factors underlying potential changes to space planning needs at the NMJC. These factors are: the number of scheduled cases; the number of tribunals; the number of personnel; the quantity of paper files (when paper is used as the main information and communication tool); and anticipated changes in the organization of work.
- 4.8.1.2 A 10-year period has been studied, i.e. until 2030.
- 4.8.1.3 The data were collected from representatives of the two administrative services at working sessions held for this purpose. Although the data are not precise, they do have value as indicators, making it possible to make working hypotheses about changes in the general framework.

Description	CAS	ATSSC	Remarks
Number of cases			ATSSC has increased 25% in 5 years
Number of court-rooms /hearing rooms			Judicial structure remains stable. Significant increase in new administrative tribunals is likely
Number of people on staff			ATSSC could see a five-fold increase in personnel (optimistic scenario)
Quantity of paper files			Impact of the electronic environment for both CAS and ATSSC
Work organization			Impact of the electronic environment for both CAS and ATSSC

4.8.2 Working hypotheses

4.8.2.1 The following assumptions were developed in the course of programming, based on the data collected:

- CAS will experience steady personnel growth over the next 10 years. Assuming 3 % annual growth, CAS is expected to have 80 employees in 2030;
- ATSSC is expected to experience a significant increase in personnel. Extrapolating the rate of 4.5 % per year demonstrated over the last 5 years, ATSSC is expected to have 28 employees in 2030;
- The likelihood of new administrative tribunals being added will lead to an increase in the demand for ATSSC's hearing and mediation rooms. The data do not allow for a reliable forecast. If in a few years CIRB adds one hearing room to the two it already has, a maximum of two new rooms will be required by 2030;
- The number of cases is expected to grow in line with CAS's current trend. Given the low room utilization rate, the current number of available rooms should easily be able to absorb the demand growth;

- e. The introduction of e-courts and e-tribunals is expected to lead the two services to move away from paper-based operations to digital mode. The impact of such a change will be significant, inasmuch as it will make available space that was previously dedicated to receiving, processing, storing and disposing of paper. Among other things, this opening up of space should make it possible to accommodate the new personnel mentioned above at low cost;
- f. In addition, in light of the current situation and telecommuting and social distancing measures, the NMJC will most likely follow the lead of the Supreme Court and adopt, at least in part, the use of the “Virtual Court.” This will reduce demand for courtrooms and hearing rooms or significantly limit the growth of that demand;
- g. The organization of work will undergo a major transformation. Major growth can be expected in telecommuting and a shift will occur from paper-based to virtual and/or digital modes.

4.8.2.2 Flexibility built into the FTP

Taking into account the working hypotheses of the previous paragraph, the programming foresees the following arrangements:

- a. Concentrate adjacent areas (used for paper modes) in the workplace in order to allow for the expansion of the number of personnel in both services;
- b. Promote the use of GCworkplace-type layouts to facilitate expansion and a transition to virtual modes of work organization;
- c. Allow the area of spaces earmarked for shared use to be increased on demand;
- d. Design the IT and AV infrastructure for 2035, taking into consideration all growth assumptions; and
- e. Wherever possible, reserve space in the base building for expansion (buffer space).

4.9 Analysis of vertical transportation

4.9.1 Traffic study

Analyses have been made of each type of system that could be considered in order to assess the system's capacity in the event of a change in the building's purpose (i.e. conversion to an office building). The goal was to ensure an adequate level of service for vertical circulation, etc.

4.9.2 Population

- a. The number of users of vertical transportation systems was estimated based on an analysis of the preliminary data and the occupancy density assumptions (based on the CGW standard). The analysis considered the most critical scenarios for the elevator systems, i.e., in the morning and at noon.
- b. Using a high occupancy rate (14 m²/person, compared to the current rate of 18 m²/person that is normally recognized for buildings with administrative and professional functions), we obtain a maximum population of 983 people. The traffic intensities used (i.e., the number of users per 5 minute peak period as typically used) were 13.5 % in the peak morning period and 13.5 % in the peak noon period.

4.9.3 Analysis A: One group of 5 elevators in destination mode

- a. The analysis considered a group of 5 traction elevators with a capacity of 1,815 kg and a nominal speed of 2 meters per second. The analysis of this system yielded the following results:

Peak period	Floors	Wait time	Intervals	Load factor	System capacity
Morning	1 to 9	15 sec.	31 sec.	11 %	132 pers.
Noon	1 to 9	21 sec.	35 sec.	16 %	132 pers.

- b. Results: The overall results are excellent, and in line with the criteria established for this type of function.

4.9.4 Analysis B: One group of 5 elevators in traditional mode

- a. The analysis considered a group of 5 traction elevators with a capacity of 1,815 kg and a nominal speed of 2 meters per second. The analysis of this system yielded the following results:

Peak period	Floors	Wait time	Intervals	Load factor	System capacity
Morning	1 to 9	24 sec.	38 sec.	17 %	132 pers.
Noon	1 to 9	27 sec.	39 sec.	19 %	132 pers.

- b. Results: The overall results are excellent, and in line with the criteria established for this type of function.

4.9.5 Analysis C: One group of 3 elevators and one group of 2 elevators in destination mode

- a. The analysis considered 2 groups of traction elevators with a capacity of 1,815 kg and a nominal speed of 2 metres per second, i.e. one group of 3 elevators and one group of 2 elevators.
- b. The population was distributed as follows: 60 % in the group of 3 elevators and 40 % in the group of 2 elevators.
- c. The analysis of this system yielded the following results:

4.9.5.1 Group of 3 elevators

Peak period	Floors	Wait time	Intervals	Load factor	System capacity
Morning	1 to 9	39 sec.	49 sec.	17 %	80 pers.
Noon	1 to 9	51 sec.	56 sec.	22 %	80 pers.

4.9.5.2 Group of 2 elevators

Peak period	Floors	Wait time	Intervals	Load factor	System capacity
Morning	1 to 9	26 sec.	40 sec.	8 %	52 pers.
Noon	1 to 9	34 sec.	44 sec.	10 %	52 pers.

— Results:

- The overall results for the group of 3 elevators do not meet the criteria established for this type of function.
- All the results for the group of 2 elevators meet the criteria established for this type of function.

4.9.5.3 Analysis criteria

- For an office building with similar physical characteristics (Class A), a system with an average morning wait time (WT) of less than 30 seconds will be considered excellent performance, from 30 to 33 seconds will be considered good, and more than 33 seconds will be considered average.
- For an office building with similar physical characteristics (Class A), a system with an average noon WT of less than 33 seconds will be considered excellent performance, from 33 to 36 seconds will be considered good, and more than 36 seconds will be considered average.
- The interval (INT) represents the average time between successive arrivals of elevators on the main level. INTs of less than 35 seconds are considered excellent performance, while INTs of more than 45 seconds are considered marginal. WTs are more representative of the efficiency of a system, since they take into account waiting on all floors.
- System capacity (SC) is calculated based on population data. It represents the number of people using the system during the busiest five minutes of the day.
- The load factor (LF) is defined as the ratio of the maximum number of passengers per round trip to the maximum number that the cabin can hold. An optimal system is characterized by LFs of less than 50 %. A percentage higher than 60 % is considered excessive, as very often passengers will complain that the cabins are too crowded.

4.9.5.4 References

These analyses are based on the theories set out in the manual by George R. Strakosch, *Vertical Transportation: Elevators and Escalators, 2nd Edition*, and the results were calculated using the Simex traffic simulation software we developed.

5. LAYOUT AND DESIGN SPECIFICATIONS

5.1 Summary table

The summary table of surface areas presents all of the needs assessed based on the organization of the project (organization charts, regulations, action missions (FAST) and strategic objectives) while at the same time correlating them with the physical framework of the building. The surface areas required for the project represent all the requirements evaluated based on the functional analysis sessions and the comments received from the building's respective users (PSPC, CAS, ATSSC).

5.1.1 Nomenclature used in the table

The columns in the table are organized as follows:

- Column 1: Numerical room list
- Column 2: Description of spatial units, groups and zones
- Columns 3 to 5: Net areas required
- Column 6: Usable areas (see article 5.1.2)
- Columns 7 to 8: Average and maximum occupancy of the premises
- Columns 9 to 10: Space is a closed or open room
- Columns 11 to 13: Type of zone (restricted, private or public)
- Columns 14 to 15: Space's hours of operation
- Columns 16 to 21: Classification of the data handled in this particular space, according to government information security standards; PA: protected A, PB: protected B, PC: protected C, C: confidential, S: secret, TS: top secret
- Columns 22 to 24: Emergency power required (yes/no; autonomy required; uninterruptible power required)
- Columns 25 to 30: I.T. systems required
- Column 31: Comments

5.1.2 Proportions of usable area

The following principles have been applied in assessing the percentages applied to net areas with a view to estimating, among other things, the circulation space applicable to usable areas²:

- 30 % of the net area is applied to rooms that are large and can contain circulation needs without a significant impact on their dimensions;
- 35 % of the net area is applied to standard rooms; and
- 42 % of the net area is applied to smaller rooms where, once circulation has been added, the usable space is significantly increased.

² In connection with the measurement conventions stipulated in point 1.8.1.

5.1.3 Summary tables

See the tables below.

A - CAS JUDICIAL SPACES																								
CODE	DESCRIPTION	Net areas			Usable areas	Occupancy		Space		Zone			Operations (hours)		Classification of data						Emergency power			COMMENTAIRE
		m²	Qty	Total (m²)		Avg.	Max	Open	Closed	Res	Priv	Pub	Avg.	Max	PA	PB	PC	C	S	TS	Y/N	Length	UPS	
A1	COURTROOM COMPLEX			1 811,0	2 444,9																			
A1.1	Courtroom complex_FCA (C1)			554,0	747,9																			Complex serving, among other things, the Federal Court of Appeal
A1.1.1	Courtroom (large)	140,0	1	140,0		43	59		●	■		■	8,0	24,0				●			N			
A1.1.2	Courtroom (average)	115,0	1	115,0		18	27		●	■		■	8,0	24,0				●			N			
A1.1.3	Antichamber	8,0	2	16,0					●			■	8,0	24,0				●			N			
A1.1.4	Interpreter's booth	12,0	2	24,0		2	2		●			■	8,0	24,0				●			N			
A1.1.5	Technician's room	8,0	2	16,0		1	1		●			■	8,0	24,0				●			N			
A1.1.6	IT/AV technical room	5,0	2	10,0		1	1		●			■	8,0	24,0				●			O	6 hr.	●	
A1.1.7	Waiting area	5,0	3	15,0		5	5	●				■	8,0	24,0				●			N			
A1.1.8	Consultation room - large	13,5	4	54,0		4	6		●			■	8,0	24,0				●			N			
A1.1.9	Chief judge's office	37,0	1	37,0					●	■			8,0	24,0				●						
A1.1.10	Judges' office	28,0	2	56,0					●	■			8,0	24,0				●			N			
A1.1.11	Private restroom	8,0	3	24,0					●	■			8,0	24,0				●			N			
A1.1.13	Judges' kitchenette	8,0	1	8,0		1	2	●		■			8,0	24,0				●			N			Includes fridge / microwave / sink / utensils / tables and chairs
A1.1.14	Waste sorting island	2,0	1	2,0				●													N			
A1.1.15	Judges' lounge	10,0	1	10,0		4	8	●		■			8,0	24,0				●			N			
A1.1.16	Business centre (photoc., faxes and equipment)	7,0	1	7,0				●		■			8,0	24,0				●			N			Includes water drinking fountains and glasses
A1.1.17	Work area	5,0	1	5,0				●		■			8,0	24,0				●			N			
A1.1.18	Storage room for hearing room	7,5	2	15,0					●			■	8,0	8,0				●			N			
A1.2	Hearing room complex (C2)			928,0	1 252,8																			
A1.2.1	Hearing room (average)	115,0	4	460,0		18	27		●	■		■	8,0	24,0				●			N			
A1.2.2	Antichamber	8,0	4	32,0					●			■	8,0	24,0				●			N			
A1.2.3	Interpreter's booth	12,0	4	48,0		2	2		●			■	8,0	24,0				●			N			
A1.2.4	Technician's room	8,0	4	32,0		1	1		●			■	8,0	24,0				●			N			
A1.2.5	IT/AV technical room	5,0	4	20,0		1	1		●			■	8,0	24,0				●			Y	6 hr.	●	
A1.2.6	Waiting area	5,0	4	20,0		5	5	●				■	8,0	24,0				●			N			
A1.2.7	Consultation room - large	13,5	8	108,0		4	6		●			■	8,0	24,0				●			N			
A1.2.8	Judges' office	28,0	4	112,0					●	■			8,0	24,0				●			N			
A1.2.9	Private restroom	8,0	4	32,0					●	■			8,0	24,0				●			N			
A1.2.10	Business centre (photoc., faxes and equipment)	7,0	2	14,0				●		■			8,0	24,0				●			N			Includes water drinking fountains and glasses
A1.2.11	Work area	5,0	4	20,0				●		■			8,0	24,0				●			N			
A1.2.12	Storage room for hearing room	7,5	4	30,0					●			■	8,0	8,0				●			N			
A1.3	Future hearing complex (C4)			329,0	444,2																			Plan for space in basement

A - CAS JUDICIAL SPACES (FOLLOWED)																								
CODE	DESCRIPTION	Net areas			Usable areas	Occupancy		Space		Zone			Operations (hours)		Classification of data						Emergency power			COMMENTAIRE
		m²	Qty	Total (m²)		Avg.	Max	Open	Closed	Res	Priv	Pub	Avg.	Max	PA	PB	PC	C	S	TS	Y/N	Length	UPS	
A2	DESIGNATED ROOMS AND AREAS			272,0	367,2																			
A2.1	Assembly rooms			195,0	263,3																			
A2.1.1	Training room	70,0	1	70,0		10	15		●			■	8,0	8,0				●			N			
A2.1.2	Formal conference room	125,0	1	125,0		24	48		●	■		■	8,0	16,0				●			N			BFAD proposes conducting an audit of use with PSPC
A2.2	Mediation (C7)			77,0	104,0																			
A2.2.1	Mediation rooms (ADR)	40,0	1	40,0		15	18		●	■		■	8,0	24,0				●			N			
A2.2.2	Adjoining break-out rooms	13,5	2	27,0		8	10		●			■	8,0	24,0				●			N			
A2.2.3	Waiting area	5,0	2	10,0		5	5	●				■	8,0	24,0				●			N			
A3	JUDGES' OFFICE			507,0	684,5																			
A3.1	Judges and Prothonotary			507,0	684,5																			
A3.1.1	Office and work area	28,0	12	336,0					●	■			8,0	24,0				●			N			
A3.1.2	Private restroom	8,0	12	96,0					●	■			8,0	24,0				●			N			
A3.1.3	Prothonotary office and work area	37,0	1	37,0														●			N			
A3.1.4	Private restroom	8,0	1	8,0														●			N			
A3.1.5	Judges' lounge	20,0	1	20,0		6	8	●		■			8,0	24,0				●			N			
A3.1.6	Judges' kitchenette	8,0	1	8,0		1	2		●	■			8,0	24,0				●			N			Includes fridge / microwave / sink / utensils / tables and chairs
A3.1.7	Waste sorting island	2,0	1	2,0				●													N			Required according to PSPC meeting 27/05/2020
A4	LAWYERS' CLOAKROOMS			90,0	121,5																			
A4.1	Cloakrooms			90,0	121,5																			
A4.1.1	Men's cloakrooms	34,0	1	34,0		10	10		●			■	8,0	16,0							N			
A4.1.2	Men's restroom	6,0	1	6,0		4	4		●			■	8,0	16,0							N			
A4.1.3	Women's cloakroom	34,0	1	34,0		10	10		●			■	8,0	16,0							N			
A4.1.4	Women's restroom	6,0	1	6,0		4	4		●			■	8,0	16,0							N			
A4.1.5	Non-gendered room	10,0	1	10,0					●			■	8,0	16,0							N			
A5	SUPPORT SPACES			128,0	172,8																			
A5.1	Logistical support			28,0	37,8																			
A5.1.1	Bailiffs' area	10,0	1	10,0					●			■	8,0	16,0							N			
A5.1.2	Visitors' cloakroom	4,5	4	18,0					●			■	8,0	24,0							N			Distribute on each floor (for mixed floor, see Table F)
A5.2	Support for the judiciary			100,0	135,0																			
A5.2.1	Judicial library	100,0	1	100,0				●		■			8,0	24,0				●			N			Includes space for reading (11 people)

B - CAS WORK SPACES																								
CODE	DESCRIPTION	Net areas			Useable afreas	Occupancy		Space		Zone			Operations (hours)		Classification of data						Emergency power			COMMENTS
		m²	Qty	Total (m²)		Avg	Max	Open	Closed	Res	Priv	Pub	Avg	Max	PA	PB	PC	C	S	TS	Y/N	Length	UPS	
B1	WORKPLACE			573,0	813,7	59																		
B1.1	Operations			192,5	273,4	34																		
B1.1.1	Director of Operations	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.1.2	Administrative Clerk- Support	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.1.3	Chief Registry Officer (supervisor)	5,5	4	22,0		4		●		■			8,0	8,0				●			N			
B1.1.4	Registry Officer	5,5	26	143,0		25		●		■			8,0	8,0				●			N			
B1.1.5	Registry Officer	5,5	3	16,5		3		●		■			8,0	8,0				●			N			
B1.2	Management Services			145,0	205,9	25																		
B1.2.1	Regional Director General	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.2.2	Administrative Assistant	7,5	1	7,5		1		●		■			8,0	8,0				●			N			
B1.2.3	Director of Management Services	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.2.4	Administrative Clerk - Support	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.2.5	Project Manager	5,5	2	11,0		2		●		■			8,0	8,0				●			N			
B1.2.6	Supervisor, Administrative Services	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.2.7	Coordinator, Operational Support	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.2.8	Clerk, Operational Support	5,5	11	60,5		10		●		■			8,0	8,0				●			N			
B1.2.9	Law Clerk	5,5	4	22,0		4		●		■			8,0	8,0				●			N			
B1.2.10	Chief Security Officer	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.2.11	Regional IT Network Technician	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.2.12	LAN Service Technician	5,5	1	5,5		1		●		■			8,0	8,0				●			N			
B1.3	Collaboration			24,0	34,1																			
B1.3.1	Enclave	8,0	3	24,0				●		■								●			N			
B1.4	Support spaces			211,5	300,3																			
B1.4.1	Quiet room(s)	5,0	2	10,0		1	3,0		●	■			8,0	8,0				●			N			
B1.4.2	Kitchenette	15,0	1	15,0		5	8,0	●		■			8,0	8,0				●			N			Includes fridge / microwave / sink / utensils / tables and chairs
B1.4.3	Waste sorting island	2,0	5	10,0				●		■								●			N			
B1.4.4	Lounge	20,0	1	20,0		15	18,0	●		■								●			N			
B1.4.5	Changing room for personnel	0,5	70	35,0				●		■			8,0	8,0				●			N			
B1.4.6	Business centre (paper, equip. and telecom)	7,0	4	28,0				●		■			8,0	8,0				●			N			
B1.4.7	Communications closet	4,0	9	36,0					●	■			8,0	8,0				●			Y	6 hr.	●	
B1.4.8	Concentration room	5,5	5	27,5				●		■								●			N			
B1.4.9	Telephone booth	5,0	4	20,0		1	1,0		●	■								●			N			
B1.4.10	Shared storage	10,0	1	10,0					●	■								●			N			

B - CAS WORK SPACES (FOLLOWED)																								
CODE	DESCRIPTION	Net areas			Useable afreas	Occupancy		Space		Zone			Operations (hours)		Classification of data						Emergency power			COMMENTS
		m²	Qty	Total (m²)		Avge	Max	Open	Closed	Res	Priv	Pub	Avge	Max	PA	PB	PC	C	S	TS	Y/N	Length	UPS	
B2	WORKPLACE SPS			400,5	540,7																			
B2.1	Customer service			81,0	109,4																			
B2.1.1	Registry	7,5	4	30,0				●		■		■	8,0	8,0				●			N			
B2.1.2	Waiting area - Registry	15,0	1	15,0																	N			
B2.1.3	Photocopy area - Registry	4,0	1	4,0				●		■			8,0	8,0				●			N			
B2.1.4	Open work stations	4,0	4	16,0				●		■			8,0	8,0				●			N			
B2.1.4	File consultation room	8,0	2	16,0					●			■	8,0	8,0				●			N			
B2.2	Files			251,0	338,9																			
B2.2.1	Registrars' service area (seals, etc.)	2,0	3	6,0				●		■			8,0	8,0				●			N			
B2.2.2	Administrative file storage	10,0						●		■			8,0	8,0				●			N			
B2.2.3	Document processing area	2,5	28	70,0				●		■			8,0	8,0				●			N			
B2.2.4	E-copy station	10,0	2	20,0				●		■			8,0	8,0				●			N			
B2.2.5	Active files	60,0	1	60,0				●		■			8,0	8,0				●			N			Corresponding to 285m.lin.
B2.2.6	Inactive files	40,0	1	40,0				●		■			8,0	8,0				●			N			Corresponding to 276m.lin.
B2.2.7	File review area	55,0	1	55,0				●		■		■	8,0	8,0				●			N			
B2.2.8	Vault for classified files	10,0							●	■			8,0	8,0				●			N			
B2.3	General support			68,5	92,5																			
B2.3.1	Mailroom	17,5	1	17,5					●	■			8,0	8,0				●			N			
B2.3.2	Mail counter	10,0	1	10,0				●		■		■	8,0	8,0				●			N			
B2.3.3	Drop-off area	8,0	1	8,0					●	■			8,0	8,0				●			N			
B2.3.4	General stationery	10,0	1	10,0					●	■								●			N			
B2.3.5	ITS server room	23,0	1	23,0					●	■			8,0	8,0				●			Y	6 hr.	●	

C - CAS SECURITY																								
CODE	DESCRIPTION	Net areas			Usable areas	Occupancy		Space		Zone			Operations (hours)		Classification of data						Emergency power			COMMENTS
		m²	Qty	Total (m²)		Med	Max	Open	Closed	Res	Priv	Pub	Avg.	Max	PA	PB	PC	C	S	TS	Y/N	Length h	UPS	
C1	SAFETY/SECURITY			47,0	63,5																			
C1.1	CONTROL CENTRE			22,0	29,7																			
C1.1.1	Security and surveillance station	18,0	1	18,0					●	■			8,0	24,0					●		Y	24	Y	
C1.1.2	Security check and registration	4,0	1	4,0					●	■			8,0	24,0					●		Y	24	Y	
C1.2	GENERAL STORAGE (S)	25,0	1	25,0	33,8																			

D - ATSSC SUMMARY TABLES																									
CODE	DESCRIPTION	Net areas			Usable areas	Occupancy		Space		Zone			Operations (hours)		Classification of data						Emergency power			COMMENTS	
		Uni	Qty	Total		Avg.	Max	Op.	Clos.	Res	Priv	Pub	Avg.	Max	PA	PB	PC	C	S	TS	Y/N	Length	UPS		
D1	HEARING ROOM COMPLEX			263,0	341,9																				
D1.1	Hearing room complex (C5)			263,0	341,9																				
D1.1.1	Hearing room (large)	150,0	1	150,0		20	27		●		■	■	8,0	24,0				●			N				
D1.1.2	Interpreter's booth	10,0	1	10,0		1	2		●			■	8,0	24,0				●			N				Deux postes de traduction / Voir visibilité des traducteurs avec SCDATA
D1.1.3	Technician's room	8,0	1	8,0		1	1		●			■	8,0	24,0		●					N				
D1.1.4	Witness waiting area	20,0	1	20,0		15	15	●				■	8,0	24,0		●					N				Serves in camera sessions and witnesses
D1.1.5	Break-out rooms	20,0	2	40,0		10	15		●			■	8,0	24,0				●			N				Two / mediation room
D1.1.6	Mediation room	30,0	1	30,0		15	18		●		■	■	8,0	24,0				●			N				Double access, restricted and public
D1.1.7	Business centre	5,0	1	5,0		1	3	●		■			8,0	24,0				●			N				Includes water drinking fountains
D2	WORKPLACE			360,0	508,2																				
D2.1	Work stations			209,0	296,8																				
D2.1.1	Members' office	14,0	5	70,0					●	■			8,0	24,0		●					N				For 4 full-time members in MTL, + 1 office for membres who sit in different cities
D2.1.2	Regional director's office (Registrar)	14,0	1	14,0		1	3		●	■			8,0	24,0		●					N				JDT would like to reduce the total number of telecommuting stations
D2.1.3	Office - Legal Counsel	10,0	1	10,0					●	■			8,0	8,0		●					N				
D2.1.4	Administrative assistant workstations	4,5	2	9,0				●		■			8,0	8,0		●					N				
D2.1.5	Industrial relations officer workstations	10,0	7	70,0				●		■			8,0	8,0		●					N				Includes Dartmouth personnel
D2.1.6	Case management officer workstations	4,5	7	31,5				●		■			8,0	8,0		●					N				Includes Dartmouth personnel
D2.1.7	IT office	4,5	1	4,5					●	■			8,0	8,0		●					N				
D2.2	Support spaces			151,0	211,4																				
D2.2.1	Reception and waiting area	10,0	1	10,0		2	5	●		■		■	8,0	8,0							N				
D2.2.2	Meeting room	15,0	1	15,0		4	8		●	■			8,0	8,0		●					N				Next to the reception
D2.2.3	Videoconference room	46,0	1	46,0		20	35		●	■			8,0	8,0		●					N				
D2.2.4	ITS server room	12,0	1	12,0					●	■			8,0	8,0		●					Y	24	Y		
D2.2.5	Buisiness centre	10,0	1	10,0		1	2		●	■			8,0	8,0		●					N				
D2.2.6	Archives and mail corner	35,0	1	35,0		1	3		●	■			8,0	8,0					●		N				
D2.2.7	Storage	10,0	1	10,0					●	■			8,0	8,0		●					N				
D2.2.8	Kitchenette	5,0	1	5,0		1	3	●		■											N				Includes fridge / microwave / sink / utensils / tables and chairs
D2.2.9	Waste sorting island	2,0	4	8,0				●													N				

E - PSPC REAL PROPERTY MANAGEMENT SPACES																											
CODE	Description	Net areas			USEABLE	LEASABLE	GROSS INTERIOR	Occupancy		Space		Zone			Operations (hours)		Classification of data							Emergency power			COMMENTAIRE
		m²	Qty	Total (m²)				Avg.	Max	Open	Clos.	Res	Priv	Pub	Avg.	Max	PA	PB	PC	C	S	TS	Y/N	Length	UPS		
E1	REAL PROPERTY MANAGEMENT			198,5	258,1																						
E1.1	Management support			198,5	258,1																						
E1.1.1	Offices	3,5	5	17,5						●			■		8,0	8,0		●					N				
E1.1.2	Meeting and collaboration room	20,0	1	20,0							●		■		8,0	8,0		●					Y	12-24 hr.			
E1.1.3	Workshop	35,0	1	35,0							●		■		8,0	8,0							Y	12-24 hr.			
E1.1.4	Lockers and showers _RPM changing rooms	10,0	1	10,0				3	6		●		■		8,0	8,0							Y	12-24 hr.	●	Includes 10 lockers	
E1.1.5	IT suppliers' rooms	12,0	2	24,0							●		■		8,0	8,0							Y	12-24 hr.			
E1.1.6	Storage space	80,0	1	80,0							●		■		8,0	8,0							N				
E1.1.7	Kitchenette	10,0	1	10,0				1	3	●			■										Y	12-24 hr.		Includes fridge / microwave / sink / utensils / tables and chairs	
E1.1.8	Waste sorting island	2,0	1	2,0						●			■										N				
E2	BASE BUILDING					1890,0																					
E2.1	Client support spaces					1890,0																					
E2.1.1	Magistrates' parking	25,0	12	300,0	110,0	410,0					●	■			8,0	24,0							N				
E2.1.2	Shared circulation, restrooms and halls	610,0	1			610,0				●			■		8,0	16,0							N				
E2.1.3	Technical services (stairs, services)	870,0	1			870,0					●		■		8,0	24,0							N				
E3	GROSS INTERIOR						2230,0																				
E3.1	Service area						1144,0																				
E3.1.1	ATSSC Grand Entry Hall	150,0	1				150,0				●			■	8,0	24,0							N			Entrance hall, elevator lobby, reception desk, restroom	
E3.1.2	CAS Grand Entry Hall	200,0	1				200,0				●			■	8,0	24,0							N			Entrance hall, elevator lobby, reception desk, restroom	
E3.1.3	Elevators	450,0	1	450,0			450,0				●				8,0	24,0							N				
E3.1.4	Lockers and showers	20,0	2	40,0	14,0		54,0				●	■			8,0	8,0							N				
E3.1.5	Mailroom	15,0	1	15,0	5,5		20,5				●				8,0	8,0					●						
E3.1.6	Manoeuvring area - Reception	60,0	1	60,0			60,0			●		■			8,0	8,0		●					Y				
E3.1.7	Merchandise in transit	20,0	2	40,0	14,0		54,0				●				8,0	8,0							Y				
E3.1.8	Manoeuvering area - Shipping	60,0	1	60,0			60,0			●					8,0	8,0							Y				
E3.1.9	Refridgerated compost room	16,0	1	16,0	6,0		22,0				●				8,0	8,0							Y	12-24 hr.			
E3.1.10	Waste	16,0	1	16,0	6,0		22,0				●	■			8,0	8,0							Y	12-24 hr.			
E3.1.11	Recycling	15,0	1	15,0	6,0		21,0				●	■			8,0	8,0							N				
E3.1.12	Janitors and maintenance	2,5	9	22,5	8,0		30,5				●				8,0	16,0							N				

E - PSPC REAL PROPERTY MANAGEMENT SPACES (FOLLOWED)																											
CODE	Description	Net areas			USEABLE	LEASABLE	GROSS INTERIOR	Occupancy		Space		Zone			Operations (hours)		Classification of data						Emergency power			COMMENTAIRE	
		m²	Qty	Total (m³)				Avg.	Max	Open	Clos.	Res	Priv	Pub	Avg.	Max	PA	PB	PC	C	S	TS	Y/N	Length	UPS		
E3.2	Electrical and mechanical						911,0																				
E3.2.1	Main electrical room	50,0	1				50,0				●	■			24,0	24,0							Y	12-24 hr.			
E3.2.2	Generator room	40,0	1				40,0				●	■			24,0	24,0							Y	12-24 hr.		Basement (20% of needs with 350KVA)	
E3.2.3	Adjoining HQ substation	30,0	1				30,0				●	■			24,0	24,0							N			Ground floor (2000A @ 80%)	
E3.2.4	Electrical room	5,0	11				55,0				●	■			24,0	24,0							N			2/large floors and 1/other floors	
E3.2.5	Drinking water entry room	4,0	1				4,0				●	■			24,0	24,0							N				
E3.2.6	Fire pump room	8,0	1				8,0				●	■			24,0	24,0							Y	12-24 hr.			
E3.2.7	Diesel reservoir room	4,0	1				4,0				●	■			24,0	24,0							Y	12-24 hr.			
E3.2.8	Ventilation	4,0	2				8,0				●	■			24,0	24,0							N				
E3.2.9	Secondary mechanical room	7,0	8				56,0				●	■			24,0	24,0							N				1/floor
E3.2.10	Ventilation/plumbing shafts	2,5	8				20,0				●	■			24,0	24,0							N				1/floor
E3.2.11	Main mechanical room	450,0	1				450,0				●	■			24,0	24,0							N				
E3.2.12	Thermal storage	41,0	1				41,0				●	■			24,0	24,0							N				
E3.2.13	Mechanical smoke flue-vent	2,0	9				18,0				●	■			24,0	24,0							Y	12-24 hr.			1/floor
E3.2.14	Vertical ducts	3,0	9				27,0				●	■			24,0	24,0							N				1/floor
E3.2.15	IT relay (satellite)	10,0	10				100,0				●	■			24,0	24,0							Y	12-24 hr.	●		1/floor
E3.3	Control centre						175,0																				
E3.3.1	Main reception desk - Lobby	25,0	3				75,0			●		■		■	8,0	16,0		●					Y	12-24 hr.	●		
E3.3.2	Security station	8,0	3				24,0				●	■			8,0	16,0		●					N	12-24 hr.	●	Control and surveillance from main reception desk	
E3.3.3	Security Operations Centre (SOC)	12,0	2				24,0				●	■			24,0	24,0			●				Y	12-24 hr.	●	Including cameras	
E3.3.4	Room for security personnel	12,0	1				13,0	5	8		●				8,0	24,0							Y	12-24 hr.			
E3.3.5	Lockers and showers _Chang. rooms (SOC)	12,0	1					5	8		●												Y	12-24 hr.	●		
E3.3.6	Kitchenette	10,0	1				10,0	1	3	●													Y	12-24 hr.		Includes fridge / microwave / sink / utensils / tables and chairs	
E3.3.7	Waste sorting island	2,0	1				2,0			●													N				
E3.3.8	Search/control area	9,0	3				27,0			●		■		■	8,0	24,0	●						Y	12-24 hr.			

F - SHAREABLE SPACES																								
CODE	DESCRIPTION	Net areas			Useable areas	Occupancy		Space		Zone			Operations (hours)		Classification of the data						Emergency power			COMMENTS
		m²	Qty	Total (m²)		Avg.	Max	Open	Closed	Res	Priv	Pub	Avg.	Max	PA	PB	PC	C	S	TS	Y/N	Length	UPS	
F1	HEARING COMPLEX			659,5	890,3																			
F1.1	Hearing complex (C6)			659,5	890,3																			
F1.1.1	Courtroom/hearing room (large)	140,0	1	140,0		15	27		●	■		■	8,0	24,0				●						
F1.1.2	Courtroom/hearing room (medium)	115,0	2	230,0		10	16		●	■		■	8,0	24,0				●						
F1.1.3	Antichamber	8,0	3	24,0					●			■	8,0	24,0				●						
F1.1.4	Interpreter's booth	12,0	3	36,0		2	2		●			■	8,0	24,0				●						
F1.1.5	Technician's room	8,0	3	24,0		1	1		●				8,0	24,0		●								
F1.1.6	IT/AV technical room	5,0	3	15,0		1	1		●			■	8,0	24,0		●								
F1.1.7	Magistrate's/member's room	14,0	9	126,0					●	■			8,0	24,0		●								
F1.1.8	Private restroom	8,0	3	24,0					●	■			8,0	24,0										
F1.1.9	Storage room for courtroom/hearing room	10,0	3	30,0					●			■	8,0	8,0										
F1.1.10	Courtroom / hearing room service area	3,5	3	10,5					●			■	8,0	8,0										One on each floor (includes water fountains)
F1.1.11	Visitors' cloakrooms	0,5	3	1,5			4	●				■												
F2	MEDIATION COMPLEX			255,0	344,3																			
F2.1	Mediation (C6)			255,0	344,3																			
F2.1.1	Mediation rooms (ADR)	40,0	3	120,0		12	18		●	■		■	8,0	24,0				●						Total mediation suite = 88 m² (before CAS changes)
F2.1.5	Break-out rooms	20,0	6	120,0		6	10		●			■	8,0	24,0		●								
F2.1.6	Waiting area	5,0	3	15,0		5	5	●				■	8,0	24,0	●									
F3	SUPPORT SPACES			54,5	73,6																			
F3.1	Logistical support			4,5	6,1																			
F3.1.2	Visitors' cloakrooms	4,5	1	4,5					●			■	8,0	24,0										
F3.2	ATSSC OPERATIONS SPACE			50,0	67,5																			Total ATSSC operations space = 106 m²
F3.2.1	Caucus	15,0	1	15,0		1	3		●		■		8,0	24,0				●						
F3.2.2	Business Centre	5,0	1	5,0		1	2		●		■		8,0	24,0		●								
F3.2.3	Kitchenette	20,0	1	20,0		5	8	●			■		8,0	24,0										Includes fridge / microwave / sink / utensils / tables and chairs
F3.2.4	Waste sorting island	2,0	2	4,0				●																
F3.2.5	Staff washrooms	6,0	1	6,0					●		■		8,0	24,0										

TOTAL PROJECT							
	Functional unit	DESCRIPTION		Net area	Usable area	Leasable area	Interior gross area
CAS	A	CAS - JUDICIAL SPACES		2808	3791		
		Total A1	HEARING COMPLEXES	1811	2445		
		Total A2	DESIGNATED ROOMS AND AREAS	272	367		
		Total A3	JUDGES' OFFICES	507	684		
		Total A4	CLOAKROOMS FOR LEGAL COUNSEL	90	122		
		Total A5	SUPPORT SPACES	128	173		
	B	CAS - WORK SPACES		974	1354		
		Total B1	WORKPLACES	573	814		
		Total B2	SPS WORKPLACE	401	541		
	C	CAS - SAFETY/SECURITY		47	63		
	Total C1	SAFETY/SECURITY	47	63			
		TOTAL CAS		3829	5209		
ATSSC	D	ATSSC - HEARING ROOMS AND WORKPLACES		623	850		
		Total D1	TRIBUNAL SPACE	263	342		
		Total D2	WORKPLACE	360	508		
			TOTAL ATSSC		623	850	
PSPC	E	PSPC - REAL PROPERTY MANAGEMENT SPACES		199	258	1890	2230
		Total E1	REAL PROPERTY MANAGEMENT SPACE	199	258		
		Total E2	BASE BUILDING			1890	
		Total E3	INTERIOR GROSS				2230
			TOTAL PSPC		199	258	1890
MIXED	F	SHAREABLE SPACES		969	1308		
		Total F1	COURTROOMS/HEARING ROOMS	660	890		
		Total F2	DESIGNATED ROOMS AND AREAS	255	344		
		Total F4	SUPPORT SPACES	55	74		
			TOTAL MIXTED		969	1308	
BASE BUILDING RESERVE				165	225		
SITE COMPLEXITY FACTOR					330		
TOTAL AREAS				5784	8180	1890	2230
GRAND TOTAL				800			
GRAND TOTAL				13100			

5.1.4 Room descriptions

To facilitate their design, each important room and area in the functional program is described below in summary form.

a. Courtrooms and hearing rooms (large and medium)

Each room must allow for the creation of a podium, in addition to offering accessibility to persons with reduced mobility and making a distinction between public circulation and magistrates' circulation. Special attention will be paid to acoustics, lighting and adaptability to information technologies, which shall be properly concealed and adapted to the need for paperless operations (currently in development). Consideration must also be given to the aesthetic quality attained in these rooms. The courtrooms and hearing rooms will be constantly changing, and will need to be adapted to each use in order to meet the flexibility requirements. All the rooms shall include special equipment areas, rear projection screens, special electronic controls, digital audio recording technology, and a remotely controlled AV system (whereby the need, among other things, for paying special attention to the design of the room's acoustics).

- Average-sized room: 120 m² (10 to 25 people)
- Large room: 150 m² (25 to 50 people)

Additional conference, mediation, meeting, consultation and amenity rooms shall be attached and twinned with the courtrooms and hearing rooms to allow for full judicial proceedings.

To this end, hearing complexes have been created that combine the courtrooms and hearing rooms with all the rooms required around them. Each complex generally includes, but is not limited to (depending on the needs):

- Two consultation rooms;
- One interpreter and technician room per two courtrooms/hearing rooms;
- One AV/IT technical room per room;
- One conference room;
- If necessary, mediation rooms attached to the courtrooms/hearing rooms.

b. Mediation room (ADR)

This special mediation room, known as an alternative dispute resolution (ADR) room, features limited public access and space.

c. Training room

This training room may be accessed by the public. It can be divided with a movable partition.

d. Court/hearing room waiting area

Members of the public are asked to arrive at least 15 minutes before their hearing. To facilitate timely arrival of the parties, a seating area shall be provided in the reception area. It will be adapted to accommodate people waiting for their hearing to start and to allow efficient circulation in and out of the hearing area, when necessary. In addition, persons who have been called to testify can wait there before giving their testimony.

e. Interpreter's booth

One of the challenges in the years to come, with the expected international opening of the courts, is to provide interpretation (i.e. simultaneous translation) services of what is said in the proceedings so that they can be carried out in both official languages.

f. Technician rooms

For the management of videoconferencing, provide for audio systems, digital audio recording systems and interpretation services.

g. IT/AV technical room

These rooms are essential in order to support all the equipment requirements.

h. Storage room for courtroom/hearing room

To accommodate additional benches of lawyers, grouped seating and extra tables.

i. Magistrate's office and restroom

The offices of the judiciary perform a function similar to that of a law firm, and therefore require productive, functional/operational and secure designs. Each office has a private bathroom with a cloakroom, a closet, shelves for books, filing space, a work space, a meeting space, a small lounge, and an area for equipment. The files for most cases are paper-based, so the magistrates require sufficient space to research and review court documents, which are often voluminous. This space requirement may be reduced at some time in the future, given that the paperless operational mode will be well established by the time the complex opens. The offices are all shared by the circuit courts and are not used for the long-term storage of documents or personal effects. Clerks' stations, a reception desk and stations for law clerks are all connected to the offices.

j. Judges' lounge

- A judges' lounge is required close to a courtroom when the courtroom cannot be located in close proximity to the judicial office area. The lounge can also be used as a space where the three judges of the Federal Court of Appeal can meet to discuss their assigned procedures.
- Additional office space may be required where courtrooms cannot adjoin the judicial office space. Judges' offices, the judges' lounge and courtrooms shall not be distributed evenly, but rather their placement shall take into account the different workloads of the various courts.

k. Judicial library and reading space

The judicial library contains all the legal publications necessary for the exercise of justice within the jurisdiction of the Federal Courts. This area may require special loading capacity. The library also contains a consultation area open to the public. The number of linear metres of files to be housed in the library remains to be determined.

l. Registry and customer service

The Registry provides litigants and their counsel with services related to hearings. This includes:

- Informing litigants about court rules, directives and procedures;
- Distributing court decisions / judgments / orders to litigants and the public;
- Processing of the documents filed or issued to litigants and recording all proceedings;
- Maintaining court records;

- Serving as a repository for the enforcement of decisions made by federal courts and administrative tribunals;
- Registration desks provide registration services to the parties and their counsel. Persons requiring these services will come to the registry, where registry officers will meet with them.

Files may be submitted to the registry. They will be received, reviewed and processed by the registry officer.

m. General support spaces

Each location requires areas for mail, stationery, photocopying, fax and document processing.

n. Lawyers' cloakrooms

Lawyers' cloakrooms complete with lockers will be needed for storing personal belongings and for putting on a robe and the other clothing required by court decorum. Restrooms are also available (including a "non-gendered" restroom).

o. Storage

Storage space is required for the complex, in particular for paper files and evidence submitted to the court.

5.2 General guidelines - Structure

5.2.1 General design requirements

5.2.1.1 Provide all the necessary structure for the construction of the new building for the NMJC, as well as all the secondary structural elements as required to meet architectural, mechanical and electrical needs and the needs of any other disciplines.

5.2.1.2 The drawings and specifications for the construction shall be signed and sealed by an engineer who is a member of the Ordre des ingénieurs du Québec. The engineers will need to design all the new building's structural systems, in coordination with all the stakeholders, for a fully functional and operational project. In addition, they shall coordinate with all the competent authorities involved in the project in order to incorporate everything into the production of drawings and specifications.

5.2.2 Codes and standards

The design of the structural work shall comply with the following codes and standards, using the current version:

- National Building Code of Canada 2015;
- Structural Commentaries (User's Guide - NBC 2015: Part 4 of Division B);
- CSA A23.3-14, Design of Concrete Structures;
- CSA A23.1/A23.2-14, Concrete Materials and Methods of Concrete / Test methods and standard practices for concrete;
- CSA S16-14, Design of Steel Structures;
- CSA O86-14, Engineering Design in Wood;

- g. CSA S136-16, North American Specification for the Design of Cold-Formed Steel Structural Members; and
- h. CSA S304.1-14, Design of Masonry Structures.

5.2.3 Design loads

The design loads shown are those prescribed by the NBC. In order to provide some flexibility in the potential refitting of some floor areas, we suggest using a minimum design load of 4.8 kPa on all floors.

- a. **Permanent loads:**
 - Dead weight of the structure;
 - Mechanical and electrical services;
 - Weight of floor and ceiling finishes;
 - Weight of raised floors;
 - Weight of partitions: 1 kPa minimum;
 - Weight of the roof covering;
 - Weight of exterior cladding and curtain walls;
 - Weight of a green roof.
- b. **Service loads:**
 - Hallways, corridors, stairs: 4.8 kPa;
 - Offices (ground floor), meeting rooms, courtrooms and hearing rooms: 4.8 kPa;
 - Offices (upper storeys): 2.4 kPa or 4.8 kPa (for flexibility in retrofits);
 - Storage areas: 4.8 kPa;
 - Mechanical rooms: 4.8 kPa;
 - Library, archive rooms: 7.2 kPa.
- c. **Snow loads:**
 - Snow loads in accordance with the NBC.
 - Snow accumulation in accordance with the NBC.
- d. **Water retention loads:**
 - Water retention loads on roofs, if applicable.
- e. **Lateral loads:**
 - Wind loads in accordance with the NBC;
 - Seismic loads in accordance with the NBC.

5.2.4 Materials

- 5.2.4.1 The materials that may be used to build the structure of the proposed building are, but are not limited to: concrete, steel and wood, subject to the various regulatory requirements.

- 5.2.4.2 For sustainable development reasons, it is recommended that preference be given to materials with a lower carbon footprint than conventional materials, such as ternary concrete mixtures, steel made with recycled materials and FSC-certified wood.

5.2.5 Location of the building

- 5.2.5.1 Several low-rise buildings border the site of the proposed building. As a result, the presence of the new building could cause significant snow accumulation on the adjacent roofs below.

- 5.2.5.2 To avoid this situation, it is recommended that the new building be built at a minimum distance of 5 m. According to the NBC regulatory framework, no snow accumulation is to be expected on the roof of a building located below a taller building when the taller building is 5 m or more away.

- 5.2.5.3 In the event that it is decided to erect the new building at a distance of less than 5 m from a neighbouring building, the designers shall:

- a. Carry out an exhaustive structural study (gravity, seismic, etc.) of each of the neighbouring buildings, including:
 - i. Complete structural and foundation surveys, which will involve numerous exploratory openings in the walls, ceilings and floors, as well as exploratory excavations in the ground);
 - ii. Detailed analyses and calculations;
 - iii. Evaluation of various reinforcement scenarios;
 - iv. Budget assessments;
 - v. The drafting of a study report;
- b. Prepare drawings and specifications for the reinforcement of neighbouring buildings; and
- c. Carry out reinforcement work on the structures and foundations of neighbouring buildings.

- 5.2.5.4 One alternative is to build snow platforms above the roofs of the buildings below the NMJC, but this is a very unattractive solution and it will need to be approved by the relevant authorities.

5.2.6 Geotechnical conditions

- 5.2.6.1 A geotechnical study was conducted by EXP Services Inc. dated December 2, 2019. For the design of the building's foundations and basement, the designers will need to take into consideration the soil conditions and the level of the water table on the site, and follow the recommendations set out in the report.

- 5.2.6.2 The results of the boreholes drilled on the site show that the natural deposit is not of good quality and does not offer sufficient bearing capacity to accommodate the loads of the proposed structure through conventional foundations.

- 5.2.6.3 Considering the results from the boreholes and knowing that the building will have several storeys, it is recommended that the loads of the proposed structure, for the entire surface area of the building, be transmitted to the underlying bedrock or very dense soils by means of a deep foundation system. Furthermore, it is not possible to support the foundations of the three-storey section on shallow foundations and the rest on deep

foundations due to the risk of differential settlement in a foundation that is free to move yet adjoining a perfectly stable structure.

5.2.7 Infrastructure

- 5.2.7.1 Given the low bearing capacity of the existing soil and the magnitude of the loads to be supported for a multi-storey building, it is recommended that the entire proposed building be built on deep pile foundations or caissons.
- 5.2.7.2 Install a French drain system to capture runoff water around the perimeter of the building's basement.
- 5.2.7.3 For work carried out in the vicinity of neighbouring buildings, the designers shall provide for the underpinning of their foundations, as well as for retaining soils during the excavations.

5.2.8 Superstructure

- 5.2.8.1 The proposed building could be erected using any of the following types of structure or a combination thereof: reinforced concrete, structural steel and glulam wood. According to the regulatory framework, the structure must be built of non-combustible materials, hence the need to apply for a different measure if wood is to be used.
- 5.2.8.2 The designers are responsible for determining the structural principles and materials to be used to meet the requirements of current codes and standards, as well as those relating to design, durability, safety, sustainable development, etc.

5.2.9 Security

- 5.2.9.1 Security considerations shall be taken into account in the design of the structure to ensure that the building and its users are protected against intrusions.
- 5.2.9.2 For the base building, all glazing in the lower level shall, at a minimum, be provided with a vandal-resistant film to prevent glass breakage and the scattering of debris in the building's public spaces.
- 5.2.9.3 Protect exterior windows that provide a view into offices, cloakrooms or circulation corridors used by judges from potential ballistic attacks.
- 5.2.9.4 Windows and exterior walls shall provide sound dampening to areas inside the building where confidential conversations may be held.
- 5.2.9.5 Provide appropriate ballistic protection to sensitive areas such as the Security Operations Centre, the courtrooms and the hearing rooms, i.e. in the rooms and/or for the furniture in those areas.
- 5.2.9.6 Provide windows made of glass with a vandal-resistant film in registrars' offices that are in publicly accessible areas.
- 5.2.9.7 Equip all points of entry with the equipment required to search visitors and packages entering the building.

5.3 General guidelines – Architecture

5.3.1 Regulations, codes and standards

The design of the NMJC shall comply with the following major regulations, codes and standards. The versions indicated are those currently in effect, but those to be considered for this project will be those in effect at the time of the building's design and/or construction.

- National Building Code of Canada 2015;
- Règlement d'urbanisme de l'Arrondissement de Ville-Marie 01-282;
- By-law Concerning the Construction and Conversion of Buildings (By-law 11-018) of the City of Montréal;
- National Fire Code Version 2015;
- Act respecting the conservation of energy in buildings and the Regulation respecting energy conservation in new buildings;
- Latest update of PWGSC's GCworkplace Fit-up Standards and the *Guide d'aménagement du milieu de travail* GC (name of English document to follow);
- Accessible design for the built environment — CSA standard B651-18;
- Federal Sustainable Development Strategy;
- Greening Government Strategy;
- 2017-2020 Departmental Sustainable Development Strategy, Public Services and Procurement Canada;
- LEED v4;
- WELL v2;
- Guide de conception et normes en matière de sécurité matérielle (name of English document to follow);
- PSPC's Principes directeurs et Paramètres sécurité et de fonctionnement (name of English document to follow);
- ASME A17.1-2010/CSA B44-10, version 2010, Safety Code for Elevators and Escalators;
- CAN/CSA B355-09, Lifts for Persons with Physical Disabilities;
- Any other regulation, code or standard referred to in this document and in Appendix 11.

5.3.2 Design philosophy

The design team must keep in mind that the NMJC is not intended to be a standard office building, but rather a prestigious building located in a particular area, so the design of the project will need to:

- a. Project an identity as a symbol of the Canadian justice system and project the values of the judicial clients;
- b. Obtain the support of various internal and external government stakeholders through consultations and work meetings;
- c. Ensure optimal, exemplary and integrated architectural quality in the context of the heritage district of Old Montréal, and by complying with the demanding federal requirements, and to help build the heritage value

of the city and the district. Incorporate the presentation concepts identified in section 3.2.5 - Presentation, of this document.

- d. Attain the exemplary sustainable development objectives favoured by the federal government, including the following certifications: LEED Platinum, WELL Silver and Zero Carbon Building (ZCB).
- e. Apply and adhere to the principles of judicial independence and impartiality, which are the foundations of the institution, through how the movements of magistrates are organized and through zoning, exclusive uses and controls.
- f. Ensure physical and operational security throughout the site and the building;
- g. Provide for universal accessibility in all interiors and interior spaces;
- h. Provide for flexible spaces that can evolve over time and be adapted to meet the needs of users and occupancy requirements, which may change over the years.

5.3.3 Construction elements - Summary description

5.3.3.1 Site development

The building's site development will need to take into account the following considerations:

- a. Provide for physical and operational security in accordance with the requirements of Part 5.8 - General Guidelines - Security, of this document, including protection against intrusion and ram vehicles;
- b. Implement all the sustainable development measures specified in Part 3.4 - Sustainable Development of this document; and
- c. Incorporate the presentation of archaeological and/or historical heritage specific to the site for the benefit of the public, as prescribed in Part 3.2.5 - Presentation, of this document, and Appendix 10 *Analyse de la mise en valeur des ressources archéologiques et historiques* (name of English document to follow).

5.3.3.2 Construction

The building's construction principles will need to take into account the following considerations:

- a. Provide for physical and operational security in accordance with the requirements of Part 5.8 - General Guidelines - Security of this document, including the construction of a "protective box" to create secure transition zones at the various entrances to the building, with no use made of rooftops;
- b. Comply as much as possible with municipal requirements regarding the building's massing and placement on the site; and
- c. Meet the high technical performance requirements dictated by the nature of the building, while allowing for minimal maintenance.

5.3.3.3 Building envelope

The design of the vertical and horizontal envelopes will need to take into account the following considerations:

- a. Provide for physical and operational security in accordance with the requirements of Part 5.8 - General Guidelines - Security of this document, including ballistic protection for walls and openings, and visual and acoustic privacy for walls and windows;
- b. Attain the energy efficiency performance required for LEED Platinum certification and Zero Carbon Building (ZCB) certification, and as detailed in Part 3.4 - Sustainable Development of this document; and
- c. Meet the high technical performance requirements dictated by the nature of the building while minimizing maintenance costs.

5.3.3.4 Fitting out

The fitting out of the building will need to take into account the following considerations:

- a. Be consistent with the institution's image;
- b. Incorporate the concept of the decorum that is dictated by the building's judicial purpose, thereby promoting judicial independence;
- c. Address the functional program of this document and all of its considerations;
- d. Meet the high quality and technical performance criteria dictated by the nature of the building, while allowing for durability and minimal maintenance;
- e. Meet the safety requirements of Part 5.8 - General Guidelines - Safety, of this document;
- f. Provide for universal accessibility in all the building's spaces; and
- g. Allow for flexibility in terms of how the building can be used and adjusted to meet user needs.

5.3.3.5 Materials

The building materials selected and their arrangement will need to take into account the following considerations:

- a. Be consistent with the institution's image;
- b. Comply with federal and municipal requirements on heritage integration and integration into the built environment;
- c. Meet the high quality and technical performance criteria dictated by the nature of the building while allowing for durability and minimizing maintenance costs;
- d. Meet the safety requirements of Part 5.8 - General Guidelines - Safety, of this document;
- e. Comply with the sustainability requirements, including those required for LEED v4 Platinum certification and WELL v2 Silver certification, as well as the life-cycle requirements (low-emitting materials, recycled content, etc.) and as detailed in Part 3.4 – Sustainable Development of this document; and
- f. Provide for universal accessibility in all the building's spaces.

5.3.3.6 Interior finishes

The selection and arrangement of finishes and fixtures will need to take into account the following considerations:

- a. Be consistent with the institution's image;
- b. Incorporate the concept of the decorum that is dictated by the building's judicial purpose, thereby promoting judicial independence;
- c. Meet the high quality and technical performance criteria dictated by the nature of the building while allowing for durability and minimizing maintenance costs;
- d. Meet the safety requirements of Part 5.8 - General Guidelines - Safety, of this document;
- e. Comply with the sustainability requirements, including those required for LEED v4 Platinum certification and WELL v2 Silver certification, as well as the life-cycle requirements (low-emitting materials, recycled content, etc.) and as detailed in Part 3.4 – Sustainable Development of this document; and
- f. Provide for universal accessibility in all the building's spaces.

5.3.4 Design specifications - Vertical transportation

5.3.4.1 Codes and standards

- ASTM A17.1-2010/CSA B44-2010, Safety Code for Elevators and Escalators (or the code in force at the time that the drawings and specifications are prepared);
- CAN/CSA B651-18, Accessible design for the built environment; and
- CSA Z432 – Safeguarding of machinery.

5.3.4.2 Description of systems

Elevators must meet the following design and technical requirements:

- a. The proposed systems shall have a minimum life span of 30 years. All elevators must meet the fire requirements, with the service elevator as the elevator designated for use by the fire department;
- b. The location of stairs and their layout within the building shall be welcoming to encourage their use, whenever possible, in the place of elevators;
- c. The configuration of the groups of passenger elevators (for the public and for judges) shall be designed in such a manner that it will be possible, in the event of a change in use of the building (I.e. its transformation into an office building), to combine all the elevators into a single group in order to ensure an adequate level of service for vertical circulation. A traffic study (traffic capacity analysis and system analysis) will need to be produced based on the proposed layout, considering a high occupancy rate (14 m²/person). Waiting times must not exceed 24 to 27 seconds during the morning rush hour and 31 to 35 seconds at noon.

5.3.4.3 CAS – Passenger elevators (public)

Quantity	2 elevators for the public, duplex operation
Type de motorization	Gearless traction motor located in an adjoining machine room
Capacity	1,815 kg
Speed	2 m/s
Levels served	1, 2, 3, 4, 5, 6, 7, 8, 9
Type of doors	Stainless steel centre-opening door: 1 220 mm (W) x 2 134 mm (H)
Cabin	2 337 mm (W) x 1 651 mm (D) x 2 590 mm clear ceiling height
Other characteristics	<ul style="list-style-type: none"> • 2 control panels per cabin • Access control in the cabin • Guardrail on cabin roof (on all sides, without landing entrance)

5.3.4.4 CAS – Passenger elevators (judges)

Quantity	1 elevator for judges, simplex operation
Type de motorization	Gearless traction motor located in an adjoining machine room
Capacity	1,815 kg
Speed	2 m/s
Levels served	B, 1, 2, 3, 4, 5, 6, 7, 8, 9
Type of doors	Stainless steel centre-opening door: 1 220 mm (W) x 2 134 mm (H)
Cabin	2 337 mm (W) x 1 651 mm (D) x 2 590 mm clear ceiling height
Other characteristics	<ul style="list-style-type: none"> • 2 control panels per cabin • Access control in the cabin • Guardrail on cabin roof (on all sides, without landing entrance)

5.3.4.5 ATSSC – Passenger elevators (public)

Quantity	2 elevators for the public, duplex operation
Type de motorization	Gearless traction motor located in an adjoining machine room
Capacity	1,815 kg
Speed	2 m/s
Levels served	1, 2, 3, 4, 5, 6, 7, 8, 9
Type of doors	Stainless steel centre-opening door: 1 220 mm (W) x 2 134 mm (H)
Cabin	2 337 mm (W) x 1 651 mm (D) x 2 590 mm clear ceiling height
Other characteristics	<ul style="list-style-type: none"> • 2 control panels per cabin • Access control in the cabin • Guardrail on cabin roof (on all sides, without landing entrance)

5.3.4.6 PSPC, CAS and ATSSC – Service elevator

Quantity	1 service elevator, simplex operation
Type de motorization	Gearless traction motor located in an adjoining machine room
Capacity	2,041 kg / Class C1 loading
Speed	2 m/s
Levels served	B, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (adjoining machine room)
Type of doors	Stainless steel side-opening door: 1 372 mm (W) x 2 134 mm (H)
Cabin	1 725 mm (W) x 2 400 mm (D) x 2 700 mm clear ceiling height
Other characteristics	<ul style="list-style-type: none"> • 1 control panel per cabin • Access control in the cabin • Guardrail on cabin roof (on all sides, without landing entrance)

5.3.4.7 Drawings and specifications

As required by the *Code de construction du Québec*, the drawings and specifications must be sealed and signed by an architect and an engineer who are members of a professional order. Shop drawings must be sealed and signed by an engineer member of the Ordre des ingénieurs du Québec (OIQ).

5.3.4.8 Bilingual location identification

Unless they are not necessary for obvious reasons, all markings (identification and operation) on call buttons and on signage devices must be in both French and English.

5.3.4.9 Use by persons with disabilities

Include all provisions that meet the requirements for operation by persons with disabilities, as cited in Appendix E of the safety code ASTM A17.1-2010/CSA B44-2010 and standard CAN/CSA B651-18.

5.3.4.10 Control system

- Control devices shall be generic microprocessor-based devices. The control device manufacturer shall provide the software, spare parts and all the devices necessary for preventive and corrective maintenance to other elevator contractors, without restriction. No special tools or tools exclusive to the contractor who installed the control devices shall be required for maintenance, adjustments, reprogramming or repairs. The manufacturer of the control equipment shall provide a copy of the software, as well as any information necessary to maintain and adjust the elevators, so that maintenance can be entrusted to a company other than the installer.
- The control devices used for passenger elevators shall be capable of operating in destination dispatching mode. This group management shall be implemented in order to:
- Restrict access to levels not required by the public during public hearings; and
- Ensure that the elevator system is flexible enough to be suitable should the building be converted to another use.

- e. The drive device shall be high efficiency, capable of providing sufficient voltage to accelerate the elevator to the rated speed with the rated load. Speed will be controlled by the drive device. In series with the D.C. motor, the system shall include appropriate modular electronic current rectifiers, including feedback power control.

5.3.4.11 Access control

- a. Elevators shall be connected to the magnetic card access control system, either in the cabin or at the landings. Orders shall be given to authorize access to a specific floor from the cabin or to allow the elevator to be called from a landing.
- b. Access control shall be capable of being used in combination with destination group management to direct the public to the level corresponding to the courtroom / hearing room and to restrict access to levels not required by the public during public hearings, in order to limit movement in the building.

5.3.4.12 Special manoeuvres

Allow for the following special manoeuvres:

- a. **Code Blue (service elevator)**
 - This manoeuvre places an emergency call, from the SOC, to obtain the elevator as quickly as possible. It will be sent directly to the recall level without making any other stops. This elevator will then be dedicated to CODE BLUE transportation until the request has been completed.
- b. **Free cabin (all elevators)**
 - This manoeuvre places a call to obtain a free cabin for a certain period of time. It will be initiated by the action of a key switch, and there shall be an indicator light on the landing button station on each floors. It shall also be possible to initiate FREE CAR service from one of the card readers installed on landing stations. When the cabin arrives at the requested landing, the user will be able to record a cabin call for an adjustable period of time (5 to 30 seconds). The elevator will then serve this call exclusively, after which it will return to automatic mode or go to the next recorded FREE CAR call.
- c. **Emergency stop (all elevators)**
 - This manoeuvre is activated from the special manoeuvre control console installed at the SOC. Once the manoeuvre is activated, all elevators must stop at the nearest landing and close their doors. No movement is permitted once the elevators are stopped. A mushroom-type activation button will need to be pressed to activate and terminate the manoeuvre.

5.3.4.13 Signage

- a. In-cabin signage shall include two control panels.
- b. The signage at landings shall include position indicators, and lighted direction indicators are required on each level.

5.3.4.14 Finishes

a. Passenger elevators

- The materials used for the cabin finishes will need to be of a quality similar to the finishes proposed for the rest of the building. Elevator finishes shall be focal points of the building's interior design. Finishes on all surfaces shall be long-lasting, be easy to replace, and require minimal maintenance. Interior and exterior finishes shall match adjacent wall surfaces. Recessed or indirect lighting fixtures shall be used.

b. Service elevator

- All service elevator finishes shall meet service level requirements for durability. Walls and ceilings shall be finished in metal. The flooring must be durable, slip-resistant, easy to maintain and easy to replace. Bumpers shall be installed on solid walls. Recessed fixtures shall be used.

5.3.4.15 Protective guards

- Protective guards shall be provided on all moving parts in the machine room to protect a mechanic working in the room from accidental and inadvertent contact. The guards shall be modular, allowing for quick and easy installation for different crowding situations and spaces, and must comply with the standard CSA Z432: "Safeguarding of Machinery."
- Guardrails on the cabin roof shall be provided on all sides without a landing entrance.

5.3.4.16 Emergency power supply

All the elevators shall be supplied with emergency power.

5.3.4.17 Control console for special manoeuvres

A control console for special elevator manoeuvres will need to be installed at the Security Operations Centre (SOC). It will include the following: a lighted signal for emergency recalls (Phase I), a keyed switch for emergency recalls, a light signal indicating emergency power supply, a switch for selecting which elevator in a group will receive emergency power (if it has a "one-at-a-time operation is required" function), a light signal indicating that the elevator is at the designated landing and that the doors have opened normally, and digital LED position indicators.

5.3.4.18 Central computerized console

- Passenger and service elevators shall be connected to a complete computerized console, to be installed in the SOC and operated through an Ethernet network. This console shall allow, from one or more computers, certain parameters of the controllers to be modified and operation history to be consulted, and it shall provide real-time information.

- b. The system shall have the following characteristics: a menu for selecting displays and functions, showing the devices by group (including the floors served by each group, on separate displays); indication of cabin positions and their directions of travel; indications of recorded calls from landings; indications of the assignment of such calls to specific elevators; indications of the cabin calls made for each device; indications of device status (running or in default); indications of door status; indications of out-of-service elevators; indications of independent service; indications of callbacks and emergency service; indications of generator service; and real-time indications of time and date from the group controller.
- c. The system shall be capable of programming the following manoeuvres (on an ad hoc or scheduled basis): blocking landing and cabin calls by level; restricting cabin calls by level (by access code); showing the devices by group; placing cabin calls; programmable recall to park a cabin at a landing; and deactivation of one or more cabins. The system shall include a history and statistics module.
- d. The system shall be capable of indicating cabin occupancy status using a load measurement system (the display shall show the cabin's load weight).
- e. The system shall be able to indicate the following activation statuses:
 - In-cabin emergency button (in-cabin alarm button or telephone button);
 - Free cabin;
 - Code Blue activated from the SOC; and
 - Emergency stop activated from the SOC.
- f. The system shall be capable of managing the devices during normal power outages. This management shall be carried out by the software or a programmable controller.
- g. The system shall be connected to a complete Ethernet network dedicated to the elevator system. This network shall link each machine room and the COS for the connection of all the elevator controllers and the central computerized console. Use optical fibre connections between the machine room and the elevator cabins.

5.3.4.19 Two-way intercom system in the building

- a. A two-way communication system shall be installed at the SOC. The system shall be capable of communications from inside the building to the cabin.
- b. The system shall allow communication between the building's emergency response personnel and each of the cabins. Communication shall be established immediately and shall not require the intervention of someone inside the cabin. The system shall have priority over communications to outside the building.
- c. A hands-free function shall be available at the SOC master station.
- d. A video function shall be available between the SOC and the elevator cabins.
- e. A central master intercom station shall be installed at the SOC and connected to each cabin, with a panel indicating the origin of calls as well as a keypad; and
- f. A secondary master intercom station connected to each cabin shall be installed in each machine room.

5.4 General guidelines – Mechanical

The drawings and specifications for mechanical systems will be prepared in accordance with the various municipal, provincial and federal codes and regulations in force.

5.4.1 Codes and standards

The design of the mechanical work shall comply with the following codes, using the version in effect at the time of final design:

- National Energy Code of Canada for Buildings 2017, for the design;
- National Energy Code of Canada for Buildings 2017, for the simulations;
- National Plumbing Code of Canada 2015;
- National Fire Code of Canada 2015; and
- MD 15000 – 2012 Mechanical Environmental Standard for Federal Office Buildings, PSPC.

5.4.2 Design philosophy

- 5.4.2.1 Provide all mechanical systems and meet all the mechanical requirements (plumbing and HVAC) necessary for the construction of a new NMJC building, including the exterior configuration within the lot boundaries, as well as everything else required by the client for the required functionality. This section is described in the same spirit as all the other texts in this document, meaning that it is written as a performance specification. The client expects to obtain a high-quality proposal for mechanical systems within a budget that is based on market trends.
- 5.4.2.2 Design the mechanical systems taking into account the following criteria: safety, durability, accessibility, sustainable development, energy efficiency and ease of operation and maintenance.
- 5.4.2.3 Design the mechanical systems to optimize service continuity and occupant comfort. This objective will be achieved by selecting quality equipment and products from recognized manufacturers.
- 5.4.2.4 Provide mechanical systems to allow for regular maintenance of the various components without unduly affecting the normal operation of the building.
- 5.4.2.5 Pay particular attention to choosing equipment that will minimize energy consumption.
- 5.4.2.6 The construction drawings and specifications shall be signed and sealed by an engineer who is a member of the Ordre des ingénieurs du Québec. The engineers will need to design all the mechanical systems of the new building, in coordination with all the stakeholders, for a fully functional and operational project. In addition, they must coordinate their work with all the competent authorities involved in the project so that everything will be incorporated into the production of drawings and specifications. They shall also supervise the work to ensure its quality and the success of the project in accordance with the requirements of the book of specifications and the drawings and specifications produced in order to comply with them.

5.4.3 Design requirements

- 5.4.3.1 Make load and consumption calculations when preparing the drawings and specifications in order to determine the required capacity of the mechanical systems.
- 5.4.3.2 Coordinate water and sewer connections with the civil engineer.
- 5.4.3.3 The main mechanical room will be located on the roof, with secondary rooms on each floor and in the basement.
- 5.4.3.4 Equip the building with an energy management system (EMS) incorporating all HVAC and domestic hot water systems.

5.5 General guidelines – Electrical

The drawings and specifications for electrical systems will be prepared in accordance with the various municipal, provincial and federal codes and regulations in force.

5.5.1 Codes and standards

The design of the electrical work will comply with the following codes, using the version in effect at the time of final design:

- Canadian Electrical Code, Part I — CSA C22.1-18;
- Quebec Construction Code – Chapter V, Electricity, 2018;
- National Energy Code of Canada for Buildings (NECB) — Canada 2017;
- Measurement of levels of lighting in the workplace — Canadian Occupational Health and Safety Regulations, Part VI — 928-1-IPG-039;
- Emergency electrical power supply for buildings — CSA C282-15;
- Standard for Installation of Fire Alarm Systems — CANULC-S524-19;
- Installation Code for Oil Burning Equipment — CSA-B139-19;
- Workplace Electrical Safety — Z462-18;
- Référence technique pour la conception des immeubles de bureaux (name of English document to follow), V2.1 by PSPC, July 2017 version - Section 8: Electrical engineering;
- GCworkplace Fit-Up Standards and the Guide d'aménagement du milieu de travail de GC (name of English document to follow), by PSPC, May 2018;
- IESNA lighting standard, 2010; and
- Low-Voltage Electrical Service from Distribution Substations – Standard E.21-11.

5.5.2 Design philosophy

- 5.5.2.1 Provide all electrical systems and meet all the electrical requirements necessary for the construction of a new NMJC building, including the exterior configuration within the lot boundaries, as well as whatever is required based on the client's needs for the required functionality. This section is described in the same spirit as all the other texts in this document, meaning that it is written as a performance specification. The client expects to obtain a high-quality proposal for electrical systems within a budget that is based on market trends.
- 5.5.2.2 Design the electrical systems taking into account the following criteria: safety, durability, accessibility, sustainable development, energy efficiency and ease of operation and maintenance.
- 5.5.2.3 Design the distribution systems to optimize the continuity of electrical services. This objective will be achieved by selecting quality equipment, and products from recognized manufacturers.
- 5.5.2.4 Design the distribution network to allow for regular maintenance of the various components without unduly affecting the normal operation of the building.
- 5.5.2.5 Pay particular attention to selecting equipment that minimizes energy consumption.
- 5.5.2.6 Design the electrical systems to provide flexibility of use, quality electrical power, and the availability of 25 % additional capacity above and beyond the load calculations, in accordance with the Electrical Code. All panels and other electrical connection points shall be qualified to isolate a fault quickly at the nearest point of fault.
- 5.5.2.7 The construction drawings and specifications must be signed and sealed by an engineer who is a member of the Ordre des ingénieurs du Québec. The engineers shall design all the electrical systems for the new building, coordinating with all the stakeholders, for a fully functional and operational project. In addition, they must coordinate their work with all the competent authorities involved in the project in order to incorporate everything into the production of drawings and specifications. They shall also supervise the work to ensure its quality and the success of the project in accordance with the requirements of the book of specifications and the drawings and specifications produced in order to comply with them.

5.5.3 Design requirements

- 5.5.3.1 When the drawings and specifications are prepared, make a load calculation for the required capacity at the electrical entrance to the building.
- 5.5.3.2 The building's electrical power could be supplied from Hydro-Québec's existing underground distribution network on Saint-Jacques Street and Notre-Dame Street. This will be provided through a distribution substation in an adjoining room that will need to be located on the ground floor. The equipment used to build the electrical infrastructure will need to be of high quality and intended for intensive use.
- 5.5.3.3 The electrical infrastructure shall be deployed in the building from the main electrical room located in the basement below the adjoining substation. From there, electrical rooms will be located on each floor, with some panels in the mechanical rooms.

- 5.5.3.4 Building lighting shall be provided by LED lighting fixtures with an energy efficiency greater than 115 lumens/watt and of varying colour and intensity. Lighting shall be managed through a programmable central control system with daylight and occupancy sensors to optimize the building's energy consumption and for enhanced occupant visual comfort.

5.5.4 Sustainable development

- 5.5.4.1 The designers will need to be innovative and favour an ecological approach, in order to minimize power consumption without reducing the functionality of the various rooms.
- 5.5.4.2 In order to achieve ecological development of the site, provide full cut-off luminaires in order to reduce light pollution and improve the visibility of the night sky.
- 5.5.4.3 Provide indoor and outdoor lighting systems that are highly efficient and based on the new light-emitting diode (LED) technology.
- 5.5.4.4 The maximum luminous intensity emitted by interior lighting must be directed toward the interior of the complex (and not toward the exterior through the windows), and a maximum portion of the luminous intensity of any exterior lighting must provide illumination within the boundaries of the property.
- 5.5.4.5 Select electrical materials for their durability, efficiency and performance, and for qualities that exceed market standards.

5.6 General guidelines – Civil engineering

Drawings and specifications for electrical systems will be prepared in accordance with the various municipal, provincial and federal codes and regulations in force. They must be signed and sealed by an engineer member of the *Ordre des ingénieurs du Québec*. The engineers will need to design all the civil engineering works for the new site, in coordination with all the stakeholders, for a functional and operational project. In addition, they must coordinate their work with all the competent authorities involved in the project in order to incorporate everything into the production of drawings and specifications. They shall also supervise the work to ensure its quality and the success of the project in accordance with the requirements of the book of specifications and the drawings and specifications produced in order to comply with them.

5.6.1 Codes and standards

The design of the civil work will comply with the following codes, using the version in effect at the time of final design:

- BNQ 1809-300 – General Technical Clauses – Water and Sewer Pipes;
- CCDG - Cahier des charges et devis généraux – Construction et réparation (French only; Government of Quebec);
- Directive 004 – Sewer Systems – MELCC (French only; Quebec department of the environment and climate change);

- Directive 001 - Captage et distribution de l'eau – MELCC (French only; Quebec department of the environment and climate change); and
- C-1.1 By-law concerning the piping of drinking water, wastewater and storm water (City of Montréal).

5.6.2 Philosophy and design

Provide for all drainage and retention systems, service connections, exterior landscaping and meet any other client needs to ensure the functionality of the site hosting the NMJC building. This section is described in the same spirit as all the other texts in this document, meaning that it is written as a performance specification. The client expects to obtain a high-quality proposal within a budget that is based on market trends.

5.6.3 Design requirements

- Dimensioning of the drainage network;
- Calculation of the retention volumes needed according to the City of Montréal's By-law C-1.1 (SWMM modelling);
- Coordination of sewer and aqueduct connections with the person in charge of mechanical engineering;
- Validation of compliance with LEED V4.1 requirements for the optimization of storm water management; and
- Design of ground marking plans.

5.7 General guidelines – IT and Multimedia

Drawings and specifications for telecommunications and multimedia environments, rooms, needs and services will be designed in accordance with the various municipal, provincial and federal codes and regulations in force, as well as the standards, statements and guides of federal departments and agencies, including Shared Services Canada (SSC).

5.7.1 Codes and standards

The design of the electrical work will comply with the following codes, standards, guides, statements and manuals, using the version in effect at the time of final design:

- Canadian Electrical Code;
- National Building Code of Canada (NBCC);
- National Fire Code of Canada (NFCC);
- National Energy Code of Canada for Buildings (NECB) for Electrical Power Systems, Telecommunications equipment and rooms section;
- ANSI/BHMA A156.13-2017 Mortise locks & latches, series 1000;
- Treasury Board's TBITS 6.9 Canadian Open Systems Application Criteria (COSAC), Telecommunications wiring system in Government-Owned and leased buildings - Implementation Criteria;
- TIA/EIA-568, Commercial Building Telecommunications Cabling Standard;
- TIA/EIA-569, Commercial Building Standard for Telecommunications Pathways and Spaces;
- TIA/EIA-570, Residential and Light Commercial Telecommunications Infrastructure Standard;

- TIA/EIA-606, Standard for structured cable labelling;
- TIA/EIA-607, Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications;
- TIA/EIA-758, Customer Owned Outside Plant Telecommunications Cabling Standard;
- TIA/EIA-862, Building Automation Systems Cabling Standard for Commercial Buildings;
- TIA/ANSI-1005, Telecommunications infrastructure standard for industrial premises
- BICSI (Building Industry Consulting Service International) Outdoor Plant Design Reference Manual;
- BICSI Telecommunications Distribution Methods Manual;
- BICSI; Information Technology Systems Installation Methods Manual;
- BICSI, Wireless Design Reference Manual;
- BICSI, Network Design Reference Manual;
- SSC (Shared Services Canada), Lignes directrices spéciales sur les normes techniques, voies d'accès et espaces de télécommunications (Réseaux de câbles) - Planification et mise en application (name of English document to follow). Revision 1.1 (SSC) 2018;
- Guide to seismic specifications for telecommunications infrastructure and related facilities;
- SSC (Shared Services Canada), Government of Canada Workplace Fit-up – Special Technical Standard Guidelines (Section A4) Telecommunications (Cable Networks) Pathways and Spaces – Planning and Implementation, 2018;
- CAS and ATSSC, Physical security standards (if applicable);
- SSC, Statement of Requirements (SOR);
- SSC, Statement of requirements - Scope of work (SOW);
- RCMP (Royal Canadian Mounted Police), Guide G13-01, Secure Storage Rooms (SSR);
- SSC, TS09 Power and Cooling in Distributor (Telecom).

5.7.2 Design philosophy

- 5.7.2.1 General guidelines in information technology (IT) and multimedia will enable designers to create an optimal environment in which future users can operate. By referring to Section 4.6, Systems characterization - IT and multimedia, the designers will be able to design an optimal telecommunications service environment.
- 5.7.2.2 Drawings and specifications for telecommunications and multimedia environments, rooms, requirements and services will be designed in compliance with the various municipal, provincial and federal codes and regulations in force, as well as the standards, statements and guides issued by federal departments and agencies, including Shared Services Canada (SSC).
- 5.7.2.3 The adopted design philosophy is expected to apply a more strategic approach, to ensure interoperability of the occupants' systems and the compatibility of operational practices across the numerous networks and data centres.

- 5.7.2.4 The objectives are provided in Section 4.6, where designers will find the operational and technical specifications for preparing the drawings and specifications that will be used to create the IT and multimedia technological environments throughout the new building.

5.8 General guidelines – Security

5.8.1 Base building

- 5.8.1.1 The base building security principles are essential to ensure security in the building without taking into consideration the specific needs of the tenants.
- 5.8.1.2 The first layer of site security is at the perimeter of the site, and the designers need to consider the following recommendations:
- a. Equip doors and windows located at ground floor level with an alarm system triggered by any intrusion or broken glass;
 - b. Perimeter doors shall be locked with heavy-duty commercial hardware;
 - c. Exterior video surveillance shall cover the entire perimeter of the building, including all doors. All camera footage must be recorded and monitored in real time by security personnel.
- 5.8.1.3 Design the sections of the building where occupants enter and exit and where security controls are located in such a way as to create a distinct separation between public and private areas.
- 5.8.1.4 Protect and/or monitor shut-off devices for publicly accessible water, electrical and gas supply systems.
- 5.8.1.5 Equip all glazing at the lower level with a vandal-resistant film to prevent glass breakage and the dispersal of debris in public areas.
- 5.8.1.6 Plan and lay out the landscaping and other site features in such a manner as to prevent unauthorized vehicle access to the building. Incorporate changes of level, such as retaining walls, in order to direct the movement of people and vehicles to observation points or to establish the site perimeter. Ensure that the objects installed, such as paving bricks, stones, rocks, benches, tables, etc. cannot be used as projectiles.
- 5.8.1.7 Provide general lighting shall be provided around the building for safe illumination and to act as a deterrent. Exterior lighting must provide sufficient visibility, including for the identification of vehicles, attempts at illegal entry, and seeing suspicious or unusual events.
- 5.8.1.8 The concept of security zoning consists of defining the various parts of the building by their required levels of security, and it will be used to apply the required security measures.
- a. Provide equipment at all points of entry for conducting searches of the visitors and packages entering the building. This also includes the entrance to the delivery dock.
 - b. Security guards will use electronic equipment to search every individual and package entering the building.
 - c. The closed-circuit television (CCTV) system shall be equipped with modern cameras.

- d. Video recordings shall be available locally and kept on file for a minimum period of time.
- e. An electronic key box is required near the guard's station.
- f. Security systems (CCTV, access control and intrusion alarm) shall be an integral part of the security system.

5.8.2 ATSSC

- 5.8.2.1 In addition to the base building security measures, other measures are also required for ATSSC.
- 5.8.2.2 All the items listed for the base building also apply to the ATSSC.
- 5.8.2.3 The concept of security zoning consists of defining the various parts of the building by their required levels of security, and it will be used to apply the required security measures:
 - a. Access to a zone with a given level of security shall, as far as possible, be from a zone with the previous level of security so as to create graded levels of protection;
 - b. The ATSSC reception desk, intended to be used for filing documents, must have protective glazing;
 - c. All access points to ATSSC zones shall be lockable and equipped with heavy-duty commercial hardware locks. Provide an electronic access control system. Access points shall be locked and equipped with an intercom, camera and electronic access card reader. The access system shall be configured to ensure that the access points are locked outside of normal working hours and only unlocked by the security guard from the guard station. All keys to this door shall be unique, with no master key;
 - d. Coordinate the locking hardware and key control for ATSSC zones with the building security manager;
 - e. Provide camera surveillance in all elevator lobbies (base building). This will allow the security guard to detect any intrusions. Elevator access shall be controlled by access card outside of normal working hours;
 - f. An electronic intrusion detection system is required for each zone occupied by ATSSC. The intrusion detection system may be incorporated into the base building security system;
 - g. A video surveillance system is required to cover all areas occupied by ATSSC. The video surveillance system can be integrated into the base building security system; and
 - h. The electronic intrusion detection system, the electronic access control system and the video surveillance system shall be integrated and form a convenient, reliable and accurate component of the system.

5.8.3 CAS

- 5.8.3.1 In addition to base building security, an enhanced security posture is required to secure CAS operations.
- 5.8.3.2 All aspects of base building security will apply, in addition to the required higher level of security.
- 5.8.3.3 Incorporate security considerations into the design of the structure to ensure the protection of the building and its users against intrusions.

- 5.8.3.4 The loads shall be carried to the base building structure by localized reinforcement of the retaining wall. The exterior walls shall be reinforced on the ground floor around the entire perimeter of the building.
- 5.8.3.5 Exterior windows that provide a view to offices, cloakrooms and circulation corridors used by judges shall be protected from ballistic attacks.
- 5.8.3.6 Provide sound dampening between the windows and exterior walls and areas within the building that may be used for confidential conversations.
- 5.8.3.7 Provide physical restraint systems, such as bollards, on the streets faced by the building to prevent a vehicle travelling at high speed from effecting a direct impact with the building's exterior envelope.
- 5.8.3.8 Provide emergency ventilation to the base building, to be used in response to a chemical or biological incident in the building. Provide the base building with an emergency method for shutting off air flow into a CAS zone in the event that a chemical or biological incident has occurred outdoors.
- 5.8.3.9 Provide a vandal-resistant film on the windows of the Registrars' offices that are in publicly accessible locations.
- 5.8.3.10 Areas occupied by CAS shall be separate from the rest of the building and clearly identified. Elevators shall not provide direct access to any work area or secure area.
- 5.8.3.11 Elevator lobbies on floors occupied by CAS shall be monitored by camera, day and night, from a guard station. Elevator access outside of normal working hours shall be controlled by access card.
- 5.8.3.12 The parking spaces allocated to CAS shall be reserved for magistrates. Magistrates shall have reserved elevator access when transiting directly to their offices and/or courtrooms.
- 5.8.3.13 Exit doors from security zones to the public zone shall be equipped with an automatic closing system and remain under keyed lock on the public, hallway or stairway side, except on the crossover floors of a high building. Signage on these doors shall clearly indicate that they are locked.
- 5.8.3.14 All access points to CAS areas shall be lockable and equipped with heavy-duty commercial hardware locks. An electronic access control system shall be provided.
- 5.8.3.15 The Security Operations Centre (SOC) shall be located in a low-activity area. The SOC shall not be located in an area that is easily accessible or visible to the public.
- 5.8.3.16 Sensitive areas such as the SOC and courtrooms shall have appropriate protection from ballistic attacks, in the courtroom and/or for the furniture in such areas.
- 5.8.3.17 Reception areas shall have sufficient space or overflow space in public access areas to accommodate visitors waiting for services without disrupting normal operations on the premises.
- 5.8.3.18 CAS shall have the equipment and space required to conduct a second search before the individual enters a courtroom.
- 5.8.3.19 The elevator that is accessible from the delivery docks shall be controlled by a card reader. Only authorized persons shall have access to occupants' floors (CAS or ATSSC).

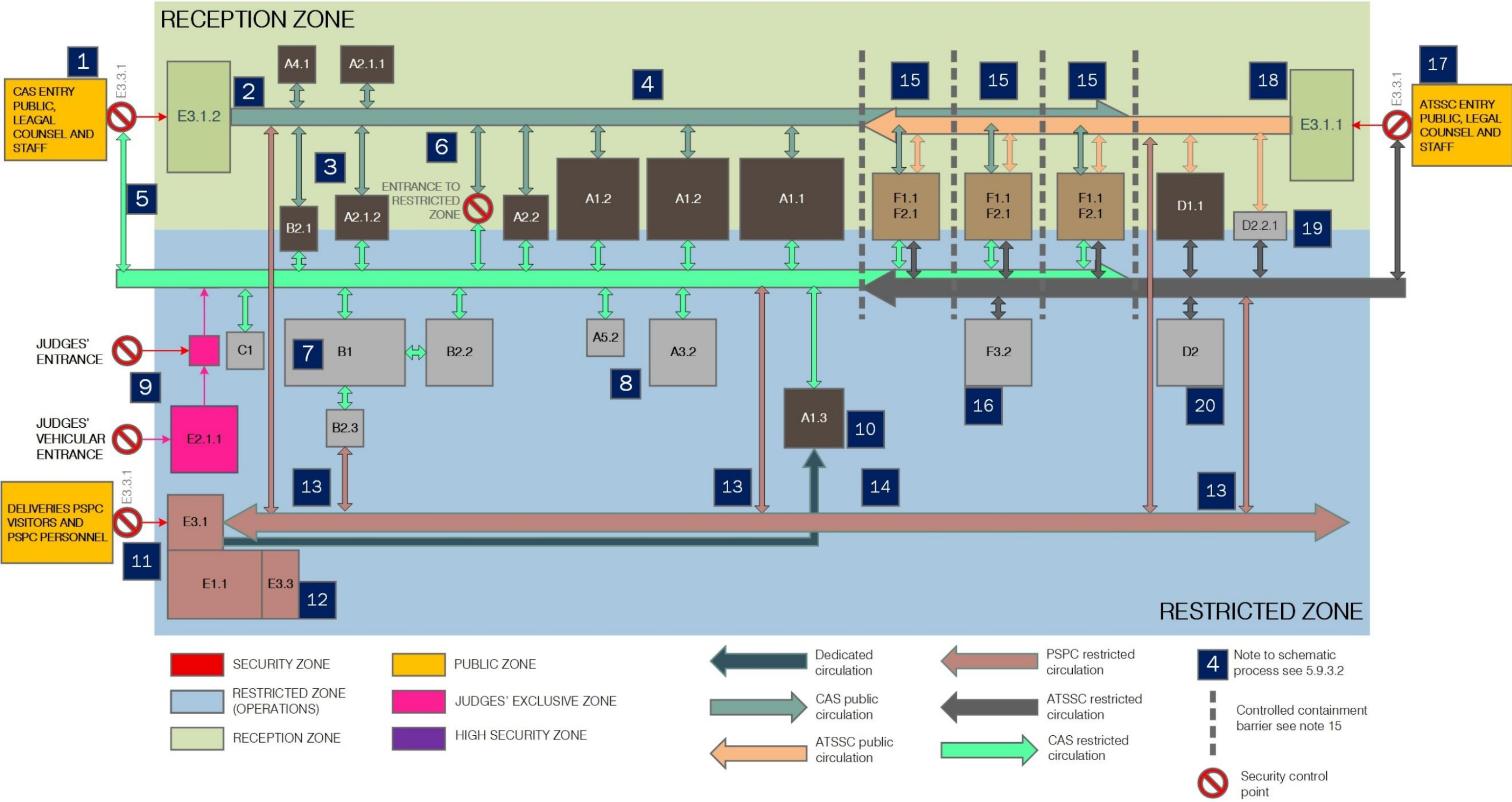
- 5.8.3.20 Equip conference rooms with soundproof windows with visual protection, such as blinds or curtains. Additional soundproofing features may be added, depending on the specific requirements related to the classification level of the information discussed therein.
- 5.8.3.21 Provide emergency buttons at the various locations where the judges and registrars will sit (office, courtroom) to provide these occupants with a method for sending an alert in real time.
- 5.8.3.22 The video surveillance system shall use modern cameras.
- 5.8.3.23 Video recording shall be available locally, with recordings held for a minimum retention period. The system shall also make the video streams available to an external monitoring station at all times, at the same quality as the local viewing.
- 5.8.3.24 An electronic intrusion detection system is required for each area occupied by CAS.
- 5.8.3.25 An access control system is required to control access doors to areas occupied by CAS.
- 5.8.3.26 The security systems must therefore include distress reporting, electronic intrusion detection, electronic access control and closed circuit video surveillance. These functions shall be combined to form a practical, reliable and accurate component of the “detection” aspect of the physical security subsystem.

5.9 Process flow diagram

5.9.1 Introduction

- 5.9.1.1 The process flow (PF) diagram is a proportionally scaled diagram used to illustrate the fit-out prescriptions and requirements for NMJC spaces and groups of spaces. It summarizes virtually all of the functional program concerns.
- 5.9.1.2 The PF diagram is not a plan. The spaces are proportionally scaled only to illustrate the magnitude of the various functions and their impact on the planned building.
- 5.9.1.3 The advantage of the PF diagram is that it presents the building and its organization without considering any of the constraints that may be imposed by the site, municipal zoning bylaws and existing elements. In a way, the PF diagram describes the essence of the “machine.”
- 5.9.1.4 The PF diagram is presented in article 5.10.2. Article 5.10.3 contains notes and instructions and should be read in conjunction with the diagram.

5.9.2 Process flow diagram



5.9.3 Process flow spaces and notes

5.9.3.1 List of spaces appearing in the process flow

A1.1	Hearing Complex – FCA (C1)
A1.2	Hearing Complex (C2)
A1.3	Future Complex (C4)
A2.1.1	Training room
A2.2	Mediation (C7)
A3.1	Judges and Prothonotaries
A4.1	Cloakrooms
A5.2	Support for the Judiciary
B1	Workplace
B2.1	Customer Service
B2.2	Files
B2.3	General Support
D1.1	Hearing Complex (C5)
C1	Security
D2	Workplace
D2.2.1	Reception and Waiting Room
E1.1	Management Support
E3.1	Service Area
E3.1.1	ATSSC Grand Entry Hall
E3.1.2	CAS Grand Entry Hall
E3.3	Control Centre
F1.1	Hearing Complex (C6)
F2.1	Mediation (C6)
F3.2	ATSSC Operational Space

5.9.3.2 Notes and instructions – Process flow diagram

- 1 Design and develop a main entrance that serves all CAS spaces in accordance with articles: 5.11.10 - Main entrance; 4.5.3 – Movements of personnel; 4.5.5 – Movements of members of the public; and 4.5.4 – Movements of legal counsel. This main entrance shall be separate from the entrance required for ATSSC.
- 2 Create a Grand Entry Hall (E3.1.2) immediately at the exit of the control spaces (E3.3.1). This space will, among other things, be used by the public (including counsel) to find where they are going and head in the right direction. Design a public circulation route from the Grand Entry Hall to all the CAS spaces and the groups of spaces identified in the Process Flow diagram.
- 3 Place the spaces and groups of spaces B2.1 – Customer Service; A2.1.1 – Training Room; and A4.1 - Cloakrooms, at the “entrance” to the dedicated CAS area to limit the presence of members of the “general” public in the courtroom areas.
- 4 Lay out the CAS public traffic courtroom complexes. As much as possible, follow the order of their positions in the PF diagram, i.e. A1.2, followed by A1.1, in accordance with section 2.4.2 dealing with the Canadian Court System and the order of the Courts. Place Complex A1.1 at the end, and equip it with the required access controls (see 5.14.2).
- 5 Design a dedicated circulation route for CAS personnel, leading from the staff entrance, that will serve both the judicial spaces and the work places indicated in the PF diagram. This circulation path will be used by CAS personnel, the judiciary and any authorized contractors.
- 6 Provide controlled access, in accordance with the security guidelines, between the public circulation areas and the restricted circulation areas to allow authorized visitors to be escorted through restricted areas.
- 7 Locate the CAS Personnel Workplace - B1 at the beginning of the circulation area mentioned in Note 5 and in close proximity to space group B2.1 – Customer Service. Locate groups B2.2 - Files and B2.General Support in close proximity, preferably adjacent B1 - Workplace. These spaces will be gradually transformed to absorb additional personnel as the workplace moves to “paperless” work mode (see Section 4.3 - CGW).
- 8 Each court complex will house judges' offices. However, the PF diagram foresees more offices in addition to what is provided for those complexes. Place these offices with their support spaces midway between complexes F1.1 and A1.2 in order to facilitate the movement of magistrates to the courtrooms when required.
- 9 Plan an exclusive pedestrian entrance for the judiciary. It shall be discreet, and in accordance with Article 4.5.2 – Movement of Judges it shall lead to the dedicated circulation area in the restricted area. It may or may not be connected to the judges' dedicated access from the parking area. In addition, provide vehicular access and parking dedicated to the judiciary in accordance with the security guidelines and with article 4.5.2 Movement of Judges.
- 10 Develop the Future Complex - A1.3 in a restricted area and outside of routine operations. Provide an access for members of the personnel and the judiciary and to court records and equipment.
- 11 Provide secure access for deliveries, shipments and CAS personnel as well as for their visitors and subcontractors in accordance with article 4.5.6 - Movement of Merchandise and article 5.11.9 – Loading Dock. It is identified as E3.1 and includes spaces E3.1.5 to E3.1.11.

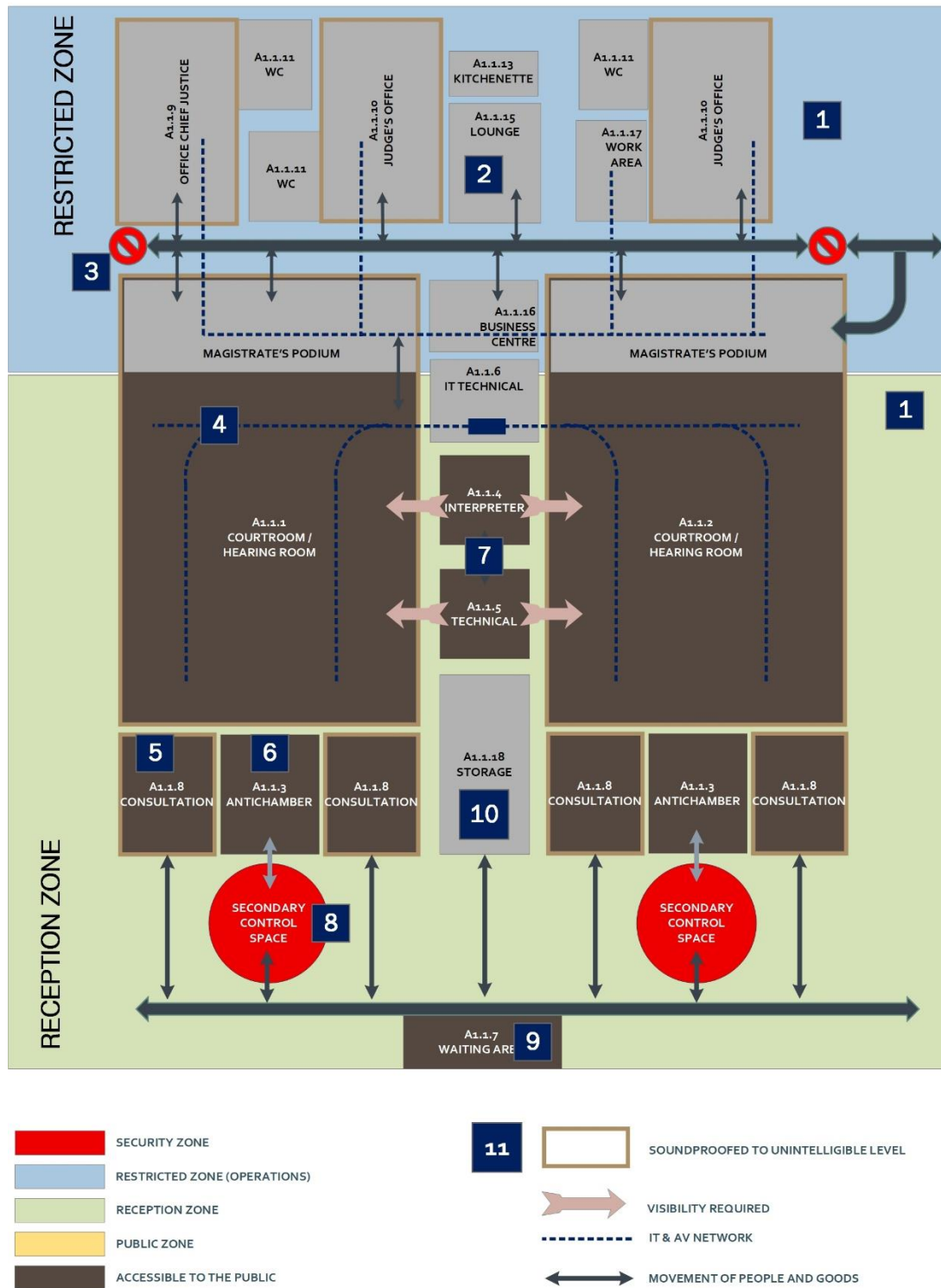
- 12 Place spaces E1 – Real Property Management spaces close to the delivery/shipping dock. In addition, set up a Security Operations Centre (SOC) in E3.3, which will include spaces E3.3.3 to E3.3.7; the SOC will be independent and have its own controlled access; it will need to have access to all NMJC circulation areas.
- 13 A transportation network for goods, merchandise and equipment will be needed to supply all NMJC spaces from the receiving/shipping dock. It must be located in such a manner that one area can be reached without having to pass through another, in order to maintain the integrity of security at the NMJC. In addition, it must be directly connected to Group B2.2 - Files in order to manage shipments to the archives.
- 14 Goods, documents, merchandise and equipment will be received at the NMJC for delivery to the Future Complex A1.3. These items will go directly to the Security Complex along a dedicated secure circulation route.
- 15 Groups F1.1 and F2.1 form three separate complexes that will be used by both CAS and ATSSC. Each of these complexes is independent of the other two and will be used by CAS and ATSSC in alternation: the principle of judicial independence requires that the two services cannot use the same space simultaneously. As a result, public and restricted circulation routes shall be designed in such a way that each complex can be used by either CAS or ATSSC in accordance with the principles of judicial independence (see Section 4.1 - Impartiality and Independence). Each complex shall be sound-proofed from its neighbours (unintelligible level).
- 16 Develop Group F3.2 - Private Space near the F1.1/F2.1 complexes. It will be reached by an ATSSC restricted-access circulation route and will be used primarily by officials of the administrative tribunals other than the CIRB. Access control shall be provided between F3.2 and D2.
- 17 Plan and design a main entrance that serves all CAS areas in accordance with article 5.11.10 - Main Entrance; article 4.5.3 – Movements of Personnel; article 4.5.5 – Movements of Members of the Public; and article 4.5.4 – Movements of Legal Counsel. This main entrance will be separate from that required for CAS spaces.
- 18 Plan a Grand Entry Hall - space E3.1.2, immediately at the exit of E3.3.2 control spaces. This space will, among other things, be used by the public (including counsel) to find where they are going and head in the right direction. Design a public circulation route from the Hall to all the ATSSC spaces and groups of spaces identified in the PF diagram.
- 19 Provide controlled access, in accordance with the security guidelines, between public circulation areas and restricted circulation areas so that authorized visitors can be escorted through restricted areas. This controlled access will be exercised in room D2.2.1.
- 20 Plan the D2 – Workplace group in a restricted area and connected to the restricted circulation route solely for ATSSC personnel.

5.10 Layout diagrams

5.10.1 Introduction

The layout diagrams illustrate the layout principles applicable to specific groupings of rooms (or functional units) as required to meet the specific needs of NMJC users. They are proportionally scaled and include colour codes and (numbered) instructions, most of which the reader will find in the accompanying text.

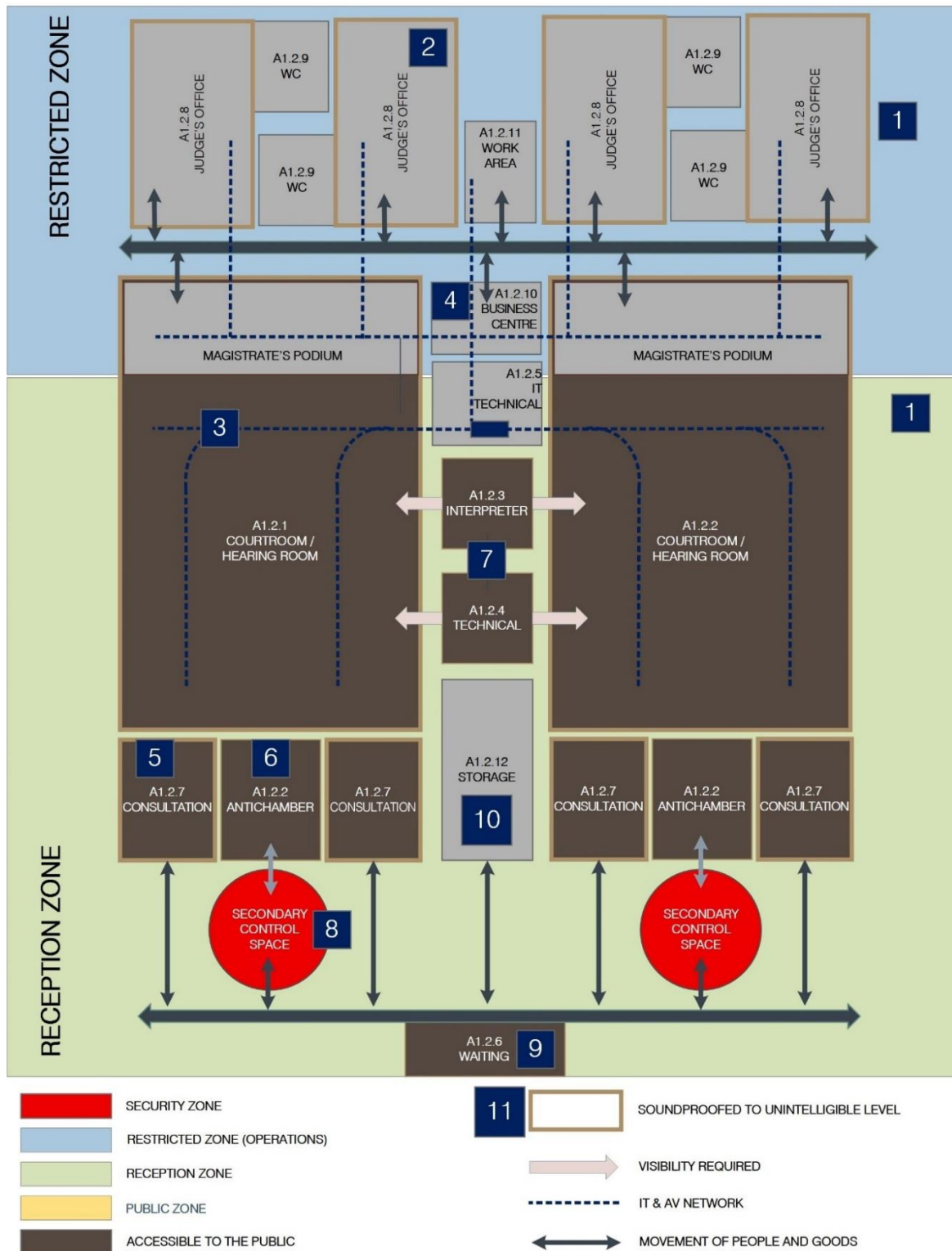
5.10.2 Complex 1



5.10.2.1 Notes and instructions – Complex 1

- 1 The restricted area will be next to the reception area. The only link between them will be the magistrate's podium; there will be no circulation between them.
- 2 The offices dedicated to Federal Court of Appeal judges as well as the adjoining service spaces will be separate from the other spaces in the restricted area. The circulation in this area will include allowing personnel to move freely between Courtroom A1.1.1 and Courtroom A1.1.2
- 3 Access to the area described in Note 2 will be controlled. These controls will be active when the FCA is in session and will not be active the rest of the time. The area shall be located at the end of the circulation route and must not divide the circulation network into restricted areas.
- 4 The courtrooms, judges' offices, magistrates' room and work area will be connected to CAS's IT network in accordance with the IT guidelines in this section.
- 5 Provide two consultation rooms for each courtroom. These rooms will be occupied by the applicant and the defendant, respectively. Other uses will include client-counsel consultations and work conducted on-site by the legal counsel. The rooms may also be used for dining or a coffee break and to isolate a witness when required by the Court. Provide sufficient acoustic isolation so that it will be impossible to understand what is being said inside the room (due to the confidentiality of what is being said), and to allow the witness to be acoustically isolated.
- 6 The primary purpose of the antechamber is to control the sound coming from the Courtroom or the adjacent public space while allowing individuals to enter or leave. Design the antechamber to be long enough so that the first door can close before the second door is opened.
- 7 The interpreters' and technician's rooms serve two courtrooms, in alternation. Their design shall ensure that the interpreters and their technician can see anyone who will be using these services.
- 8 Provide a clear space in front of each antechamber to accommodate secondary control devices when such devices will be used. Provide sufficient space for people to form a line.
- 9 Centralize the waiting area so that witnesses can be easily reached and brought to the courtroom.
- 10 The storage room will serve both courtrooms. Ensure that the space is centrally located and has sufficient clearance for storing benches for the public, tables and other similar items.
- 11 Acoustically isolate the spaces indicated in the diagram to ensure that the discussions inside cannot be understood from outside. Pay particular attention to the consultation rooms, due to the confidential nature of the discussions.

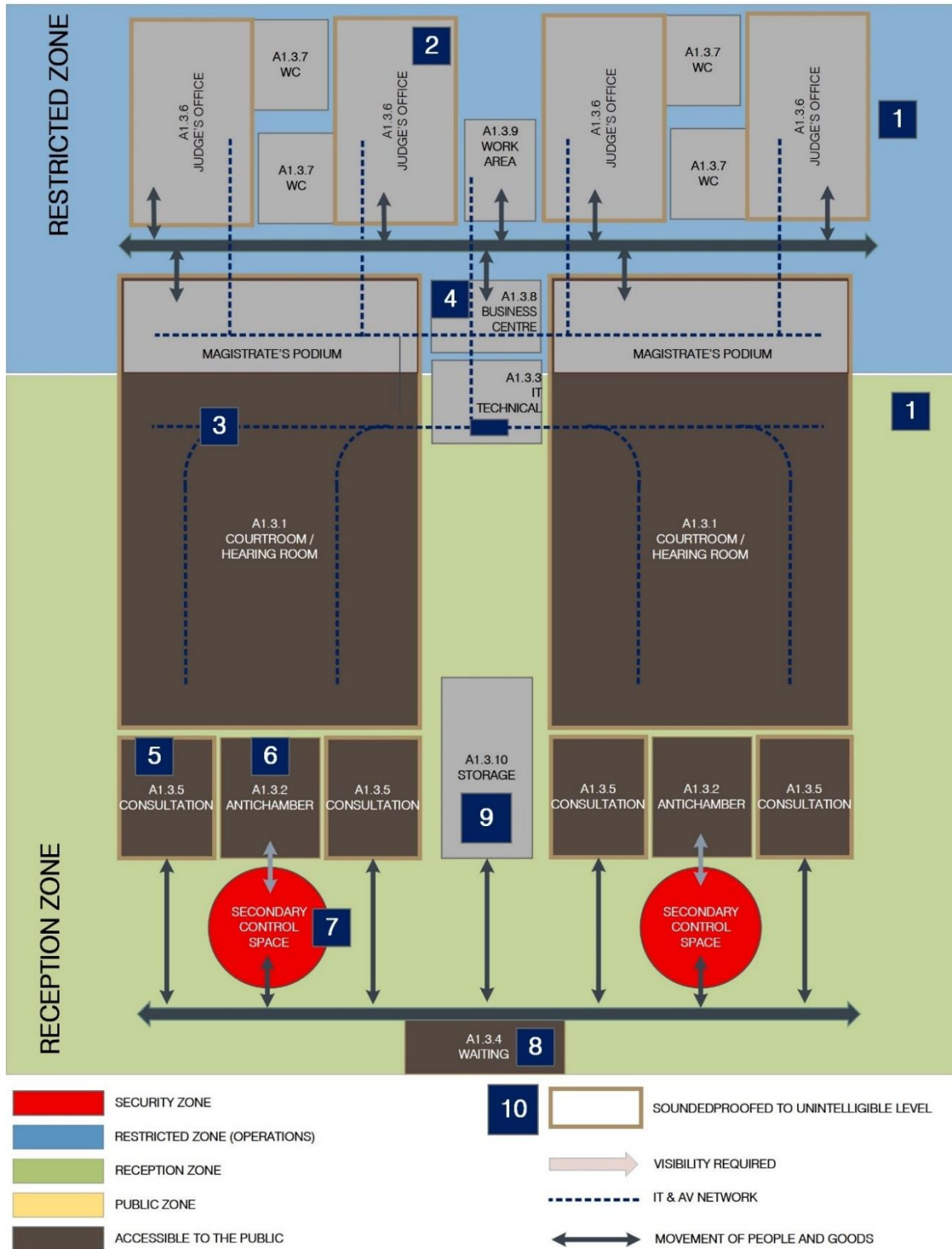
5.10.3 Complex 2



5.10.3.1 Notes and instructions – Complex 2

- 1 The restricted area will be next to the reception area. The only link between them will be the magistrate's podium; there will be no circulation between them.
- 2 Provide four dedicated offices for judges as well as the adjoining service spaces in an area close to the two courtrooms they will serve.
- 3 The courtrooms, judges' offices, business centre and work area will be connected to CAS's IT network in accordance with the IT guidelines in this section.
- 4 Give the business centre a central location so that it can serve both courtrooms equitably.
- 5 Provide two consultation rooms for each courtroom. These rooms will be occupied by the applicant and the defendant, respectively. Other uses will include client-counsel consultations and work conducted on-site by the legal counsel. The rooms may also be used for dining or a coffee break and to isolate a witness when required by the Court. Provide sufficient acoustic isolation so that it will be impossible to understand what is being said inside the room (due to the confidentiality of what is being said), and to allow the witness to be acoustically isolated.
- 6 The primary purpose of the antechamber is to control the sound coming from the Courtroom or the adjacent public space while allowing individuals to enter or leave. Design the antechamber to be long enough so that the first door can close before the second door is opened.
- 7 The interpreters' and technician's rooms serve two courtrooms, in alternation. Their design shall ensure that the interpreters and their technician can see anyone who will be using these services.
- 8 Provide a clear space in front of each antechamber to accommodate secondary control devices when such devices will be used. Provide sufficient space for people to form a line.
- 9 Centralize the waiting area so that witnesses can be easily reached and brought to the courtroom.
- 10 The storage room will serve both courtrooms. Ensure that the space is centrally located and has sufficient clearance for storing benches for the public, tables and other similar items.
- 11 Acoustically isolate the spaces indicated in the diagram to ensure that the discussions inside cannot be understood from outside. Pay particular attention to the consultation rooms, due to the confidential nature of the discussions.

5.10.4 Complex 3

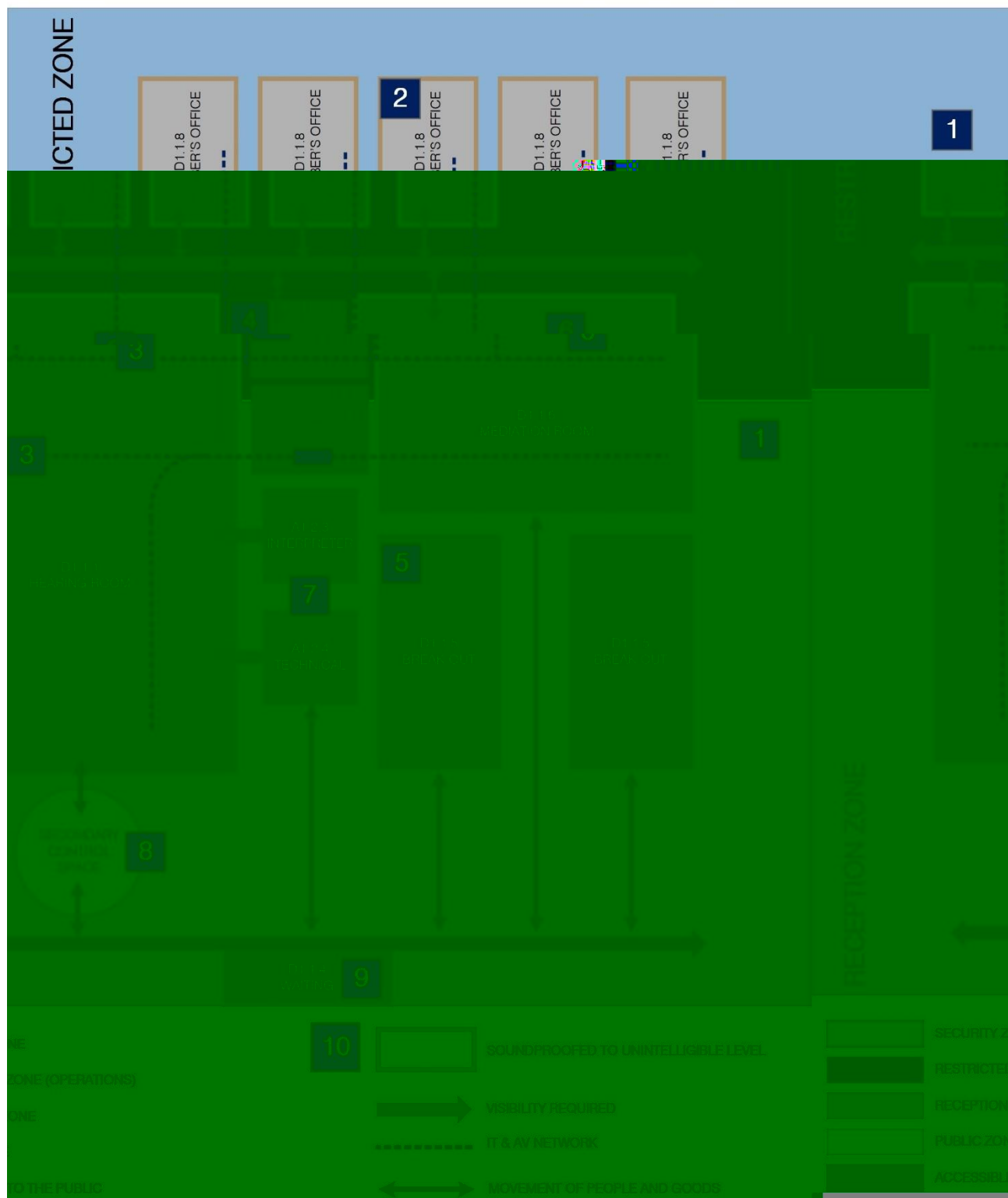


5.10.4.1 Notes and instructions – Complex 3

- 1 The restricted area will be next to the reception area. The only link between them will be the magistrate's podium; there will be no circulation between them.
- 2 Provide four dedicated offices for judges as well as the adjoining service spaces in an area close to the two courtrooms they will serve.
- 3 The courtrooms, judges' offices, business centre and work area will be connected to CAS's IT network in accordance with the IT guidelines in this section.
- 4 Give the business centre a central location so that it can serve both courtrooms equitably.
- 5 Provide two consultation rooms for each courtroom. These rooms will be occupied by the applicant and the defendant, respectively. Other uses will include client-counsel consultations and work conducted on-site by the legal counsel. The rooms may also be used for dining or a coffee break and to isolate a witness when required by the Court. Provide sufficient acoustic isolation so that it will be impossible to understand what is being said inside the room (due to the confidentiality of what is being said), and to allow the witness to be acoustically isolated.
- 6 The primary purpose of the antechamber is to control the sound coming from the Courtroom or the adjacent public space while allowing individuals to enter or leave. Design the antechamber to be long enough so that the first door can close before the second door is opened.
- 7 Provide a clear space in front of each antechamber to accommodate secondary control devices when such devices will be used. Provide adequate space for people to form a line.
- 8 Centralize the waiting area so that witnesses can be easily reached and brought to the courtroom.
- 9 The storage room will serve both courtrooms. Ensure that the space is centrally located and has sufficient clearance for storing benches for the public, tables and other similar items.
- 10 Acoustically isolate the spaces indicated in the diagram to ensure that the discussions inside cannot be understood from outside. Pay particular attention to the consultation rooms, since the subjects discussed in them are confidential in nature.

5.10.5 Complex 4 – Future
(TO FOLLOW)

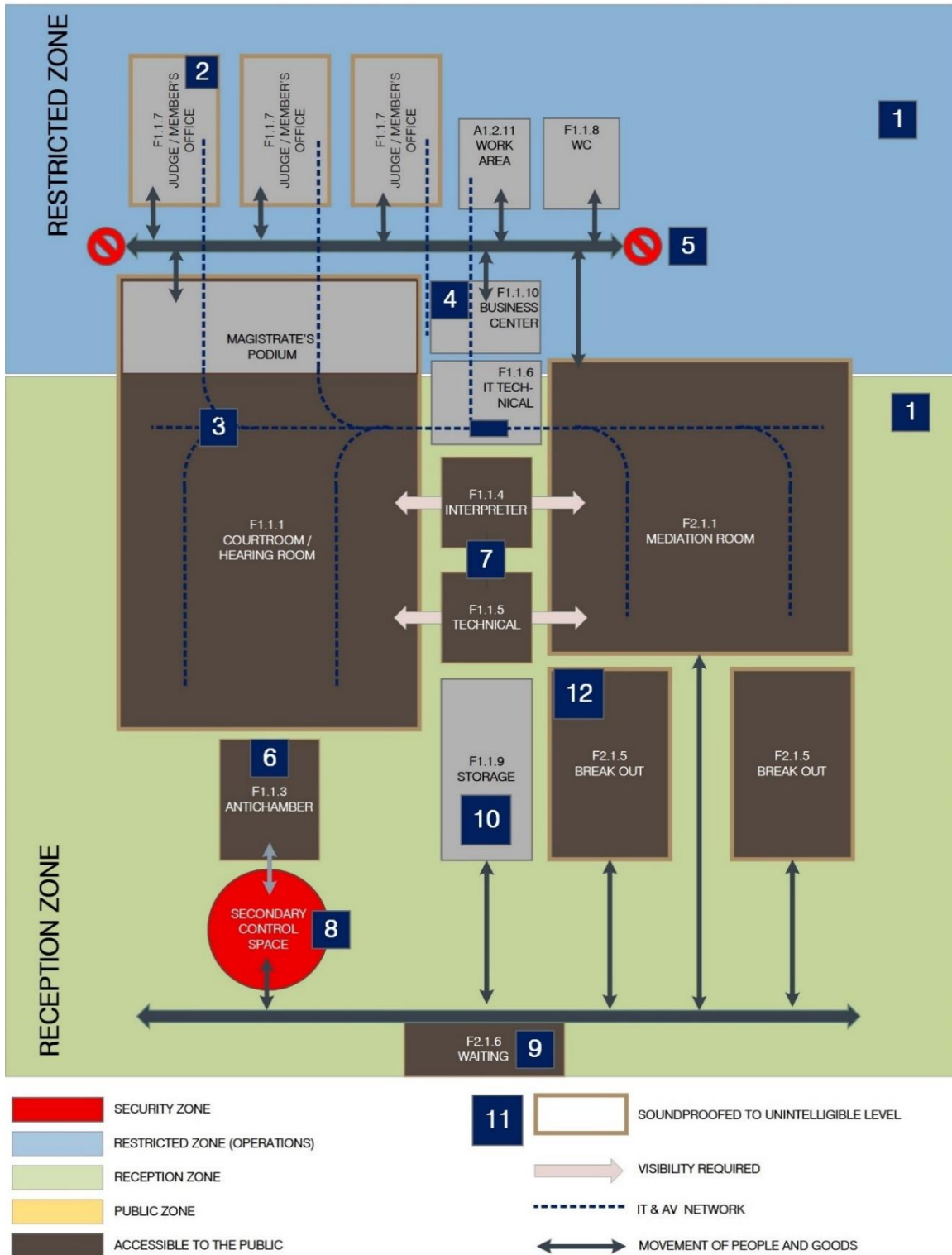
5.10.6 Complex 5



5.10.6.1 Notes and instructions – Complex 5

- 1 The restricted area will be next to the reception area. The only link between them will be the magistrate's podium; there will be no circulation between them.
- 2 Provide five dedicated offices for magistrates as well as the adjoining service spaces in an area close to the hearing room and the mediation room they will serve.
- 3 The hearing rooms, magistrates' offices, business centre and work area will be connected to ATSSC's IT network in accordance with the IT guidelines in this section.
- 4 Locate the business centre centrally, so that it can serve both the hearing room and the mediation room equitably.
- 5 Provide two consultation rooms (break-out rooms). These rooms will be occupied by the applicant and the defendant, respectively, and other uses will include consultations and discussions between the members of the parties, and occasionally for dining or a coffee break. The level of acoustical isolation shall be sufficient to make it impossible to understand what is being said inside the room, due to the confidentiality of what is being said. Pay particular attention to the positioning of the doors: locate them as far away from each other as possible for better sound dampening.
- 6 Provide direct access to the mediation room from the restricted area.
- 7 The interpreters' and technician's rooms serve the hearing room. Their design shall ensure that the interpreters and their technician can see anyone who will be using these services.
- 8 Provide a clear space in front of each antechamber to accommodate secondary control devices when such devices will be used. Provide adequate space for people to form a line.
- 9 Centralize the waiting area so that witnesses can be easily reached and brought to the hearing room.
- 10 Acoustically isolate the spaces indicated in the diagram to ensure that the discussions inside cannot be understood from outside. Pay particular attention to the consultation rooms, due to the confidential nature of the discussions.

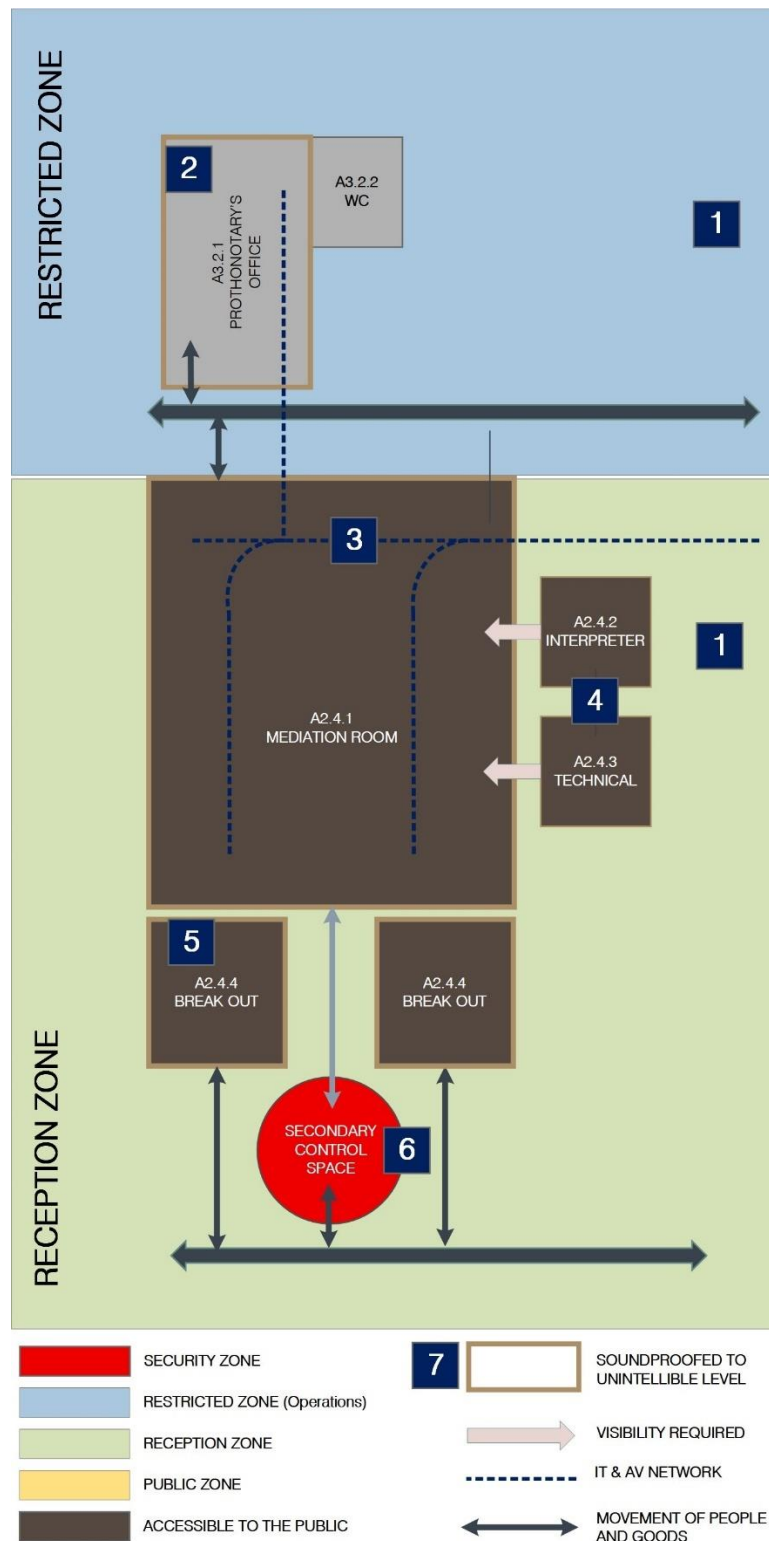
5.10.7 Complex 6



5.10.7.1 Notes and instructions – Complex 6

- 1 The restricted area will be next to the reception area. The only link between them will be the magistrate's podium; there will be no circulation between them.
- 2 Provide four dedicated offices for magistrates as well as the adjoining service spaces in an area close to the two hearing rooms they will serve.
- 3 The hearing rooms, magistrates' offices, business centre and work area will be connected to CAS's or ATSSC's IT network, as appropriate, in accordance with the IT guidelines in this section.
- 4 Give the business centre a central location so that it can serve both hearing rooms.
- 5 Access to the complex's restricted circulation route will be controlled by card readers.
- 6 The primary purpose of the antechamber is to control the sound coming from the hearing room and the adjacent public space while allowing individuals to enter or leave. Design the antechamber to be long enough so that the first door can close before the second door is opened.
- 7 The interpreters' and technician's rooms serve the hearing room and the mediation room, in alternation. Their design shall ensure that the interpreters and their technician can see anyone who will be using these services.
- 8 Provide a clear space in front of each antechamber to accommodate secondary control devices when such devices will be used. Provide adequate space for people to form a line.
- 9 Centralize the waiting area so that witnesses can be easily reached and brought to the hearing room
- 10 Provide a storage room near the hearing room and ensure that the space has sufficient clearance for storing benches for the public, tables and other similar items.
- 11 Acoustically isolate the spaces indicated in the diagram to ensure that the discussions inside cannot be understood from outside. Pay particular attention to the consultation rooms, due to the confidential nature of the discussions.
- 12 Provide two consultation rooms (break-out rooms). These rooms will be occupied by the applicant and the defendant, respectively, and other uses will include consultations and discussions between the members of the parties, and occasionally for dining or a coffee break. The level of acoustical isolation shall be sufficient to make it impossible to understand what is being said inside the room, due to the confidentiality of what is being said. Pay particular attention to the positioning of the doors: locate them as far away from each other as possible for better sound dampening.

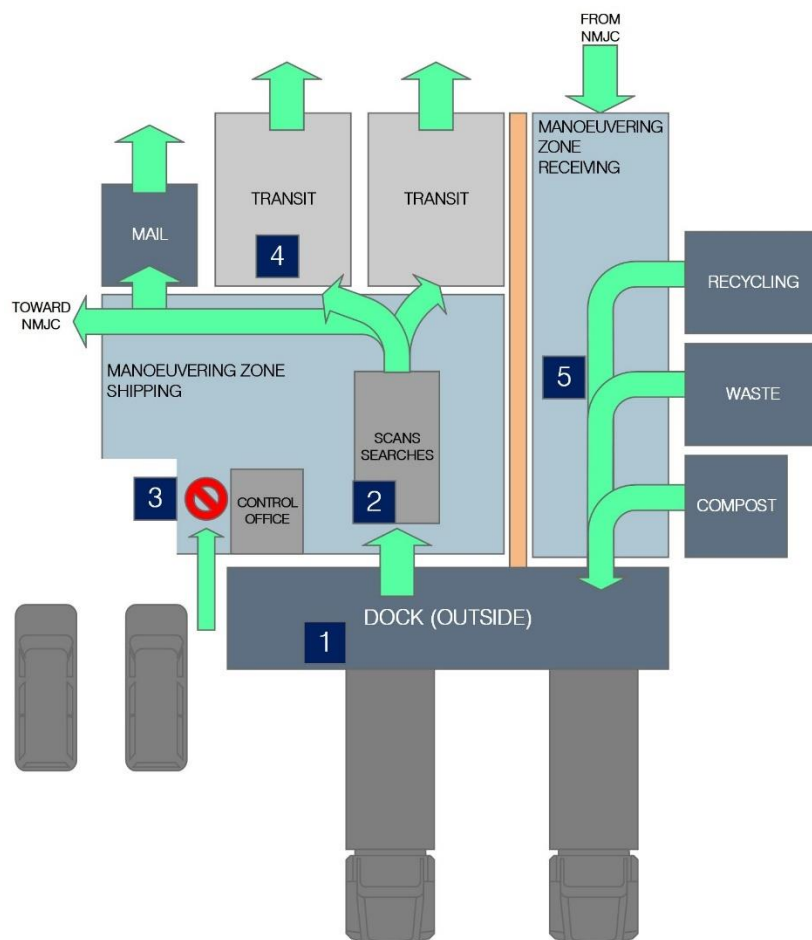
5.10.8 Complex 7



5.10.8.1 Notes and instructions – Complex 7

- 1 The restricted area will be next to the reception area. The only link between them will be the magistrate's podium; there will be no circulation between them.
- 2 Locate the prothonotary's office near the mediation room.
- 3 The mediation room and the prothonotary's office will be connected to CAS's IT network in accordance with the IT guidelines in this section.
- 4 The design shall ensure that the interpreters and their technician can see anyone who will be using these services.
- 5 Provide two consultation rooms (break-out rooms). These rooms will be occupied by the applicant and the defendant, respectively, and other uses will include consultations and discussions between the members of the parties, and occasionally for dining or a coffee break. The level of acoustical isolation shall be sufficient to make it impossible to understand what is being said inside the room, due to the confidentiality of what is being said. Pay particular attention to the positioning of the doors: locate them as far away from each other as possible for better sound dampening.
- 6 Provide a clear space to accommodate secondary control devices when such devices will be used. Provide adequate space for people to form a line.
- 7 Acoustically isolate the spaces indicated in the diagram to ensure that the discussions inside cannot be understood from outside. Pay particular attention to the consultation rooms, since the subjects discussed in them are confidential in nature.

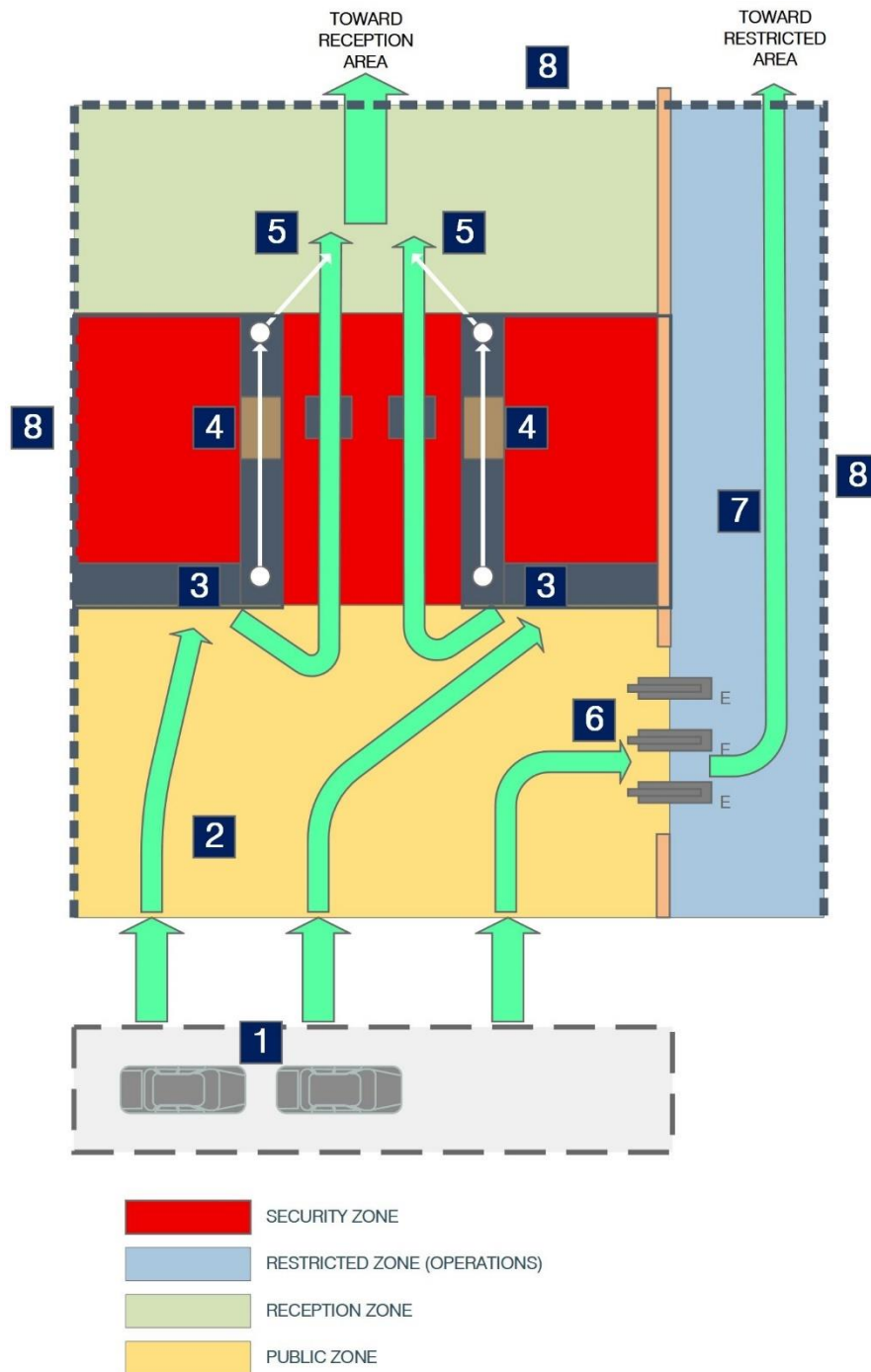
5.10.9 Loading dock – Reception / shipping dock



5.10.9.1 Notes and instructions – Reception / shipping dock

- 1 The vehicular loading dock will be outside the building for operational security reasons. The design will need to include weather protection so that security personnel can search the vehicle if deemed necessary and complete a cursory inspection of the delivery prior to their search and scan.
- 2 All deliveries will be searched and/or electronically scanned before being admitted to the manoeuvring area.
- 3 Delivery staff and subcontractors will report to the control office for admission. Some will be provided with access cards, while others will be considered “members of the public.” Plan the space accordingly. Ensure that there are no other possible points of entry.
- 4 Plan transit areas in the vicinity of the search. These areas are continuous: each delivery will enter the transit area through the manoeuvring area and exit the transit area at the opposite end, toward the NMJC. Pedestrian access shall be provided on both sides of the transit areas. The same applies to the mailroom.
- 5 Shipped materials reach the shipping area through the NMJC's internal circulation routes. The shipping area is physically separate from the receiving area. Waste and recyclable materials are stored there until they can be collected by specialized subcontractors.

5.10.10 Main entrance



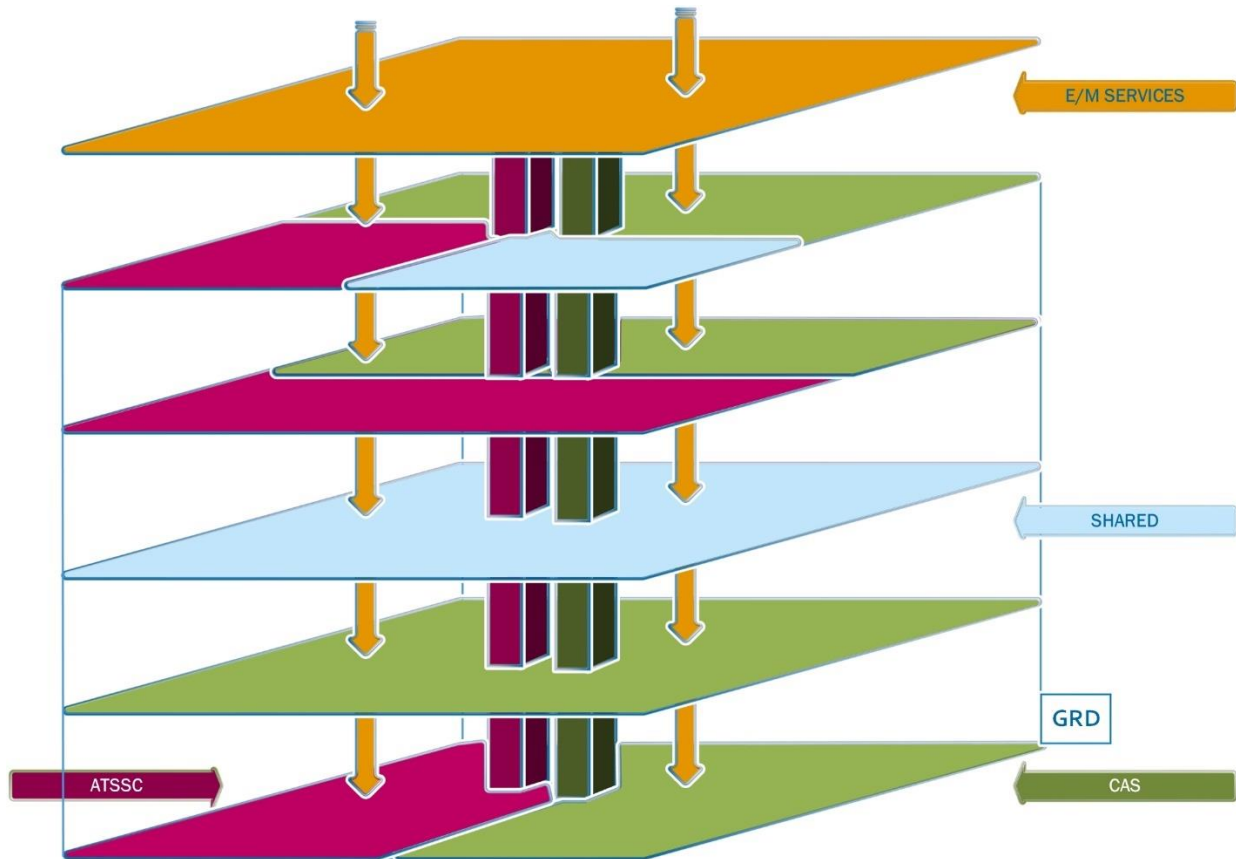
5.10.10.1 Notes and instructions – Main entrance

- 1 Provide a public drop-off area for dropping off persons with reduced mobility and for dropping off large quantities of documents and evidence destined for the courtrooms and hearing rooms. It is also planned that private couriers will be able to deliver limited quantities of documents.
- 2 Provide a public lobby that will allow the public to move to the appropriate counter and personnel to move to the personnel entrance (see occupancy calculations).
- 3 Set up a reception and security desk to receive the public and conduct the required searches. There will be two counters: one for the general public and one for the legal counsel and deliveries.
- 4 Individuals as well as items brought inside the building (bags, documents, computers, deliveries, etc.) will be scanned.
- 5 Provide an area for retrieving items and documents.
- 6 Provide card-operated security gates with positive identification for NMJC personnel. One of the gates must allow access for persons with reduced mobility.
- 7 Once through the gates, the personnel will take restricted circulation routes. This shall be maintained from the gates to the workplace.
- 8 This note is deleted.

5.11 Design guidelines

5.11.1 Organizing principles

- a. ATSSC and CAS will each have permanent entries.
- b. Each will have an exclusive vertical transportation axis for the entire height of the building.
- c. Each may be accommodated on any available floor.
- d. Each floor area occupied by ATSSC or CAS will be isolated from the areas of any other function (design simulations required).
- e. Electrical and mechanical services will be unified and shared for reasons of flexibility and safety. This is in order to:
 - ensure flexibility of use;
 - allow ATSSC and CAS to freely expand;
 - facilitate transformations;
 - inform design specifications (safety).



5.12 Unit Space Worksheets

- a. The Unit Space Worksheets show all the requirements for each room. The supplied Excel file may eventually enhance the design BIM model by providing all the component parameters (rooms, objects) required for the project. The records provide detailed listings at Unifomat Level 4. For a good understanding of the organization under Unifomat, see article 1.1.3.
- b. The worksheets include the client's references and requirements in terms of performance objectives, standards for each room and object required for the project. Since the judicial standards are very complex, the project will be planned using the list of specifications that are relevant to the architects, designers and cost consultants. These worksheets assist in the development of the New Montréal Judicial Complex and are an integral part of the functional program.
- c. To facilitate the design process, detailed information on all the architectural, mechanical, electrical and structural specifications are provided under the tabs in the Unit Space Worksheets. These planning standards and furniture and equipment standards allow for the standardization, as much as possible, of regional and national facilities in order to benefit from economies of scale in life-cycle replacement activities and to facilitate procurement processes.
- d. The worksheets therefore have two tabs: the first one contains their data and the second consists of the database. This database supports all the rooms of standard spaces in the left columns and in detail, the first horizontal lines of the table present the characteristics of the spaces based on the Level 4 detail required for each component.

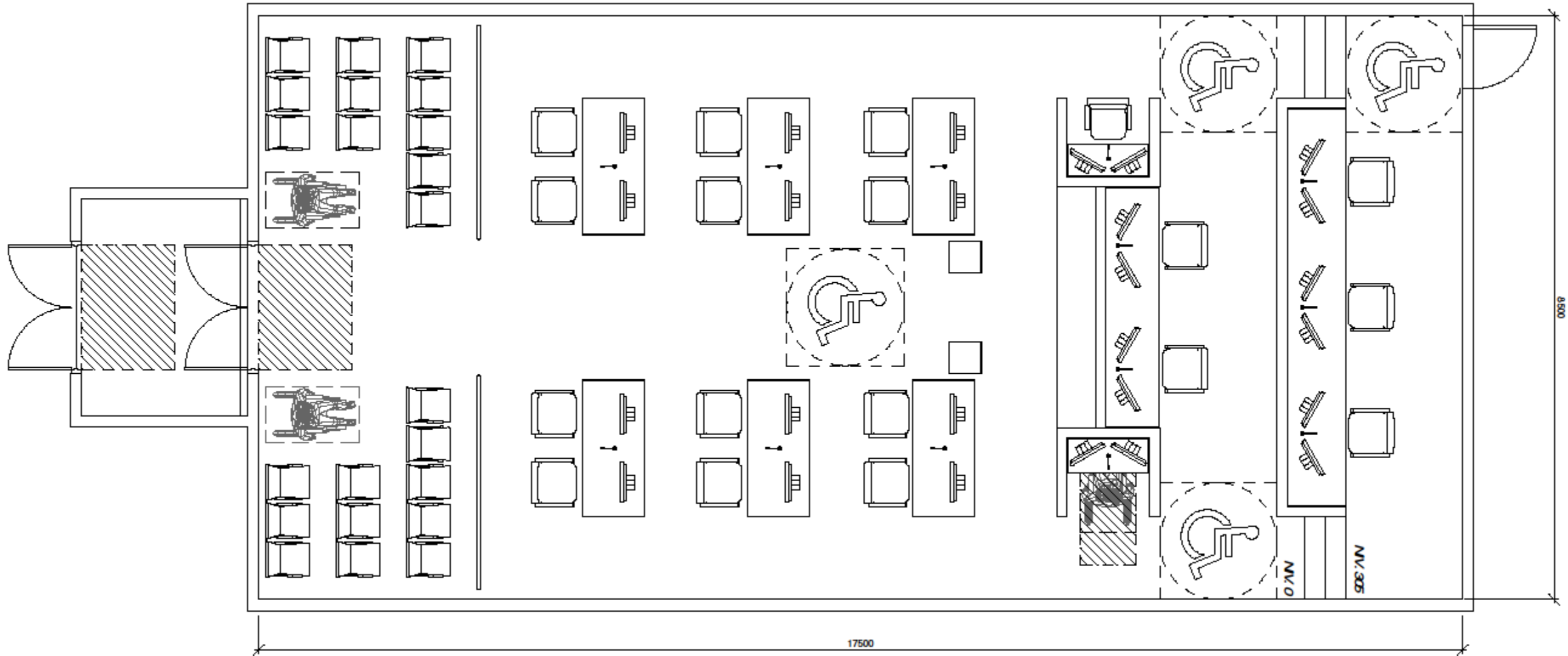
5.13 SPS layouts

The following plans, sections and 3D illustrations are taken from the summary tables. They represent all the special-purpose spaces (SPSs). To be read in conjunction with the Unit Space Worksheets.

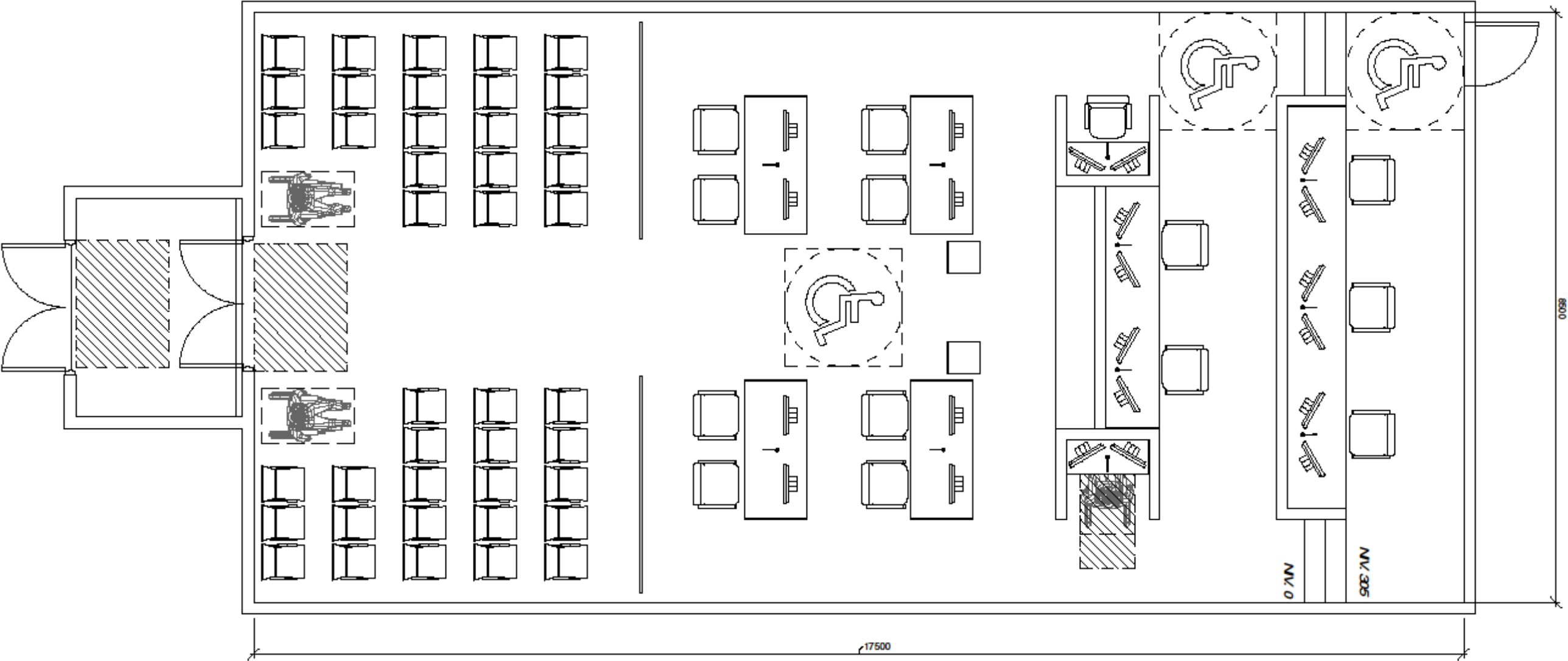
5.14 Hearing room complex (A1, D1, F1)

5.14.1 Large courtroom A1.1.1 and F1.1.1

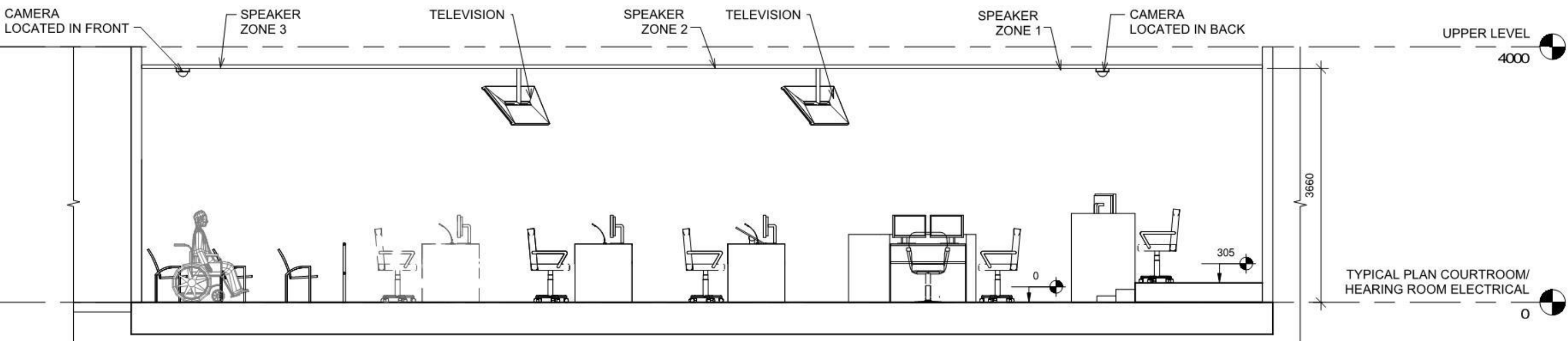
5.14.1.1 Configuration A – CAS



5.14.1.2 Configuration B – CAS



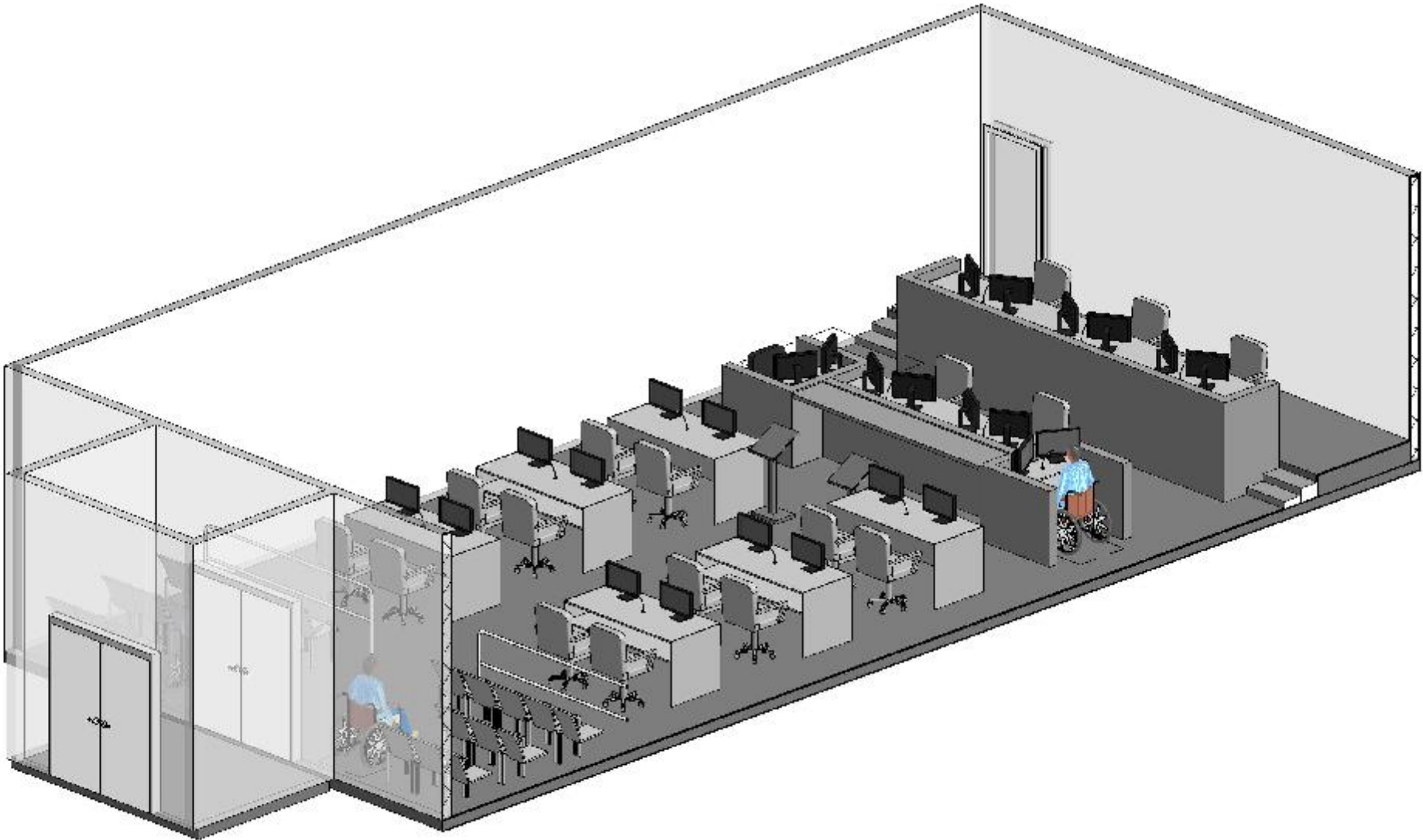
5.14.1.3 Longitudinal Section - CAS



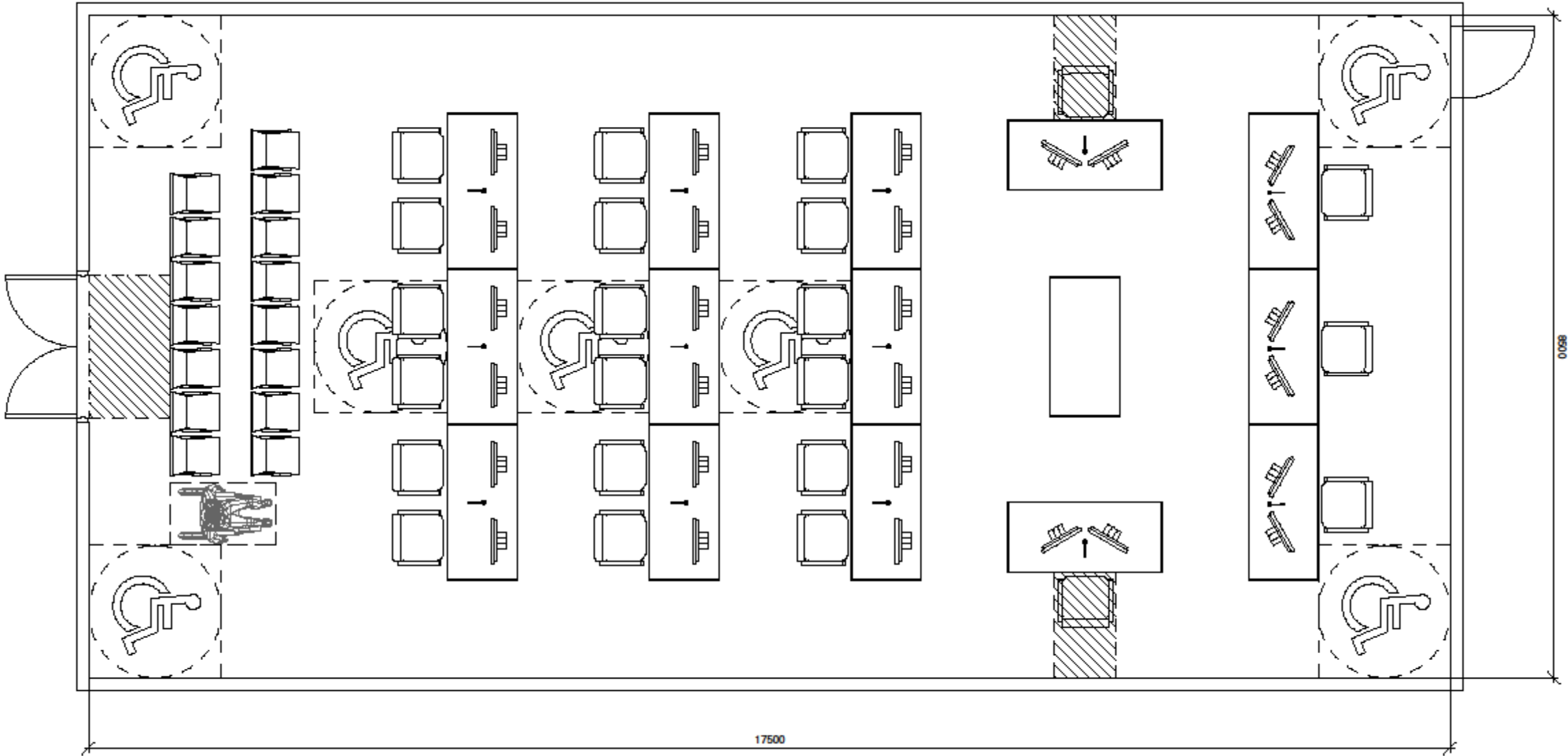
5.14.1.4 Perspective View - CAS



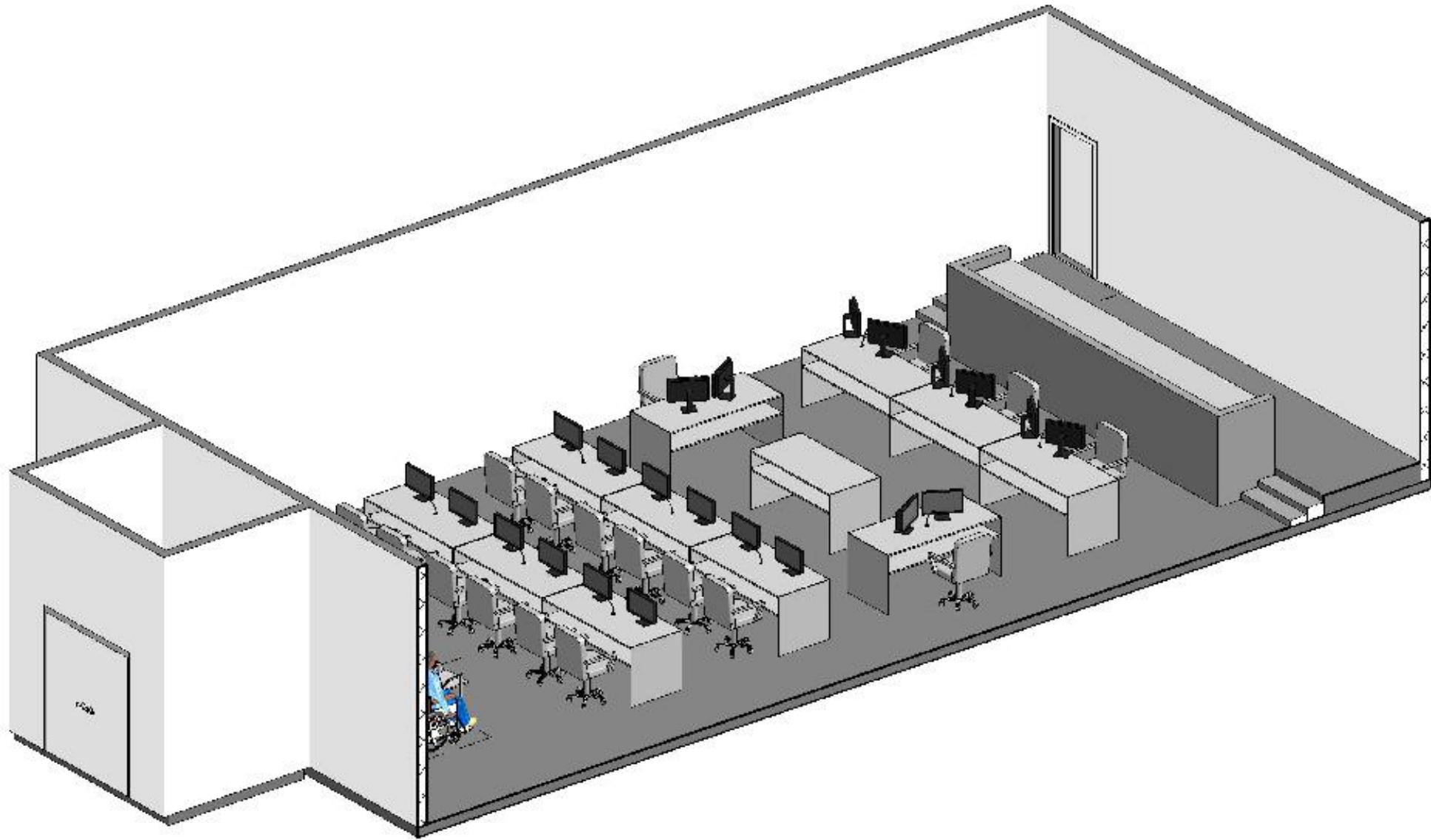
5.14.1.5 Axonometric View



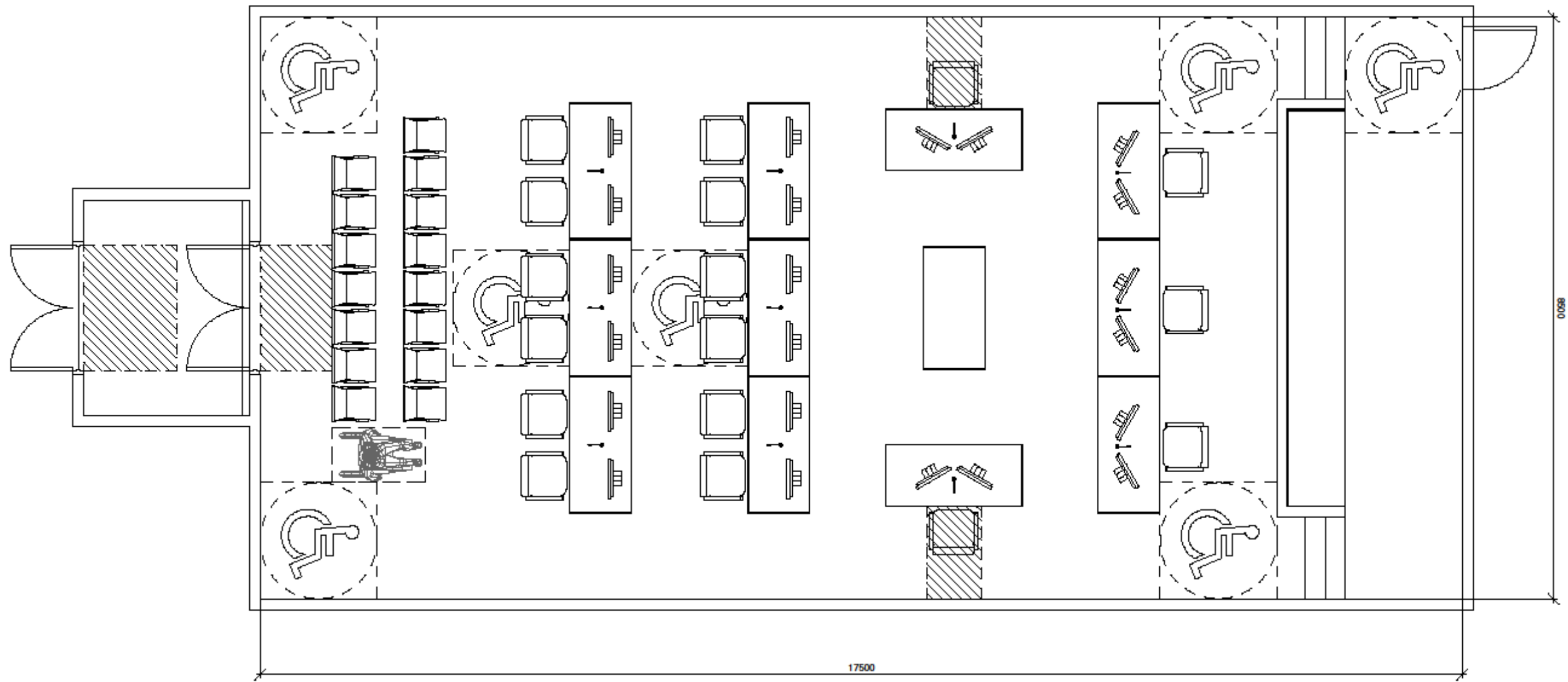
5.14.1.6 Configuration – ATSSC



5.14.1.7 Axonometric View – ATSSC

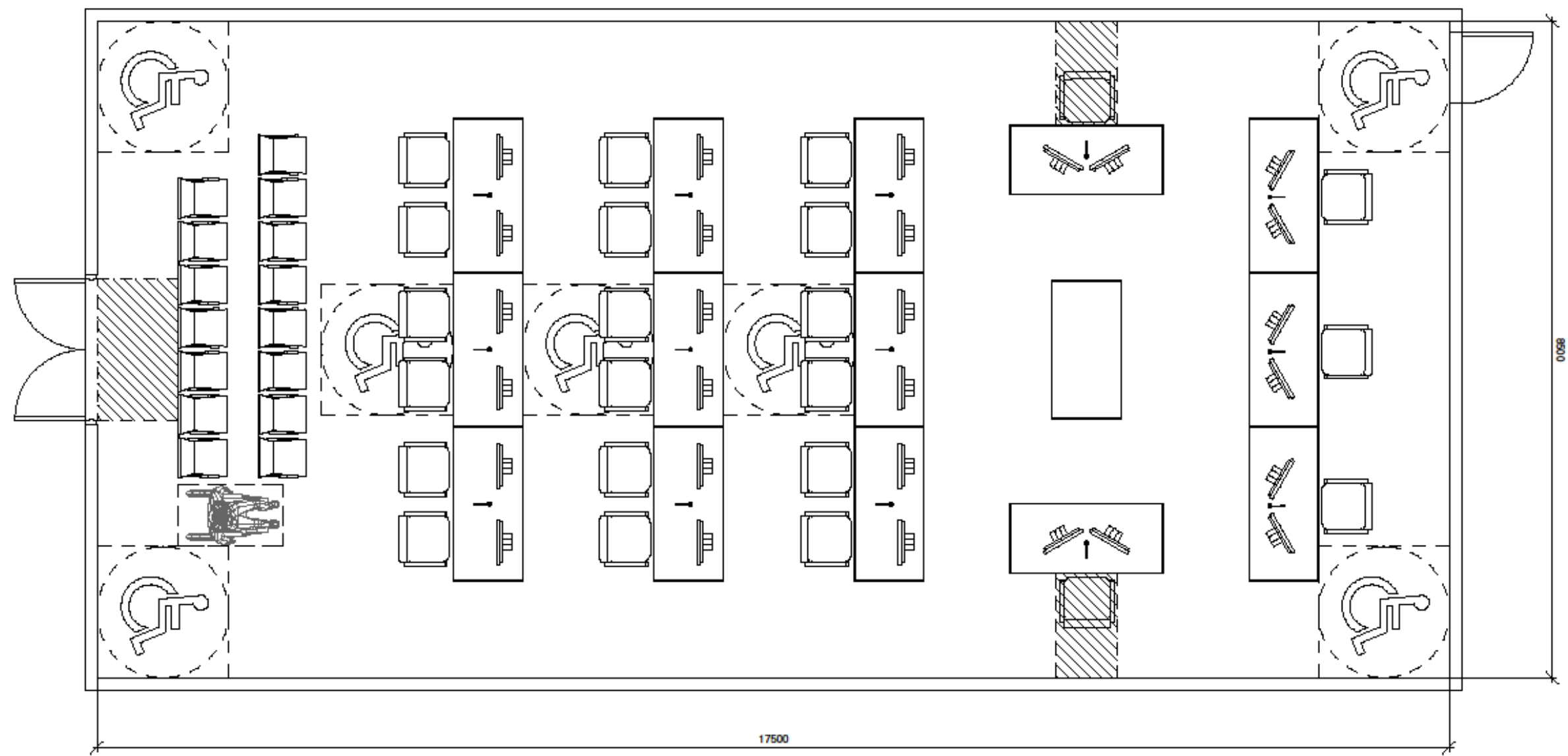


5.14.1.8 Configuration physical distancing – CAS

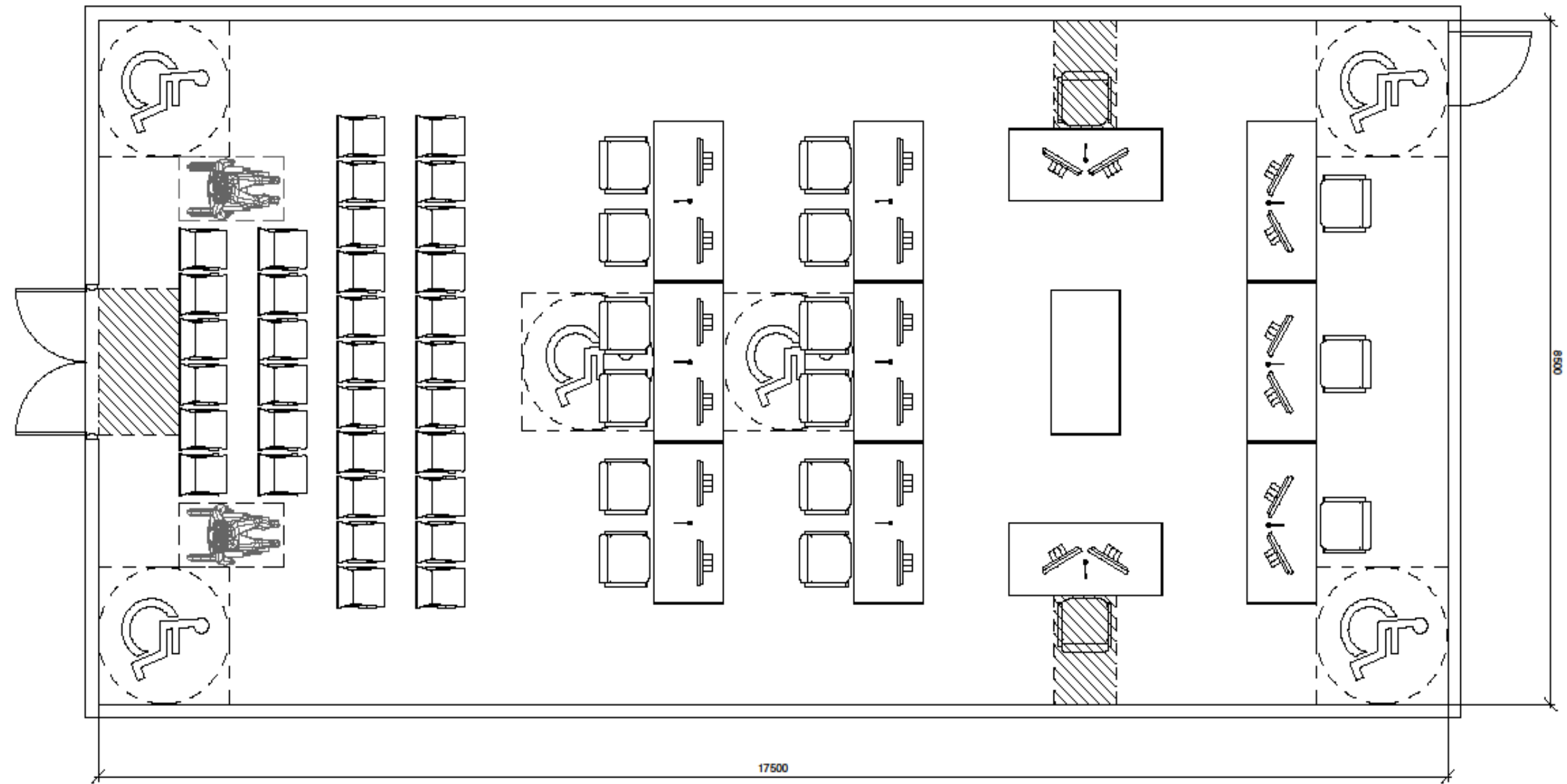


5.14.2 Hearing room D1.1.1

5.14.2.1 Configuration A

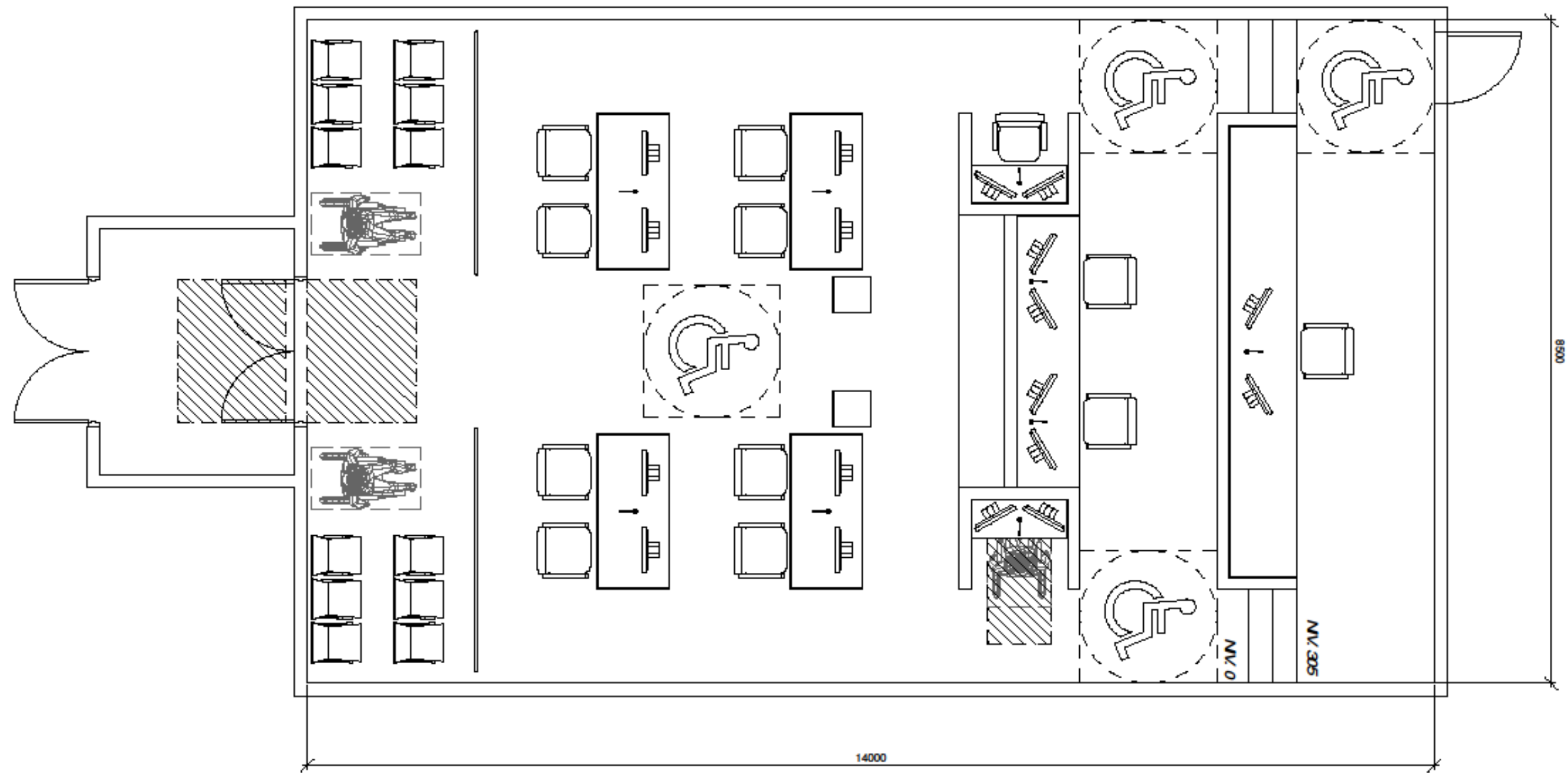


5.14.2.2 Configuration B

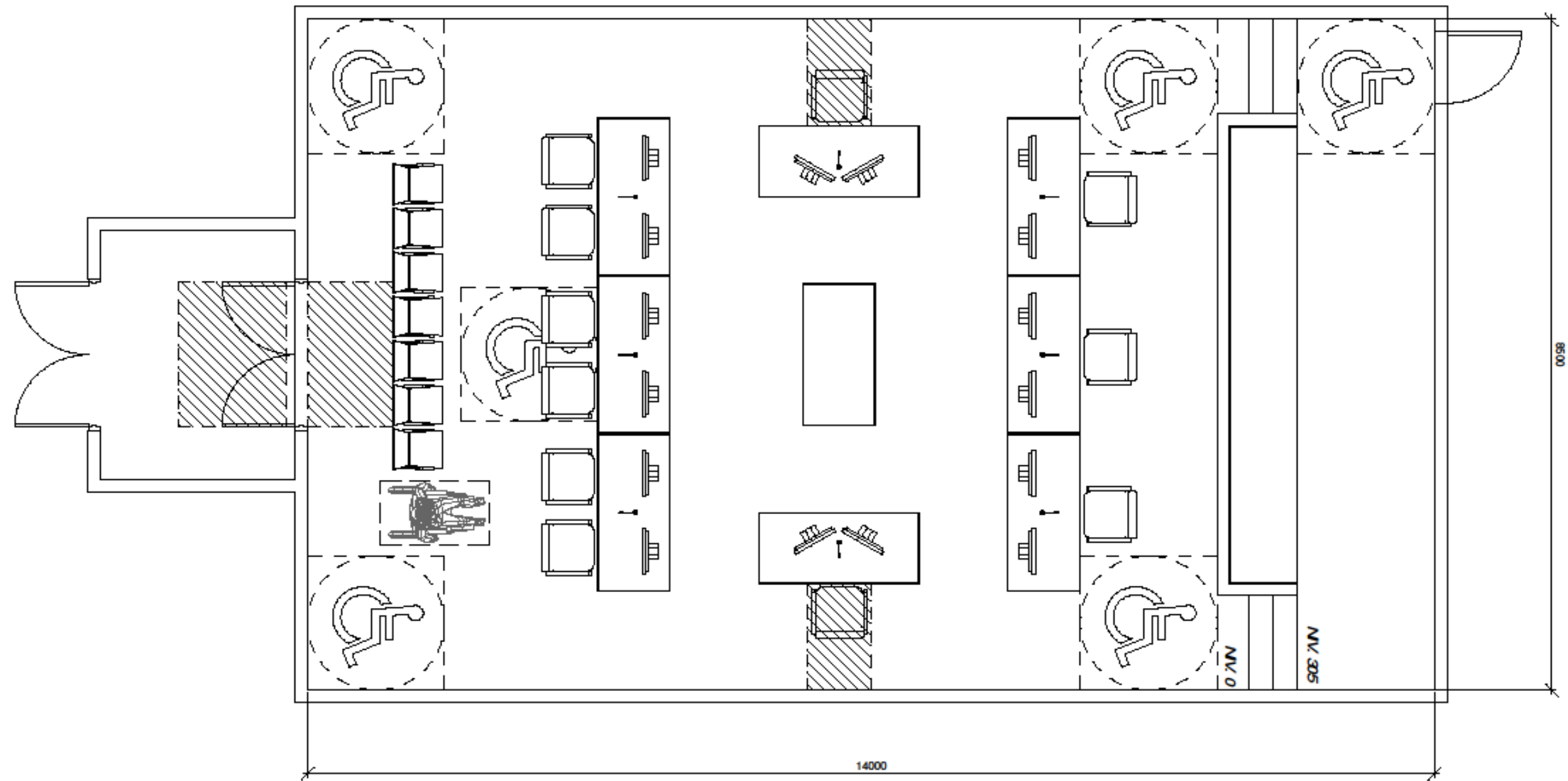


5.14.3 Hearing room (medium) A1.1.2, A1.2.1 and F1.1.2

5.14.3.1 Configuration – CAS

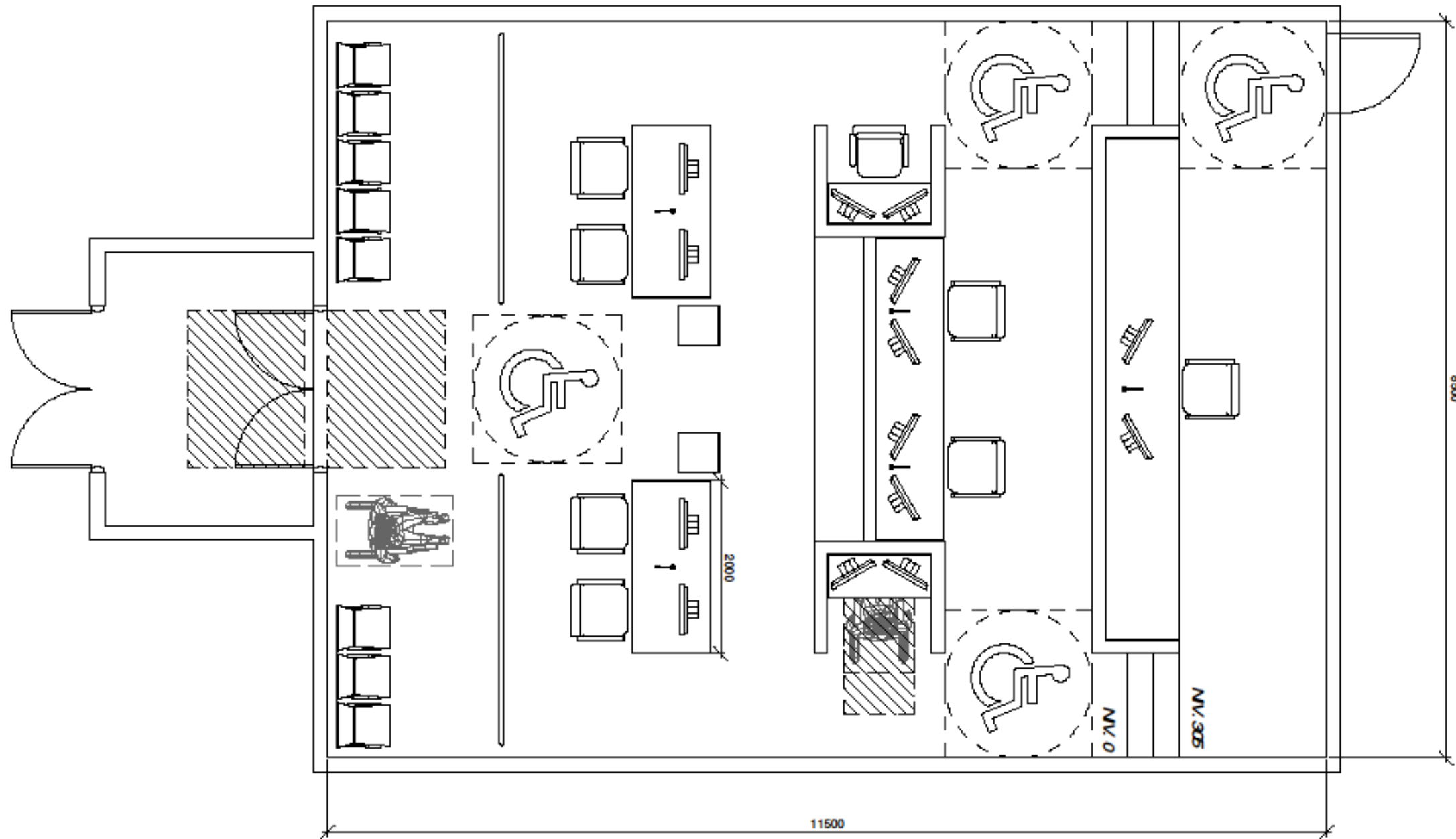


5.14.3.2 Configuration – ATSSC



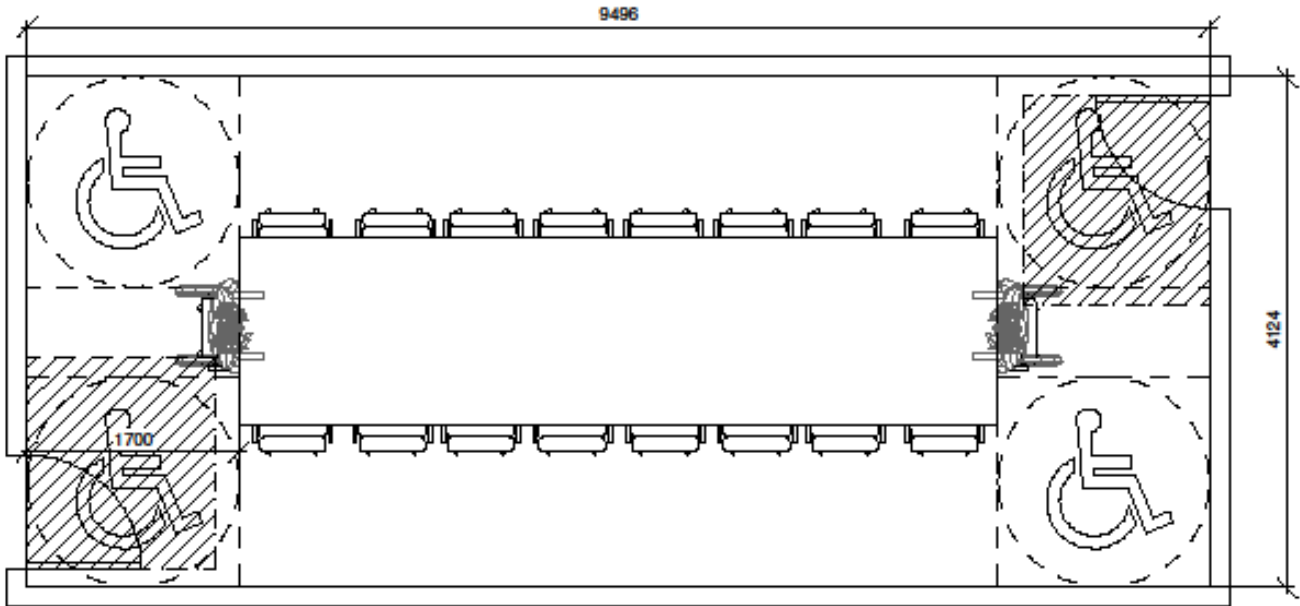
5.14.4 Hearing room (small) A1.3.1

5.14.4.1 Configuration – CAS

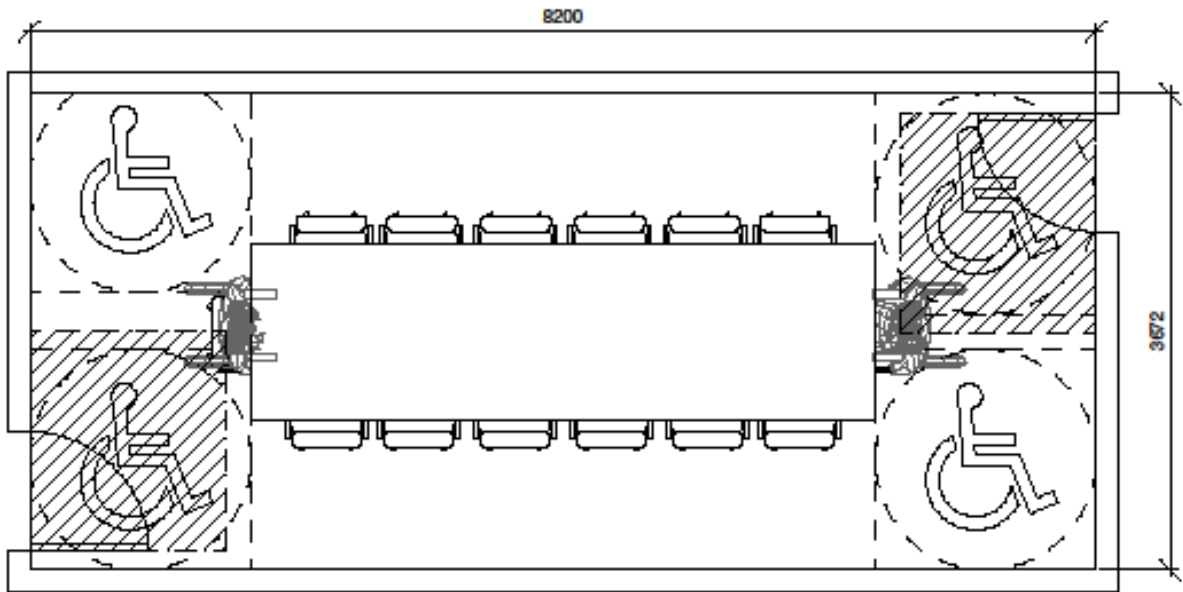


5.14.5 Mediation Complex F2

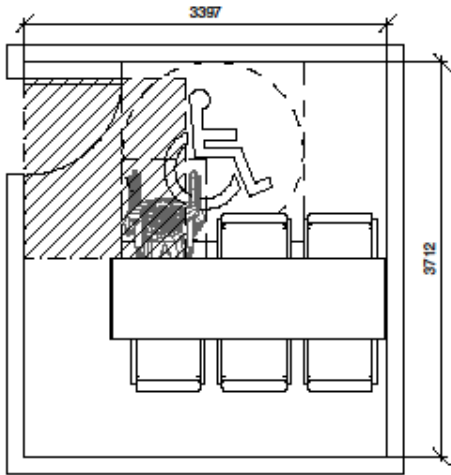
5.14.5.1 Shared and not shared mediation room A2.4.1 and F2.1.1 – CAS



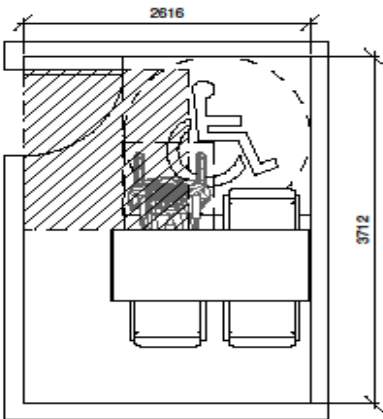
5.14.5.2 Mediation room D1.1.6 – ATSSC



5.14.6 Consultation room (large) A1.1.8 and A1.2.7

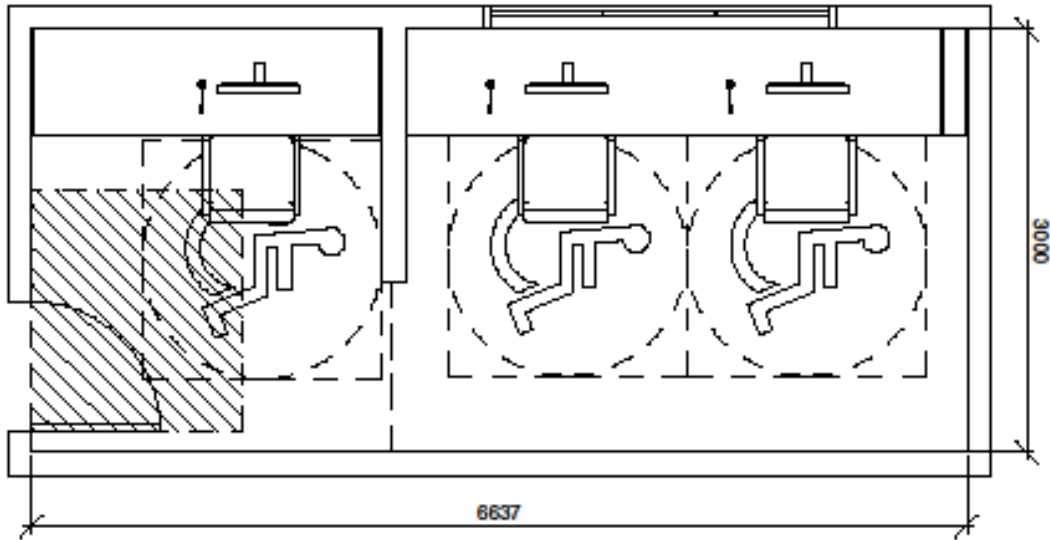


5.14.7 Consultation room (small) A1.3.5



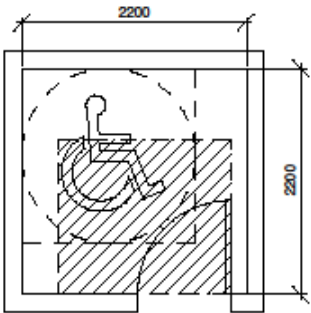
5.14.8 Interpreter's booth and Technician's room

5.14.8.1 A1.1.4, A1.2.3, A2.4.2, D1.1.2, F1.1.4 et A1.1.5, A1.2.4, A2.4.3, D1.1.3 and F1.1.5

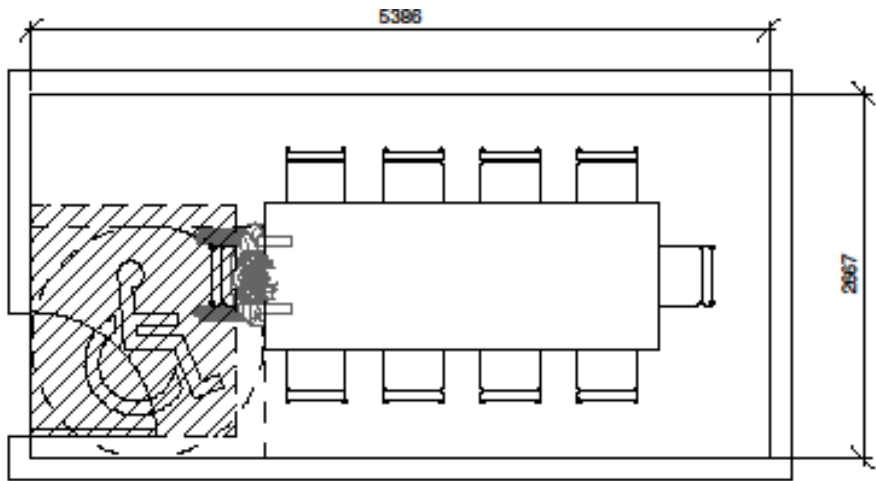


5.14.9 IT / AV technical room

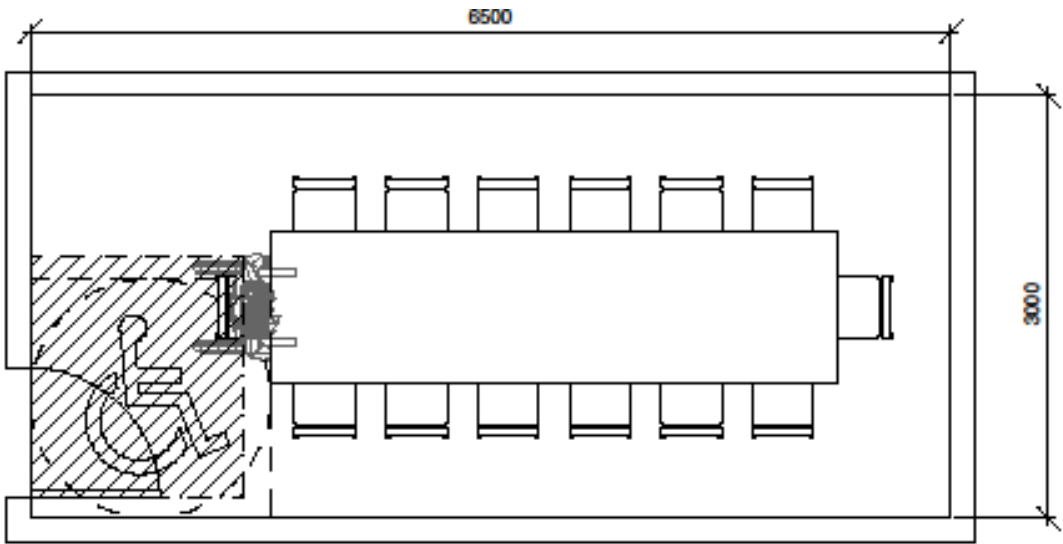
5.14.9.1 A1.1.6, A1.2.5, A1.3.3, A2.4.4, F1.1.6 and F1.1.6



5.14.10 Shared and not shared adjoining breakout room – Configuration CAS

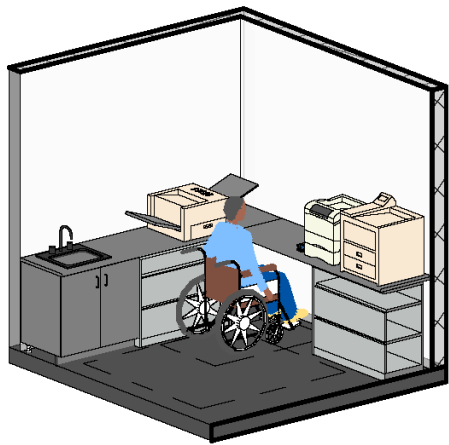
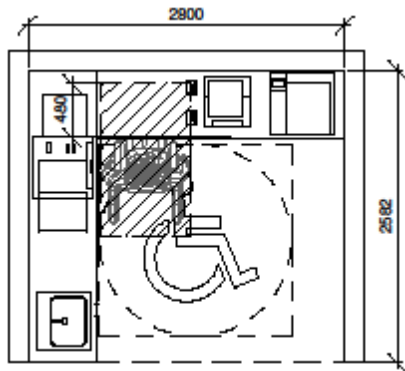


5.14.11 Unshared adjoining breakout room D1.1.5 – Configuration ATSSC



5.14.12 Business centre

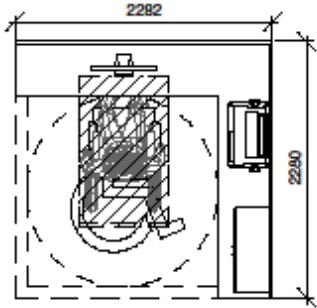
5.14.12.1 A1.1.15, A1.2.10, A1.3.8, B1.4.6 and D1.1.7



Axonometric View

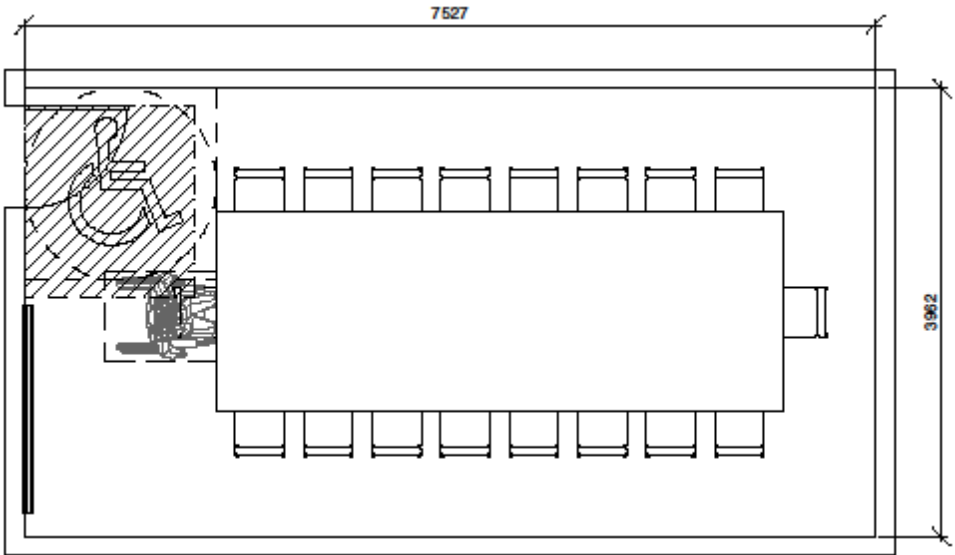
5.14.13 Work area

5.14.13.1 A1.1.16, A1.2.11 and A1.3.9

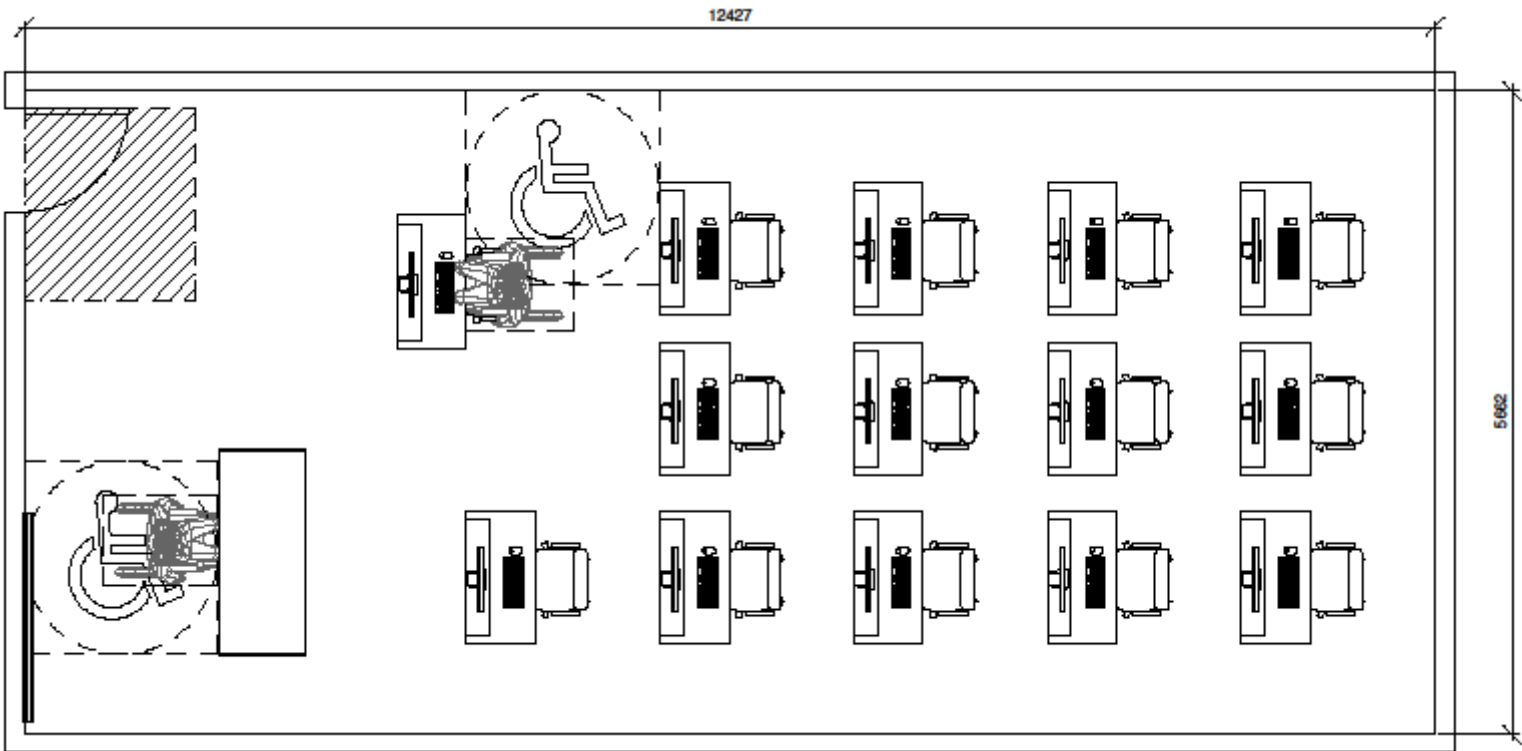


5.14.14 Designated rooms and areas – A2

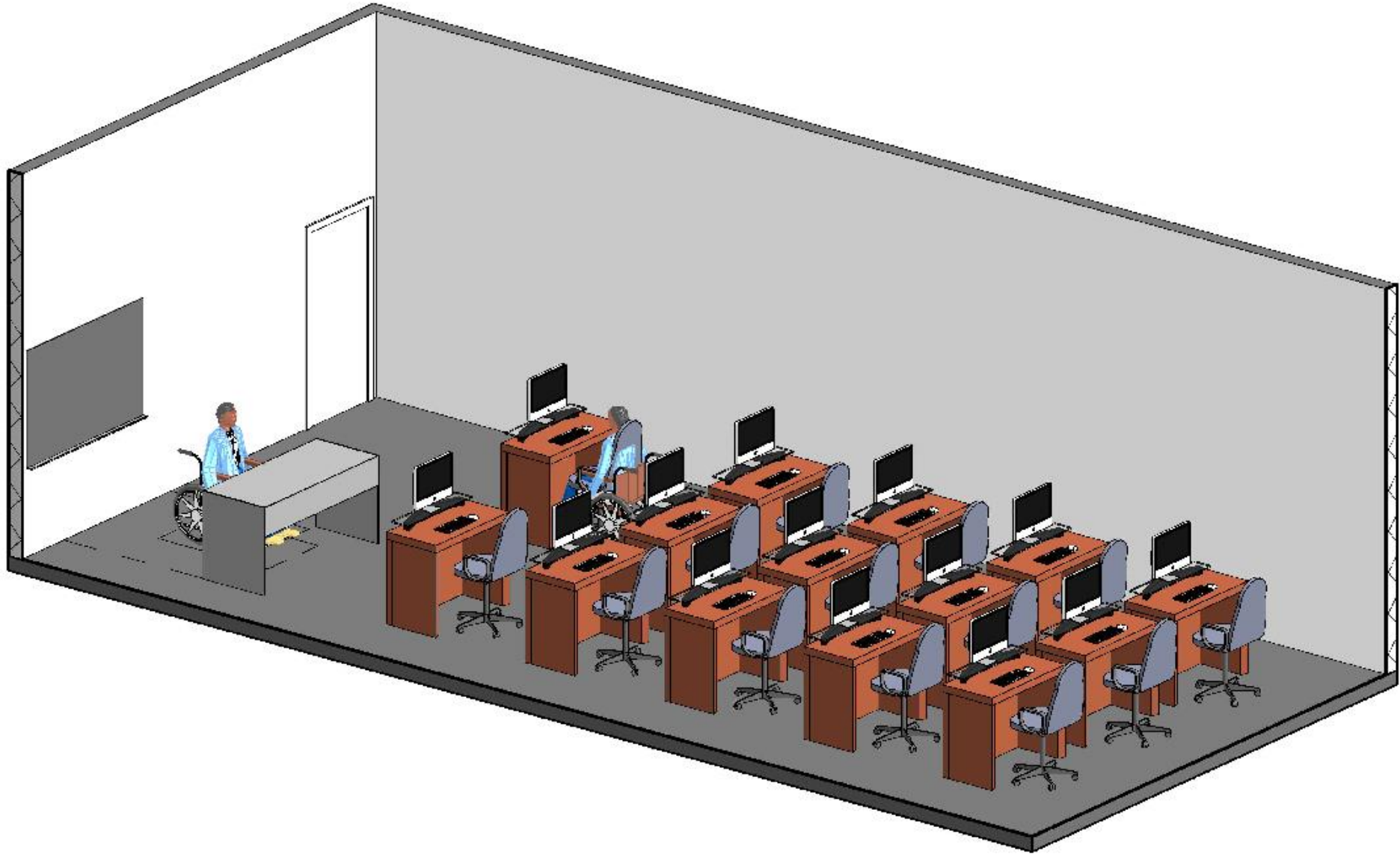
5.14.14.1 Videoconference room A2.1.1



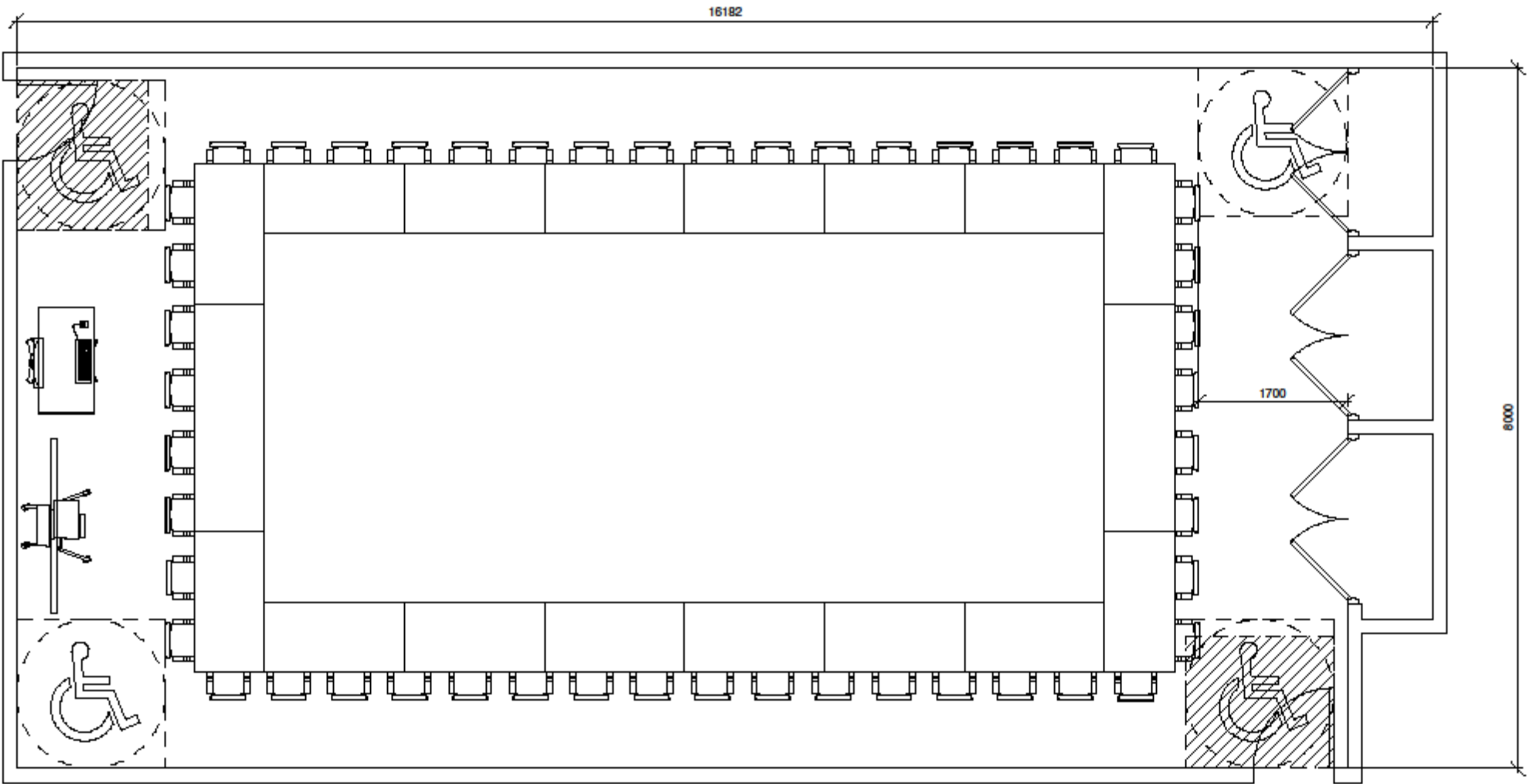
5.14.14.2 Training room A2.1.2



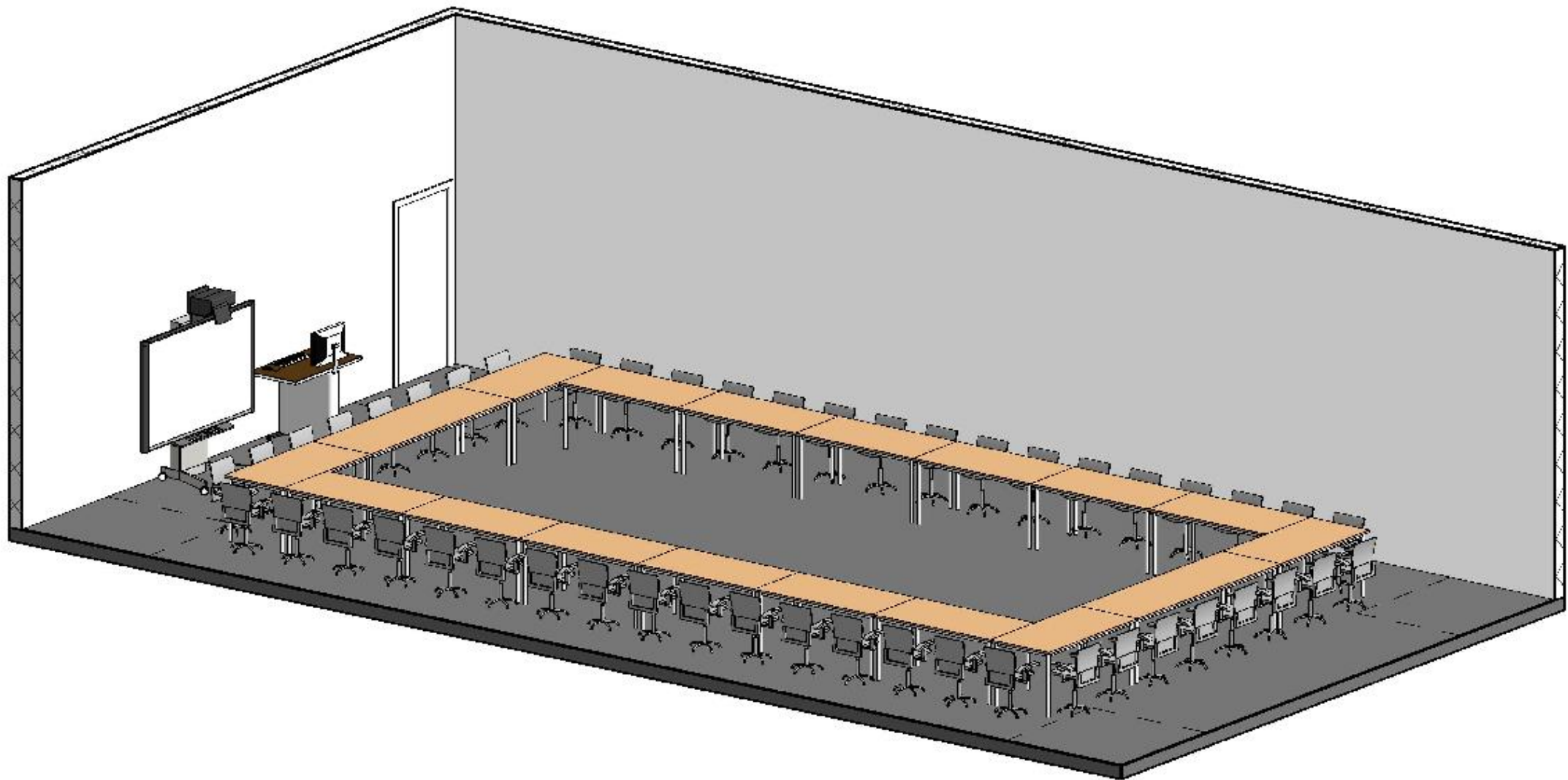
5.14.14.3 Training room A2.1.2 – Axonometric View



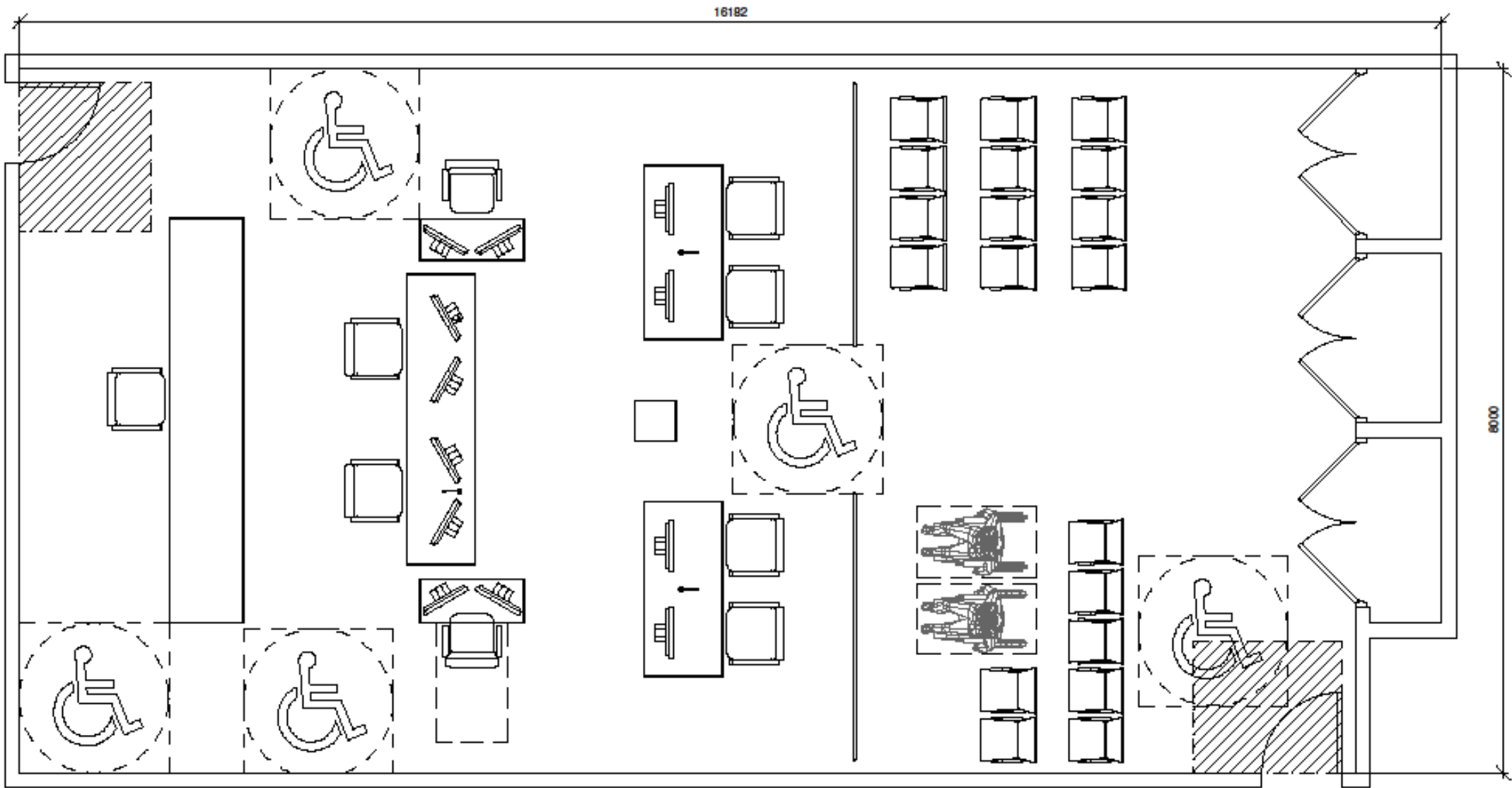
5.14.14.4 Protocol conference room A2.1.3 – Setup for protocol session



5.14.14.5 Protocol conference room – Setup for protocol session A2.1.3 – Axonometric View

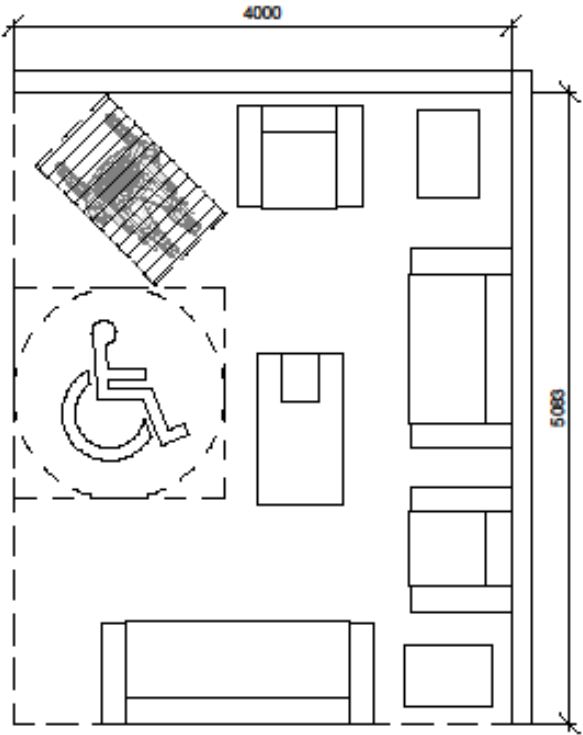


5.14.14.6 Protocol conference room A2.1.3 – Setup for hearing room

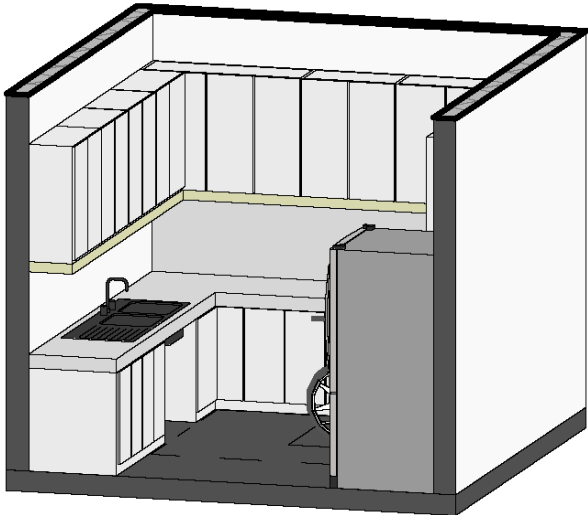
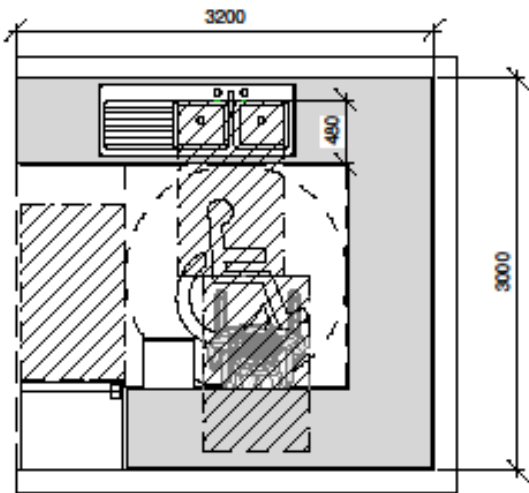


5.14.15 Magistrates' office – A3

5.14.15.1 Magistrate lounge A.3.2.5



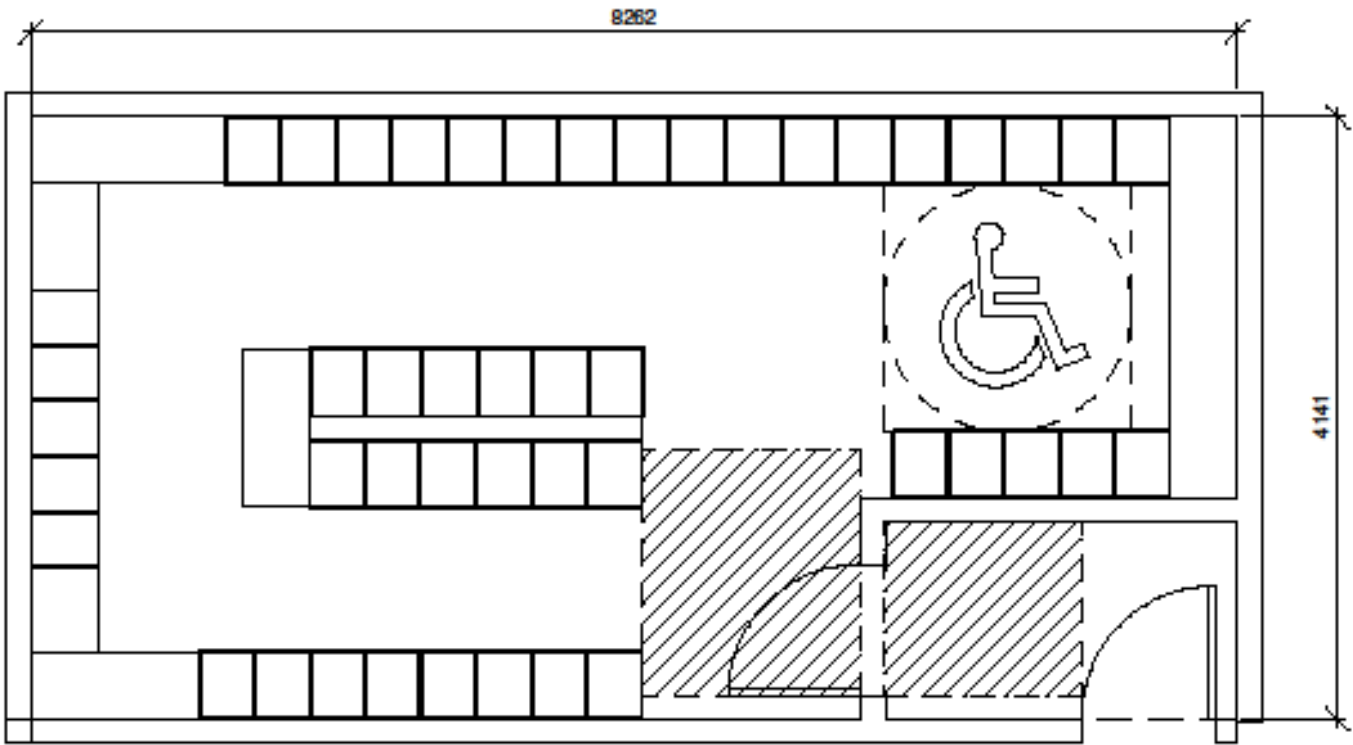
5.14.15.2 Magistrates' kitchenette A1.1.2 and A3.2.6



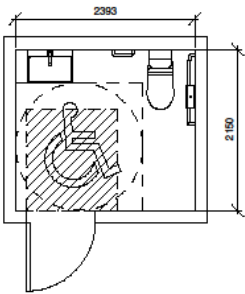
Axonometric View

5.14.16 Counsel's cloakroom – A4

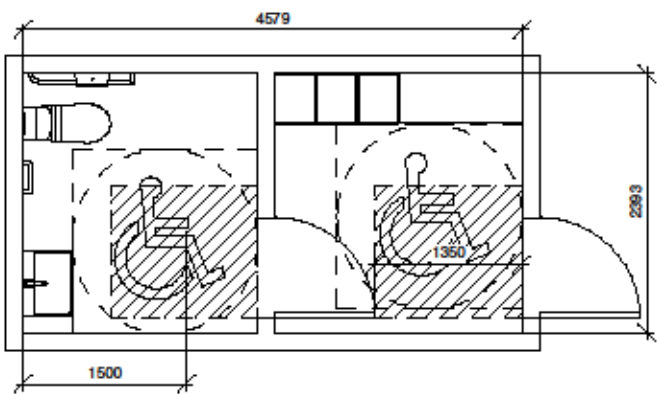
5.14.16.1 Cloakrooms A4.1.1 and A4.1.3



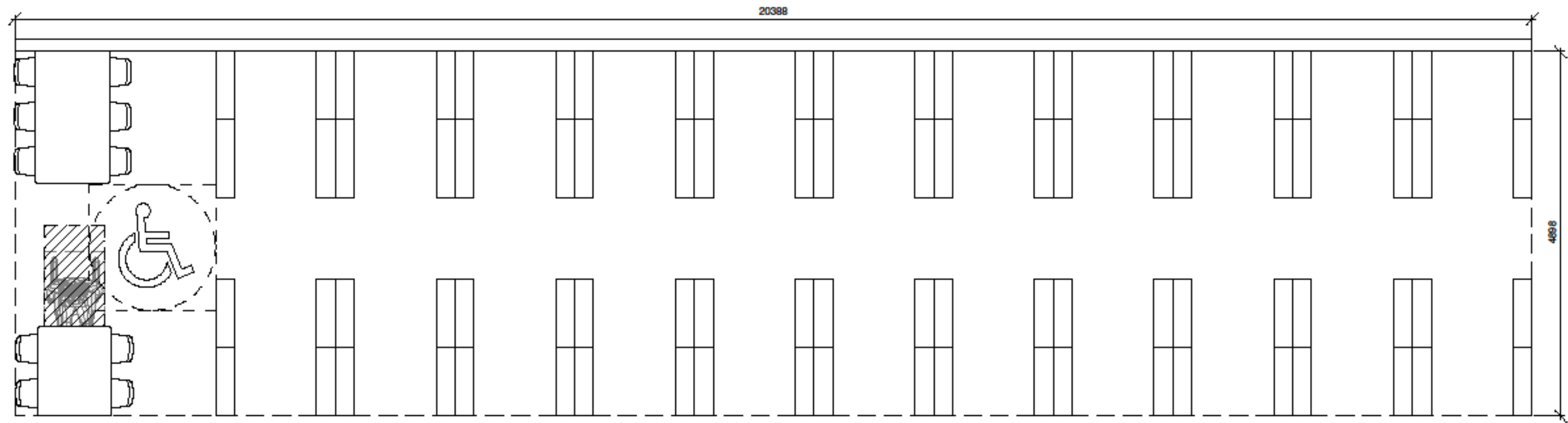
5.14.16.2 Restroom A4.1.2 and A4.1.4



5.14.16.3 Non-gendered restroom A4.1.5

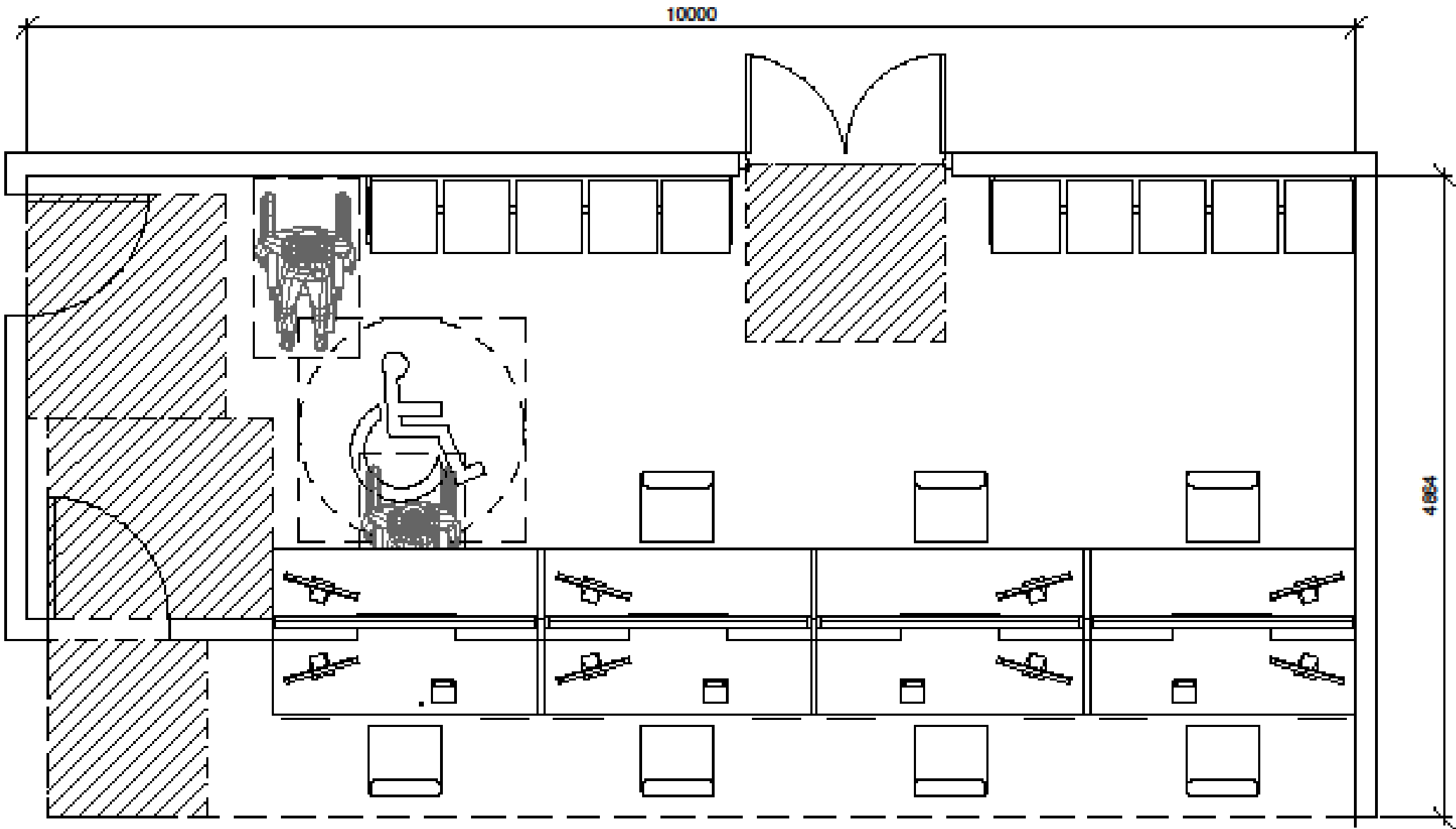


5.14.17 Judicial library A5.2.1

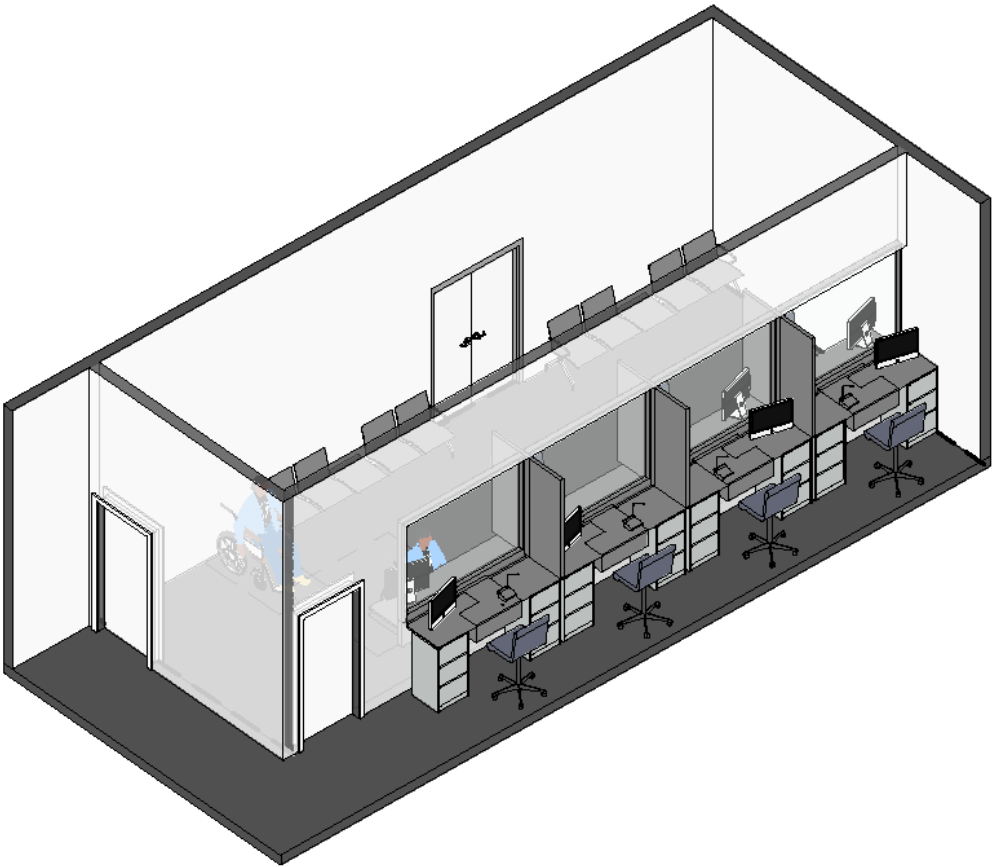


5.14.18 Workplace – B1, B2, D2

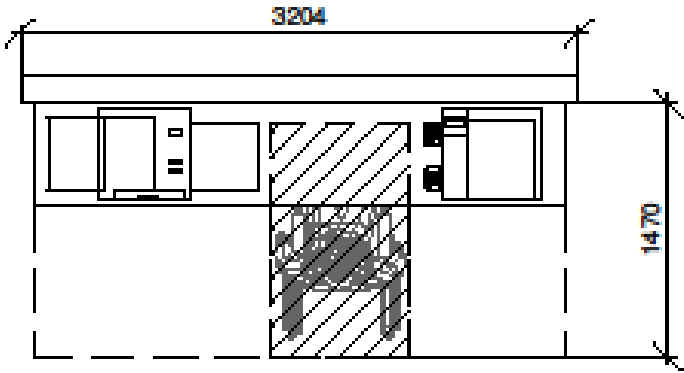
5.14.18.1 Registry B2.1.1



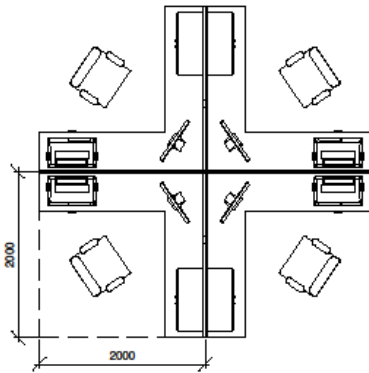
5.14.18.2 Registry counter B2.1.1 – Axonometric View



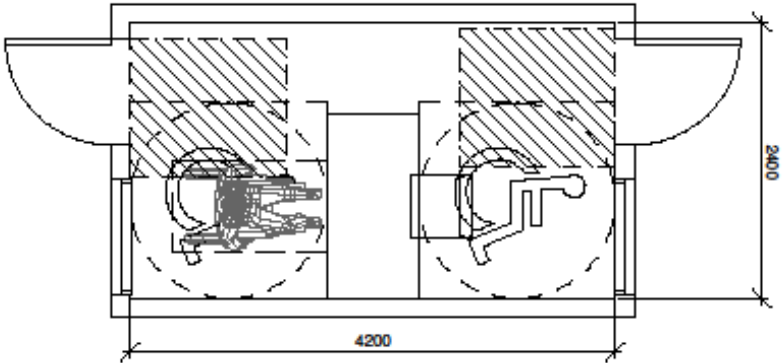
5.14.18.3 Photocopy area B2.1.2 – Registry counter



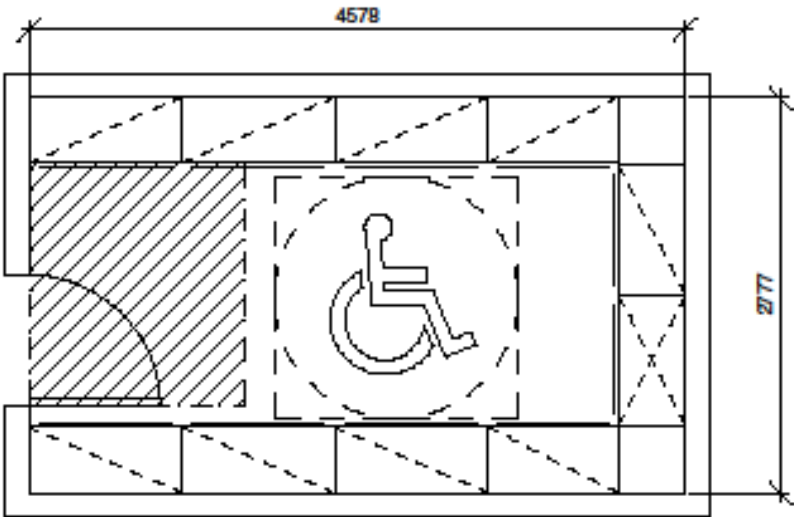
5.14.18.4 Open work stations B2.1.3



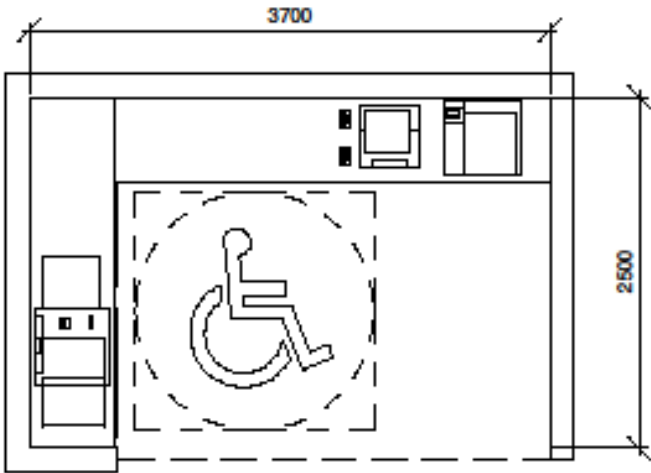
5.14.18.5 File consultation room B2.1.4



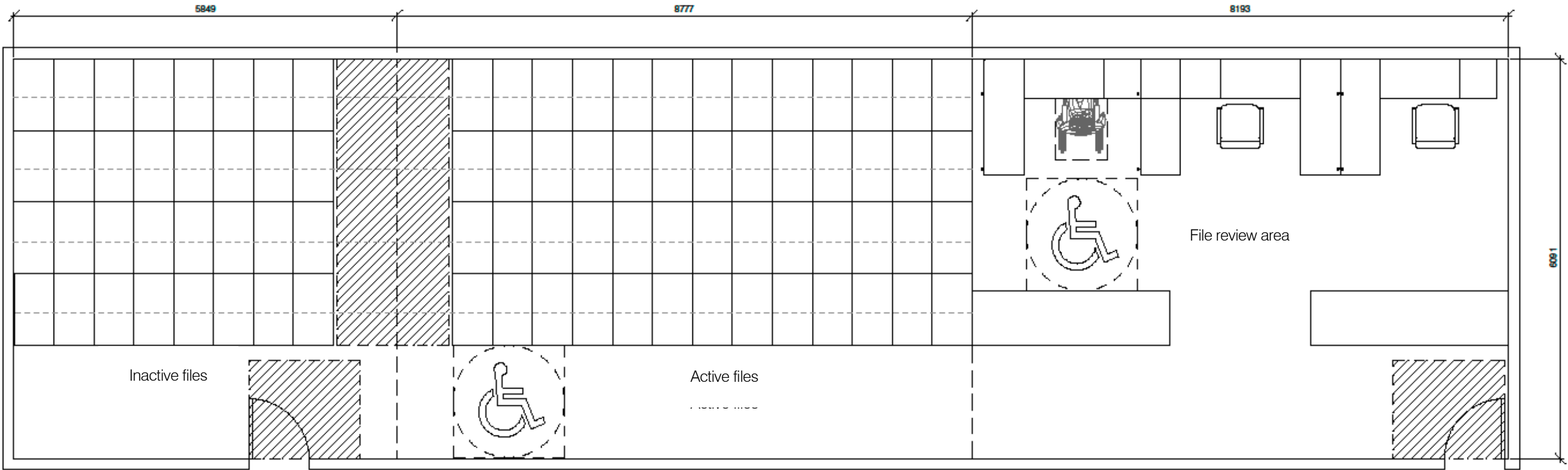
5.14.18.6 Administrative file storage B2.2.2



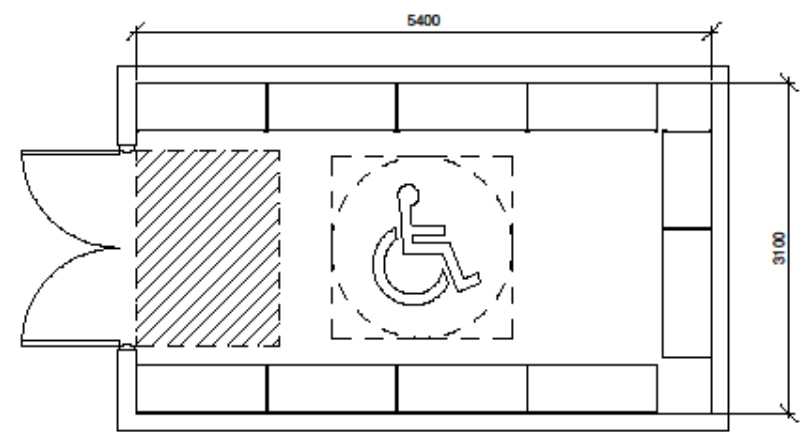
5.14.18.7 E-copy station B2.2.4



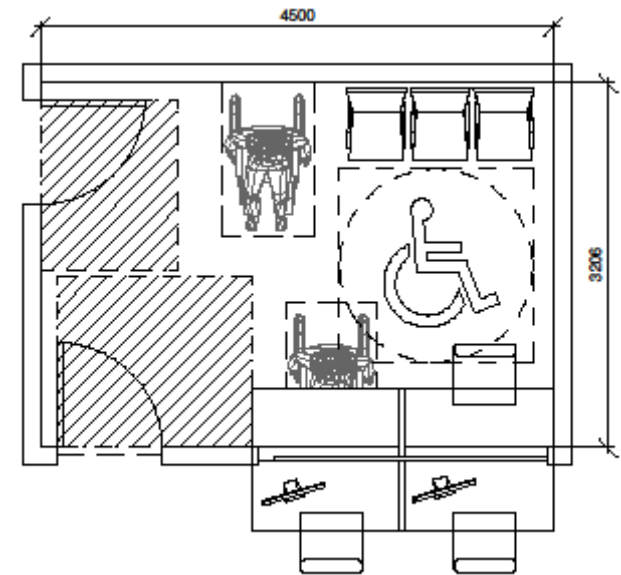
- 5.14.18.8 **Files**
- a. Active files B2.2.5
 - b. Inactive files B2.2.6
 - c. File review area B2.2.7



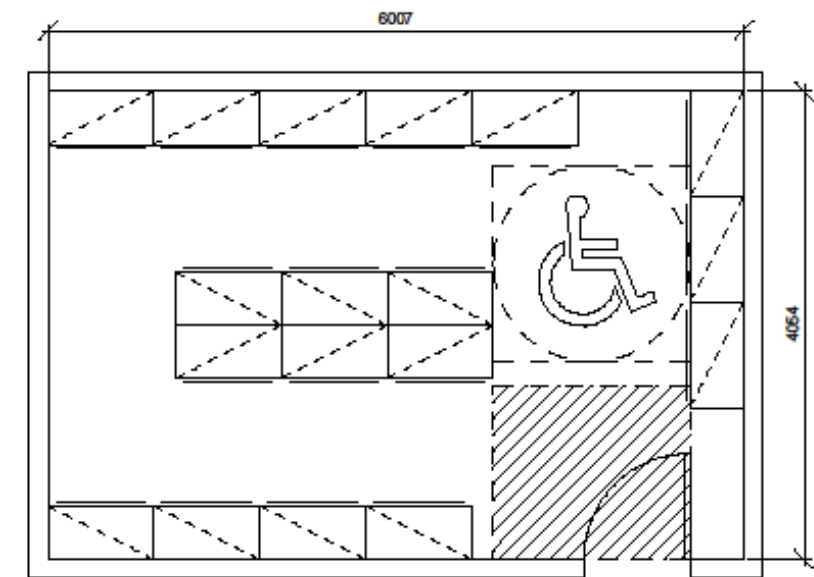
5.14.18.9 Vault for classified files B2.2.8



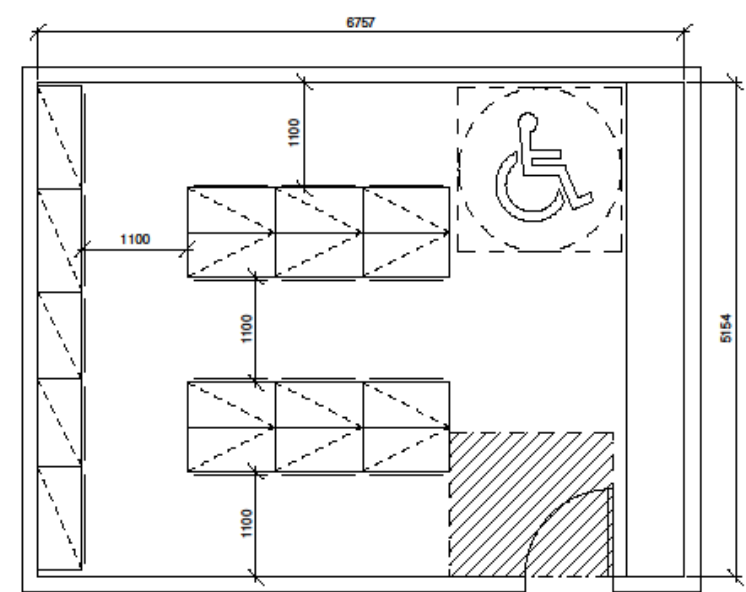
5.14.18.10 Mail counter B2.3.2



5.14.18.11 General stationery B2.3.4

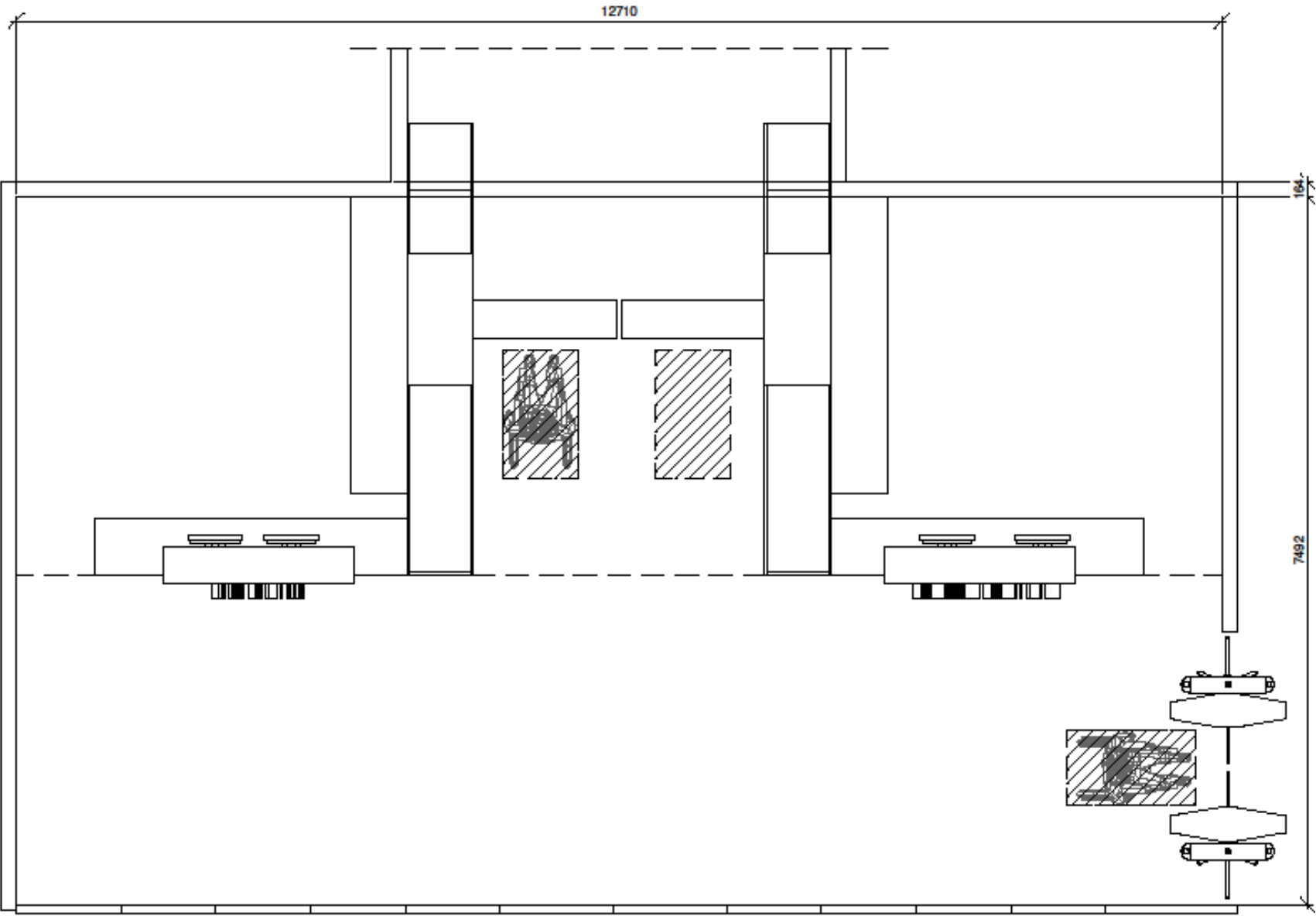


5.14.18.12 Archives and mail corner D2.2.6

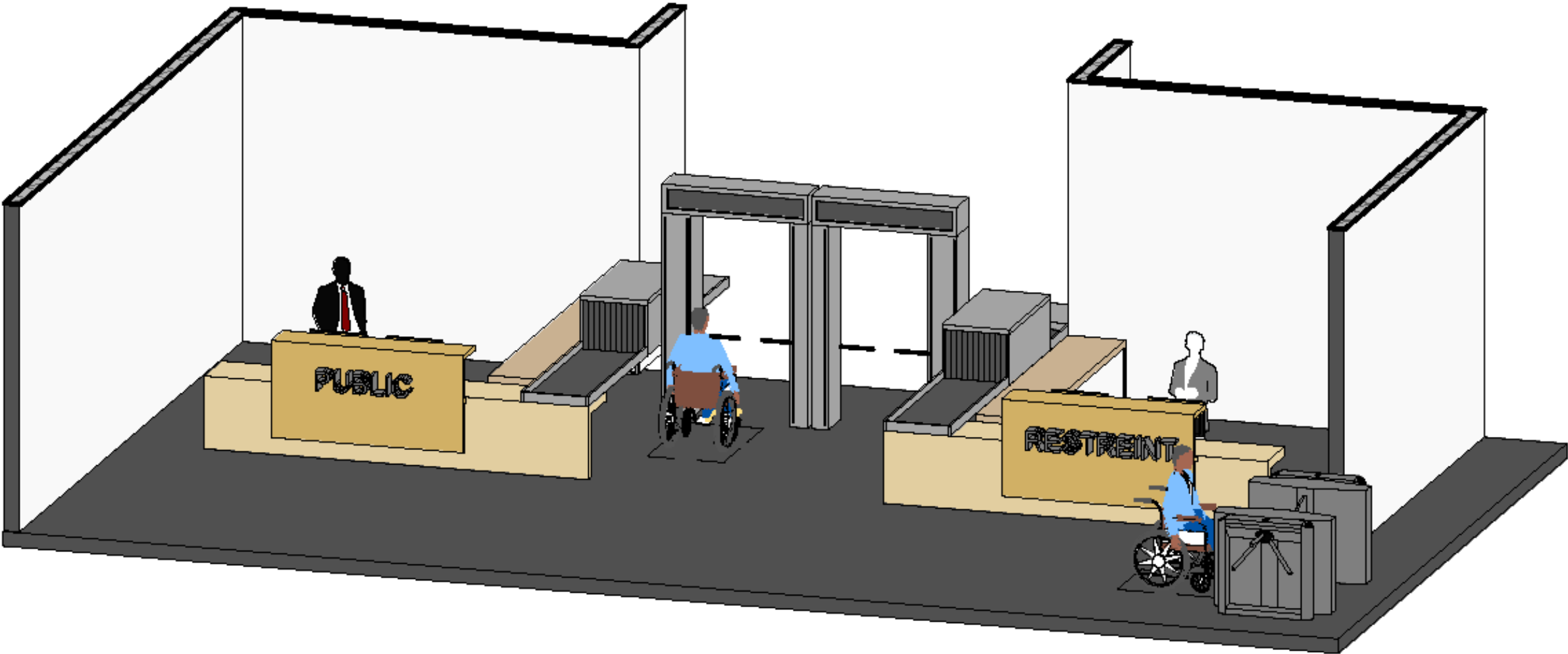


5.14.19 Control centre C1

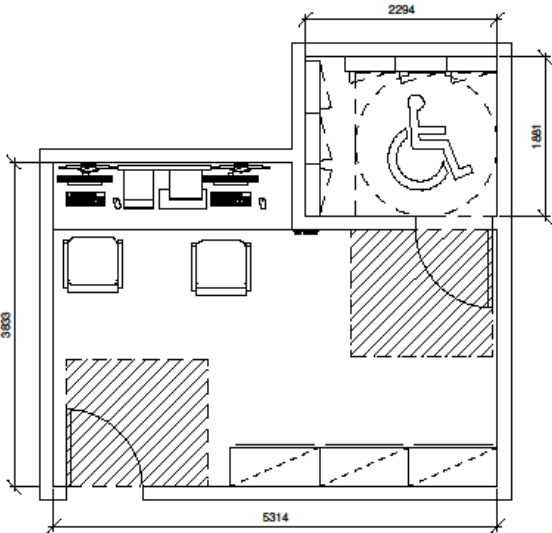
5.14.19.1 Security and surveillance station C1.1.1



5.14.19.2 Security and surveillance station C1.1.1 – Axonometric View

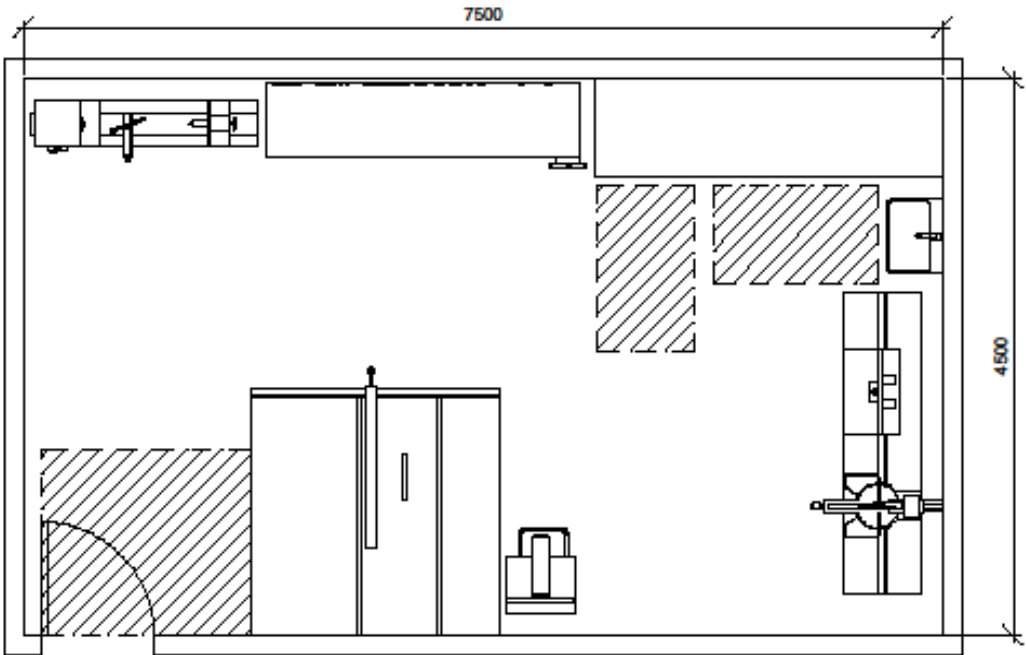


5.14.19.3 Security check and registration C1.1.2



5.14.20 Real Property Management spaces E1

5.14.20.1 Workshop E1.1.3



6. ESTIMATES AND TIMELINE

6.1 Estimates

- See request for proposal.

6.2 Timeline

- See request for proposal

Functional and Technical Program



PSPC

New Montréal Judicial Complex

PSPC file No.: R.090448.001

BFAD file No.: 190808

Volume 3 – Appendices– Version 4

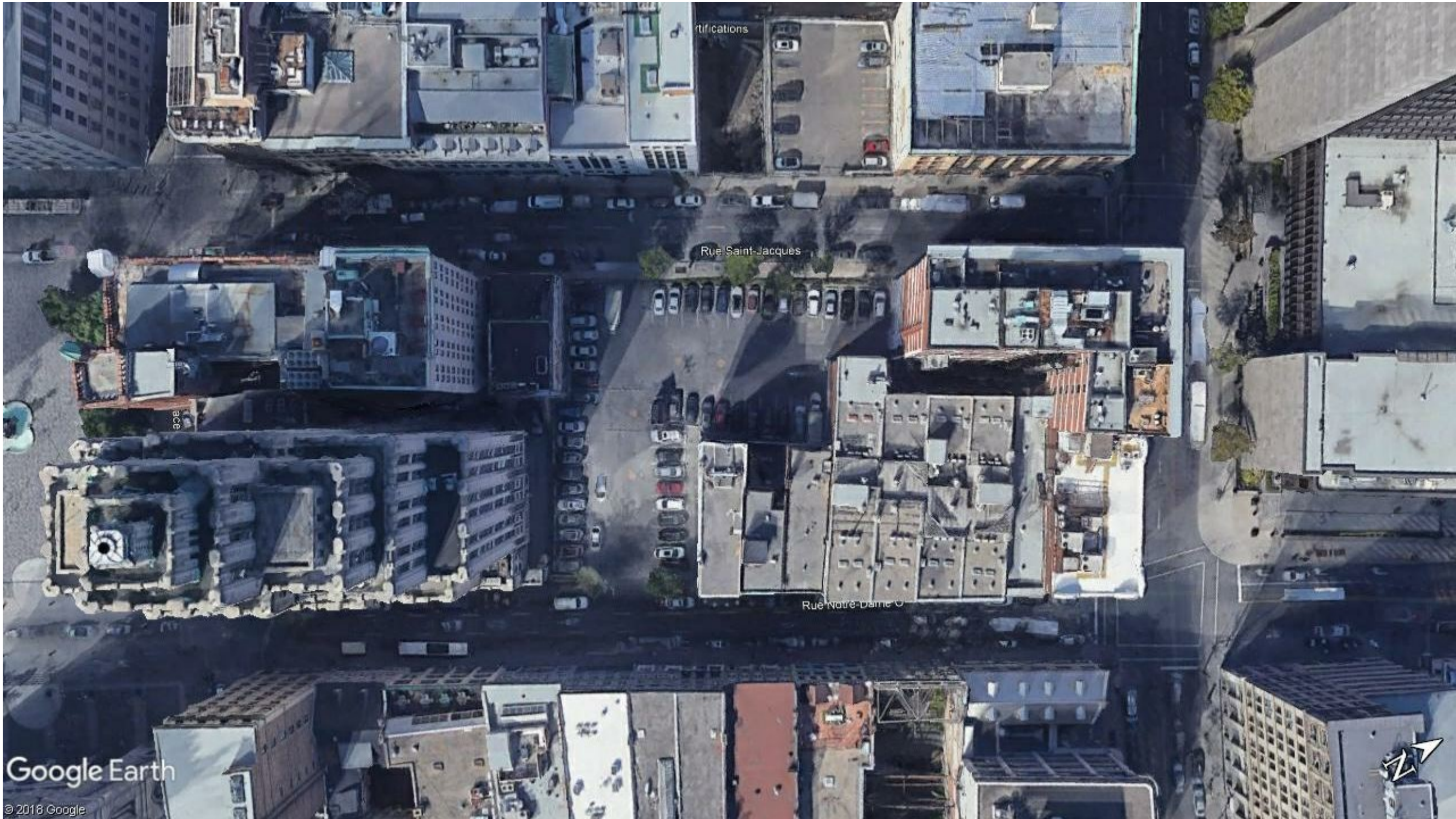
September 3, 2020

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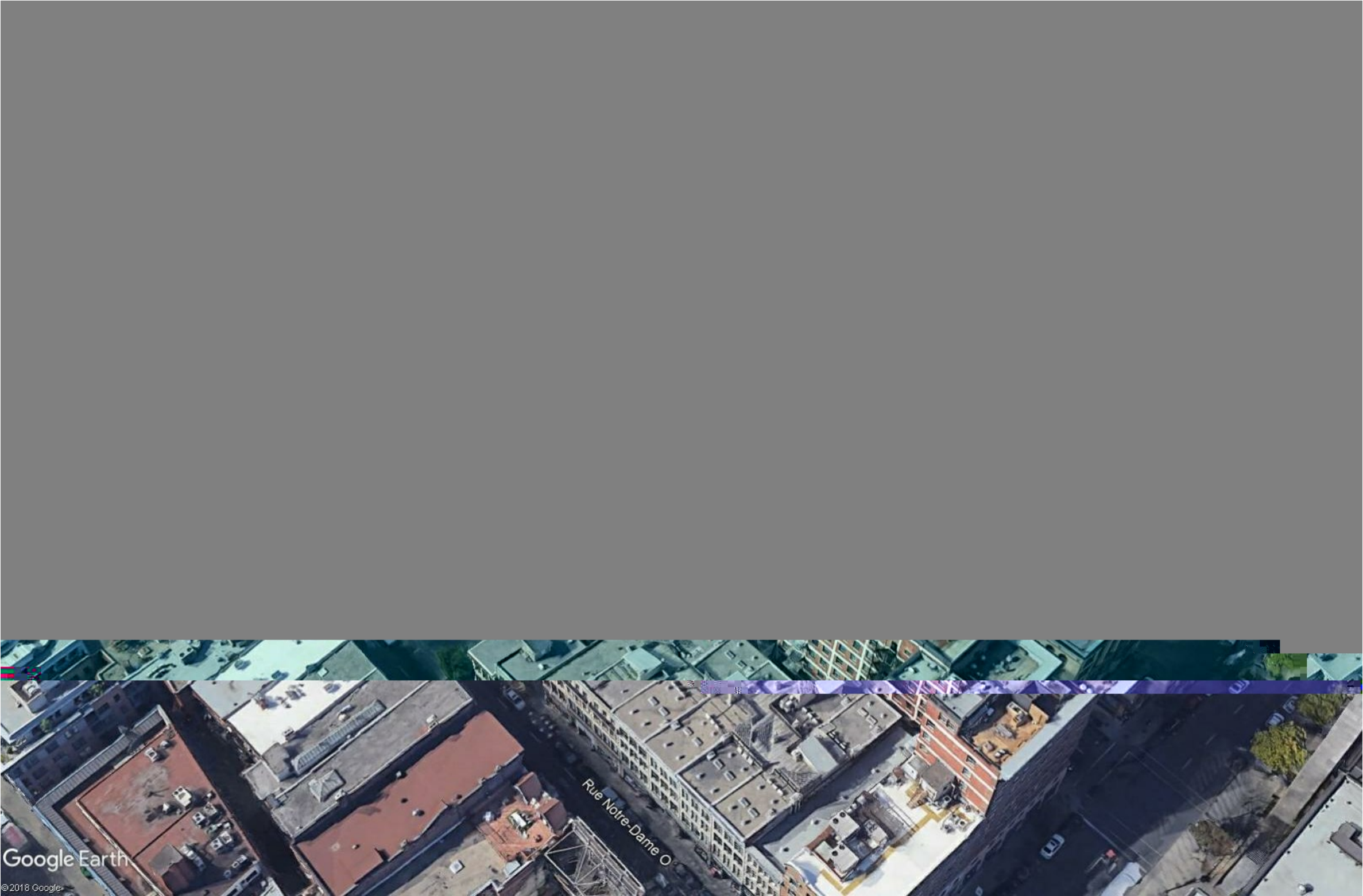
3. Appendices

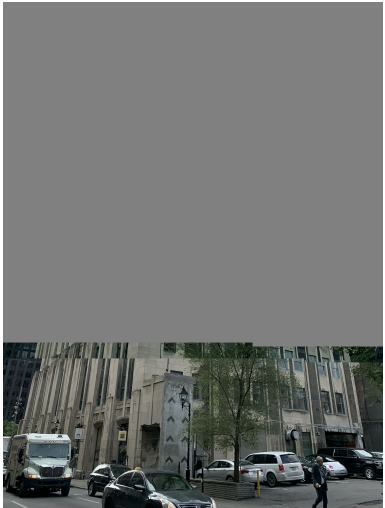
.1 Photographic Site Report





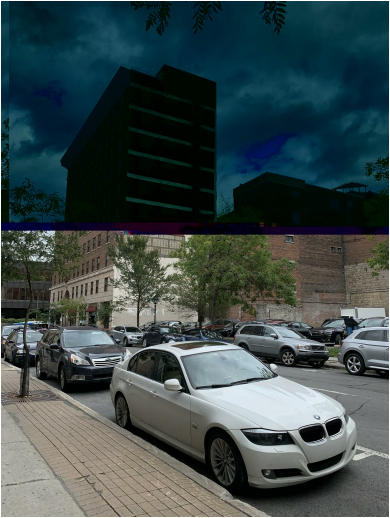
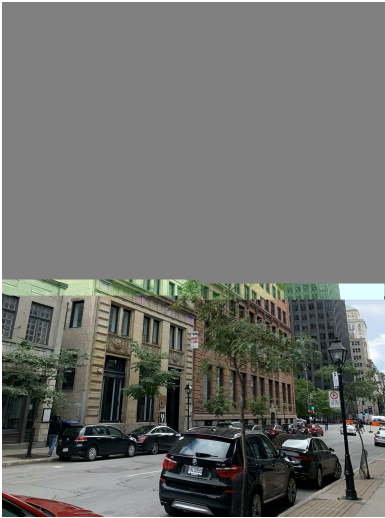






NOTRE DAME STREET

SAINT JACQUES STREET



.2 Certificat of localization (in French only)

CERTIFICAT DE LOCALISATION

Je, soussigné, **JEAN-LOUIS CHÉNARD** arpenteur-géomètre, dûment autorisé à pratiquer dans la Province de Québec, fais rapport que:

1. RELEVÉ DU SITE

Les 23 et 25 octobre 2017, un relevé des lieux a été complété pour localiser un terrain vacant utilisé comme stationnement, sis au numéro 46, rue Saint-Jacques, dans la municipalité de la Ville de Montréal (arrondissement de Ville-Marie) et dont la nature, la forme et les dimensions sont telles que montrées sur la copie ci-jointe du plan.

2. DESCRIPTION ACTUALISÉE DE L'EMPLACEMENT

Suivant mon opinion, la propriété à l'étude est entièrement érigée à l'intérieur de l'emplacement connu et désigné comme étant le lot **UN MILLION CENT QUATRE-VINGT MILLE NEUF CENT CINQUANTE-QUATRE (1 180 954)**, du cadastre du Québec, circonscription foncière de Montréal.

Lot 1 180 954

Le lot **UN MILLION CENT QUATRE-VINGT MILLE NEUF CENT CINQUANTE-QUATRE (1 180 954)**, du cadastre du Québec, circonscription foncière de Montréal, dans la municipalité de la Ville de Montréal (arrondissement Sud-Ouest), de figure irrégulière, borné et plus explicitement décrit comme suit: Le point de départ de ladite parcelle étant le point 1, vers le Nord-Ouest par le lot 1 182 678 composant la rue Saint-Jacques (point 2), mesurant vingt-deux mètres et quarante-sept centièmes (22,47 m) dans une direction de 29°17'21" le long de cette limite; vers le Nord-Ouest par le lot 1 182 678 composant la rue Saint-Jacques (point 3), mesurant trente-quatre mètres et quarante-cinq centièmes (34,45 m) dans une direction de 30°30'18" le long de cette limite; vers le Nord-Est par le lot 3 482 703 et al (PC-14547) (point 4), mesurant quatorze mètres et cinquante-sept centièmes (14,57 m) dans une direction de 122°44'30" le long de cette limite; vers le Sud-Est par le lot 1 180 958 (point 5), mesurant dix mètres et quarante-huit centièmes (10,48 m) dans une direction de 212°13'36" le long de cette limite; vers le Nord-Est par le lot 1 180 958 (point 6), mesurant quatorze mètres et treize centièmes (14,13 m) dans une direction de 123°14'32" le long de cette limite; vers le Sud-Est par les lots 1 180 957 et 1 180 955 (point 7), mesurant vingt

mètres et quarante-huit centièmes (20,48 m) dans une direction de 212°52'02" le long de cette limite; vers le Nord-Est par le lot 1 180 955 (point 8), mesurant vingt-quatre mètres et cinq centièmes (24,05 m) dans une direction de 120°34'06" le long de cette limite; vers le Sud-Est par le lot 1 182 679 composant la rue Notre-Dame Ouest (point 9), mesurant vingt-six mètres et vingt et un centièmes (26,21 m) dans une direction de 209°20'59" le long de cette limite; vers le Sud-Ouest par le lot 1 180 941 (point 10), mesurant trente et un mètres et quatre-vingts centièmes (31,80 m) dans une direction de 299°40'36" le long de cette limite; vers le Nord-Ouest par le lot 1 180 953 (point 11), mesurant deux mètres et quarante-deux centièmes (2,42 m) dans une direction de 29°45'38" le long de cette limite; vers le Sud-Ouest par le lot 1 180 953 (point 12), mesurant huit mètres et trente-six centièmes (8,36 m) dans une direction de 300°05'10" le long de cette limite; vers le Sud-Ouest par le lot 1 180 953 (point 1), mesurant onze mètres et quarante-quatre centièmes (11,44 m) dans une direction de 298°29'06" le long de cette limite, jusqu'au point de départ (point 1).

Contenant en superficie deux mille soixante-cinq mètres carrés et huit dixièmes (2 065,8 m²).

L'emplacement ci-haut décrit est sujet à une vérification notariale des titres et des servitudes.

3. DATE DES RECHERCHES

Les recherches au bureau de la publicité des droits ont été complétées le 30 août 2017.

4. RÉFÉRENCE AU DERNIER ACTE D'ACQUISITION

Cet emplacement est détenu par la Ville de Montréal en vertu d'un avis d'expropriation publié le 29 août 2001 sous le numéro 5 284 315 et d'un avis de transfert de propriété exécuté devant le Tribunal Administratif du Québec (dossier TAQ : SAI-M-69258-0108) publié le 30 novembre 2001 sous le numéro 5 305 640. La partie expropriante est la Ville de Montréal et la partie expropriée est Stationnement et Développement International Inc.

5. HISTORIQUE CADASTRAL (pour la partie sous étude seulement)

Couches cadastrales

La couche cadastrale sous-jacente du lot 1 180 954 était composée des lots 114 à 116 et d'une partie des lots 113 et 119 du cadastre de la Cité de Montréal (Quartier Centre).

Date d'établissement

Le lot 1 180 954 a été déposé au bureau de la publicité des droits le 17 juillet 1998. Ce lot a été corrigé le 23 août 2003 pour modifier la limite Nord-Est séparant du lot 1 180 956 (maintenant lot 3 482 703 et al), la limite Nord-Est séparant du lot 1 180 958 ainsi que la superficie

Ce lot a ensuite été corrigé le 7 septembre 2004 pour modifier la limite Sud-Ouest séparant du lot 1 180 953 ainsi que la superficie.

Les lots 113, 114 à 116 et 119 ont été déposés le 1^{er} septembre 1870.

6. CONCORDANCE AVEC LES TITRES, LE CADASTRE ET L'OCCUPATION

Pour l'analyse de la position et de la dimension des limites de propriété, nous avons obtenu les titres de propriété ainsi qu'une copie des certificats de localisation de tous les emplacements adjacents. Toutefois, outre les données d'arpentage, les documents principaux que nous avons utilisés sont le plan actuel du cadastre du Québec ainsi que le plan préparé par l'arpenteuse Sylvie Gauthier, indexé au greffe de la Ville de Montréal sous le numéro J-17 CENTRE et ayant servi de base pour l'acquisition de cet emplacement par la Ville de Montréal (ci-après appelé plan J-17).

J'ai constaté plusieurs différences entre ce qui a été mesuré sur les lieux et ce qui apparaît aux plans existants. Les différences de 1cm ne sont pas considérées car elles résultent dans la plupart des cas de différences d'arrondi de la troisième décimale.

Ligne 1-2-3

La ligne 1-2 mesure 22,47 mètres selon l'arpentage et 22,89 mètres suivant le plan J-17. La ligne 2-3 mesure 34,45 mètres, conformément au plan J-17. Le cadastre donne une longueur totale de 57,31 mètres et le total mesuré est de 56,92 mètres. Cette différence est causée par un déficit entre le mur Nord-Est de l'édifice érigé sur le lot 1 180 953 et le mur Sud-Ouest de l'édifice érigé sur le lot 3 482 703 et autres.

Ligne 3-4

La ligne 3-4 mesure 14,57 mètres, selon l'arpentage conformément au plan de cadastre et au plan J-17. Cette longueur correspond à la distance entre la limite Sud-Est de la rue Saint-Jacques et le prolongement vers le Nord-Est du mur Nord-Ouest de l'édifice érigé sur le lot 1 180 958.

Ligne 4-5

La ligne 4-5 mesure 10,48 mètres, selon l'arpentage conformément au plan J-17 et mesure 10,25 mètres suivant le plan de cadastre. Cette différence est causée par un surplus de terrain par rapport au plan de cadastre. Cette longueur correspond à la distance entre le prolongement vers le Sud-Est du mur Sud-Ouest de l'édifice érigé sur le lot 3 482 703 et al. et le mur Sud-Ouest de l'édifice érigé sur le lot 1 180 958.

Ligne 5-6

La ligne 5-6 mesure 14,13 mètres, selon l'arpentage conformément au plan de cadastre et au plan J-17. Cette longueur correspond à la distance entre le mur Nord-Ouest de l'édifice érigé sur le lot 1 180 958 et le mur Nord-Ouest de l'édifice érigé sur le lot 1 180 957.

Ligne 6-7

La ligne 6-7 mesure 20,48 mètres selon l'arpentage mais mesure 20,34 mètres suivant le plan J-17 et 19,83 mètres suivant le plan de cadastre. Cette différence est causée par un surplus de terrain. Cette longueur correspond à la distance entre le mur Sud-Ouest de l'édifice érigé sur le lot 1 180 958 et le centre du mur mitoyen du côté Sud-Ouest de l'édifice érigé sur le lot 1 180 955.

Ligne 7-8

La ligne 7-8 mesure 24,05 mètres, selon l'arpentage conformément au plan J-17 et mesure 23,65 mètres suivant le plan de cadastre. Cette différence est causée par un surplus de terrain par rapport au plan de cadastre. Cette longueur correspond à la distance entre le mur Nord-Ouest de l'édifice érigé sur le lot 1 180 955 et la limite Nord-Ouest de la rue Notre-Dame Ouest.

Ligne 8-9

La ligne 8-9 mesure 26,21 mètres, selon l'arpentage conformément au plan de cadastre et 26,00 mètres suivant le plan J-17. Cette différence est causée par un surplus de terrain par rapport au plan J-17. Cette longueur correspond à la distance entre le centre du mur mitoyen du côté Sud-Ouest de l'édifice érigé sur le lot 1 180 955 et la limite Nord-Est du lot 1 180 941 placée suivant les plans d'arpentage de cet emplacement.

Ligne 9-10

La ligne 9-10 mesure 31,80 mètres selon l'arpentage, 31,43 mètres suivant le plan de cadastre et 31,78 mètres suivant le plan J-17. Cette différence provient d'un surplus de terrain entre la limite Nord-Ouest de la rue Notre-Dame Ouest et la limite Sud-Est du lot 1 180 953. La longueur de 31,80 correspond également à la longueur inscrite pour cette limite au certificat de localisation du lot 1 180 941.

Ligne 10-11

La ligne 10-11 mesure 2,42 mètres, selon l'arpentage conformément au plan de cadastre et mesure 2,62 mètres suivant le plan J-17. Cette longueur correspond à l'occupation mais est en déficit par rapport au plan J-17.

Ligne 11-12-1

La ligne 11-12 mesure 8,36 mètres selon l'arpentage, conformément au plan J-17. La ligne 12-1 mesure 11,44 mètres. La longueur totale mesurée est de 19,80 mètres, conformément au plan de cadastre. La géométrie de cette ligne est différente de celle montrée au plan J-17, l'arpenteuse Sylvie Gauthier ayant omis de considérer un acte d'abandon de mitoyenneté publié le 25 avril 1996 sous le numéro 4 846 338.

La superficie de cet emplacement est de 2 065,8 mètres carrés suivant mes calculs, de 2 023,8 mètres carrés suivant le plan de cadastre et de 2 067,6 mètres carrés suivant le plan J-17

Dans tous les cas, les plans d'arpentage et les titres de propriété des emplacements adjacents ont été consultés et les limites ont été placées en s'assurant que les emplacements adjacents aient au moins leur contenance. Les différences constatées ne lèsent donc pas les emplacements adjacents.

Plusieurs différences d'occupation ont été observées. Ces situations sont énoncées et décrites au paragraphe 9 ci-après.

Remarques générales :

Les marques d'occupation qui ne sont pas situées sur les limites de propriété peuvent entraîner un effet sur la possession pouvant mener à la prescription.

Par ailleurs, la position des limites (autres que celles bornées, le cas échéant) de cette propriété montrée sur le plan ci-joint est basée sur mon opinion professionnelle rendue suite à une analyse foncière à l'égard des titres de propriété, du cadastre et de l'occupation des lieux. La présente opinion professionnelle n'est pas opposable aux tiers ni aux propriétaires voisins.

7. MITOYENNETÉ

Le long des limites latérales de cet emplacement, de nombreux murs sont mitoyens. Plusieurs d'entre eux montrent des vestiges de structures provenant d'édifices qui étaient érigés sur l'emplacement ci-haut décrit et qui ont été démolis.

Les parties de ces murs et vestiges qui sont situées sur l'emplacement ci-haut décrit sont énoncées et décrites au paragraphe 8 ci-après.

8. OCCUPATION DES MURS

A) Occupation du mur, fondation et cheminée

Description (lot 1 180 954 Ptie) parcelle 1

(voir agrandissement A)

De figure irrégulière, borné et plus explicitement décrit comme suit: Le point de départ de ladite parcelle étant le point A, vers le Nord-Ouest par le lot 1 182 678 composant la rue Saint-Jacques (point 3), mesurant cinquante-neuf centièmes de mètre (0,59 m) dans une direction de 30°30'18'' le long de cette limite; vers le Nord-Est par le lot 3 482 703 et al (point B), mesurant douze mètres et un centième (12,01 m) dans une direction de 122°44'30'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point X'), mesurant dix-neuf centièmes de mètre (0,19 m) dans une direction de 212°30'43'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point C), mesurant un mètre et dix centièmes (1,10 m) dans une direction de 302°50'09'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point D), mesurant quarante-six centièmes de mètre (0,46 m) dans une direction de 212°43'08'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point E), mesurant un mètre et quatre-vingt-onze centièmes (1,91 m) dans une direction de 302°43'08'' le long de cette limite; vers le Nord-Ouest par une autre partie du lot

1 180 954 (point F), mesurant quarante-cinq centièmes de mètre (0,45 m) dans une direction de 32°43'08'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point G), mesurant trois mètres et quatre-vingt-seize centièmes (3,96 m) dans une direction de 302°43'08'' le long de cette limite; vers le Sud par une autre partie du lot 1 180 954 (point H), mesurant quarante-cinq centièmes de mètre (0,45 m) dans une direction de 264°40'02'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point A), mesurant quatre mètres et soixante-six centièmes (4,66 m) dans une direction de 301°17'51'' le long de cette limite, jusqu'au point de départ (point A).

Contenant en superficie quatre mètres carrés et huit dixièmes (4,8 m²).

Cette parcelle est occupée par un mur et des ouvrages de maçonnerie le long de la limite Sud-Ouest de l'édifice érigé sur le lot 3 482 703 et al.

B) Occupation du mur

Description (lot 1 180 954 Ptie) parcelle 2

(voir agrandissement B)

De figure irrégulière, borné et plus explicitement décrit comme suit: Le point de départ de ladite parcelle étant le point I, vers le Nord-Ouest par une autre partie du lot 1 180 954 (point J), mesurant soixante-douze centièmes de mètre (0,72 m) dans une direction de 31°45'55'' le long de cette limite; vers le Nord-Est par une autre partie du lot 1 180 954 (point K), mesurant trente-six centièmes de mètre (0,36 m) dans une direction de 123°30'09'' le long de cette limite; vers le Sud-Est par le lot 1 180 958 (point 5), mesurant soixante-deux centièmes de mètre (0,62 m) dans une direction de 212°13'36'' le long de cette limite; vers le Nord-Est par le lot 1 180 958 (point L), mesurant six mètres et dix centièmes (6,10 m) dans une direction de 123°14'32'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point M), mesurant treize centièmes de mètre (0,13 m) dans une direction de 213°14'32'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point I), mesurant six mètres et quarante-cinq centièmes (6,45 m) dans une direction de 303°30'09'' le long de cette limite, jusqu'au point de départ (point I).

Contenant en superficie neuf dixièmes de mètre carré (0,9 m²).

Cette parcelle est occupée par un mur et des ouvrages de maçonnerie le long de la limite Sud-Ouest de l'édifice érigé sur le lot 1 180 958.

C) Occupation du mur et vestiges

Description (lot 1 180 954 Ptie) parcelle 5

(voir agrandissement D)

De figure irrégulière, borné et plus explicitement décrit comme suit: Le point de départ de ladite parcelle étant le point F', vers le Nord-Ouest par une autre partie du lot 1 180 954 (point R), mesurant soixante-dix-huit centièmes de mètre (0,78 m) dans une direction de 27°57'58'' le long de cette limite; vers le Nord-Est par une autre partie du lot 1 180 954 (point U), mesurant un mètre et vingt-trois centièmes (1,23 m) dans une direction de 120°07'05'' le long de cette limite; vers le Sud-Est par le lot 1 180 955 (point 7), mesurant vingt-trois centièmes de mètre (0,23 m) dans une direction de 212°52'02'' le long de cette limite; vers le Nord-Est par le lot 1 180 955 (point V), mesurant vingt-trois mètres et quatre-vingt-neuf centièmes (23,89 m) dans une direction de 120°34'06'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point W), mesurant vingt-deux centièmes de mètre (0,22 m) dans une direction de 209°27'59'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point X), mesurant quatre mètres et quatre-vingt-deux centièmes (4,82 m) dans une direction de 300°41'52'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point Y), mesurant vingt-trois centièmes de mètre (0,23 m) dans une direction de 210°41'52'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point Z), mesurant deux mètres et quarante-cinq centièmes (2,45 m) dans une direction de 301°02'00'' le long de cette limite; vers le Nord-Ouest par une autre partie du lot 1 180 954 (point A'), mesurant vingt-deux centièmes de mètre (0,22 m) dans une direction de 30°41'52'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point B'), mesurant deux mètres et vingt-trois centièmes (2,23 m) dans une direction de 300°41'52'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point C'), mesurant quarante et un centièmes de mètre (0,41 m)

dans une direction de 211°03'56'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point D'), mesurant quatorze mètres et un centième (14,01 m) dans une direction de 300°32'01'' le long de cette limite; vers le Nord-Ouest par une autre partie du lot 1 180 954 (point E'), mesurant sept centièmes de mètre (0,07 m) dans une direction de 30°34'35'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point F'), mesurant un mètre et cinquante-huit centièmes (1,58 m) dans une direction de 300°34'35'' le long de cette limite, jusqu'au point de départ (point F').

Contenant en superficie douze mètres carrés et trois dixièmes (12,3 m²).

Cette parcelle est occupée par un mur et des ouvrages de maçonnerie le long de la limite Sud-Ouest de l'édifice érigé sur le lot 1 180 955.

D) Occupation du mur

Description (lot 1 180 954 Ptie) parcelle 6

(voir agrandissement E)

De figure irrégulière, borné et plus explicitement décrit comme suit: Le point de départ de ladite parcelle étant le point G', vers le Nord-Ouest par une autre partie du lot 1 180 954 (point H'), mesurant soixante-neuf centièmes de mètre (0,69 m) dans une direction de 35°36'28'' le long de cette limite; vers le Nord-Est par une autre partie du lot 1 180 954 (point I'), mesurant soixante-treize centièmes de mètre (0,73 m) dans une direction de 118°28'06'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point J'), mesurant deux mètres et soixante-seize centièmes (2,76 m) dans une direction de 210°13'03'' le long de cette limite; vers le Nord-Est par une autre partie du lot 1 180 954 (point K'), mesurant quatre mètres et trente-cinq centièmes (4,35 m) dans une direction de 120°08'53'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point L'), mesurant trente-trois centièmes de mètre (0,33 m) dans une direction de 201°10'44'' le long de cette limite; vers le Sud-Ouest par le lot 1 180 941 (point 10), mesurant quatre mètres et soixante-dix-neuf centièmes (4,79 m) dans une direction de 299°40'36'' le long de cette limite; vers le Nord-Ouest par le lot 1 180 953 (point 11), mesurant deux mètres et quarante-deux

centièmes (2,42 m) dans une direction de 29°45'38'' le long de cette limite; vers le Sud-Ouest par le lot 1 180 953 (point G'), mesurant trente-huit centièmes de mètre (0,38 m) dans une direction de 300°05'10'' le long de cette limite, jusqu'au point de départ (point G').

Contenant en superficie trois mètres carrés (3,0 m²).

Cette parcelle est occupée par un mur situé également en partie sur les lots 1 180 941 et 1 180 953.

9. EMPIÉTEMENTS

A) Empiètement de l'échelle

Description (lot 1 180 954 Ptie) parcelle 3

(voir agrandissement C)

De figure régulière, borné et plus explicitement décrit comme suit: Le point de rattachement de ladite parcelle étant le point 6 situé au coin Nord du lot 1 180 957; de là, vers le Sud-Est mesurant sept mètres et vingt-deux centièmes (7,22 m) dans une direction de 212°52'02'' jusqu'au point de départ de la parcelle à décrire (point P); de là, et successivement bornée vers le Sud-Est par le lot 1 180 957 (point Q), mesurant trente-deux centièmes de mètre (0,32 m) dans une direction de 212°52'02'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point N), mesurant vingt centièmes de mètre (0,20 m) dans une direction de 302°22'33'' le long de cette limite; vers le Nord-Ouest par une autre partie du lot 1 180 954 (point O), mesurant trente-deux centièmes de mètre (0,32 m) dans une direction de 32°22'33'' le long de cette limite; vers le Nord-Est par une autre partie du lot 1 180 954 (point P), mesurant vingt et un centièmes de mètre (0,21 m) dans une direction de 122°22'33'' le long de cette limite, jusqu'au point de départ (point P).

Contenant en superficie un dixième de mètre carré (0,1 m²).

Cette parcelle est occupée par une échelle de secours à l'usage de l'édifice érigé sur le lot 1 180 957.

B) Empiètement du perron

Description (lot 1 180 954 Ptie) parcelle 4

(voir agrandissement D)

De figure régulière, borné et plus explicitement décrit comme suit: Le point de rattachement de ladite parcelle étant le point 7 situé au coin Ouest du lot 1 180 955; de là, vers le Nord-Est mesurant vingt-trois centièmes de mètre (0,23 m) dans une direction de 32°52'02'' jusqu'au point de départ de la parcelle à décrire (point U); de là, et successivement bornée vers le Sud-Ouest par une autre partie du lot 1 180 954 (point R), mesurant un mètre et vingt-trois centièmes (1,23 m) dans une direction de 300°07'05'' le long de cette limite; vers le Nord-Ouest par une autre partie du lot 1 180 954 (point S), mesurant un mètre et trente-trois centièmes (1,33 m) dans une direction de 31°13'49'' le long de cette limite; vers le Nord-Est par une autre partie du lot 1 180 954 (point T), mesurant un mètre et vingt-sept centièmes (1,27 m) dans une direction de 120°07'05'' le long de cette limite; vers le Sud-Est par le lot 1 180 955 (point U), mesurant un mètre et trente-trois centièmes (1,33 m) dans une direction de 212°52'02'' le long de cette limite, jusqu'au point de départ (point U).

Contenant en superficie un mètre carré et sept dixièmes (1,7 m²).

Cette parcelle est occupée par un perron de béton à l'usage de l'édifice érigé sur le lot 1 180 955.

C) Empiètement du mur

Description (lot 1 180 954 Ptie) parcelle 7

(voir agrandissement F)

De figure irrégulière, borné et plus explicitement décrit comme suit: Le point de départ de ladite parcelle étant le point 1, vers le Nord-Ouest par le lot 1 182 678 composant la rue Saint-Jacques (point M'), mesurant vingt-cinq centièmes de mètre (0,25 m) dans une direction de 29°17'21'' le long de cette limite; vers le Nord-Est par une autre partie du lot 1 180 954 (point N'), mesurant onze mètres et quarante-quatre centièmes (11,44 m) dans une direction de 118°23'59'' le long de cette limite; vers le Sud-Est par une autre

partie du lot 1 180 954 (point O'), mesurant vingt-sept centièmes de mètre (0,27 m) dans une direction de 213°13'52'' le long de cette limite; vers le Sud-Ouest par le lot 1 180 953 (point 1), mesurant onze mètres et quarante-cinq centièmes (11,45 m) dans une direction de 298°29'06'' le long de cette limite, jusqu'au point de départ (point 1).

Contenant en superficie trois mètres carrés (3,0 m²).

Cette parcelle est occupée par un mur le long de la limite Nord-Est de l'édifice érigé sur le lot 1 180 953. Ce mur était mitoyen et a fait l'objet d'un acte d'abandon de mitoyenneté publié sous le numéro 4 846 338. Toutefois, l'assiette décrite audit acte est inférieure à la largeur du mur, d'où l'empiétement.

D) Empiètement de l'enseigne

Description (lot 1 180 954 Ptie) parcelle 8

(voir agrandissement F)

De figure régulière, borné et plus explicitement décrit comme suit: Le point de rattachement de ladite parcelle étant le point 1 situé au coin Nord du lot 1 180 953; de là, vers le Sud-Est mesurant cinquante et un centièmes de mètre (0,51 m) dans une direction de 118°29'06'' jusqu'au point de départ de la parcelle à décrire (point P'); de là, et successivement bornée vers le Nord-Ouest par une autre partie du lot 1 180 954 (point Q'), mesurant vingt-huit centièmes de mètre (0,28 m) dans une direction de 28°29'06'' le long de cette limite; vers le Nord-Est par une autre partie du lot 1 180 954 (point R'), mesurant un mètre et trente-neuf centièmes (1,39 m) dans une direction de 120°10'15'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point S'), mesurant vingt-quatre centièmes de mètre (0,24 m) dans une direction de 208°29'06'' le long de cette limite; vers le Sud-Ouest par le lot 1 180 953 (point P'), mesurant un mètre et trente-neuf centièmes (1,39 m) dans une direction de 298°29'06'' le long de cette limite, jusqu'au point de départ (point P').

Contenant en superficie quatre dixièmes de mètre carré (0,4 m²).

Cette parcelle est occupée par une enseigne à l'usage de l'emplacement adjacent au Sud-Ouest étant le lot 1 180 953.

E) Empiètement de la boîte en bois

Description (lot 1 180 954 Ptie) parcelle 9

(voir agrandissement F)

De figure régulière, borné et plus explicitement décrit comme suit: Le point de rattachement de ladite parcelle étant le point 1 situé au coin Nord du lot 1 180 953; de là, vers le Sud-Est mesurant un mètre et vingt et un centièmes (1,21 m) dans une direction de 106°28'20'' jusqu'au point de départ de la parcelle à décrire (point T'); de là, et successivement bornée vers le Nord-Ouest par une autre partie du lot 1 180 954 (point U'), mesurant trente-sept centièmes de mètre (0,37 m) dans une direction de 29°23'59'' le long de cette limite; vers le Nord-Est par une autre partie du lot 1 180 954 (point V'), mesurant un mètre et quinze centièmes (1,15 m) dans une direction de 118°48'37'' le long de cette limite; vers le Sud-Est par une autre partie du lot 1 180 954 (point W'), mesurant trente-six centièmes de mètre (0,36 m) dans une direction de 208°23'59'' le long de cette limite; vers le Sud-Ouest par une autre partie du lot 1 180 954 (point T'), mesurant un mètre et quinze centièmes (1,15 m) dans une direction de 298°23'59'' le long de cette limite, jusqu'au point de départ (point T').

Contenant en superficie quatre dixièmes de mètre carré (0,4 m²).

Cette parcelle est occupée par une boîte de bois qui semble protéger des équipements d'électricité. Cette boîte est installée au mur de long de la limite Nord-Est de la maison située sur le lot 1 180 953.

10. OUVERTURES ET VUES

Dans le mur Nord-Ouest de l'édifice érigé sur le lot 1 180 958, il y a une ouverture de ventilation donnant sur l'emplacement ci-haut décrit. Aucune servitude n'a été accordée pour régulariser cette ouverture.

Dans le mur Sud-Ouest de l'édifice érigé sur le lot 1 180 958, il y a huit fenêtres donnant sur l'emplacement ci-haut décrit. Aucune servitude n'a été accordée pour régulariser ces vues.

Dans le mur Nord-Ouest de l'édifice érigé sur le lot 1 180 955, il y a deux ouvertures de ventilation donnant sur l'emplacement ci-haut décrit. Aucune servitude n'a été accordée pour régulariser ces ouvertures.

Dans le mur Sud-Ouest de l'édifice érigé sur le lot 1 180 955, il y a une porte en verre clair donnant sur l'emplacement ci-haut décrit. Aucune servitude n'a été accordée pour régulariser cette vue.

Les vues ci-haut mentionnées sont situées à une distance moindre que celle prévue à l'article 993 du code civil du Québec. Tel que ci-après mentionné au paragraphe 23, les ouvertures et vues ci-haut mentionnées devraient être analysées dans l'éventualité de les faire fermer ou d'accorder des servitudes.

Il y a deux fenêtres en verre dormant dans le mur Nord-Ouest de l'édifice érigé sur le lot 1 180 955.

Dans le mur Nord-Ouest de l'édifice érigé sur le lot 1 180 955, il y a une porte pleine donnant accès à l'emplacement ci-haut décrit.

Il n'y a aucune autre ouverture ou vue apparente affectant cette propriété.

11. SERVITUDES INSCRITES COMME TELLES À L'INDEX DES IMMEUBLES ET AU REGISTRE FONCIER

Suivant acte publié le 14 janvier 2005 sous le numéro 12 010 992, il y a une servitude de passage à pied sur le lot 1 180 954 en faveur du lot 1 180 955 afin de permettre un accès à la rue Saint-Jacques ou à la rue Notre-Dame Ouest à partir de l'arrière de l'édifice érigé sur le lot 1 180 955 (une porte est située dans le mur Nord-Ouest de cet édifice). L'assiette de ce droit de passage est à la discrétion du propriétaire du fonds servant (lot 1 180 954) et doit mesurer une largeur minimale de 1,1 m et une hauteur minimale de 2,1 mètres.

Suivant actes publiés le 7 février 1905 sous le numéro 140 188 et le 19 décembre 1977 sous le numéro 2 838 522, l'emplacement ci-haut décrit bénéficie d'un droit de vue et de passage dans le passage au rez-de-chaussée de l'édifice érigé sur l'emplacement adjacent au Nord-Est et désigné comme les lots 3 482 703 et autres (cadastre vertical). Suivant les mêmes actes, l'emplacement ci-haut décrit a également droit de vue et de passage sur une partie du lot 1 180 958 mesurant 2,44 mètres au Nord-Est et au Sud-Ouest et 3,05 mètres au Nord-Ouest et au Sud-Est et bornée au Nord-Ouest par le lot 1 180 954, au Nord-Est par les lots 3 482 703 et autres

(cadastre vertical), au Sud-Est par le lot 3 244 687 et au Sud-Ouest par une autre partie du lot 1 180 958.

Il n'y a aucune autre servitude inscrite affectant ledit emplacement.

12. SERVITUDES APPARENTES

Il y a des câbles de télécommunication le long des murs Nord-Ouest et Sud-Ouest de l'édifice érigé sur le lot 1 180 958, le long du mur Nord-Ouest des édifices érigés sur les lots 1 180 955 et 1 180 957 et le long du mur Sud-Est de l'édifice érigé sur le lot 1 180 953.

Il y a des câbles aériens qui surplombent l'emplacement ci-haut décrit entre l'édifice érigé sur le lot 1 180 958 et l'édifice érigé sur les lots 3 482 703 et autres (cadastre vertical) et entre l'édifice érigé sur le lot 1 180 955 et l'édifice érigé sur le lot 1 180 953.

Il y a des câbles d'électricité le long du mur Nord-Est de l'édifice érigé sur le lot 1 180 953.

L'emplacement présentement décrit est assujéti aux conditions de service d'électricité d'Hydro-Québec approuvées par la Régie de l'énergie (décision : D-2008-028), notamment, sur le passage et l'installation de lignes de distribution d'électricité sur les propriétés privées.

Il y a une porte dans le mur Sud-Ouest de l'édifice érigé sur le lot 1 180 955. Il y a donc un passage piétonnier qui s'exerce à partir de cette porte, autre que celui prévu à l'acte de servitude numéro 12 010 992 ci-haut mentionné.

Il n'y a aucune autre servitude apparente affectant ledit emplacement sauf celles qui peuvent exister pour fins d'utilité publique usuelles.

13. BORNAGE

Aucune limite de l'emplacement n'a fait l'objet d'un bornage.

Il est à noter que les limites de propriété d'un emplacement, ne peuvent être considérées comme définitives, permanentes et irrévocables que si elles ont été établies par procès-verbal de bornage.

14. RÉSERVE ET AVIS D'EXPROPRIATION

Il n'y a aucune réserve ni aucun avis d'expropriation inscrit au registre foncier contre ledit emplacement.

15. PROTECTION DU TERRITOIRE AGRICOLE

Cet emplacement n'est pas situé dans une aire retenue en vertu de la Loi sur la protection du territoire et des activités agricoles (RLRQ, c. P-41.1).

16. PATRIMOINE CULTUREL

Concernant le bien-fonds ci-haut décrit :

Cette dite propriété est située dans le site patrimonial de Montréal (autrement connu sous le nom « arrondissement historique du Vieux Montréal ») en vertu de la déclaration inscrite au registre du Patrimoine culturel du Québec le 8 janvier 1964 et le 26 avril 1995.

17. POSITION DES BÂTIMENTS

Cet emplacement est utilisé pour fin de stationnement. Il y a un bâtiment d'un étage dont le revêtement est de bois sur cet emplacement.

Suivant mon opinion, ledit emplacement rencontre les exigences des règlements municipaux de zonage en ce qui a trait aux marges minimales requises actuellement.

18. ZONAGE MUNICIPAL

Cet emplacement est situé dans les zones 0128 et 0390 de l'arrondissement Ville-Marie du règlement de zonage municipal de la Ville de Montréal.

19. ZONE D'INONDATION

Le bien-fonds n'est pas situé, en tout ou en partie, à l'intérieur d'une zone d'inondation cartographiée en vertu de la Convention entre le gouvernement du Canada et le gouvernement du Québec relative à la cartographie et à la protection des plaines d'inondation et au développement durable des ressources en eau, signée en 1976 et ses modifications subséquentes.

Le bien-fonds n'est pas situé, en tout ou en partie, à l'intérieur d'une bande de protection riveraine établie par le règlement municipal de zonage pris en vertu du décret concernant la Politique de protection des rives, du littoral et des plaines inondables (RLRQ, chapitre Q-2, r.35).

20. ZONE DE PROTECTION

Le bien-fonds n'est pas situé, en tout ou en partie, à l'intérieur d'une zone de protection, d'une bande de protection, d'une zone d'inondation ou d'une zone à risque établie par le règlement municipal de zonage.

21. ZONAGE AÉRIEN

Le bien-fonds n'est pas situé, en tout ou en partie, à l'intérieur d'une zone aéroportuaire, établie par un règlement adopté sous l'autorité de la Loi sur l'aéronautique (L.R.C. 1985, c. A-2) et déposé au bureau de la publicité des droits.

22. ENSEMBLE IMMOBILIER

L'immeuble ne présente aucun élément apparent d'un ensemble immobilier au sens de l'article 45 de la Loi sur la Régie du logement (RLRQ, c. R-8.1).

23. RECOMMANDATIONS

De nombreuses différences ont été observées entre les mesurages effectués sur les lieux et le plan de cadastre du Québec. Dans tous les cas, ces différences ne lèsent pas les emplacements adjacents. Il y aurait donc lieu de corriger le plan de cadastre du lot 1 180 954 pour le rendre conforme à la situation actuelle sur les lieux. Ces corrections entraîneraient une modification de la position de certains nœuds graphiques sur la carte cadastrale et donc une correction des lots 1 180 955 et 1 180 953.

Il y a de nombreux murs et vestiges de murs qui sont mitoyens. Dans l'éventualité où ces structures ne pourraient pas être démolies sans fragiliser les édifices adjacents, il y aurait lieu d'établir avec les emplacements adjacents des conventions pour leur usage et leur entretien ou d'envisager de renoncer en faveur des emplacements adjacents aux droits que l'un peut détenir dans ces structures.

Les empiétements identifiés au paragraphe 9 devraient être analysés dans l'éventualité de les faire ôter ou d'accorder des permissions ou des servitudes.

Les ouvertures de ventilation, les fenêtres et la porte en verre clair mentionnées au paragraphe 10 devraient être analysées dans l'éventualité de les faire fermer ou d'accorder des servitudes de tolérance, de vues et de passage.

Il y aurait lieu de définir l'usage des câbles mentionnés au paragraphe 12 ci-haut, de les faire déplacer ou d'obtenir des servitudes.

24. MESURES ET PLAN

Toutes les mesures données dans le présent certificat sont en mètres (SI) et le tout tel que montré sur la copie ci-jointe du plan préparé par le soussigné, le 28 mars 2018.

Ce rapport et le plan qui l'accompagne portant le numéro M2017-10332 des archives de Travaux Publics et Services Gouvernementaux Canada font partie intégrante du certificat de localisation qui a été préparé à la demande de **TRAVAUX PUBLICS ET SERVICES GOUVERNEMENTAUX CANADA** dans le but d'une transaction spécifique, soit une vente et/ou l'obtention de financement et ne peut être utilisé ou invoqué à d'autres fins sans une autorisation écrite de l'arpenteur-géomètre soussigné.

Les observations effectuées lors de la préparation de ce certificat de localisation ont été vérifiées par le soussigné, conformément aux paragraphes 1 à 23 de l'article 9 du règlement sur la norme de pratique relative au certificat de localisation.

En foi de quoi, j'ai signé à Montréal, ce vingt-huitième jour du mois de mars, de l'an deux mille dix-huit (28 mars 2018).

Minute: **9455**
Plan: **M2017-10332**
Référence: **2017-08-36**

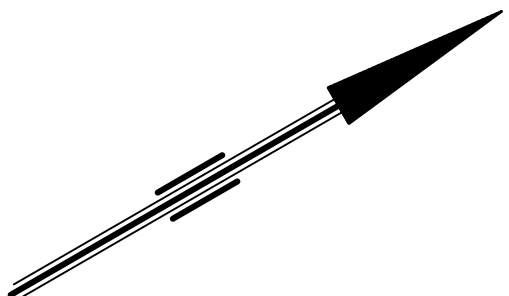
JEAN-LOUIS CHÉNARD
arpenteur-géomètre
3285, boul. Cavendish, bureau 300
Montréal (Québec)
H4B 2L9
Tél.: (514) 489-9708

CONFORME À L'ORIGINAL

Le **18 avril 2018**

arpenteur-géomètre








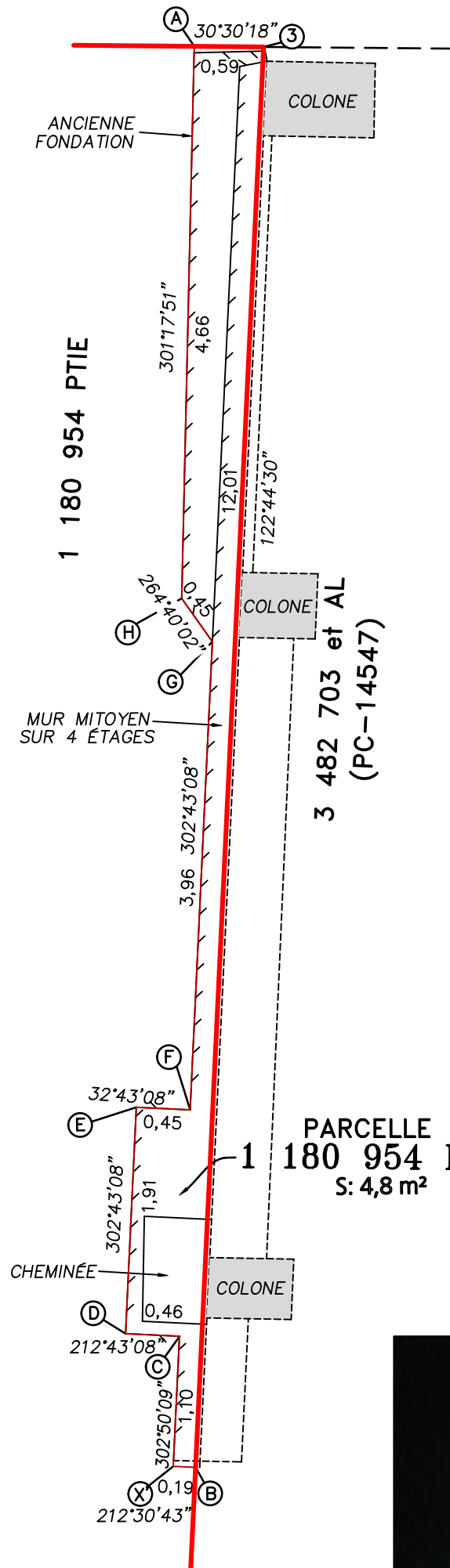
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	(Y)	(X)	
87KM374	5 040 596,222	300 310,668	22,035
M04KM340	5 040 467,818	300 598,833	13,50

NOTES

- SERVITUDE DE PASSAGE A PIEDS CONTRE LE LOT 1 180 954 EN FAVEUR DU LOT 1 180 955, (ASSIETTE NON DEFINIE) (No D'INSC.:12 010 992, 2005-01-14).
- DATE DES RECHERCHES: 30 AOÛT 2017.
- CE PLAN AINSI QUE LE RAPPORT QUI L'ACCOMPAGNE FONT PARTIES INTEGRANTES DU PRESENT CERTIFICAT DE LOCALISATION, PREPARES POUR DES FINS DE VENTE ET DE MISE A JOUR DE L'INVENTAIRE IMMOBILIER, ILS NE DEVRONT PAS ETRE UTILISES A D'AUTRES FINS SANS L'AUTORISATION ECRITE DU SOUSSIGNE.
- LES COORDONNEES DES LIMITES DE LA PROPRIETE INDIQUEES SUR CE PLAN CORRESPONDENT A L'EXPRESSION DE MON OPINION ET ONT LA MEME PORTEE QUE CELLES QUI SERAIENT ETABLIES DANS LE CADRE D'UNE OPERATION DE PIQUETAGE.
- LES DIMENSIONS SONT EN METRES (SI).
- LES DIRECTIONS INDIQUEES SUR CE PLAN SONT DES GISEMENTS EN REFERENCE AU SYSTEME SCOPQ (FUSEAU 8, MERIDIEN CENTRAL 73°30') NAD83.
- SUJET A UNE VERIFICATION NOTARIALE DES TITRES ET DES SERVITUDES.
- LES ALTITUDES ORTHOMETRIQUES INSCRITES SUR CE PLAN SONT EN REFERENCE AU SYSTEME GEODESIQUE (POINT No.: 87KM374 , ALT.:22.04) BASE SUR LE DATUM, CGVD28.
- TOUS LES SERVICES D'UTILITE PUBLIQUE DEVRONT ETRE VERIFIES AVANT TOUTE CONSTRUCTION.
- LES SERVICES SOUTERRAINS D'UTILITE PUBLIQUE ILLUSTRES AU PRESENT PLAN ONT ETE COMPILES SELON LES RENSEIGNEMENTS QUI NOUS ONT ETE FOURNIS PAR LES DIFFERENTS ORGANISMES CONCERNES ET DEVRONT ETRE VERIFIES QUANT A LEUR EXISTENCE, POSITION EXACTE ET CARACTERISTIQUES AUPRES DES AUTORITES COMPETENTES ET INFO-EXCAVATION AVANT D'ENTREPRENDRE TOUT PROJET.
- DATE(S) DU LEVE TERRAIN: 23 ET 25 OCTOBRE 2017.
- FACTEUR ECHELLE : 0,9999012.

 Travaux publics et Services gouvernementaux Canada		Public Works and Government Services Canada			
PROJET PROJECT		MONTRÉAL, 46 RUE ST-JACQUES			
SUJET SUBJECT		CERTIFICAT DE LOCALISATION			
PROPRIÉTÉ DE / PROPERTY OF VILLE DE MONTRÉAL		PRÉPARÉ PAR / PREPARED BY JEAN-LOUIS CHENARD <i>Signature</i> minute 9455 ARPENTUR-GEOMÈTRE / QUEBEC LAND SURVEYOR			
LOT (S) 1 180 954		MONTRÉAL, LE 28 MARS 2018			
CADASTRE OFFICIEL / OFFICIAL CADASTRE DU QUÉBEC		COPIE CONFORME À L'ORIGINAL / TRUE			
CIRCONSCRIPTION FONCIÈRE/REGISTRATION DIVISION MONTRÉAL		 ARPENTUR-GEOMÈTRE / QUEBEC LAND SURVEYOR			
ÉCHELLE / SCALE 1 : 200	DESSINÉ PAR DRAWN BY G.B. VÉRIFIÉ PAR CHECKED BY J.L.C.	MONTRÉAL, LE 18 avril 2018			
NO PLAN PLAN NO	M2017-1033213				

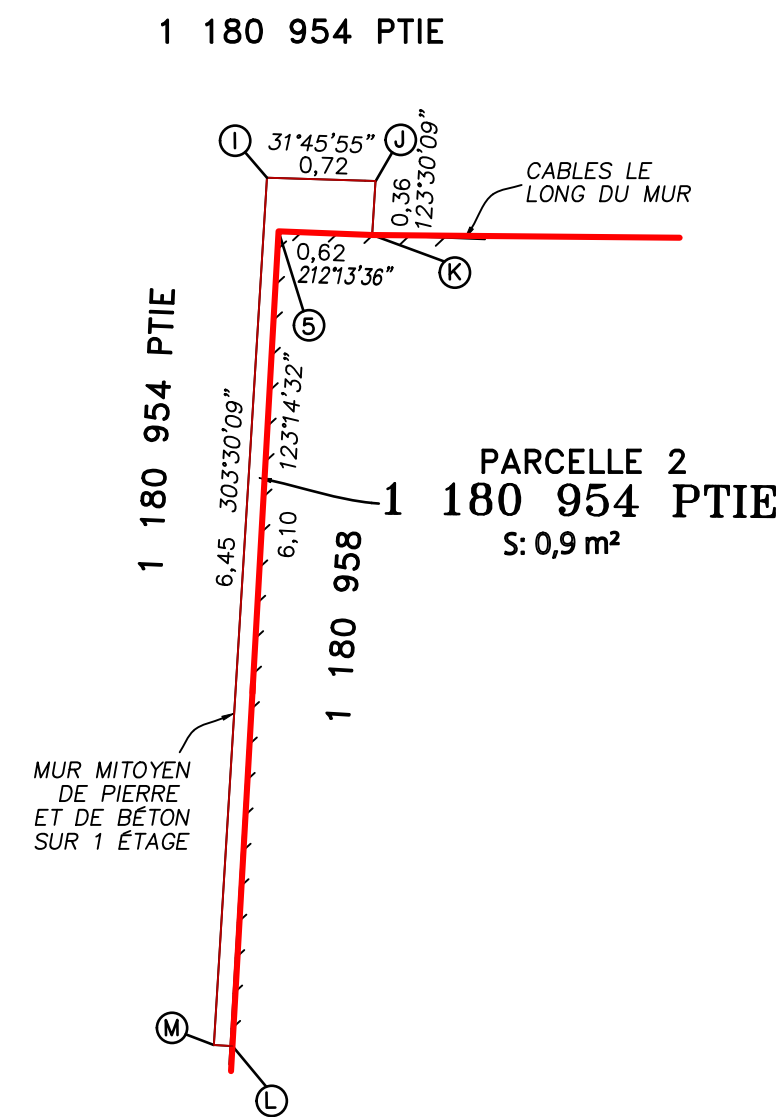
RUE SAINT-JACQUES
1 182 678



PARCELLE 1			
1 180 954 PTIE			
OCCUPATION MUR ET CHEMINEE			
DE	A	GISEMENT	DISTANCE (m)
A	3	30°30'18"	0,59
3	B	122°44'30"	12,01
B	X'	212°30'43"	0,19
X'	C	302°50'09"	1,10
C	D	212°43'08"	0,46
D	E	302°43'08"	1,91
E	F	32°43'08"	0,45
F	G	302°43'08"	3,96
G	H	264°40'02"	0,45
H	A	301°17'51"	4,66
SUPERFICIE: 4,8m²			



AGRANDISSEMENT B
ÉCHELLE 1: 50
PARCELLE 2

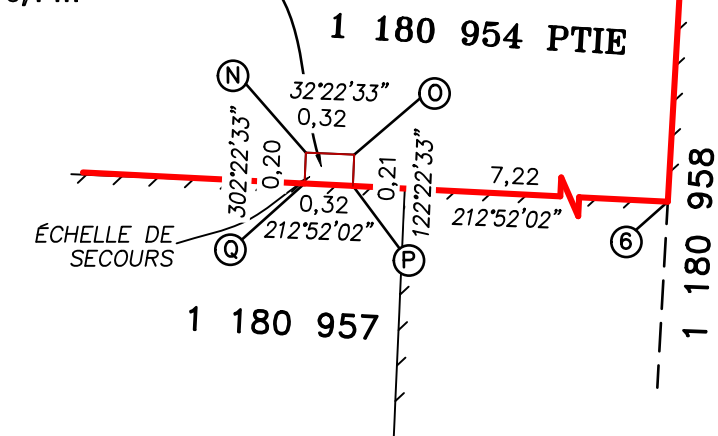


PARCELLE 2			
1 180 954 PTIE			
OCCUPATION MUR			
DE	A	GEISEMENT	DISTANCE (m)
I	J	31°45'55"	0,72
J	K	123°30'09"	0,36
K	S	212°1'3"36"	0,62
S	L	123°14'32"	6,10
L	M	213°14'32"	0,13
M	I	303°30'09"	6,45
SUPERFICIE: 0.9 m ²			



02/18/2018

PARCELLE 3
1 180 954 PTIE
S: 0,1 m²



PARCELLE 3			
1 180 954 PTIE			
RATT.: DE 6 ● P 212°52'02" 7,22m			
EMPIÈTEMENT ÉCHELLE			
DE	A	GEISEMENT	DISTANCE (m)
N	O	32°22'33"	0,32
O	P	122°22'33"	0,21
P	Q	212°52'02"	0,32
Q	N	302°22'33"	0,20
SUPERFICIE: 0.1 m ²			



02/18/2018

APPROUVÉ PAR / APPROVED BY

Luc Milodeau

ARPENTEUR-GÉOMÈTRE / QUEBEC LAND SURVEYOR

MONTREAL, LE 18 avril 2018

 Travaux publics et
Services gouvernementaux
Canada

Public Works and
Government Services
Canada

Canada

PROJET	
PROJECT	MONTREAL, 46 RUE ST-JACQUES

SUJET	
SUBJECT	CERTIFICAT DE LOCALISATION

PROPRIÉTÉ DE / PROPERTY OF
VILLE DE MONTRÉAL

LOT (S)
1 180 954

CADASTRE OF
DU QUÉBEC

CIRCONSCRIPTION FONCIÈRE/REGISTRATION DIVISION
MONTREAL


ÉCHELLE / SCALE
VOIR PLAN

NO PLAN
PLAN NO

PRÉPARÉ PAR / PREPARED BY
JEAN-LOUIS CHÉNARD

ARPEUTEUR-GEOMETRE / QUEBEC LAND SURVEYOR

MONTREAL, LE 28 MARS 2018

COPIE CONFORME À L'ORIGINAL / TRUE 

[Signature]

ARPENTEUR-GÉOMÈTRE / QUEBEC LAND SURVEYOR

MONTRÉAL, LE 18 avril 2018

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NOTES

- DATE DES RECHERCHES: 30 AOÛT 2017.
- CE PLAN AINSI QUE LE RAPPORT QUI L'ACCOMPAGNE FONT PARTIES INTÉGRANTES DU PRÉSENT CERTIFICAT DE LOCALISATION. CÉLÈBRES POUR DES FINS DE VENTE ET DE MISE À JOUR DE L'INVENTAIRE IMMOBILIER IL NE DEVRONT PAS ÊTRE UTILISÉS A D'AUTRES FINS SANS L'AUTORISATION ÉCRITE DU SOUSSIGNÉ.
- LES DIMENSIONS SONT EN MÈTRES (SI).
- LES DIRECTIONS INDICÉES SUR CE PLAN SONT DES GISEMENTS EN RÉFÉRENCE AU SYSTÈME SCOPQ (FUSEAU 8, MÉRIDIEN CENTRAL 73°30') NAD83.
- SUIET A UNE VÉRIFICATION NOTARIALE DES TITRES ET DES SERVITUDES.
- DATE(S) DU LEVÉ TERRAIN: 23 ET 25 OCTOBRE 2017.
- FACTEUR ÉCHELLE : 0,9999012.



.3 Lettre mandat de la ministre SPAC

Minister of Public Services and Procurement Mandate Letter

December 13, 2019

Office of the
Prime Minister



Cabinet du
Premier ministre

Ottawa, Canada K1A 0A2

Dear Ms. Anand:

Thank you for agreeing to serve Canadians as Minister of Public Services and Procurement.

On Election Day, Canadians chose to continue moving forward. From coast to coast to coast, people chose to invest in their families and communities, create good middle class jobs and fight climate change while keeping our economy strong and growing. Canadians sent the message that they want us to work together to make progress on the issues that matter most, from making their lives more affordable and strengthening the healthcare system, to protecting the environment, keeping our communities safe and moving forward on reconciliation with Indigenous Peoples. People expect Parliamentarians to work together to deliver these results, and that's exactly what this team will do.

It is more important than ever for Canadians to unite and build a stronger, more inclusive and more resilient country. The Government of Canada is the central institution to promote that unity of purpose and, as a Minister in that Government, you have a personal duty and responsibility to fulfill that objective.

That starts with a commitment to govern in a positive, open and collaborative way. Our platform, *Forward: A Real Plan for the Middle Class*, is the starting point for our Government. I expect us to work with Parliament to deliver on our commitments. Other issues and ideas will arise or will come from Canadians, Parliament, stakeholders and the public service. It is my expectation that you will engage constructively and thoughtfully and add priorities to the Government's agenda when appropriate. Where legislation is required, you will need to work with the Leader of the Government in the House of Commons and the Cabinet Committee on Operations to prioritize within the minority Parliament.

We will continue to deliver real results and effective government to Canadians. This includes: tracking and publicly reporting on the progress of our commitments; assessing the effectiveness of our work; aligning our resources with priorities; and adapting to events as they unfold, in order to get the results Canadians rightly demand of us.

Many of our most important commitments require partnership with provincial, territorial and municipal governments and Indigenous partners, communities and governments. Even where disagreements may occur, we will remember that our mandate comes from citizens who are served by all orders of government and it is in everyone's interest that we work together to find common ground. The Deputy Prime Minister and Minister of Intergovernmental Affairs is the Government-wide lead on all relations with the provinces and territories.

There remains no more important relationship to me and to Canada than the one with Indigenous Peoples. We made significant progress in our last mandate on supporting self-determination, improving service delivery and advancing reconciliation. I am directing every single Minister to determine what they can do in their specific portfolio to accelerate and build on the progress we have made with First Nations, Inuit and Métis Peoples.

I also expect us to continue to raise the bar on openness, effectiveness and transparency in government. This means a government that is open by default. It means better digital capacity and services for Canadians. It means a strong and resilient public service. It also means humility and continuing to acknowledge mistakes when we make them. Canadians do not expect us to be perfect; they expect us to be diligent, honest, open and sincere in our efforts to serve the public interest.

As Minister, you are accountable for your style of leadership and your ability to work constructively in Parliament. I expect that you will collaborate closely with your Cabinet and Caucus colleagues. You will also meaningfully engage with the Government Caucus and Opposition Members of Parliament, the increasingly non-partisan Senate, and Parliamentary Committees.

It is also your responsibility to substantively engage with Canadians, civil society and stakeholders, including businesses of all sizes, organized labour, the broader public sector and the not-for-profit and charitable sectors. You must be proactive in ensuring that a broad array of voices provides you with advice, in both official languages, from every region of the country.

We are committed to evidence-based decision-making that takes into consideration the impacts of policies on all Canadians and fully defends the *Canadian Charter of Rights and Freedoms*. You will apply Gender-based Analysis Plus (GBA+) in the decisions that you make.

Canada's media and your engagement with them in a professional and timely manner are essential. The Parliamentary Press Gallery, indeed all journalists in Canada and abroad, ask necessary questions and contribute in an important way to the democratic process.

You will do your part to continue our Government's commitment to transparent, merit-based appointments, to help ensure that people of all gender identities, Indigenous Peoples, racialized people, persons with disabilities and minority groups are reflected in positions of leadership.

As Minister of Public Services and Procurement, you will ensure services within your portfolio, including those internal to government, are delivered at a high standard and in an efficient manner. You will oversee the procurement processes of government so that they reflect modern best practices, lessons learned and value for money.

I will expect you to work with your colleagues and through established legislative, regulatory and Cabinet processes to deliver on your top priorities. In particular, you will:

- With the support of the President of the Treasury Board, continue the modernization of procurement practices so that they are simpler, less administratively burdensome, user friendly, deploy modern comptrollership, encourage greater competition and include practices that support our economic policy goals, including innovation, as well as green and social procurement. Your implementation of the e-Procurement Solution will be central to this priority.
- Publish clear metrics to measure government performance on procurements and make government data more readily available to vendors to encourage more and better bids.
- Continue the development of better vendor management tools to ensure the Government is able to hold contractors accountable for poor performance or unacceptable behaviour, particularly in large-scale procurements.
- Develop initiatives to increase the diversity of bidders on government contracts.
- Work with the Minister of Indigenous Services and the President of the Treasury Board to create more opportunities for Indigenous businesses to succeed and grow by creating a new target to have at least 5 per cent of federal contracts awarded to businesses managed and led by Indigenous Peoples.
- Lead, with the support of the Minister of National Defence and the Minister of Fisheries, Oceans and the Canadian Coast Guard, in bringing forward analyses and options for the creation of Defence Procurement Canada, to ensure that Canada's biggest and most complex National Defence and Canadian Coast Guard procurement projects are delivered on time and with greater transparency to Parliament. This priority is to be developed concurrently with ongoing procurement projects and existing timelines.
- Work with the Minister of Innovation, Science and Industry, as well as the Minister of Fisheries, Oceans and the Canadian Coast Guard to continue the full renewal of the Canadian Coast Guard fleet, and with the Minister of National Defence to continue the renewal of the Royal Canadian Navy Fleet, continuing the revitalization of the shipbuilding industry across Canada, creating middle class jobs and ensuring Canada's marine services have the modern ships that they need.
- Work with the Minister of National Defence and the Minister of Innovation, Science and Industry to manage the competitive process, select a supplier and enter into a contract to construct Canada's fighter aircraft fleet.
- With the support of the Minister of Digital Government, eliminate the backlog of outstanding pay issues for public servants as a result of the Phoenix Pay System to rebuild their confidence in the integrity of their pay and pensions.
- Support the Minister of Digital Government on the Next Generation Pay and Human Resources System to replace the Phoenix Pay System and support the President of the Treasury Board to actively engage Canada's major public sector unions.
- Work with the Minister of Employment, Workforce Development and Disability Inclusion to develop a proposal to require that government suppliers participate in the new Canadian Apprenticeship Service, and require that federal construction contracts meet targets for greater inclusion of women in the trades.
- Working with the provinces and energy suppliers, develop a strategy to power federal buildings with 100 per cent clean electricity, where available, by 2022. Commit to being a first purchaser to help support the growth of new clean electricity/renewable power sources as they become available.
- Explore measures that support the conversion of Government fleets to zero-emission vehicles.
- Continue to implement a new vision for Canada Post to ensure it provides the high-quality service that Canadians expect at a reasonable price. The Minister for Women and Gender Equality and Rural Economic Development will support you in improving Canada Post services in rural and remote areas.
- Be the lead Minister for the National Capital Commission (NCC) and leverage your department's strengths in real property management and heritage rehabilitation, as demonstrated in the Parliamentary Precinct rehabilitation. You will work with the NCC in its core functions of federal lands planning, stewardship of nationally significant public places, and creative partner for development and conservation.
- Continue to improve crossings in the National Capital Region, moving forward with Budget 2019 commitments to replace the Alexandra Bridge, addressing the demonstrated need for an additional National Capital Region crossing with a long-term integrated interprovincial crossing plan led by the NCC, and investing to rehabilitate and maintain the crossings, including the Chaudière and Macdonald-Cartier bridges.
- Support the Minister of Crown-Indigenous Relations to conclude the Government's contribution to the space for Indigenous Peoples in the Parliamentary Precinct.
- Working with the Minister of Canadian Heritage and the Minister of Indigenous Services leverage the expertise of the Translation Bureau to help preserve, protect and revitalize First Nations, Inuit and Métis languages by increasing the availability of translation and interpretation services.

These priorities draw heavily from our election platform commitments. As mentioned, you are encouraged to seek opportunities to work across Parliament in the fulfillment of these commitments and to identify additional priorities.

I expect you to work closely with your Deputy Minister and their senior officials to ensure that the ongoing work of your department is undertaken in a professional manner and that decisions are made in the public interest. Your Deputy Minister will brief you on the many daily decisions necessary to ensure the achievement of your priorities, the effective running of the government and better services for Canadians. It is my expectation that you will apply our values and principles to these decisions so that they are dealt with in a timely and responsible manner and in a way that is consistent with the overall direction of our Government.

Our ability, as a government, to implement our priorities depends on consideration of the professional, non-partisan advice of public servants. Each and every time a government employee comes to work, they do so in service to Canada, with a goal of improving our country and the lives of all Canadians. I expect you to establish a collaborative working relationship with your Deputy Minister, whose role, and the role of public servants under their direction, is to support you in the performance of your responsibilities.

We have committed to an open, honest government that is accountable to Canadians, lives up to the highest ethical standards and applies the utmost care and prudence in the handling of public funds. I expect you to embody these values in your work and observe the highest ethical standards in everything you do. I want Canadians to look on their own government with pride and trust.

As Minister, you must ensure that you are aware of and fully compliant with the *Conflict of Interest Act* and Treasury Board policies and guidelines. You will be provided with a copy of *Open and Accountable Government* to assist you as you undertake your responsibilities. I ask that you carefully read it, including elements that have been added to strengthen it, and ensure that your staff does so as well. I expect that in staffing your offices you will hire people who reflect the diversity of Canada, and that you will uphold principles of gender equality, disability equality, pay equity and inclusion.

Give particular attention to the Ethical Guidelines set out in Annex A of that document, which apply to you and your staff. As noted in the Guidelines, you must uphold the highest standards of honesty and impartiality, and both the performance of your official duties and the arrangement of your private affairs should bear the closest public scrutiny. This is an obligation that is not fully discharged by simply acting within the law.

I will note that you are responsible for ensuring that your Minister's Office meets the highest standards of professionalism and that it is a safe, respectful, rewarding and welcoming place for your staff to work.

I know I can count on you to fulfill the important responsibilities entrusted in you. It is incumbent on you to turn to me and the Deputy Prime Minister early and often to support you in your role as Minister.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Justin Trudeau', with a stylized flourish at the end.

Rt. Hon. Justin Trudeau, P.C., M.P.
Prime Minister of Canada

.4 Municipal and Heritage Regulations (in French only)

.4.1 PIIA Requirements

Les exigences suivantes concernent le futur bâtiment et sont relatives au PIIA : (extraites de : Codification Administrative eu règlement d'urbanisme de l'arrondissement de Ville-marie 01-282) version 22 Mai 2019

SECTION III – CRITÈRES SPÉCIFIQUES AUX UNITÉS DE PAYSAGE

24. Sous réserve de l'article 14 et des limites de hauteur prescrites, la hauteur en mètres et en étages d'un bâtiment situé entre 2 bâtiments adjacents d'un même secteur de hauteur en mètres et en étages ne doit pas :

1^o être inférieure à la hauteur en étages du bâtiment adjacent le plus bas conforme aux limites de hauteur prescrites;

2^o être supérieure à la hauteur en étages du bâtiment adjacent le plus haut conforme aux limites de hauteur prescrites, ni être supérieure de plus de 1 m à la hauteur en mètres de ce bâtiment.

SECTION III – CRITÈRES SPÉCIFIQUES AUX UNITÉS DE PAYSAGE

127. Sur un terrain où est érigé un bâtiment ou un ensemble de bâtiments désignés comme immeuble d'intérêt, dans les unités de paysage Grands parcs (GP), Vieux- Montréal (VM), Flanc sud (FS), Flanc ouest (FO), Square Dorchester – Place du Canada (SDPC) et dans le site patrimonial déclaré du Mont-Royal, les travaux visés à l'article 102 doivent être approuvés en respectant les critères suivants :

1^o le caractère unique et distinctif des bâtiments ou du site doit être sauvegardé et chacune de leurs parties ou de leurs caractéristiques architecturales doit être protégée;

2^o les caractéristiques dominantes du paysage urbain doivent être maintenues;

3^o le mode d'implantation existant doit être respecté;

4^o les bâtiments, les marques d'occupations antérieures du territoire et les éléments naturels d'intérêt qui se trouvent encore dans le secteur ou sur le tronçon doivent être mis en valeur;

5^o les effets sur les constructions voisines doivent être considérés de manière à préserver ou mettre en valeur le caractère d'ensemble du secteur environnant;

6^o les caractéristiques des constructions voisines telles que le type de bâtiment, les dimensions, les paramètres d'implantation sur le terrain, les revêtements, les types de toits, les ouvertures, les accès et les saillies, doivent être considérées afin de s'intégrer au milieu;

7^o les travaux doivent être réalisés avec des matériaux et des détails architecturaux d'une qualité équivalente ou supérieure à celle des constructions voisines ainsi que du bâtiment lui-même, et y être compatibles;

8^o les travaux doivent contribuer à atténuer les irrégularités de hauteur et d'alignement entre les bâtiments en se basant sur :

a) L'alignement dominant et le profil général de la hauteur des bâtiments situés de part et d'autre du tronçon de la voie publique où est situé le projet;

b) les caractéristiques des bâtiments ayant le plus d'intérêt architectural ou urbain parmi les bâtiments situés de part et d'autre du tronçon de la voie publique où est situé le projet;

9^o sauf dans l'unité de paysage Grands parcs (GP), les travaux doivent contribuer à la cohérence de l'îlot, de l'intersection, de la rue ou du secteur environnant selon son usage, sa visibilité et l'importance significative qu'il peut avoir dans la ville.

127.1. Dans l'unité de paysage Artère commerciale (AC), les travaux doivent tendre à respecter les caractéristiques suivantes :

- 1° l'implantation à la limite d'emprise de la voie publique;
- 2° une volumétrie cubique avec toiture plate;
- 3° une composition architecturale tripartite, incluant un rez-de-chaussée ayant une proportion d'ouverture supérieure à 50 %, un corps de bâtiment distinct et un couronnement à parapet;
- 4° un entablement séparant le rez-de-chaussée des étages et supportant l'enseigne commerciale;
- 5° des ouvertures aux proportions verticales d'un minimum de 20 % de la superficie de la façade et d'un maximum de 40 % de la superficie de la façade aux étages;
- 6° des subdivisions verticales soulignant le rythme parcellaire régulier de la rue dans le cas de façades occupant plusieurs lots d'origine;
- 7° des matériaux de revêtement de brique d'argile ou de pierre naturelle grise;
- 8° des bardeaux d'ardoise ou des couvertures métalliques pour les toitures apparentes;
- 9° lorsque le bâtiment comprend un balcon en façade, celui-ci doit être encastré dans le volume principal ou faire saillie d'au plus 0,5 m.

127.22. Dans l'unité de paysage Vieux-Montréal (VM), les travaux visés à l'article 102 doivent tendre à respecter les caractéristiques suivantes :

- 1° l'implantation à la limite d'emprise de la voie publique;
- 2° l'utilisation des matériaux d'origine lorsqu'ils existent encore ou qu'ils sont documentés;
- 3° l'unité et la cohérence du front bâti sur les rues De La Commune et Notre-Dame;
- 4° des matériaux de revêtement de pierre naturelle grise;
- 5° des bardeaux d'ardoise ou des couvertures métalliques pour les toitures apparentes;
- 6° des ouvertures aux proportions verticales d'un minimum de 20 % de la superficie de la façade et d'un maximum de 50 % de la superficie de la façade;
- 7° une volumétrie cubique avec toiture plate;
- 8° une composition architecturale tripartite intégrant des découpages horizontaux et un couronnement à corniche continue ou à parapet.

Immeuble d'intérêt :

Un « immeuble d'intérêt patrimonial » : désigne et comprend un monument historique, un immeuble situé dans un site du patrimoine ainsi qu'un témoin architectural significatif. Il comprend aussi son terrain.

127.23. Les travaux visés à l'article 102 concernant un immeuble d'intérêt doivent tendre à respecter les caractéristiques suivantes :

- 1° le caractère distinctif du bâtiment;
- 2° la protection de chacune des parties ou caractéristiques du bâtiment exprimant les conditions sociales, politiques, économiques ou technologiques représentatives de l'époque de construction du bâtiment;
- 3° le plan et les matériaux d'origine;
- 4° le mode d'implantation;
- 5° des matériaux et des détails architecturaux d'une qualité équivalente ou supérieure à celle d'origine.

.4.2 Requirements for PIIA uses

282.98, a. 76.

226. La catégorie M.7 regroupe les usages résidentiels, les établissements de vente au détail, de services, les industries légères caractéristiques du centre-ville et les équipements collectifs et institutionnels.

282.98, a. 76.

226.1. (Abrogé)

282.35, a. 11; 282.81, a. 10; 282.98, a. 76.

SOUS-SECTION 1

USAGES AUTORISÉS DANS LA CATÉGORIE M.7

282.98, a. 76.

227. La catégorie M.7 comprend :

- 1j les usages résidentiels suivants :
 - ¥ bâtiment abritant un nombre illimité de logements;
 - ¥ gîte touristique;
 - ¥ maison de chambres;
 - ¥ maison de retraite;
- 2j les usages commerciaux spécifiques suivants :
 - ¥ accessoires et appareils électroniques et informatiques;
 - ¥ accessoires personnels;
 - ¥ animaux domestiques, sauf garde et dressage;
 - ¥ antiquités;
 - ¥ articles de bureau;
 - ¥ articles de sport et de loisirs;
 - ¥ carburant;
 - ¥ débit de boissons alcooliques;
 - ¥ épicerie;
 - ¥ établissement de jeux récréatifs;
 - ¥ fleuriste;
 - ¥ librairie;
 - ¥ magasin à rayons;
 - ¥ matériel scientifique et professionnel;
 - ¥ meubles, accessoires et appareils domestiques;
 - ¥ pharmacie;
 - ¥ pièces, accessoires d'automobiles (vente);
 - ¥ prêt sur gages;
 - ¥ quincaillerie;
 - ¥ restaurant, traiteur;
 - ¥ salle de danse;
 - ¥ salle de réception;
 - ¥ salle de réunion;
 - ¥ salle de spectacle;
 - ¥ salle d'exposition;
 - ¥ services personnels et domestiques;

- ¥ véhicules automobiles (location, vente);
 - ¥ vêtements, chaussures;
 - ¥ vins, spiritueux;
- 3j les usages commerciaux additionnels suivants :
- ¥ atelier d'artiste et d'artisan;
 - ¥ bureau;
 - ¥ centre d'activités physiques;
 - ¥ clinique médicale;
 - ¥ école d'enseignement spécialisé;
 - ¥ galerie d'art;
 - ¥ hôtel;
 - ¥ institution financière;
 - ¥ laboratoire dont la quantité utilisée de matières dangereuses ne dépasse pas les seuils prescrits par le Règlement sur la prévention des incendies de Montréal (12-005);
 - ¥ salle de billard;
 - ¥ salle Internet;
 - ¥ salon funéraire;
 - ¥ services personnels et domestiques (sauf blanchisserie et buanderie automatique);
 - ¥ soins personnels;
 - ¥ studio de production;
- 4j les usages industriels suivants :
- ¥ bijouterie, joaillerie, orfèvrerie, horlogerie;
 - ¥ caoutchouc (fabrication avec produits finis, sans moulage ou chauffage);
 - ¥ électriques et électroniques (assemblage et réparation d'appareils et de produits);
 - ¥ électriques et électroniques, petits appareils;
 - ¥ imprimerie;
 - ¥ instruments de musique;
 - ¥ instruments scientifiques et professionnels;
 - ¥ jouets et jeux;
 - ¥ les industries liées aux médias ou aux télécommunications;
 - ¥ miroirs (fabrication avec produits finis);
 - ¥ petits objets et articles (fabrication avec produits finis tels que papier, bois, carton, caoutchouc, plastique, verre);
 - ¥ produits alimentaires pour consommation humaine;
 - ¥ rembourrage;
 - ¥ solutions photographiques (fabrication par mélange à froid sans émanation nuisible);
 - ¥ textile, cuir sans vernissage, fourrure (fabrication de produits) et vêtements;
 - ¥ vidéo et audio (enregistrement, montage et duplication);
- 5j les usages équipements collectifs et institutionnels suivants :
- ¥ activité communautaire ou socioculturelle;
 - ¥ aréna;

- ¥ bibliothèque;
- ¥ caserne;
- ¥ centre de congrès et d'exposition;
- ¥ centre de protection de l'enfance et de la jeunesse;
- ¥ centre de réadaptation;
- ¥ centre de services de santé et de services sociaux;
- ¥ centre d'hébergement et de soins de longue durée;
- ¥ centre hospitalier;
- ¥ école primaire et préscolaire;
- ¥ école secondaire;
- ¥ garderie;
- ¥ institution gouvernementale;
- ¥ jardin communautaire;
- ¥ maison de la culture;
- ¥ musée;
- ¥ parc;
- ¥ piscine;
- ¥ poste de police;
- ¥ poste de pompiers.

282.98, a. 76; 282.101, a. 4.

SOUS-SECTION 2

EXIGENCES RELATIVES À LA CATÉGORIE M.7

282.98, a. 76.

228. Dans un secteur de la catégorie M.7, un local situé au rez-de-chaussée, adjacent à une façade faisant face à un terrain situé dans un secteur de la catégorie M.1 à M.11, doit être occupé par un usage commercial ou par un usage équipement collectif et institutionnel.

Le premier alinéa ne s'applique pas à un local qui n'est adjacent qu'à une façade faisant face au prolongement d'une voie publique principalement située dans un secteur de la catégorie R.1 à R.3, à l'intérieur d'un rayon de 100 m du terrain de cet établissement, ni à un local qui est adjacent à deux façades, lorsque celui-ci rencontre les deux conditions suivantes :

- 1i une façade fait face au prolongement d'une voie publique principalement située dans un secteur de la catégorie R.1 à R.3, à l'intérieur d'un rayon de 100 m du terrain de cet établissement;
- 2i l'autre façade ne fait pas face à un terrain situé dans un secteur de la catégorie M.1 à M.11.

282.98, a. 76.

229. Dans un secteur situé à l'ouest de la rue Amherst où est autorisée la classe B ou C, un établissement exploitant un usage spécifique de la catégorie M.7 occupant le rez-de-chaussée, peut uniquement être prolongé au niveau immédiatement supérieur au rez-de-chaussée s'il occupe une superficie de plancher équivalente ou inférieure à celle occupée au rez-de-chaussée.

282.98, a. 76; 282.109, a. 60.

230. Malgré l'article 182, dans un secteur de la catégorie M.7 situé à l'ouest de la rue Amherst, un usage peut être exercé sous un niveau immédiatement inférieur au rez-de-chaussée dans un bâtiment dont la construction a été autorisée par la Ville le ou après le 17 août 1994.

Toutefois, la superficie de plancher occupée par cet usage ne doit pas excéder 50 m² par établissement, sauf pour un restaurant qui peut être implanté sans limites de superficie.
282.19, a. 24; 282.98, a. 76.

231. Dans un secteur de la catégorie M.7, un usage industriel de cette catégorie doit respecter les exigences suivantes :

- 1j aucune matière explosive ou pouvant présenter des dangers d'émanations ou des déversements toxiques ne peut être utilisée;
- 2j aucune vibration et aucune émission d'odeur, de poussière, de bruit, de vapeur ou de gaz ne doit être perceptible hors de l'établissement;
- 3j aucune lumière éblouissante ne doit être visible hors de l'établissement;
- 4j toutes les opérations, y compris l'entreposage, doivent être réalisées à l'intérieur d'un bâtiment.

282.19, a. 25; 282.98, a. 76.

SOUS-SECTION 3

USAGES CONDITIONNELS ASSOCIÉS À LA CATÉGORIE M.7

282.98, a. 76.

232. Sont associés à la catégorie M.7 :

- 1j les usages commerciaux suivants :
 - ¥ usages spécifiques de la catégorie M.7, au-delà de la limite de superficie prescrite;
- 2j les usages équipements collectifs et institutionnels suivants :
 - ¥ ateliers municipaux;
 - ¥ centrale téléphonique;
 - ¥ collège d'enseignement général et professionnel;
 - ¥ cour de justice;
 - ¥ cour de matériel et de véhicules de service;
 - ¥ cour et gare de triage;
 - ¥ établissement cultuel, tels lieu de culte et couvent;
 - ¥ établissement d'assainissement, de filtration et d'épuration des eaux;
 - ¥ établissement et service liés à la gestion des neiges usées;
 - ¥ gare;
 - ¥ station ou sous-station électrique;
 - ¥ université;
- 3j les usages suivants :
 - ¥ parc de stationnement privé intérieur accessoire à un usage résidentiel dont le nombre d'unités de stationnement excède le nombre maximal autorisé pour cet usage;
 - ¥ parc de stationnement public intérieur.

282.19, a. 25; 282.98, a. 76; 282.109, a. 61.

.4.3 Land use category

Catégories d'affectation du sol

CATÉGORIE ET DESCRIPTION	COMPOSANTES	NOTES
SECTEUR RÉSIDENTIEL Aire à vocation principalement résidentielle comportant aussi des portions mixtes, notamment des rues de commerces et d'habitation.	<ul style="list-style-type: none"> ■ Habitation ■ Commerce ■ Équipement collectif ou institutionnel ■ Équipement et construction requis pour la mise en service du réservoir d'eau potable souterrain existant dans le parc local Étienne-Desmarteau 	<p>La réglementation assure le découpage en zones distinctes des secteurs essentiellement résidentiels, des secteurs à caractère commercial et des ensembles occupés par des équipements collectifs ou institutionnels.</p> <p>Elle détermine les catégories d'usages selon la nature des milieux et le caractère de l'arrondissement. Elle assure, par les modes de gestion des usages, l'insertion harmonieuse des activités non résidentielles : les types d'usages autorisés de plein droit, les usages conditionnels, les limites de superficie, l'obligation de continuité commerciale, le contingentement de certains usages, etc.</p>
SECTEUR MIXTE Aire diversifiée comportant une composition variée d'activités et de l'habitation. Plusieurs de ces secteurs recouvrent des aires présentant un potentiel d'intensification du nombre de logements ou du nombre d'emplois.	<ul style="list-style-type: none"> ■ Habitation ■ Commerce ■ Bureau ■ Équipement collectif ou institutionnel ■ Dans le respect de la cohérence des milieux et en assurant une saine cohabitation des usages, la réglementation reconnaît ponctuellement certaines occupations à caractère industriel présentes lors de l'adoption du Schéma d'aménagement le 29 janvier 2015 	<p>La réglementation définit les zones et détermine les usages autorisés dans chacune selon la nature des milieux, notamment de manière à assurer l'interface entre les ensembles à dominance résidentielle et les zones d'activités plus intensives.</p>
SECTEUR D'ACTIVITÉS DIVERSIFIÉES Aire à dominante économique qui peut accueillir, sous certaines conditions, l'intégration d'un usage résidentiel à proximité du réseau de transport collectif.	<ul style="list-style-type: none"> ■ Commerce ■ Bureau ■ Industrie légère ■ Équipement collectif ou institutionnel ■ Habitation, si compatible avec les usages, l'intensité des nuisances et des risques et la nature du cadre bâti 	<p>Afin de permettre un usage résidentiel dans une zone, une étude de sa compatibilité doit être effectuée en regard des autres usages, de l'intensité des nuisances et des risques et de la nature du cadre bâti.</p>
SECTEUR D'EMPLOIS Aire à vocation économique comportant principalement des activités à caractère industriel ou commercial. Les secteurs d'emplois correspondent à des aires où l'habitation est exclue.	<ul style="list-style-type: none"> ■ Industrie ■ Bureau ■ Commerce ■ Équipement collectif ou institutionnel 	<p>La réglementation définit les zones et détermine les types d'usages autorisés selon la nature des milieux, notamment de manière à limiter aux secteurs d'emplois à caractère industriel les types d'usages générateurs de nuisances majeures.</p>

(suite)

Catégories

d'affectation du sol

CATÉGORIE ET DESCRIPTION

AGRICOLE

Aire réservée à l'agriculture et aux activités agricoles au sens de la LPTAA, qui comprend la culture du sol et des végétaux, l'horticulture, l'acériculture ainsi que l'élevage.

COMPOSANTES

- Agriculture et activité agricole
- Habitation unifamiliale conforme aux droits et privilèges précisés dans la LPTAA
- Commerce et industrie légère complémentaires à l'exploitation agricole, en vertu de la LPTAA
- Installation, équipement ou aménagement de récréation extensive, complémentaires à l'exploitation agricole
- Installation de recherche, d'éducation, de prélèvement scientifique ou d'interprétation qui est reliée à la nature

NOTES

CONSERVATION

Aire réservée à la protection, au rehaussement et à la mise en valeur de la biodiversité ainsi que du patrimoine naturel et paysager, située à l'intérieur du périmètre d'urbanisation ou en zone agricole permanente.

- Installation de recherche, d'éducation, de prélèvement scientifique ou d'interprétation reliée à la nature
- Installation, équipement ou aménagement de récréation extensive
- Aménagement des milieux naturels visant la gestion écologique et l'amélioration de la biodiversité

En zone agricole permanente sont permises les activités agricoles au sens de la LPTAA.

Dans les habitats floristiques désignés en vertu de la *Loi sur les espèces menacées ou vulnérables* ainsi que dans les réserves naturelles établies en vertu de la *Loi sur la conservation du patrimoine naturel*, les usages et activités devront être restreints à ceux autorisés par ces lois.

(suite)

Catégories

d'affectation du sol

CATÉGORIE ET DESCRIPTION	COMPOSANTES	NOTES
GRAND ÉQUIPEMENT INSTITUTIONNEL Aire comportant des constructions et des terrains réservés à des activités institutionnelles qui jouent un important rôle de service dans la communauté montréalaise.	<ul style="list-style-type: none">■ Grand équipement institutionnel (enseignement, soins de santé, sport et culture)■ Équipement collectif ou institutionnel■ Commerce et habitation complémentaires■ Commerce situé au rez-de chaussée en bordure d'une rue du Centre identifiée à la carte 2.1.2 où la continuité commerciale est exigée, ou situés à même le réseau piéton souterrain, à la condition que de tels commerces soient autorisés par un règlement adopté en vertu de l'article 89 de la Charte de la Ville de Montréal ou par une résolution de projet particulier de construction, de modification ou d'occupation d'un immeuble	
COUVENT, MONASTÈRE OU LIEU DE CULTE Aire comportant des constructions et des terrains réservés à des établissements conventuels ou à des lieux de culte.	<ul style="list-style-type: none">■ Immeuble voué aux activités des communautés religieuses comportant des lieux de résidence■ Lieu de culte■ Équipement collectif ou institutionnel■ Commerce et habitation complémentaires	<p>Même s'ils ne sont pas identifiés par une aire d'affectation à la carte 3.1.1, sont visés par cette catégorie d'affectation les lieux de culte compris dans les listes de bâtiments d'intérêt patrimonial et architectural de la Partie II.</p> <p>Dans l'arrondissement de Ville-Marie, cette affectation permet les commerces uniquement dans un local occupé à cette fin avant l'entrée en vigueur du Plan d'urbanisme de la Ville de Montréal, en novembre 2004, à la condition que de tels commerces soient autorisés par un règlement adopté en vertu de l'article 89 de la Charte de la Ville de Montréal ou par une résolution de projet particulier de construction, de modification ou d'occupation d'un immeuble.</p>

(suite)

Catégories d'affectation du sol

CATÉGORIE ET DESCRIPTION	COMPOSANTES	NOTES
GRAND ESPACE VERT OU PARC RIVERAIN Aire réservée aux espaces verts ou naturels d'envergure montréalaise ou situés en rive ainsi qu'aux grands cimetières.	<ul style="list-style-type: none">■ Grand parc■ Parc local■ Parc-nature■ Lieu public■ Réserve naturelle■ Berge et île publiques■ Golf■ Équipement collectif ou institutionnel■ Commerce ou bureau complémentaires aux installations de récréation■ Équipement collectif Casino, commerces et installations complémentaires	La réglementation n'autorise l'équipement collectif Casino, commerces et installations complémentaires que sur les lots 2 988 178, 2 988 179 et 2 988 180 du cadastre du Québec et prévoit cet usage sans limite de superficie de plancher.
GRANDE EMPRISE OU GRANDE INFRASTRUCTURE PUBLIQUE Aire vouée aux activités de transport et aux équipements à l'usage des services publics pouvant générer des nuisances importantes pour le voisinage.	<ul style="list-style-type: none">■ Infrastructure portuaire, ferroviaire ou aéroportuaire■ Équipement ou infrastructure d'assainissement et de traitement des eaux■ Équipement majeur de collecte, de tri, de valorisation et d'élimination de matières résiduelles■ Équipement majeur d'entreposage et d'élimination des neiges usées	

NOTES GÉNÉRALES :

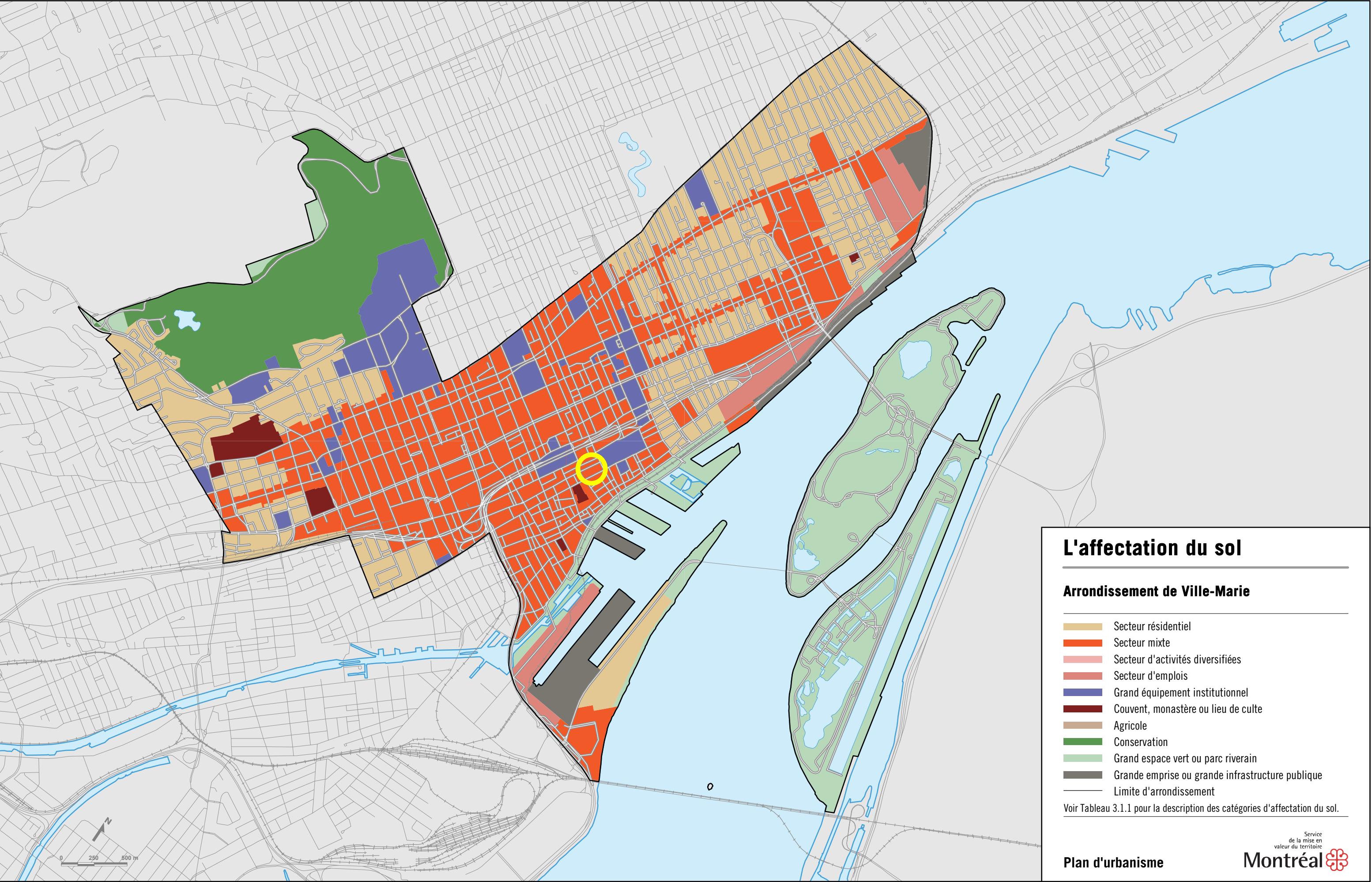
La partie II du Plan inclut une carte par arrondissement qui identifie les parcs locaux dont la vocation est confirmée par le Plan d'urbanisme. La conversion d'un parc ou d'une de ses parties, à des fins autres que d'usage complémentaire ou d'équipement collectif d'envergure locale, requiert une modification du Plan d'urbanisme.

Malgré le premier alinéa, dans le parc local Étienne-Desmarteau, les équipements et constructions requis pour la mise en service du réservoir d'eau potable souterrain existant sont autorisés.

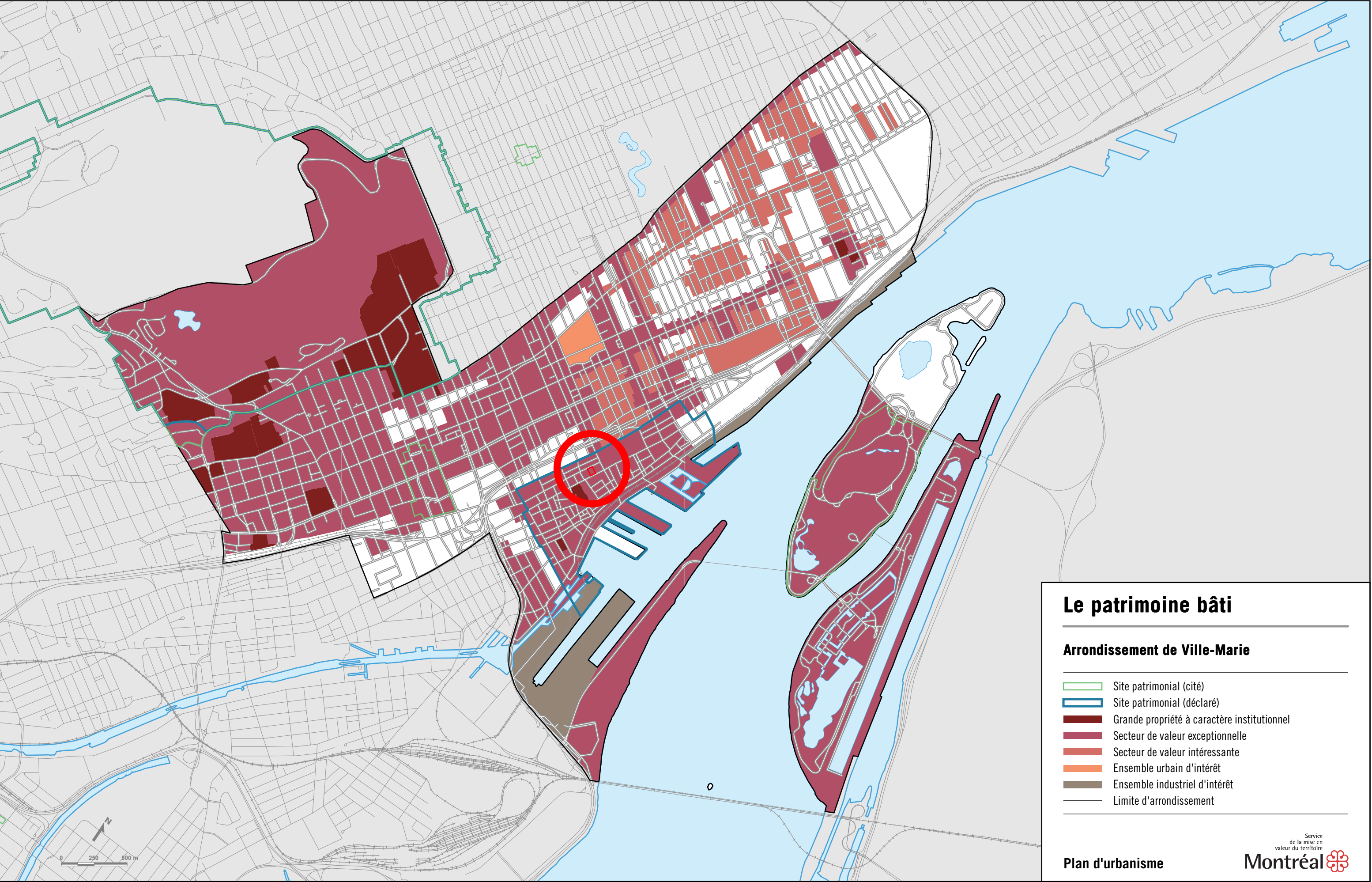
Les parcs, les cimetières, les espaces de conservation, les installations essentielles au fonctionnement du métro, les infrastructures publiques autres que celles comprises dans l'affectation du sol « Grande emprise ou grande infrastructure publique » sont autorisées dans toutes les catégories d'affectation du sol.

Malgré l'alinéa qui précède, les cimetières ne sont pas autorisés dans l'affectation « Agricole ». De même, les gares de triage et les cours de voirie ne sont pas autorisées dans la zone agricole permanente telle qu'illustrée à la carte 2.5.1 intitulée « Les parcs et les espaces verts ».

La délimitation des aires d'affectation du sol doit être interprétée en fonction des emprises de rues et de ruelles ainsi que des limites cadastrales existant au 1^{er} avril 2015.



.4.4 Built heritage



Bâtiments d'intérêt patrimonial et architectural hors secteurs de valeur exceptionnelle

25 Arrondissement de Ville-Marie

La liste suivante identifie les bâtiments d'intérêt patrimonial et architectural situés à l'extérieur des secteurs de valeur exceptionnelle et des grandes propriétés à caractère institutionnel de l'arrondissement (voir carte précédente).

La liste identifie également l'ensemble des lieux de culte d'intérêt patrimonial de l'arrondissement. Tel qu'indiqué au tableau 3.1.1, ces lieux de culte sont couverts par la catégorie d'affectation du sol « Couvent, monastère ou lieu de culte ».

Conformément à l'objectif 15, les bâtiments identifiés dans la liste suivante et l'ensemble de ceux situés dans les secteurs de valeur exceptionnelle ou dans les grandes propriétés à caractère institutionnel doivent faire l'objet d'un contrôle serré, quant aux travaux de construction, de rénovation et de démolition, par les outils réglementaires appropriés, notamment les règlements sur les plans d'implantation et d'intégration architecturale (PIIA).

Les lieux de culte

- | | | |
|---|--|---|
| ■ 2550, avenue Gascon
(Our Lady of Czestochowa) | ■ 205, rue De La Gauchetière
(Mission catholique chinoise du Saint-Esprit) | ■ 430, rue Sainte-Catherine Ouest
(Chapelle Notre-Dame-de-Lourdes) |
| ■ 1455, avenue Papineau
(Centre évangélique) | ■ 1201, rue De La Visitation
(Église Saint-Pierre-Apôtre) | ■ 463, rue Sainte-Catherine Ouest
(St. James United) |
| ■ 1640, avenue Papineau
(Temple du Réveil/Taylor's Church) | ■ 2388, rue D'Iberville
(Saint-Michael's Ukrainian Catholic) | ■ 635, rue Sainte-Catherine Ouest
(Christ Church Cathedral) |
| ■ 137, avenue Du Président-Kennedy
(Saint John the Evangelist) | ■ 2015, rue Dorion
(Église Sainte-Marguerite-Marie) | ■ 1439, rue Sainte-Catherine Ouest
(St. James the Apostle) |
| ■ 460, boulevard René-Lévesque Ouest
(St. Patrick) | ■ 2151, rue Fullum
(Église Saint-Eusèbe-de-Verceil) | ■ 400, rue Saint-Paul Est
(Chapelle Notre-Dame-de-Bon-Secours) |
| ■ 1153, rue Alexandre-De-Sève
(Église Sainte-Brigide-de-Kildare) | ■ 1235, rue Lambert-Closse
(Évangél Pentecostal Church) | ■ 1850, rue Sherbrooke Ouest
(Masonic Memorial Temple) |
| ■ 2000, rue Alexandre-De-Sève
(Église Sacré-Coeur-de-Jésus) | ■ 110, rue Notre-Dame Ouest
(Basilique Notre-Dame) | ■ 1101, rue Stanley
(St. George's Anglican) |
| ■ 1202, rue De Bleury
(Le Gesù) | ■ 1429, rue Poupart
(Association missionnaire internationale
des Adventistes du 7 ^e jour) | ■ 2097, rue Union
(People's Church of Montréal) |
| ■ 2020, rue De Bordeaux
(Notre-Dame-de-Guadalupe/
Sainte-Marguerite-Marie Alacoque) | ■ 3415, rue Redpath
(St. Andrew and St. Paul) | |
| ■ 1085, rue De La Cathédrale
(Cathédrale Marie-Reine-du-Monde) | ■ 110, rue Sainte-Catherine Est
(Église unie Saint-Jean) | |
| ■ 1151, rue De Champlain
(Saints-Pierre-et-Paul/St. Luke's Episcopalian) | ■ 2310, rue Sainte-Catherine Est
(Église Saint-Vincent-de-Paul) | |

Les édifices scolaires

- | | | |
|--|--|--|
| ■ 1808, avenue Papineau
(École Gabriel-Souart) | ■ 1705, rue De La Visitation
(Académie Garneau) | ■ 2275, rue Fullum
(École Saint-Eusèbe) |
| ■ 301-305, boulevard De Maisonneuve Est
(École Saint-Jacques) | ■ 2743, rue De Rouen
(École Frontenac) | ■ 1960, rue Poupart
(École Gédéon-Ouimet) |
| ■ 1097, rue Berri
(Académie Marchand) | ■ 2237, rue Fullum
(École Jean-Baptiste-Meilleur) | ■ 1250, rue Sanguinet
(Alexandra School) |

Bâtiments d'intérêt patrimonial et architectural hors secteurs de valeur exceptionnelle

25 Arrondissement de Ville-Marie

Les édifices publics

- 2050, rue Amherst
(Bain Généreux)
- 1945, rue Fullum
(Poste d'incendie no 19)
- 2383, rue Notre-Dame Est
(Vespasienne du parc Bellerive)
- 1125, rue Ontario Est
(Marché Saint-Jacques)
- 715, rue Peel
(Bureau de poste central)
- 2070, rue Peel
(Montreal Amateur Athletic Association)
- 227, rue Riverside
(Station de pompage Riverside)
- 2000, rue Saint-Antoine Est
(Usine de pompage Craig)

Les habitations

- 1151, rue Alexandre-De-Sève
(Presbytère sur le site de
L'Église Sainte-Brigide-de-Kildare)
- 1310, rue Alexandre-De-Sève
(Immeuble J.-Edmond-Morin Ltée)
- 1167, rue Berri
(Appartements Roberval)
- 1174, rue De Champlain
(Ancienne sacristie de l'Église
Sainte-Brigide-de-Kildare)
- 530, rue De La Gauchetière Est
(Maison Marie-Hélène-Jodoin)
- 1425-1439, rue Stanley
(Appartements Stanley)

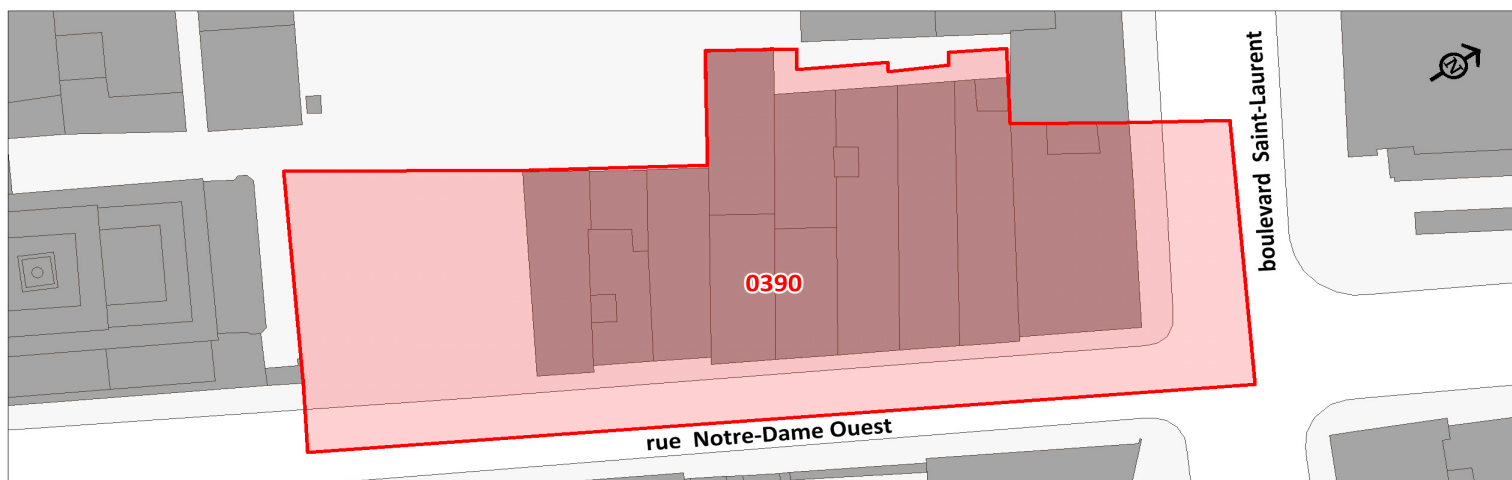
Les édifices commerciaux

- 1400, boulevard René-Lévesque Est
(Maison de Radio-Canada)
- 1050, Côte Du Beaver-Hall
(Bell Canada)
- 800, rue De La Gauchetière Ouest
(Place Bonaventure)
- 1647, rue De La Visitation
(Maison L'Archevêque)
- 1551, rue Ontario Est
(Banque d'Épargne, succursale Ontario
et Alexandre-De-Sève)
- 1430, rue Peel
(House of Seagram)
- 1455, rue Peel
(Hôtel Mont-Royal)
- 1470, rue Peel
(Hermes Building)
- 155, rue Saint-Antoine Ouest
(Tramways Building)
- 2085, rue Drummond
(La Citadelle/Emmanuel Congregational)

Les édifices industriels

- 1930, avenue Papineau
(Montreal Dairy Company Ltd.)
- 1030, rue Cheneville
(Canadian Cork Cutting Company)
- 20-50, rue Des Soeurs-Grises
(Terminal Warehousing and
Cartage Company)
- 1425, rue Du Havre
(Ateliers Hochelaga)
- 850, rue Mill
(St. Lawrence Engine Works)
- 930-990, rue Mill
(Ogilvie Flour Mill Company Ltd.)
- 2025, rue Parthenais
(Knit-To-Fit Company)
- 2, Port de Montréal
(Élévateur à grains no 5)
- 3, Port de Montréal
(Entrepôt frigorifique du Port de Montréal)
- 987-991, rue Côté
(S. Davis & Sons Cigar Manufacturers
intégrant des vestiges de l'ancienne
Free Presbyterian Church)

.4.5 Notre-Dame Ouest zoning sheet



Si votre propriété est située proche de la limite de la zone, communiquez avec : permis.inspections.ville-marie@ville.montreal.qc.ca

District électoral

Saint-Jacques

Usages prescrits

M.7C

Zone de mixité autorisant les commerces et les services de moyenne intensité : un usage commercial ou industriel est autorisé à tous les niveaux

Densité et implantation

Densité maximale	Taux d'implantation Min.	Note
6	0	S.O.
Mode d'implantation	Taux d'implantation Max.	
C	100	

Hauteur, surhauteur et marges

Hauteur minimale / maximale en étage	Surhauteur maximale en mètres	Marge latérale minimale
Min: S.O. Max: S.O.	S.O.	3
Hauteur minimale / maximale en mètres	Note	Marge arrière minimale
Min: 11 Max: 23	S.O.	4

Patrimoine

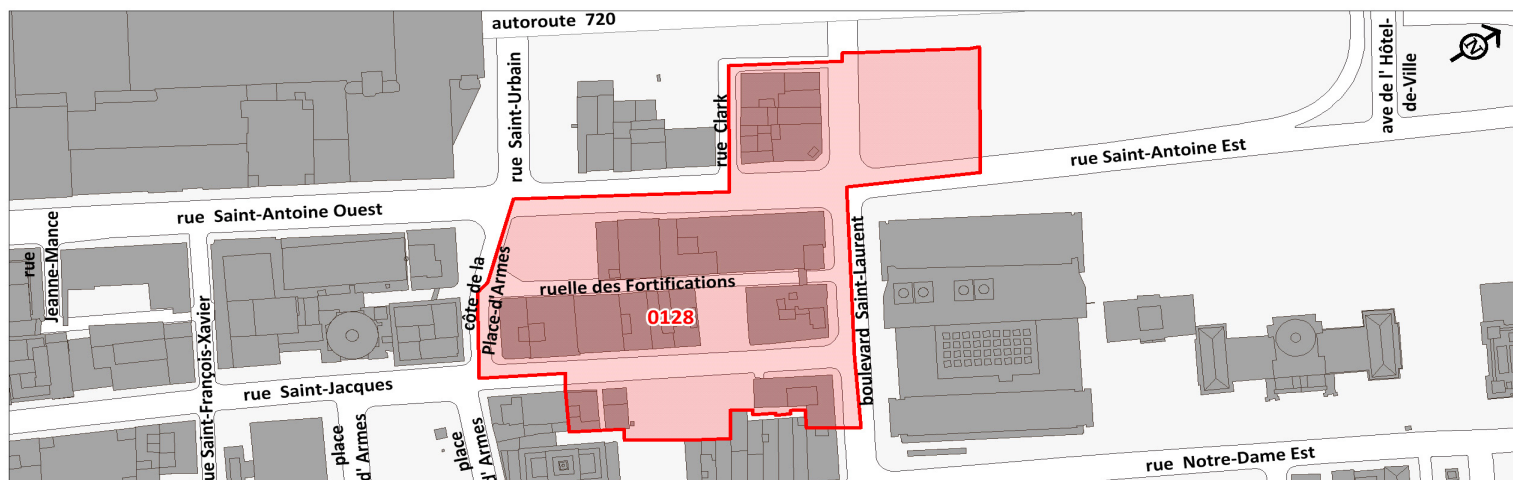
Statut patrimonial	Aire de protection
Le site patrimonial déclaré de Montréal	S.O.

Unité de paysage

Vieux-Montréal

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.4.6 St-Jacques zoning sheet



Si votre propriété est située proche de la limite de la zone, communiquez avec :

permis.inspections.ville-marie@ville.montreal.qc.ca

District électoral

Saint-Jacques

Usages prescrits

M.7C

Zone de mixité autorisant les commerces et les services de moyenne intensité : un usage commercial ou industriel est autorisé à tous les niveaux

Densité et implantation

Densité maximale	Taux d'implantation Min.	Note
6	0	S.O.
Mode d'implantation	Taux d'implantation Max.	
C	100	

Hauteur, surhauteur et marges

Hauteur minimale / maximale en étage	Surhauteur maximale en mètres	Marge latérale minimale
Min: S.O. Max: S.O.	S.O.	4
Hauteur minimale / maximale en mètres	Note	Marge arrière minimale
Min: 16 Max: 44	S.O.	4

Patrimoine

Statut patrimonial	Aire de protection
Le site patrimonial déclaré de Montréal	S.O.

Unité de paysage

Boulevard Saint-Laurent, Vieux-Montréal

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.5 Geotechnical Study – EXP Services Inc.



**Public Services and Procurement
Canada**

**Geotechnical study
New Judicial Complex of Montreal
46 St-Jacques Street, Montreal (Quebec),
Canada**

**Final report
(English translation)**

Les Services EXP inc.
8487, Avenue Albert-Louis-Van-Houtte
Montréal, QC H1Z 4J2
Phone: +1.514.521.4290
www.exp.com

Public Services and Procurement Canada

Geotechnical study New Judicial Complex of Montreal 46 St-Jacques Street, Montreal (Quebec), Canada

Final report
(English translation)

Project n°:
MTR-00255784-A0-005021

Submitted to:
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Project manager
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Date:
December 2nd 2019



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- Appendix B: Explanatory notes relating to borehole logs
Borehole logs
- Appendix C: Results of laboratory tests
- Appendix D: Compilation table of the chemical analyses
- Appendix E: Certificate of chemical analyses
- Appendix F: Grid for the management of excavated soils



1. Introduction

According to the information obtained in the service mandate – Standing offer – Architecture and Engineering, Public Services and Procurement Canada wishes to build a building on 46 St-Jacques Street in Montreal. The building would be host to the Court Administration Service (CAS) and the Administrative Tribunals Support Service of Canada (ATSSC).

The professional services of EXP Services Inc. were retained by Public Services and Procurement Canada to develop a functional and technical program (FTP) in relation to a construction project for a building that will become the new judicial complex of Montreal. As part of this FTP, a geotechnical study was suggested to the client as their conclusions and recommendations are important inputs for the development of the FTP.

According to the received information, three (3) environmental characterization studies of soils had already been carried out on the site under study before the writing of this study. Firstly, a preliminary environmental site assessment – Phase II was carried out by Solroc Group in 2007. Secondly, an environmental site assessment (phase II) was carried out by Groupe ABS. Finally, an environmental site assessment (Phase I) and a further environmental characterization of soils (Phase III) were carried out by the firm Akifer in 2019.

As part of these studies, surveys had reached a maximum depth of 4.9 metres and no geotechnical recommendation had been formulated.

This study was thus carried out in order to determine the nature and some characteristics of the soils and rock in place, and to express the geotechnical recommendations necessary to the design of the foundations and the construction of the proposed building.

No environmental characterization was initially planned in the present study given that the subject had already been exhaustively studied. However, organoleptic indications of hydrocarbon contamination were noticed while the work was carried out. By mutual agreement with the client, we undertook a few chemical analyses in a laboratory, and the results were compared to the various generic criteria established in the *Guide d'intervention - Protection des sols et réhabilitation des terrains contaminés* by the *Ministère de l'Environnement et de la Lutte contre les changements climatiques* (MELCC, March 2019) and various federal criteria.

This environmental characterization is for information purposes only and it is not an environmental site assessment; therefore, it cannot be used to determine the presence or absence of real or potential contaminating sources on the site under study.

This report includes the description of the field investigation work carried out on site and in the laboratory, the summary of the obtained results as well as our conclusions and recommendations.



2. Site description

The site under study is located on 46 St-Jacques Street in Montreal between St-Jacques and Notre-Dame West streets, near Place d'Armes in the Ville-Marie district.

Except for a slight downslope on both sides of the parking towards St-Jacques and Notre-Dame West streets, the site is globally flat. Four (4) buildings, whose height varies between 2 and 23 floors, are adjacent to the site

At the moment of the writing of this report, the site under study is used as a parking lot administrated by the City of Montreal.



3. Investigation work

The geotechnical investigation work aiming at determining the nature and some characteristics of the soils and rock under study were carried out on site and in the laboratory.

3.1 Field work

The field work, which was carried out between October 9 and 21, 2019, consisted in the realization of three (3) boreholes at the location of the proposed building.

The verification of the location of underground public services (sewers, aqueducts, gas, electricity and phone) with the competent authorities (Info-Excavation and the municipality) was done by our services. The on-site location of boreholes was determined based on location certificate (Jean-Louis Chénard, minute 9455, dated March 28, 2019) and on-site measurements through visible points of reference.

The position of the boreholes as part of this mandate is shown on the borehole location plan (L-01) attached in appendix A. The boreholes were levelled and all the elevations mentioned in this report are geodetic.

The boreholes, identified as F-19-01, F-19-02 and F-19-04, were done with a truck-mounted hydraulic drill by using hollow-stem augers drilled by rotation for the first 12 metres of boring F-19-02, then by using NW casing (89-millimetre wide) drilled by rotation and washing for the rest of the boring work. These boreholes reached a depth varying between 33.93 and 35.36 metres under the surface of the present field. Boring F-19-03, that was initially planned, was cancelled for lack of time given that the depth of the basement rock was greater than planned. However, the information collected with the three boreholes is deemed enough for the requirements of this study.

A standard 51-millimetre-wide split-spoon sampler was used for sample tests and for the measurement of the "N" index of the Standard Penetration Test (ASTM D1586-11). This index enables the estimation of the density of the penetrated soils. When core tubes of bigger diameters were used, "N" indexes were corrected accordingly. The basement rock was continuously sampled using a double-tube core barrel of NQ caliber (48-millimetre wide) over a length of approximately 2.85 to 3.63 metres.

In order to avoid any cross-contamination, the tools that have to be in contact with the samples that were sampled for environmental analysis purposes were carefully cleaned with a brush before each test, and then successively rinsed with distilled water, acetone and hexane, then again with acetone and distilled water so as to get rid of any substance that could be a contaminating source. The samples were kept cool in hermetic glass containers put in a portable cooler. These procedures comply with the



recommendations of the sampling guides for environmental analysis purposes and the *Guide de caractérisation des terrains* (2003) by the MELCC.

An open standpipe that was perforated in its lower part was left in each borehole in order to specify the level of groundwater left after the end of the field work. Flushmount aluminum service boxes were placed at the surface in order to protect the open standpipes.

All the field work was carried out under the supervision of a technician. The boring reports enclosed in appendix B of this report display the information collected on the field.

3.2 Laboratory

3.2.1 Geotechnical tests

All the samples that were tested were sent to the laboratory, where they were visually identified by a geotechnical engineer.

Subsequently, the following laboratory test program was carried out:

Tests	Standard	Number
Natural water content (w)	LC 21-201	2
Sieve analysis	LC 21-040	16
Sedimentation analysis	BNQ 2501-025/2013	2
Unconfined compression on rock test	ASTM D7012	2

The results of these tests and analyses are included in appendix C of this report. The samples that were not used for the laboratory tests will be stored over a period of six months from the date of their sampling; they will then be destroyed unless otherwise stated.

3.2.2 Chemical analyses

Although this geotechnical study was not meant to be an environmental characterization of the materials and the soils that were come across, organoleptic indications of hydrocarbon contamination were found at borehole F-19-02, between 9.40 and 12.19 metres deep. As agreed with the client, the tested samples were sent to our laboratory, where they were frozen so as to extend the preservation period. Subsequently, the following chemical analysis program was carried out:



Parameters	Analyses
	Soils
Petroleum hydrocarbon C ₁₀ to C ₅₀	3
Metals (14 metals)	3
Polycyclic aromatic hydrocarbon (PAH)	3
Monocyclic aromatic hydrocarbon (MAH)	3
F1 (C ₆ -C ₁₀)	3
F2 (C ₁₀ -C ₁₆)	3
F3 (C ₁₆ -C ₃₄)	3
F4 (C ₃₄ -C ₅₀)	3

Given the low amount of chemical analyses, no specific measure of quality control was deemed necessary. Nevertheless, the subcontracting laboratory implemented their own measures of quality control that are required by their accreditation.

The certificate of chemical analyses that was delivered by the laboratory is included in appendix E of this report. The detailed results of the internal measures of quality control are displayed there. As for appendix D, it presents a compilation table of the results of the chemical analyses.



4. Nature and characteristics of the soils and the rock

The boreholes enabled the establishment of the stratigraphy presented in the following paragraphs and summed up in the table below.

Borehole:	F-19-01			F-19-02			F-19-04		
Element	Depth (m)	Elevation (m)	Thickness (m)	Depth (m)	Elevation (m)	Thickness (m)	Depth (m)	Elevation (m)	Thickness (m)
Bituminous pavement	0.00 – 0.10	15.47 – 15.37	0.10	0.00 – 0.08	15.74 – 15.66	0.08	0.00 – 0.08	15.62 – 15.54	0.08
Granular base (alternating crushed stone and bituminous pavement)	0.10 – 0.61	15.37 – 14.86	0.51	0.08 – 0.61	15.66 – 15.13	0.53	0.08 – 0.43	15.54 – 15.19	0.35
Fill materials / residual materials	0.61 – 3.84	14.86 – 11.63	3.23	0.61 – 4.27	15.13 – 11.47	3.66	0.43 – 3.05	15.19 – 12.57	2.62
First sandy deposit (SM)	3.84 – 7.62	11.63 – 7.85	3.78	4.27 – 10.67	11.47 – 5.07	6.40	3.05 – 12.40	12.57 – 3.22	9.35
Silty-sandy deposit (SM or ML-CL)	7.62 – 8.59	7.85 – 6.88	0.97	10.67 – 15.24	5.07 – 0.50	4.57	12.40 – 19.81	3.22 – (-4.19)	7.41
Second sandy deposit (SM)	8.59 – 32.51	6.88 – (-17.04)	23.92	15.24 – 30.71	0.50 – (-14.97)	15.47	19.81 – 30.30	(-4.19) – (-14.68)	10.49
Bedrock	32.51 – > 35.36	-17.04 – < (-19.89)	2.85*	30.71 – > 34.01	(-14.97) – < (-18.27)	3.30*	30.30 – > 33.93	(-14.68) – < (-18.31)	3.63
End of borehole	35.36	(-19.89)	---	34.01	(-18.27)	---	33.93	(-18.31)	---

The soils and materials were classified in accordance with the ASTM D2487 (USCS) standard depending on the results of the granulometric analysis; unless tests were also carried out on the thin part (< 80 µm), the SM category was not subdivided (SM / SC / SC-SM) since this classification requires the appropriate tests on the thin part.

4.1 Pavement structure

4.1.1 Bituminous pavement

At the location of the boreholes, a layer of bituminous pavement with a thickness varying between 75 and 100 millimetres was found.



4.1.2 Granular base

Under the bituminous pavement on the surface, through the boreholes, an alternation between crushed stone and bituminous pavement was sampled with a split spoon over a thickness varying from 0.35 to 0.53 metre.

4.2 Fill materials / residual materials

Then, fill materials mixed with residual materials were found up to a depth varying from 3.05 to 4.27 metres of the current surface of the field. Demolition debris, combustion residues, macadam and fragments of bituminous pavement were found. Hydrocarbon odours were detected in these fill materials at a depth varying between 2.44 and 3.05 metres through borehole F-19-01 and between 1.22 and 1.83 through borehole F-19-02.

These fill materials containing residual materials were exhaustively studied in the past environmental characterizations (2007, 2011 and 2019). Their environmental management is not discussed as part of this geotechnical study.

4.3 First sandy deposit

The natural soil was then intercepted at depths varying between 3.05 and 4.27 metres. It is first a deposit constituted of fine to medium sand, with a little silt to silty, traces of gravel to gravelly. The colour of this deposit is brown.

Six (6) sieve analyses were carried out on samples that were deemed representative of this first sandy deposit. The results are shown in the table below.

Borehole / Sample	Depth (m)	Proportion of the components (%)			Unified classification (USCS)
		Gravel	Sand	< 80µm	
F-19-01 / CF-10	4.88 – 5.49	19	57	24	SM
F-19-02 / CF-9	4.27 – 4.88	0	84	16	SM
F-19-02 / CF-15	8.38 – 8.99	0	79	21	SM
F-19-04 / CF-10	4.88 – 5.49	7	73	20	SM
F-19-04 / CF-13	6.86 – 7.47	10	65	25	SM
F-19-04 / CF-17	10.67 – 11.28	1	82	17	SM



According to the Unified Soil Classification System (USCS), the deposit can be qualified as silty sand of SM type.

Based on the N indexes measured during the standard penetration test (SPT), the density of this deposit is usually from medium to dense. The average value of the N index on the three boreholes of this deposit is 30 excluding refusals.

A loose density of the deposit was however noticed through borehole F-19-04, at a depth between 3.66 and 4.88 metres.

4.4 Silty-sandy deposit

The presence of a finer soil deposit can be noticed, composed of silt and sand to little sand, brown becoming grey at around 9.91 metres with traces to little gravel. The thickness of this layer greatly varies depending on the borehole from 0.97 to 7.41 metres.

Four (4) sieve analyses were carried out on samples that were deemed representative of this silty-sand deposit. The results are shown in the table below.

Borehole / Sample	Depth (m)	Proportions of the components (%)				Water content (%)	Unified classification (USCS)
		Gravel	Sand	Silt	Clay		
F-19-01 / CF-14	7.62 – 8.23	0	14	78	8	23.6	U/D
F-19-02 / CF-20	12.19 – 12.80	0	5	86	9	-	U/D
F-19-04 / CF-19	13.72 – 14.33	3	53	44		-	SM
F-19-04 / CF-23	18.29 – 18.90	19	32	49		-	SM

U/D – Undetermined

Based on the N indexes measured during the standard penetration test (SPT), the density of this deposit can be qualified of medium dense to very dense. The average value of the N index on the three boreholes of this deposit is 27 excluding refusals.

4.5 Second sandy deposit

A second sandy deposit with roughly the same characteristics as the first intercepted sandy deposit, but globally more gravelly, was found through all the boreholes at depths varying between 8.59 and 19.81 metres. The thickness of this deposit varies between 10.49 and 23.92 metres.

Six (6) sieve analyses were carried out on samples that were deemed representative of this second sandy deposit. The results are shown in the table below.



Borehole / Sample	Depth (m)	Proportion of the components (%)			Unified classification (USCS)
		Gravel	Sand	< 80 µm	
F-19-01 / CF-20	15.24 – 15.85	36	47	17	SM
F-19-01 / CF-25	22.86 – 23.47	28	56	16	SM
F-19-01 / CF-30	30.48 – 31.09	13	64	23	SM
F-19-02 / CF-22	15.24 – 15.85	7	62	31	SM
F-19-02 / CF-26	21.34 – 21.95	22	58	20	SM
F-19-04 / CF-27	24.38 – 24.99	6	79	15	SM

Based on the N indexes measured during the standard penetration test (SPT), the density of this deposit is usually from medium to very dense with an average value of 31.

The presence of pebbles and blocks was noticed through borehole F-19-02, at a depth between 27.48 and 30.71 metres, approaching the bedrock.

4.6 Bedrock

The bedrock was reached at a depth varying between 30.30 and 32.51 metres (geodetic elevation -14.68 to -17.04 metres). At borehole F-19-01, the rock is a grey mafic dyke with fractures at an angle of 25-45° from the vertical as well as a few millimetrical subvertical fractures filled with calcite. Based on the measured RQD, the quality varies from average to good.

Through borehole F-19-02, a black shale of average quality was found, and the presence of a subvertical dyke was intercepted from a depth of 31.70 metres.

Finally, through borehole F-19-04, a black shale, typical of the Utica shale formation of the region, containing a few thin fractures at an angle of 20-45° from the vertical, filled with calcite, was found. The rock is of very good quality based on the RQD measured on the field and at the laboratory.

Two (2) tests were performed to measure the unconfined compressive strength of rock samples, whose results are shown in the table below. The presence of a subvertical fracture in the rock samples from borehole F-19-02 prevented the preparation of a sample of acceptable quality to successfully complete a resistance test in uniaxial pressing.



Borehole	Sample	Recovery (%)	RQD (%)	Depth (m)	Unconfined compressive strength (MPa)	Petrographic facies
F-19-01	CR-32	100	60	33.10 – 33.22	176.3	Mafic dyke
F-19-04	CR-31	100	100	30.72 – 30.78	39.6	Shale

Based on the obtained results, it can be noticed that the intercepted facies greatly affects the obtained pressing resistance. The unconfined compressive strength of the tested shale sample can be qualified as moderated¹. As for the F-19-01 / CR-32 sample from the mafic dyke, the unconfined compressive strength can be qualified as high.

¹ According to *The International Society for [Rock Mechanics](#) (ISRM) standard terminology for UCS*, resistance to uniaxial pressing is qualified as follows: < 5 MPa: very low, 5 - 25 MPa: low, 25 – 50 MPa: moderate, 50 – 100 MPa: average, 100 – 250 MPa: high, and >250 MPa: very high.



5. Groundwater

The level of groundwater was measured in the open standpipes left in the boreholes. The results of the sampling are summed up in the following table:

Borehole	Date of the end of the boring	Date of measure	Stabilization time (days)	Elevation from the surface of the ground (m)	Level of groundwater	
					Depth (m)	Elevation (m)
F-19-01	2019-10-11	2019-10-28	17	15.47	Dry at 13.71	Dry at 1.76
		2019-11-11	31		Dry at 13.71	Dry at 1.76
F-19-02	2019-10-15	2019-10-28	13	15.74	10.39	5.35
		2019-11-11	27		10.46	5.28
F-19-04	2019-10-21	2019-10-28	7	15.62	13.98	1.64
		2019-11-11	21		13.70	1.92

These measures are provided for information purposes only since the level of the groundwater table can vary depending on rainfall and on the seasons. These measures can thus be different from the real level of the groundwater table.

Organoleptic indications of groundwater contamination through borehole F-19-02 were noticed during the work. An observation well could not be installed in the borehole as this equipment was not initially planned, but a well was installed in borehole F-19-01. Unfortunately, this well was dry, so the water could not be sampled.



6. Interpretation of the results of the chemical analyses

6.1 Interpretation according to provincial criteria

The results of the chemical analyses were interpreted according to the generic criteria defined in section 8.2 of the *Guide d'intervention* by the MELCC (March 2019) about soil protection and the rehabilitation of contaminated sites.

As for the soils, three levels of generic criteria are defined for multiple substances, and these levels (A, B, C) can be summed up as follows:

- Criterion A: Background content for the inorganic parameters and limit of quantification for the organic parameters.
- Criterion B: Maximum acceptable limit for residential sites or sites for institutional use (primary or secondary educational institutions, childcare centres, daycare centres, hospital centres, residential and long-term care centres, rehabilitation centres, child and youth protection centres, institutional facilities) and the first metre of play areas in municipal parks.
- Criterion C: Maximum acceptable limit for industrial, commercial, non-sensible and recreative institutional sites (bike lanes and municipal parks, except for the first metre of play areas), as well as those intended to constitute a roadway or a sidewalk.

These generic criteria are also used to identify how the contaminated soils must be treated and positioned during excavation work, in accordance with the guidelines of the *Grille de gestion des sols excavés* in appendix 5 of the *Guide d'intervention*. Furthermore, maximum concentrations were established in the *Règlement sur l'enfouissement des sols contaminés (RESC)*, from which landfilling is prohibited, which implies that the contaminated soils at this level must be treated to an acceptable level before being buried.

Given the intended purpose of the site under study, which is a non-sensible government building, the "C" criterion must be considered as the effective contamination threshold.

The different values of these generic criteria and maximum landfill concentrations (RESC) are also included in the summary table of the results of chemical analyses attached in appendix D. The certificate of chemical analyses is also attached in appendix E.

The following table summarizes the results obtained based on the generic criteria detailed in section 6.1.



Samples	Depth of the sample (m)	Type of soil	Analyzed parameters ⁽¹⁾			Considered level of contamination
			Results based on generic criteria ⁽¹⁾⁽²⁾			
			HP C ₁₀ -C ₅₀	PAH	Metals ⁽³⁾	
F-19-02 / CF-17	9.91 – 10.21	Natural soil	C-RESC	B-C	≤ A	C-RESC
F-19-02 / CF-18	10.67 – 11.28	Natural soil	B-C	B-C	≤ A	B-C
F-19-02 / CF-21	13.72 – 14.33	Natural soil	≤ A	≤ A	A-B	A-B

(1) *Guide d'intervention – Protection des sols et réhabilitations des terrains contaminés* (MELCC, 2019);

(2) The certificate of analyses takes precedence over this table;

(3) Fourteen metals (arsenic, barium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, tin and zinc).

These results were also compiled and presented in summary table D.1 in appendix D.

Interpreted according to the generic criteria described above, the results of the chemical analyses show that the concentrations of petroleum hydrocarbons (HP C₁₀-C₅₀) obtained for the F-19-01 / CF-17 sample exceed the "C" criterion. These soils are incompatible with the current and planned use of the site.

As for the other parameters, the results demonstrated that the concentrations for the analyzed samples were lower than criterion C for the chosen parameters. These soils are compatible with the current use of the site. However, it is important to note that regardless of whether or not they are compatible with the use of the site, the excavated soils must be subjected to management, as presented in section 6.4.

6.2 Interpretation according to federal criteria (CCME)

At the request of the client Mr. Frédéric Boily (SPAC), the samples were also submitted to HP C₆-C₅₀ (F1 to F4) analyses, in accordance with Canada-wide standards of the Canadian Council of Ministers of the Environment (CCME) from 2008.

Thus, the following tables show the analytical findings of F1 to F4 fractions of petroleum hydrocarbon from the Maxxam certificate (B954965) regarding environmental sampling of soils through borehole F-19-02, at a depth between 9.91 and 14.33 metres on the site under study located on 46 St-Jacques Street in Montreal. They also compare other substances subjected to the *Canadian Soil Quality Guidelines: Protection of Environmental and Human Health* criteria. Given the depth of the contamination (> 10 metres), humans are unlikely to come into direct contact with the soil, so the recommendations for environmental quality have been adopted (RQS_E).



		Results compared to the Canada-wide standards (CCME)		
		Coarse-textured soils, commercial use, underground (> 3m)		
Sample		F-19-02 / CF-17	F-19-02 / CF-18	F-19-02 / CF-21
Depth (m)		9.91 – 10.21	10.67 – 11.28	13.72 – 14.33
Parameter	Criteria (mg/kg)	Results (mg/kg)		
Exposure pathway: vapour inhalation (indoor)				
F1 C ₆ - C ₁₀	320	330	33	<10
F2 C ₁₀ - C ₁₆	1700	3000	4600	15
F3 C ₁₆ - C ₃₄	S.O.	3500	3700	<50
F4 C ₃₄ - C ₅₀	S.O.	<50	<50	<50
Limits for management purposes				
F1 C ₆ - C ₁₀	700	330	33	<10
F2 C ₁₀ - C ₁₆	1000	3000	4600	15
F3 C ₁₆ - C ₃₄	3500	3500	3700	<50
F4 C ₃₄ - C ₅₀	10 000	<50	<50	<50

Greasy concentration: Exceeding the established criterion

Results compared to the recommendations for soil quality – Environmental and Human Health (RQSE)					
Commercial use, coarse-textured soils No surface soil / underground soil distinction					
Sample			F-19-02 / CF-17	F-19-02 / CF-18	F-19-02 / CF-21
Depth (m)			9.91 – 10.21	10.67 – 11.28	13.72 – 14.33
Type	Contaminant	Criterion (mg/kg)	Results (mg/kg)		
MAH	---	---	---	---	---
PAH	Naphtalene	0.013	0.59	0.99	---
	Phenanthrene	0.046	2.9	0.65	---
Metals	---	---	---	---	---

--- No exceedance



The analytical results of fractions F1 to F4 of petroleum hydrocarbons show that samples F-19-02 / CF-17 and F-19-02 / CF-18 exceed certain applicable criteria.

As for the "Vapour inhalation (indoor)" exposure pathway, the concentrations of sample F-19-02 / CF-17 exceed the criterion established for the only two fractions for which a criterion is defined, that is F1 and F2. As for sample F-19-02 / CF-18, only the concentration of fraction F2 exceeds the established criterion.

As for the limits for management purposes, the concentrations of samples F-19-02 / CF-17 and CF-18 exceed the criterion established for fractions F2 and F3.

The high concentrations of fractions F2 and F3 indicate that it could be a diesel or heating oil contamination. Exceeding the criteria established for the dangers of vapour inhalation for fraction F2 on samples F-19-02 / CF-17 and 18 could become an odour problem in the basement of the proposed building, but a more extensive evaluation of the risks associated with this contamination would be necessary before deciding on the measures to be taken.

The purpose of presenting organoleptic indications of site contamination in this environmental characterization of soil samples was to provide information as to the nature and concentrations of said contamination. This characterization is for information purposes only and does not constitute an environmental site assessment; therefore, it cannot be used to determine the presence or absence of actual or potential sources of contamination on the site under study.

Even if the excavation work is not currently planned to excavate to the depth of this contamination, it would be wise to carry out further investigation in order to know the lateral extent of the contamination on the one hand, and on the second hand, to assess whether the source of contamination is still active. Given that a phase I Environmental Assessment was recently carried out (2019), it would be important to update it with the new information obtained as part of this geotechnical study. Akifer's Phase I environmental assessment report (2019) stated that it was "unlikely that the groundwater table would be impacted by the potential or actual sources of environmental impact identified in [their] study". Researching other sources of impact and / or investigating certain identified sources of impact could reveal other relevant pieces of information.

6.3 Quality control

Given the low quantity of chemical analyses, no specific measure of quality control was deemed necessary. Nevertheless, the subcontracting laboratory implemented their own measures of quality control that are required by their accreditation.



6.4 Recommendations for soil management

Firstly, it is important to specify that the recommendations for the environmental management of fill materials, soils and residual materials were exhaustively presented in the ABS phase II environmental characterization report in 2011 (Ref.: E4-10-1445). The following recommendations are directed towards the management of petroleum hydrocarbon contamination found in depth through borehole F-19-02.

When taking the results presented in section 6.1 into consideration, and given that the work is meant for use as a public building, which is not part of the exceptions to the application of the limit values in appendix I of RPRT (article 1. a) ii.), the "C" criterion can be considered as the maximum acceptable contamination limit for the site under study. The following conclusions can be drawn:

- Once the soils contaminated beyond the "C" criterion of the guide are excavated, they must be managed off site and disposed of in a disposal site authorized by the MELCC, in compliance with the soil management grid in appendix 5 of the *Guide d'intervention* by the MELCC. This table is reproduced in appendix F of this report.
- Contaminated soils with "A-B" and "B-C" criteria do not have to be disposed of off site in the event of their excavation. Although their contamination level complies with the intended use on the site under study, they must be managed in compliance with the options in the excavated soils gestion grid should they be disposed of off site. This grid, which is taken from the *Guide d'intervention - Protection des sols et réhabilitation des terrains contaminés* by the MELCC, is reproduced in appendix F of this report.
- As for the soils for which no contaminant is present in a concentration higher than the "A" criterion, there seems to be no environmental restriction in regards to their management. From a strictly environmental point of view, these soils and fill materials can therefore be reused on the site without restriction.

The quality of the groundwater could not be assessed as part of this mandate. If the water was to be pumped as part of the building construction work, it would have to undergo chemical analyses before allowing its discharge into municipal sewers.



7. Conclusions and recommendations

7.1 Project description and hypotheses

According to the latest information available, the area of the building is of approximately 1,900 square metres, of which approximately one-third (overlooking rue Notre-Dame West) is square and includes three (3) floors above ground, while about two-thirds (overlooking rue Saint-Jacques) are rectangular and have (9) floors.

The projected elevation of the ground floor slab is unknown, but has been estimated to be approximately 15.50 metres, fairly close to the current ground level, still for preliminary design purposes.

As for the number of basement levels, it is not yet fixed. It was first estimated for preliminary design needs at two (2), which would be about 6 to 7 metres (elevation 8.5 to 9.5 metres) below the level of the ground slab. This choice was guided, among other things, by the depth of the water table and the complications of excavations below the level of groundwater in permeable deposits.

Another option, that is to say a single basement level, was also studied. In this case the base of the foundation footings was considered 3.0 metres below the current surface of the site.

If the hypotheses made in this report are no longer valid, we will need to be contacted by writing to modify our recommendations, if applicable.

7.2 Site preparation

The fill materials present on the surface of the current site are not acceptable to support structural loads, whether they are footings or a slab on the ground. They will therefore have to be entirely excavated to the level of the intact natural soil and replaced by appropriately placed and densified borrow materials (structural fill). The dimensions of the bottom of the excavation must exceed those of the perimeter of the proposed building, by a width equivalent to the height of the structural fill (slope 1.0 H: 1.0 V from the outer edge of the planned footing).

Before installing the borrow materials, a visual inspection must be carried out to ensure that the natural soil in place is intact. Any reworked, frozen or unstable soil must be excavated and replaced with a borrow material in accordance with the requirements specified below.

It is important to note that very loose soils were encountered through borehole F-19-04, at a depth between 3.66 and 4.88 metres. We recommend that rolling tests be carried out at the bottom of the excavation in order to detect any soft areas and replace them with a borrowed material in compliance with the requirements specified below.



The residual difference in elevation between the bottom of the excavation and the level of the projected structures must be filled with non-cohesive borrowing materials of MG 112 type, preferably with a uniformity coefficient ($C_u > 4$) facilitating its compaction. They must also be free of shale particles or any other potentially swelling material (DB certification) in order to avoid the possible lifting of the structures after construction. Borrow materials must be placed in layers with a thickness that does not exceed 300 millimetres, each of which shall be densified to a minimum dry density of 95 percent of the maximum value obtained in the modified Proctor test.

7.3 Shallow foundation and bearing capacities

Given the results of the boreholes, it will probably not be possible to transmit the loads of the proposed structure to the foundation soils via superficial footings supported by the natural deposit described in section 4.3. However, as the bearing capacities of the soil were requested in the expert mandate, they are still presented here, for information purposes only.

The natural soil under the footings must be intact (not altered) and protected from frost at all times. In order to ensure uniformity of the seating surface of the footings, we recommend that a layer of crushed aggregates of MG 20 type (or equivalent) be placed under the soles. This layer must have a minimum thickness of 300 millimetres and must be densified to a minimum dry density of 95 percent of the maximum value obtained in the modified Proctor test.

If these conditions are respected, the following bearing capacities can be considered by the designer in the calculation for the foundations (D being the depth of installation of the base of the footings).

Conditions	Outer foundations (strip footing)					
	1 underground level D = 3.0 metres			2 underground levels D = 6.0 metres		
	Bearing capacities (kPa)			Bearing capacities (kPa)		
	1.2m x ∞	1.8m x ∞	2.4m x ∞	1.2m x ∞	1.8m x ∞	2.4m x ∞
Resistance to the ultimate limit state (ULS)	1520	1640	1700	2970	3020	3070
Factored geotechnical resistance with a performance factor of 0.5	760	820	850	1480	1510	1530
Resistance to the serviceability limit state for 25-millimetre settlement (SLS _{25 mm})	180	125	100	240	180	120



Inner foundations (square footing)

Conditions	1 underground level D = 3.0 metres			2 underground levels D = 6.0 metres		
	Bearing capacities (kPa)			Bearing capacities (kPa)		
	1.0 x 1.0 m	2.0 x 2.0 m	3.0 x 3.0 m	1.0 x 1.0 m	2.0 x 2.0 m	3.0 x 3.0 m
Resistance to the ultimate limit state (ULS)	2280	2300	2320	4490	4430	4390
Factored geotechnical resistance with a performance factor of 0.5	1140	1150	1160	2240	2210	2190
Resistance to the serviceability limit state for 25-millimetre compactings (SLS _{25 mm})	300	170	115	450	240	150

The geotechnical resistance to the ULS is based on security, that is to say mainly on the failure mechanisms of the structure, and it corresponds with the total loads. The geotechnical resistance (SLS) relates to the planned use of the structure, regarding the allowable total and differential settlements. It corresponds to the stresses that can be added to the stresses in place (q' ou σ'_{v0}) at the considered level (admissible net loads). No safety factor is involved in the settlement calculations.

The horizontal distance between the footings, measured from the outer edge, must be sufficient to avoid interaction between the footings, such an interaction can lead to excessive differential settlements. As an indication, the minimum safe distance is approximately equivalent to the width of the neighbouring footings; the larger dimensions should be considered in case two adjoining footings have different dimensions.

Furthermore, the difference between the pressures exerted between the exterior side (backfilled) and the interior side (underground) is likely to create an eccentricity of load that can stress the soil above the admissible pressures (ELS) and from there cause excessive differential settlements. The designer should therefore take this into account, and ensure that the resulting reaction coincides with the central axis of the footing by moving the axis of the wall inwards

7.4 Piled foundations

Considering the results of the boreholes and knowing that the building will have several floors, we recommend transmitting the loads of the proposed structure to the bedrock or very dense soils via a system of deep foundations, and this for the whole area of the building. Indeed, it is not possible to support the section consisting of three (3) floors with superficial foundations and the rest with deep foundations because of the risks of differential settlements that would result from a foundation that is free to move juxtaposed with a fixed structure.



Two types of piles can be considered, either piles driven to refusal or, depending on the structural characteristics, piles drilled directly to the bedrock. The basement rock was encountered at a depth varying from 30.30 to 32.51 metres, i.e. at an elevation ranging from -14.68 to -17.04 metres.

Furthermore, although they can be considered equivalent, the use of circular-section piles instead of H-shaped piles (H) has the advantage of being able to inspect them after their installation and to detect structural defects or damages induced by the driving, provided that they are put in place with closed ends.

Regardless of the type of pile used, the use of structural slabs should be considered in conjunction with the piled foundation in place of conventional slabs on soil because of the risks of differential settlements that would result from a slab that is free to move juxtaposed with a fixed structure.

The services of a contractor specializing in piles will have to be retained so that the work is carried out in compliance with the applicable professional rules.

7.4.1 Driven piles

The bearing capacity of a pile or a group of driven piles is essentially conditioned by the structural capacity of the pile itself rather than its geotechnical capacity since the friction component of the resistance can be considered to be low compared to the toe resistance. It is therefore the driving energy used to drive the pile that builds resistance.

The actual length of the piles will depend on the geotechnical conditions, but mostly on the service loads required per pile and their dimensions, but due to the nature of the soils encountered in drilling, it is likely that the piles will reach the level of rock. The presence of stones and boulders, as found through borehole F-19-02 at a depth between 27.48 and 30.71 metres (but it can also be encountered elsewhere on the surface of the building), could however hinder the advancement and result in premature refusals. When the service loads and characteristics of the piles are known, the theoretical length of the piles can be calculated according to the geotechnical parameters recommended in section 7.6 of this report.

The criteria for choosing the hammer for driving and refusal criteria must be based on an ultimate load that is sufficient to offer an acceptable safety factor (equal to or greater than 3.0) with respect to the desired payload, in accordance with the considered driving formula.

A dynamic analysis of ten percent of the piles (minimum of five piles) should be provided to validate the driving formula; if necessary, the dynamic analysis will indicate whether a more severe driving criterion should be used, in which case all the piles already driven will have to be driven again with the new refusal



criterion that will be determined. Given the precision of the dynamic method, a safety factor of 2.0 may be sufficient during this verification.

We recommend redriving at least 50 percent of the piles, following a minimum delay of 48 to 72 hours after their installation in order to avoid the reduction in bearing capacity following stress relaxation phenomena and / or dissipation of interstitial overpressures after the placement of the piles. Such a reduction could indeed lead to additional pile settlements at the time of loading. Depending on the results obtained, the relevance of carrying out the redriving and / or the number of piles to be rebuilt may be reassessed.

The installation of the piled foundation must be closely supervised by a laboratory in order to ensure the quality of the supplied materials and the conformity of the piles after their installation (alignment, verticality, straightness, refusal, etc.). A visual inspection of all the piles should be carried out before concreting to ensure that the piles are still in good condition.

We recommend that the following tolerances be specified:

- Refusal: The refusal criterion is obtained three times in a row.
- Redriving: The refusal criterion is obtained again.
- Alignment: At a maximum of $\pm 100\text{mm}$ of the theoretical position or less depending on the designer's requirements
- Straightness: $\pm 2\%$ of the vertical or the specified angle for the inclined piles, if required.

7.4.2 Bored piles or caissons

The use of bored piles or caissons could also be considered by the designers given that this type of piles offers a better pullout resistance and can be used as anchors.

A minimum embedment length in the rock equivalent to twice the diameter of the pile should be provided, and the first metre of the rock should not be considered in this minimum juncture. In order not to cause settlements of the structures when loading the piles, the bottom of the embedment in the rock must be clean and free of any loose material (soil, debris, etc.) in order to ensure direct contact between the base of the pile and the rock.

For design purposes, we recommend that the following values be used.



Conditions	Recommended value (kPa)
Resistance to the ultimate limit state (ULS)	3,900
Admissible resistance (F.S. = 3)	1,300
Equivalent resistance to the serviceability limit state (SLS)	1,300
Rock-concrete adhesion (q_s)	1,300

Given that the SLS is not defined as part of a foundation on the rock as the settlements are considered to be negligible, we are of the opinion that the value of the above-mentioned admissible resistance can be considered as equivalent to the SLS in this context.

The recommended resistance (q_s) takes into account a compressive strength of the concrete (f'_c) of the piles of 30 MPa; this parameter should be reduced to 5 percent of the compressive strength ($0.05 f'_c$) if lower-strength concrete is specified.

The bearing capacity of the piles will have to be validated on site by loading tests, but the implementation of such tests can become problematic in the case of caissons where the service loads are considerable. The verification of the quality of the rock by means of drilling at the bottom of the embedment over a length of 3.0 to 5.0 metres, with the measurement of the compressive strength of the rock in the laboratory, could be considered equivalent.

7.4.3 Lateral resistance and holding power

The lateral resistance can be calculated through the coefficient of horizontal reaction (k_s). In the granular soils, the lateral soil reaction module (k_s) depends on the length of the pile, and thus of the considered depth (z), its diameters (d) and the horizontal reaction constant (n_h).

- $k_s = n_h \cdot z/d$ cohesionless soils

Based on the typical properties of natural deposits established in sections 4.3, 4.4 and 4.5 of this report, we recommend using the following values (before weighting) in the calculation of the lateral reaction module.



Stratigraphic unit	n_H (kN/m ³)
Sandy and silty-sandy deposits (above the water table)	6,600
Sandy and silty-sandy deposits (beneath the water table)	4,400

The part of the pile in the fill materials layer, if applicable, should not be considered in these calculations.

The pullout resistance of a driven pile corresponds to the friction component of the pile, which is relatively low compared to the toe bearing capacity, to which the weight of the pile itself can be added. The friction resistance can be calculated with the relation 18.2 (cohesionless soils) recommended in the MCIF (2013).

- $q_s = \sigma'_v \cdot K_s \cdot \tan(\delta) = \beta \sigma'_v$ cohesionless soils

The following values from Tables 18.1 and 18.2 of MCIF could be considered for the preliminary design:

- β coefficient: 0.8
- N_T factor: 80
- Friction angle soil-pile (δ): 24° (uncovered steel pile)

In the case of bored piles or caissons, the resistance component along the embedment can be used.

The applicable weighting factors are 0.5 for lateral resistance and 0.3 for the pullout resistance value, whether for driven or bored piles.

7.4.4 Negative friction

The absence of a clay layer implies that the piles should not be subjected to negative friction if the current soil levels are raised.

7.4.5 Group effects

Since piles are most often used in groups, they can interact with each other. The installation of driven piles at a distance lower than three times their diameter ($3D_{max}$), measured centre to centre and taking the largest diameter (D_{max}) into account in the case of piles of different dimensions, should be avoided. The group effect can be considered to be zero at a distance of seven times the diameter ($7D_{max}$). Between $3D_{max}$ and $7D_{max}$, the toe resistance is not affected by the group effect, but the friction resistance can increase due to the effect of soil densification by displacement.

The group effect is not applicable to caissons or bored piles.



7.5 Frost protection

Pile heads and connecting structures exposed to frost must be buried at least 1.5 metres below the final surface of the ground to provide effective protection against frost heaving.

However, additional protection against the effects of frost may be necessary in areas particularly exposed to frost (loading / unloading dock, garage entrance, etc.). Indeed, in the absence of the insulating layer that is the snow cover, the penetration of the frost could reach 1.8 metres.

7.6 Seismic site class and soil liquefaction potential

According to table 4.1.8.4.A as well as articles 99 to 104 of commentary J of the CNB (2010), the classification of the location is based on the speed of the shear waves (V_s). In order to indirectly evaluate this parameter, it is possible to correlate the N_{60} index for granular soils and / or undrained resistance (C_u) in the case of coherent soils, but the average properties over a thickness of 30 metres must be considered. When the basement rock is reached at a depth of less than 30 metres, its V_s is also estimated based on the nature of the rock and its mechanical characteristics. In this case, the rock is located at a depth greater than 30 metres. An average value over the entire requested depth (V_{s30}) can thus be calculated in the ground only.

Based on this, we recommend that a “D” location category be considered (stiff soil).

This indirect evaluation is necessarily conservative. Direct measurement of shear rates before final design by recognized geophysical methods could potentially allow the use of a higher category if the actual speed is greater than the indirectly assessed speed.

The peak ground acceleration (PGA) determined in accordance with the CNB2015 standard is approximately 0.37g for the site under study. This value is associated with an earthquake with a 2-percent probability of being exceeded in 50 years. A summary assessment of the liquefaction potential was carried out based on the SPT method as suggested by Youd and Idriss in 2001. According to this assessment, the soils present do not present a risk of liquefaction.

7.7 Excavation, pumping and temporary soil support

According to the results of the drilling, the excavations will be carried out in fill materials, residual materials and natural deposits consisting mainly of sand but also gravel and silt. Excavations in the these may be carried out using conventional equipment. Rock excavation is not planned due to its depth.

The slopes must comply with the standards of the *Commission des normes, de l'équité, de la santé et de la sécurité du travail du Québec* (CNESST) in order for the workers to safely carry out the work. Should



the walls of the excavations show any sign of instability, the slopes must immediately be softened and / or a temporary support adapted to the groundwater conditions and the soils in place must be installed.

The excavation walls must be adequately protected against erosion using tarpaulins for example. In addition, the cuttings must be placed at a distance from the edge of the excavations that is at least equal to its depth so as not to overload the top of the slopes.

The water level surveys carried out as part of this mandate show that the water table was between 10.39 and 13.98 metres deep at the time of the surveys, but the conditions when the construction is carried out could be different.

Considering two underground levels for an approximate depth of 6 to 7 metres below the level of the slab on ground floor, the work should take place above the water table. If we consider more than three floors (more than 9 metres under the slab on the ground floor), the hydraulic head created by the difference in elevation between the groundwater level and the expected level of the bottom excavations will give rise to a new regime of underground flow which is likely to raise or make the walls and the bottom of the excavations unstable during the excavation work. The installation of a pumping system that is suitable to the groundwater conditions and to the soils in place must be planned in order to reduce the groundwater level to a minimum depth of one metre below the level of the bottom of the excavations. The installation and launching of the pumping system must be done early enough to obtain the desired lowering of the water table. In addition, the design of the pumping system must include all the necessary measures (geotextile membrane, sand filter, etc.) to prevent the drive of fine particles (silt, sand) by pumping. The lowering of the water table caused by this intervention (pumping) must be carried out so as to avoid causing damage to the surrounding infrastructures or buildings.

In order to design and study the variants, temporary lateral slopes of excavation not exceeding 1 vertically to 1.5 horizontally (1.0V: 1.5H) may be considered in loose deposits, above the water table only. As these are temporary excavations for construction purposes, the contractor remains fully responsible for the choice of slopes and the measures to ensure their stability.

It is expected that these excavation slopes cannot be respected due to the proximity of the proposed building to the existing adjacent buildings. Temporary support adapted to the groundwater conditions and the soils in place should therefore be considered at the perimeter of the excavation as well as in places where safe slopes cannot be respected for any other constraint.

The following parameters are recommended, depending on the geometry of the excavations, for stability calculations and / or sizing of soil retaining structures.

Parameters	Recommended values (only above the water table)
------------	--



	Fill materials / residual materials	Sandy deposit	Silty- sanddeposit
Total bulk density (γ_t)	17kN/m ³	19kN/m ³	18kN/m ³
Shear strength (C_u)	0kPa	0kPa	0kPa
Cohesion (c')	0kPa	0kPa	0kPa
Friction angle ϕ'	28°	32°	31°
Coefficient of resting lands K_0^*	0.53	0.47	0.48
Coefficient of active pressure K_a^*	0.36	0.31	0.32
Coefficient of passive pressure K_p^*	2.77	3.25	3.12

*: Considering vertical walls and a horizontal profile above the surface ($\beta = 0^\circ$)

7.8 Permanent drainage

We recommend the installation of a permanent peripheral drainage system below the level of the slab on the ground when one or more basement levels are considered. The use of perforated drains coated with a geotextile or a pulverulent material containing less than 10 per cent of particles passing the 5mm sieve could be suitable for this purpose.

The capacity of the system put in place should allow all the water thus collected to be transported off the site by gravity and / or by means of pumping wells to the neighbouring storm sewer systems.

In all cases, the design must comply with the prescriptions of the National Building Code in effect.



7.9 Protective measures for the existing structures

The excavations to be carried out near existing buildings, the installation of a temporary support, the digging of the excavations by sections of limited width, the underpinning of the current foundations or the use of any other method deemed acceptable by the designer must be planned and implemented to ensure the stability of buildings and infrastructures adjacent to the excavation work.

The type and implantation depth of the foundations of the adjacent buildings are currently unknown to us, but it is expected that the two-floor adjacent buildings rest on shallow foundations. As for the building with a maximum of 23 floors located on the corner of Place d'Armes and Notre-Dame West, it is presumably supported by a system of deep foundations.

In all cases, the pile installation work must be carried out in such a way as to avoid damaging neighbouring buildings, for instance via the effects of the vibrations induced by driving. To this end, we recommend that a survey of the condition of the neighbouring buildings (photographs, measurement of cracks, level survey and apparent damage, etc.) be carried out before the start of the work. The monitoring of the displacements / accelerations undergone by the neighbouring buildings could be useful during the work in order to monitor the effects of the construction work on them in real time. It is recommended that a qualified engineer be involved from the start of the project for this purpose.

7.10 Backfilling of the foundation walls

The backfilling of the outer foundation walls subjected to frost must be done with a MG 112 type material with a water content that allows placement and compaction. In areas where surface improvements are planned (paved areas, concrete slab, or other) or when the backfill settlements must be minimized, we recommend densifying the backfill materials to a minimum dry density of 95% of the maximum value obtained in the Proctor test with modified compaction energy (2,700 kN-m/m³) in accordance with the BNQ 2501-255 standards, in layers with a thickness of 300mm maximum. In the absence of infrastructures, a degree of compaction at 90% of this maximum value may be considered to be sufficient.

An adequate drainage must be ensured to avoid an accumulation of water in backfilled soils, which could lead to significant swelling and / or compaction depending on the freeze-thaw cycles.

In all cases, backfilling the inner and outer sides of the walls must be carried out simultaneously and the lateral forces induced by compaction must be considered by the designer.

The reuse of excavation materials can only be considered to the extent that their compaction as a result of their placement and / or as a result of freeze-thaw cycles has no drawbacks. Nominal compaction by layers is however recommended to reduce them.



7.11 Scope and limitations of the report

The conclusions and recommendations formulated in the preceding paragraphs are based on the assumption of the representativeness, on the whole site under study, of the geotechnical and environmental conditions noted through the boreholes established within the framework of this mandate. The conditions encountered between the boreholes or elsewhere on the site may possibly differ from those observed at their location.

These recommendations are also based on the information provided to us by the designers and by the client at the time of writing this report. The information we have is noted in the preceding paragraphs.

This report should only be used for design purposes for the project described below. Our conclusions and recommendations are valid only on the site under study and may not be used on other land, even contiguous, without having been the subject of a further study.

We must be notified of any change in the location, nature or design of the project in order to assess the impact and, if necessary, modify the recommendations made in this report.

Furthermore, these conclusions and recommendations are also based on the various laws, policies and environmental guides and regulations that were in effect at the time of writing this report. Any modification made to these laws, regulations, policies or guides as well as any change in the vocation of the site under study are likely to affect them. This report cannot, under any circumstances, be considered as legal advice.

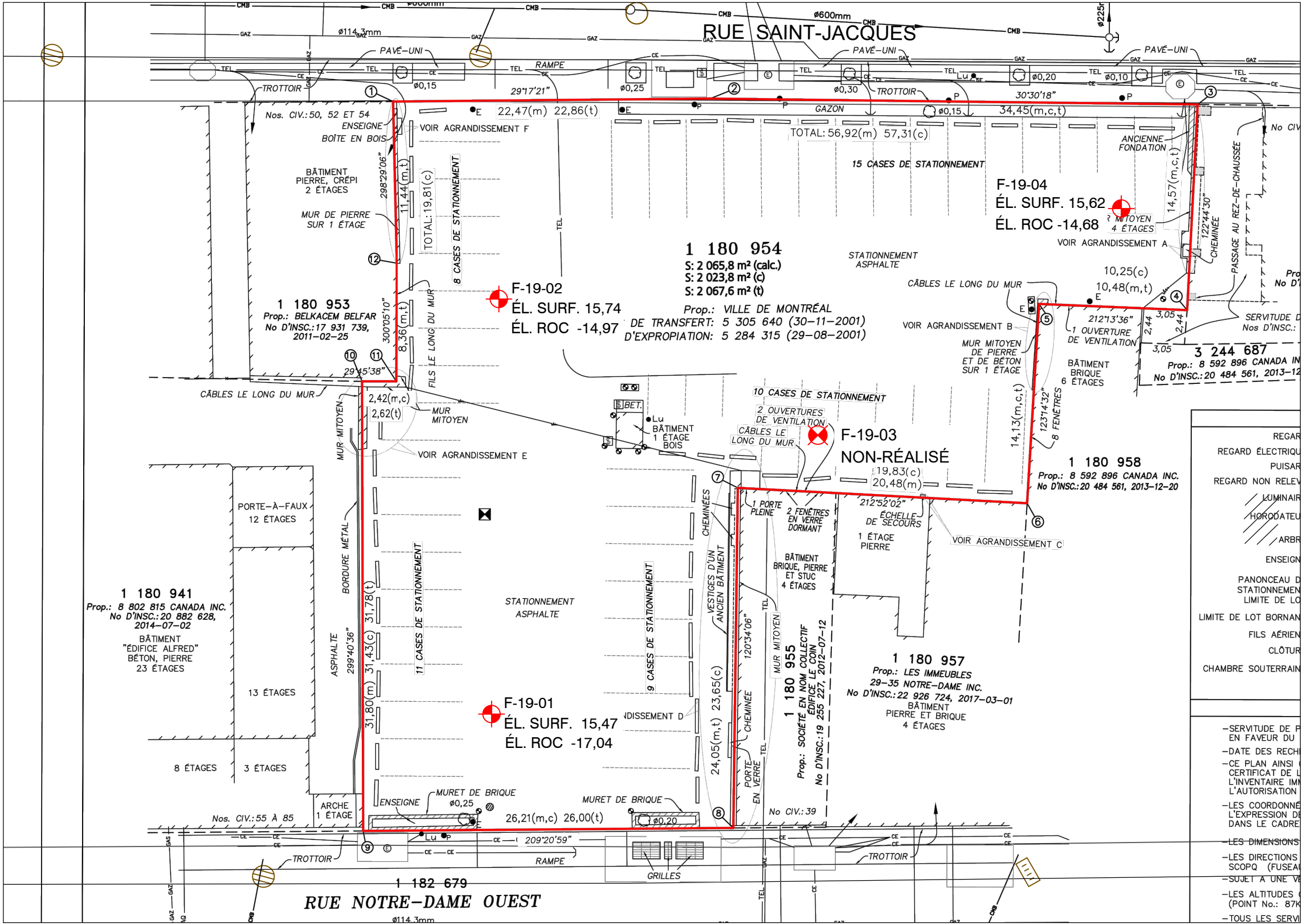
We recommend that the excavations be inspected by a qualified geotechnical engineer to ensure the representativeness of the boreholes and, if necessary, to detect any particular feature that could affect our conclusions and recommendations.

The directives of the National Building Code (NBC), 2010 edition, and more particularly sections 4.1 and 4.2 of the code, comments J and K of appendix A of said code and the 4th edition of the Canadian Foundation Engineering Manual (CFEM, 2013) were considered in the preparation of this report, particularly in the bearing capacity calculations.



Appendix A – Borehole location plan (L-01)





LÉGENDE

FORAGE NON-RÉALISÉ

FORAGES RÉALISÉS EXP, 2019

F-19-XX

NUMÉRO DE FORAGE

ÉL. SURF.

ÉLÉVATION DE LA SURFACE DU TERRAIN (m)

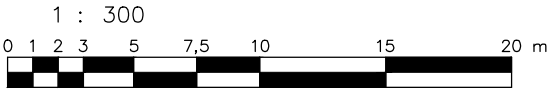
ÉL. ROC

ÉLÉVATION DU SOCLE ROCHEUX (m)

BÂTIMENTS EXISTANTSLIMITES DE PROPRIÉTÉ

SYSTÈME DE COORDONNÉES : MTM SCOPQ Fuseau 8 (NAD83)				
Forage	X (m)	Y (m)	Z (m)	Él.: Roc (m)
F-19-01	300 391,2	5 040 623,2	15,47	-17,04
F-19-02	300 366,4	5 040 638,0	15,74	-17,97
F-19-04	300 382,5	5 040 678,8	15,62	-14,68

- REGAR
- REGARD ÉLECTRIQU
- PUISAR
- REGARD NON RELEV
- LUMINAI
- HORODATEU
- ARBR
- ENSEIGN
- PANONCEAU D
- STATIONNEM
- LIMITE DE LO
- LIMITE DE LOT BORNAN
- FILS AÉRIEN
- CLÔTUR
- CHAMBRE SOUTERRAIN
- SERVITUDE DE P
- EN FAVEUR DU
- DATE DES RECH
- CE PLAN AINSI
- CERTIFICAT DE L
- L'INVENTAIRE IM
- L'AUTORISATION
- LES COORDONNÉ
- L'EXPRESSION DE
- DANS LE CADRE
- LES DIMENSIONS
- LES DIRECTIONS
- SCOPQ (FUSEAU
- SOUJET A UNE V
- LES ALTITUDES
- (POINT No.: 87K
- TOUS LES SERV



NOTES

- FONDS DE PLAN UTILISÉS :
- CARTOGRAPHIE DE BASE DE LA VILLE DE MONTRÉAL
 - CERTIFICAT DE LOCALISATION PAR JEAN-LOUIS CHÉNARD
NO M2017-10332, 1 DE 3, MINUTE 9455, DATÉ DU 18 AVRIL 2018



Projet : ÉTUDE DE FAISABILITÉ ET PFT - NOUVEAU COMPLEXE JUDIAIRE DE MONTRÉAL
ÉTUDE GÉOTECHNIQUE - 46 ST-JACQUES, MONTRÉAL (QC)

Titre : PLAN DE LOCALISATION DES FORAGES

Préparé par : P. Tétreault, ing.	Dossier no : TPSGC-00255784-A0-005021	Date : 2019-11-26	Plan : L-01
Dessiné par : J. Kosh	Fichier électronique : MTR-00255784-A0	Échelle : 1 : 300	Feuille no : Révision :











Appendix B – Explanation notes on the borehole logs Borehole logs



Géotechnique et environnement

Notes explicatives sur les rapports de sondage

Les rapports de forages et/ou sondage, placés en annexe, contiennent une description des sols et du roc rencontrés, incluant la profondeur et l'élévation de chacune des couches et le type, la profondeur et la récupération de chacun des échantillons prélevés lors des travaux sur le terrain.

DESCRIPTION			Socle rocheux	
La description des sols est basée sur la classification selon la dimension des particules, l'importance relative de chacun des constituants et les résultats des divers essais réalisés sur le terrain ou en laboratoire.			La description du roc est le résultat de l'examen pétrographique des échantillons recueillis. Le degré de fracturation du roc est exprimé par l'indice de qualité du roc (RQD), qui est le résultat du rapport de la sommation des longueurs des échantillons de plus de 100 millimètres de longueur sur la longueur totale de la course.	
Classification et dimension des particules (ASTM D2487)				
Terminologie	Dimensions (mm)		Terminologie	Indice RQD
Blocs	> 300		Très mauvaise	0 % à 25 %
Cailloux	80 à 300		Mauvaise	25 % à 50 %
Gravier	5,0 à 80		Moyenne	50 % à 75 %
Sable	0,080 à 5,0		Bonne	75 % à 90 %
Silt	0,002 à 0,080		Excellente	90 % à 100 %
Argile	< 0,002			
	Proportion (en poids)		STRATIGRAPHIE	
Traces	< 10 %		Les symboles suivants sont utilisés, seuls ou associés, pour illustrer la stratigraphie; un X indique qu'il s'agit de matériaux de remblai.	
Un peu	10 % à 20 %			Argile
Adjectif (ex. : sableux)	20 % à 35 %			Silt
Nom (ex. : et sable)	> 35 %			Sable
				Roche ignée
				Grès
				Gravier
				Sols organiques
				Calcaire ou dolomie
				Shale ou ardoise
				Roche métamorphique
Un matériau décrit comme un « till » ou « moraine » est susceptible de contenir des cailloux et/ou des blocs de façon erratique. La proportion de cailloux et de blocs est donc évaluée de façon distincte.			ESSAIS	
Sols pulvérulents			Dans cette colonne sont indiqués les résultats des essais réalisés sur le terrain et en laboratoire, aux profondeurs correspondantes. Les symboles suivants indiquent les essais couramment réalisés.	
			N	: Essai de pénétration standard
			C _u	: Résistance au cisaillement
			C _{ur}	: Résistance au cisaillement (remanié)
			S _t	: Sensibilité au remaniement
			RQD	: Indice de qualité du roc en laboratoire
			Inj	: Injection d'eau sous pression
			w	: Teneur en eau naturelle
			w _l / w _p	: Limites d'Atterberg
			k	: Perméabilité
			AG	: Analyse granulométrique (tamisage)
			AC	: Analyse chimique
			Com	: Résistance en compression (roc)
			Dos	: Dosage par lavage au tamis de 80 µm
			Oed	: Consolidation oedométrique
			Sed	: Sédimentométrie
			COLONNE QUADRILLÉE	
Pour les sols cohérents (silt argileux à argile), la consistance du sol est évaluée à partir des essais de résistance au cisaillement (C _u) ou, à défaut, de l'indice « N ». La sensibilité au remaniement (S _t) est définie par le rapport de la résistance au cisaillement du matériau intact (C _u) sur celle du matériau remanié (C _{ur}).			La colonne quadrillée de l'extrême droite du rapport de forage permet l'expression graphique des résultats de terrain ou de laboratoire tels que le profil de résistance au cisaillement ou l'essai de pénétration dynamique. Les valeurs de terrain sont généralement représentées par un cercle et les résultats de laboratoire par un triangle renversé. Le quadrillage peut être remplacé par un croquis d'installation de piézomètre et/ou de tube d'observation.	
Consistance	Résistance (C _u , kPa)	Indice « N »		
Très molle	< 12			
Molle	12 à 25			
Ferme	25 à 50	4 à 8		
Raide	50 à 100	8 à 15		
Très raide	100 à 200	15 à 30		
Dure	> 200	> 30		
Sensibilité (S _t)	C _u / C _{ur}			
Faible	< 2			
Moyenne	2 à 4			
Sensible	4 à 8			
Très sensible	8 à 16			
Liquide	> 16			
Plasticité	Limite de liquidité (w _l)	Indice de plasticité (I _p)		
Faible	< 30	< 10 %		
Moyenne	30 à 50	10 % à 25 %		
Élevée	> 50	> 25 %		

Forage N° : F-19-01
Dossier : MTR-00255784-A0

Projet : Étude géotechnique - Construction d'un nouveau bâtiment
Endroit : 46 Rue Notre-Dame Ouest, Montréal (Québec)
Foreur : EXP
Date du forage : 2019-10-16

Compilé par : P. Tétreault, ing.
Technicien : M. Grenier-Houde, tech.
Approuvé par : P. Tétreault, ing.
Date du rapport : 2019-11-27





Coordonnées géo. (NAD83 MTM fuseau 8)
X : 300391.2 m
Y : 5040623.2 m






Niveau de référence
Géodésique

Niveau d'eau
Prof.: Sec à 13,71 m Date: 2019-10-28
Prof.: Sec à 13,71 m Date: 2019-11-11

Tubage : NW
Carottier : NQ
Marteau : Masse : 63.5 kg kg Chute : 0.76 m

Type d'échantillon
CF : Cuillère fendue
TM : Tube à paroi mince
CR : Carotte (forage au diamant)
ET : Tarière
EM : Manuel

État de l'échantillon
 Remanié
 Intact
 Perdu
 Forage au diamant

Graphique
 : Cu (scissomètre au chantier) (kPa)
 : Cu (cône suédois) (kPa)
 : Nc (pénétration dynamique)
 : Teneur en eau (w)
 : Limites (wp et wl)

Prof.			Coupe stratigraphique			Échantillons					Odeur		Essais		Graphique				
pi	m	Élév. Prof.	Description	Strat.	Eau	État	Type - No	Réc. %	N / RQD	FAIBLE	MOYENNE	FORTE	Essais	Cu Cur Nc	20	40	60	80	100
		15.47	Niveau actuel du sol																
		0.00	Enrobé bitumineux (100 mm d'épaisseur).				CR-1												
		15.37					CF-2	90	49										
	1	0.10	Remblai : Alternance de pierre concassée et de minces couches d'enrobé bitumineux.																
		14.86					CF-3	50	16										
		0.61	Remblai : Silt brun, un peu de sable et de gravier, hétérogène.																
	5	14.25					CF-4	63	16										
		1.22	Matières résiduelles : Débris de combustion, de démolition et maccadam. Présence d'odeurs fortes d'hydrocarbures de 2,44 à 3,05 mètres de profondeur.				CF-5	33	5										
	2						CF-6	58	9										
		12.42					CF-7	13	30										
	10	3.05	Remblai : Sable silteux graveleux brun. Présence de brique et de mortier.				CF-8	67	11										
		11.63					CF-9	58	29										
	4	3.84	Sol naturel : Sable silteux brun,un peu de gravier (SM). Compacité moyenne.				CF-10	79	25				w, AG						
	15						CF-11	46	20										
	5						CF-12	67	30										
							CF-13	75	15										
	20																		
	7						CF-14	100	20				w, AG, Séd.						
		7.85	Silt brun, un peu de sable, traces d'argile (CL-ML). Compacité moyenne.																
	8	7.62					CF-15	100	18										
		6.88	Sable silteux brun, traces de gravier (SM). Compacité moyenne.																
	30	8.59					CF-16	67	28										
	10						CF-17	71	21										
	35																		
	11						CF-18	88	23										
	40																		
	12																		
	13																		
	45																		
	14	1.75	Devenant plus graveleux et de compacité dense à moyenne à partir de 13,72 m de profondeur.				CF-19	79	61										
		13.72																	
	15																		
	50						CF-20	67	36				AG						

Remarques :

Prof.		Coupe stratigraphique				Échantillons				Odeur		Essais		Graphique					
pi	m	Élév. Prof.	Description	Strat.	Eau	État	Type - No	Réc. %	N / RQD	FAIBLE	MOYENNE	FORTE	Essais	Cu Cur Nc	20	40	60	80	100
55	17						CF-21	67	42										
60	18						CF-22	79	28										
65	19						CF-23	79	28										
70	21						CF-24	58	37										
75	22						CF-25	75	40				AG						
80	24						CF-26	63	51										
85	25						CF-27	54	48										
90	26						CF-28	58	35										
95	27						CF-29	58	27										
100	28						CF-30	88	42				AG						
105	31						CF-31	67	R										
110	32	-16.38 31.85	Présence probable de cailloux et de blocs à partir de 31,85 m de profondeur.																
115	33	-17.04 32.51	Socle rocheux : Dyke mafique gris, fractures à un angle de 25 à 45° par rapport à la verticale. Quelques fractures subverticales remplies de calcite. Qualité moyenne à bonne.																
120	34																		
125	35																		
130	36	-19.89 35.36	Fin du forage à 35,36 mètres de profondeur.																

Forage N° : F-19-02
Dossier : MTR-00255784-A0

Projet : Étude géotechnique - Construction d'un nouveau bâtiment
Endroit : 46 Rue Notre-Dame Ouest, Montréal (Québec)
Foreur : EXP
Date du forage : 2019-10-09





Compilé par : P. Tétreault, ing.
Technicien : M. Grenier-Houde, tech.
Approuvé par : P. Tétreault, ing.
Date du rapport : 2019-11-27






Coordonnées géo. (NAD83 MTM fuseau 8)
X : 300366.4 m
Y : 5040638.0 m

Niveau de référence
Géodésique

Niveau d'eau
Prof.: 10.39 m Date: 2019-10-28
Prof.: 10.46 m Date: 2019-11-11
Tubage : Tarière 200mm, NW
Carottier : NQ
Marteau : Masse : 63.5 kg kg Chute : 0.76 m

Type d'échantillon
CF : Cuillère fendue
TM : Tube à paroi mince
CR : Carotte (forage au diamant)
ET : Tarière
EM : Manuel

État de l'échantillon
 Remanié
 Intact
 Perdu
 Forage au diamant

Graphique
 : Cu (scissomètre au chantier) (kPa)
 : Cu (cône suédois) (kPa)
 : Nc (pénétration dynamique)
 : Teneur en eau (w)
 : Limites (wp et wl)

Prof.		Coupe stratigraphique				Échantillons				Odeur	Essais		Graphique						
pi	m	Élév. Prof.	Description	Strat.	Eau	État	Type - No	Réc. %	N / RQD	FAIBLE	MOYENNE	FORTE	Essais	Cu Cur Nc	20	40	60	80	100
		15.74	Niveau actuel du sol																
		0.00	Enrobé bitumineux (75 mm d'épaisseur).				CR-1												
		15.66	Remblai : Alternance de pierre concassée et de minces couches d'enrobé bitumineux. Présence de cailloux.				CF-2	76	26										
		0.08					CF-3	46	8										
1		15.13																	
		0.61					CF-4	38	9										
5		15.03	Remblai : Silt brun un peu de sable et de gravier.																
		0.71	Matières résiduelles : Résidus de combustion, débris de démolition, macadam. Présence d'odeurs fortes d'hydrocarbures de 1,22 à 1,83 mètre de profondeur.				CF-5	75	10										
2							CF-6	58	9										
		13.15					CF-7	71	20										
10		2.59					CF-8	75	17										
			Remblai : Silt brun, un peu de sable et de gravier. Présence de fragments de brique.				CF-9	96	23				AG						
4							CF-10	96	24										
15		11.47					CF-11	92	23										
5		4.27		Sol naturel : Sable brun fin à moyen, un peu de silt (SM). Compacité moyenne.			CF-12	92	28										
							CF-13	96	26										
20							CF-14	67	27										
7							CF-15	92	26				AG						
25							CF-16	79	62										
		6.34	Deviend gris et graveleux à partir de 9,40 m de profondeur. Présence d'odeurs d'hydrocarbures à partir de 9,53 m de profondeur.				CF-17	100	R										
10		9.40																	
35		5.07	Silt sableux, traces de gravier, traces d'argile (SM). Compacité moyenne à très dense. Odeurs fortes d'hydrocarbures jusqu'à 12,19 m de profondeur.				CF-18	88	11										
		10.67					CF-19	92	38										
12							CF-20	96	41				AG, Séd.						
40							CF-21	79	59										
13																			
45																			
14			Sable silteux gris, traces de gravier à graveleux (SM). Compacité moyenne à dense.				CF-22	71	29				AG						
15		0.50																	
50		15.24																	

Remarques :

Prof.		Coupe stratigraphique			Échantillons				Odeur		Essais		Graphique						
pi	m	Élév. Prof.	Description	Strat.	Eau	État	Type - No	Réc. %	N / RQD	FAIBLE	MOYENNE	FORTE	Essais	Cu Cur Nc	20	40	60	80	100
55	17																		
60	18						CF-23	21	39										
65	19						CF-24	63	33										
70	20						CF-25	63	27										
75	21																		
80	22						CF-26	63	33				AG						
85	23						CF-27	71	34										
90	24																		
95	25						CF-28	71	33										
100	26						CF-29	75	27										
105	27																		
110	28	-11.74 27.48	Présence de cailloux et de blocs de 27,48 à 30,71 m de profondeur.				CF-30 CR-31	50	R										
115	29						CR-32	41											
120	30																		
125	31	-14.97 30.71	Socle rocheux : Shale noir. Présence d'un dyke subvertical, intercepté à partir de 31,70 m de profondeur. Qualité moyenne.				CF-33 CR-34	0 100	R										
130	32						CR-35	100	60										
135	33																		
140	34	-18.27 34.01	Fin du forage à 34,01 mètres de profondeur.				CR-36	100	55										
145	35																		
150	36																		



RAPPORT DE FORAGE

Page 1 de 2

Forage N° : F-19-04

Dossier : MTR-00255784-A0

Projet : Étude géotechnique - Construction d'un nouveau bâtiment

Endroit : 46 Rue Notre-Dame Ouest, Montréal (Québec)

Foreur : EXP

Date du forage : 2019-10-21

Compilé par : P. Tétreault, ing.

Technicien : M. Grenier-Houde, tech.

Approuvé par : P. Tétreault, ing.

Date du rapport : 2019-11-27

Coordonnées géo. (NAD83 MTM fuseau 8)

X : 300382.5 m

Y : 5040678.8 m

Niveau de référence

Géodésique

Niveau d'eau

Prof.: 13.98 m Date: 2019-10-28

Prof.: 13.70 m Date: 2019-11-11

Tubage : NW

Carottier : NQ

Marteau : Masse : 63.5 kg kg Chute : 0.76 m

Coupe stratigraphique				Échantillons						Odeur		Essais		Graphique							
pi	m	Élév. Prof.	Description	Strat.	Eau	État	Type - No	Réc. %	N / RQD	FAIBLE	MOYENNE	FORTE	Essais	Cu Cur Nc	20	40	60	80	100		
		15.62	Niveau actuel du sol																		
		0.00	Enrobé bitumineux (75 mm d'épaisseur). Alternance de pierre concassée et de minces couches d'enrobé bitumineux. Remblai : Mélange de débris de démolition et de sable brun, un peu de silt.				CR-1														
		15.54					CF-2	81	23												
		0.08					CF-3	21	10												
1		15.19					CF-4	29	3												
		0.43					CF-5	42	5												
5						CF-6	92	14													
2						CF-7	38	11													
		12.57	Sol naturel : Sable fin à moyen, brun, un peu de silt à silteux, traces à un peu de gravier (SM). Compacité moyenne, avec un passage très lâche entre 3,66 et 4,88 m de profondeur.				CF-8	21	1												
10		3.05					CF-9	38	3												
							CF-10	100	27			AG									
							CF-11	75	28												
							CF-12	83	23												
							CF-13	75	26			AG									
							CF-14	38	27												
							CF-15	88	21												
							CF-16	83	23												
							CF-17	71	16		AG										

Remarques :

NOTE : CE RAPPORT DE FORAGE EST UNE REPRÉSENTATION DES CONDITIONS DE SOLS ET D'EAU SOUTERRAINE, INTERPRÉTÉE SELON LA PRATIQUE COURANTE, ET NE S'APPLIQUE QU'À L'EMPLACEMENT DE CE SONDAGE ET AU MOMENT DE SON EXÉCUTION. CE RAPPORT DOIT ÊTRE LU AVEC LE TEXTE QU'IL ACCOMPAGNE. CE RAPPORT NE DOIT PAS ÊTRE REPRODUIT, SINON EN ENTIER, SANS L'AUTORISATION ÉCRITE DU LABORATOIRE.

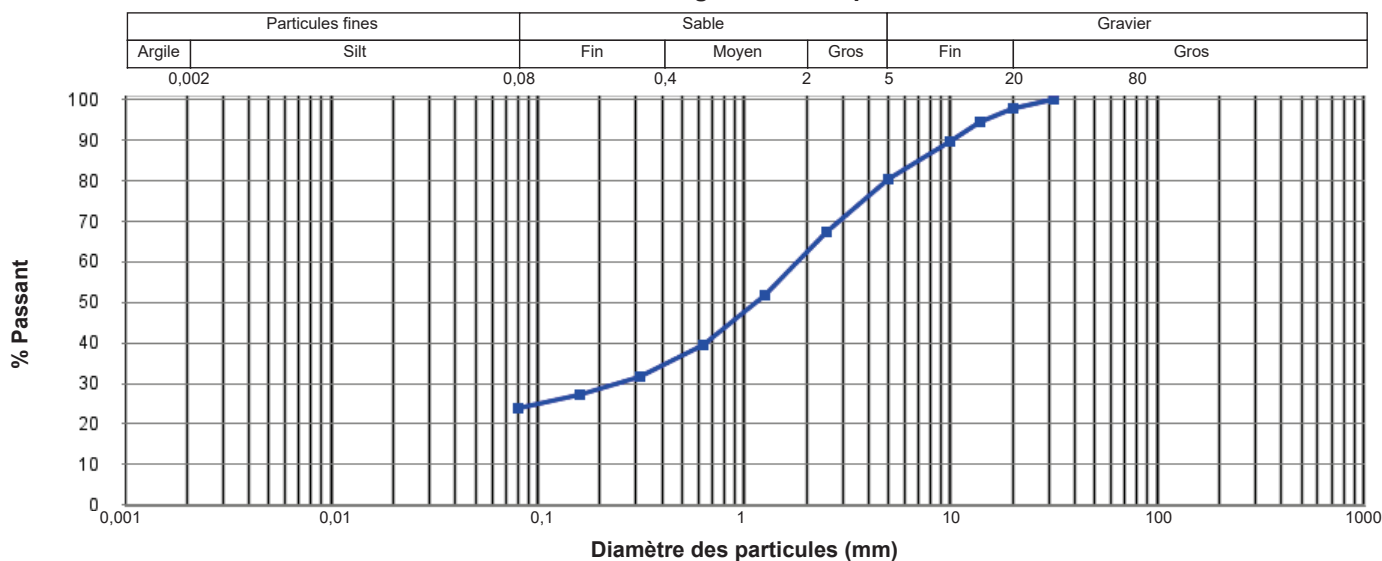
Prof.		Coupe stratigraphique			Échantillons					Odeur		Essais		Graphique					
pi	m	Élév. Prof.	Description	Strat.	Eau	État	Type - No	Réc. %	N / RQD	FAIBLE	MOYENNE	FORTE	Essais	Cu Cur Nc	20	40	60	80	100
55	17						CF-21	88	27										
							CF-22	75	11										
60	18						CF-23	42	11				AG						
65	19																		
		-4.19 19.81	Sable fin à moyen, gris, un peu de silt, traces à un peu de gravier (SM). Compacité moyenne à dense.				CF-24	58	14										
	21																		
70	22						CF-25	67	22										
75	23						CF-26	67	48										
80	24						CF-27	71	11				AG						
	25																		
85	26						CF-28	63	26										
	27																		
90	28						CF-29	33	17										
95	29						CF-30	81	R										
	30																		
		-14.68 30.30	Socle rocheux : Shale noir. Quelques minces fractures remplies de calcite, d'un angle de 20 à 45° par rapport à la verticale. De très bonne qualité.				CR-31	100	100										
	31																		
							CR-32	100	92										
105	32																		
	33																		
110							CR-33	100	93										
		-18.31 33.93	Fin du forage à 33,93 mètres de profondeur.																
	35																		
115																			
	36																		

Appendix C – Results of laboratory tests



Client :	Services publics et Approvisionnement Canada	Dossier n° :	TPSGC-255784-005021
Projet :	Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° :	MO-14563
		Réf. client :	
Sondage n° :	F-19-01	Prélevé le :	2019-10-16 par EXP
Échantillon :	CF-10	Reçu le :	2019-10-16
Profondeur :	4,88 à 5,49 mètres		

Courbe granulométrique

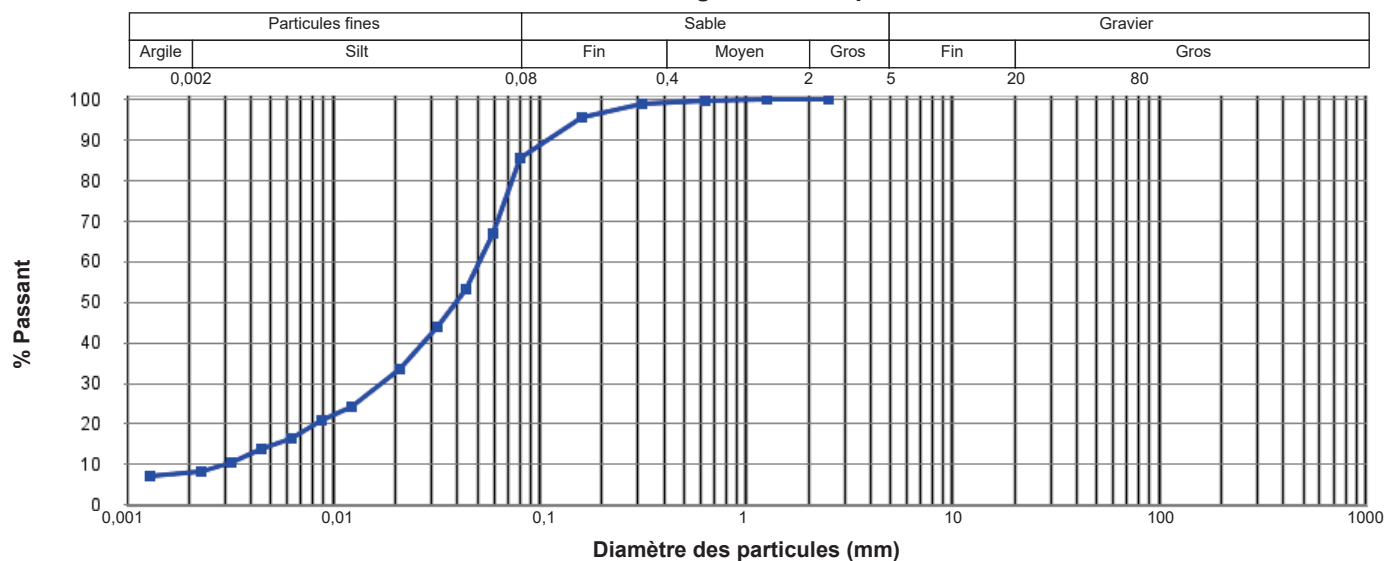


Analyse granulométrique LC 21-040		Description	Autres essais	
Tamis (mm)	Tamisat %passant mesuré	D ₁₀ : D ₃₀ : 0,256 mm D ₆₀ : 1,914 mm Coefficient d'uniformité (Cu) : Coefficient de courbure (Cc) : Gravier: 19 % Sable: 57 % Silt et argile: 24 % Description : Sable silteux, un peu de gravier Classification unifiée : SM	Teneur en eau	LC 21-201 14,2 %
112				
80				
56				
40				
31,5	100			
20	98			
14	95			
10	90			
5	81			
2,5	67			
1,25	52			
0,630	40			
0,315	32			
0,160	27			
0,080	23,9			

Remarques :

Client :	Services publics et Approvisionnement Canada	Dossier n° :	TPSGC-255784-005021
Projet :	Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° :	MO-14564
		Réf. client :	
Sondage n° :	F-19-01	Prélevé le :	2019-10-16 par EXP
Échantillon :	CF-14	Reçu le :	2019-10-16
Profondeur :	7,62 à 8,23 mètres		

Courbe granulométrique



Analyse granulométrique LC 21-040

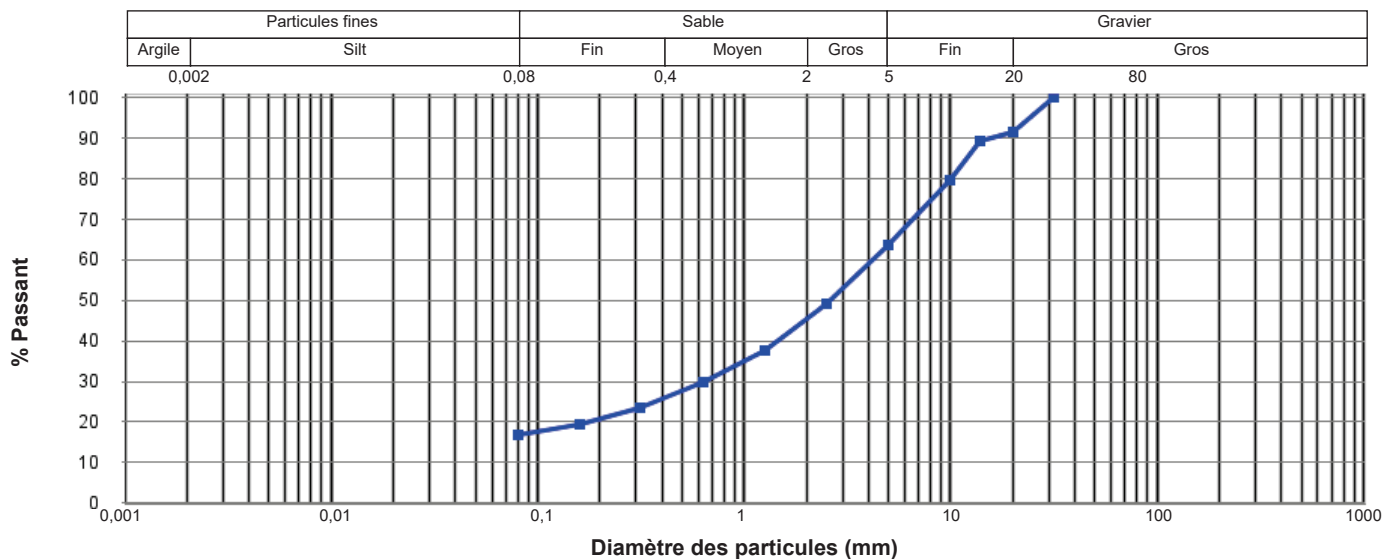
Description

Tamis (mm)	Tamisat %passant mesuré	Tamis (mm)	Tamisat %passant mesuré	
112		0.0596	67,1	D ₁₀ : 0,003 mm
80		0.0441	53,2	D ₃₀ : 0,018 mm
56		0.032	44,0	D ₆₀ : 0,052 mm
40		0.0209	33,6	Coefficient d'uniformité (Cu) :
31,5		0.0123	24,4	Coefficient de courbure (Cc) :
20		0.0088	20,9	Gravier: 0 %
14		0.0063	16,3	Sable: 14 %
10		0.0045	14,0	Silt: 78 %
5		0.0032	10,5	Argile: 8 %
2,5	100	0.0023	8,2	Description : Silt, un peu de sable, traces d'argile
1,25	100	0.0013	7,1	Classification unifiée :
0,630	100			
0,315	99			
0,160	96			
0,080	85,7			

Remarques :

Client : Services publics et Approvisionnement Canada	Dossier n° : TPSGC-255784-005021	
Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° : MO-14565	
	Réf. client :	
Sondage n° : F-19-01	Prélevé le : 2019-10-16 par EXP	
Échantillon : CF-20	Reçu le : 2019-10-16	
Profondeur : 15,24 à 15,85 mètres		

Courbe granulométrique



**Analyse granulométrique
LC 21-040**

Description

Autres essais

Tamis (mm)	Tamisat %passant mesuré		
112		D ₁₀ :	
80		D ₃₀ :	0,657 mm
56		D ₆₀ :	4,367 mm
40		Coefficient d'uniformité (Cu) :	
31,5	100	Coefficient de courbure (Cc) :	
20	92		
14	89	Gravier:	36 %
10	80	Sable:	47 %
5	64	Silt et argile:	17 %
2,5	49		
1,25	38	Description : Sable et gravier, un peu de silt	
0,630	30		
0,315	24	Classification unifiée : SM	
0,160	20		
0,080	16,8		

Remarques :

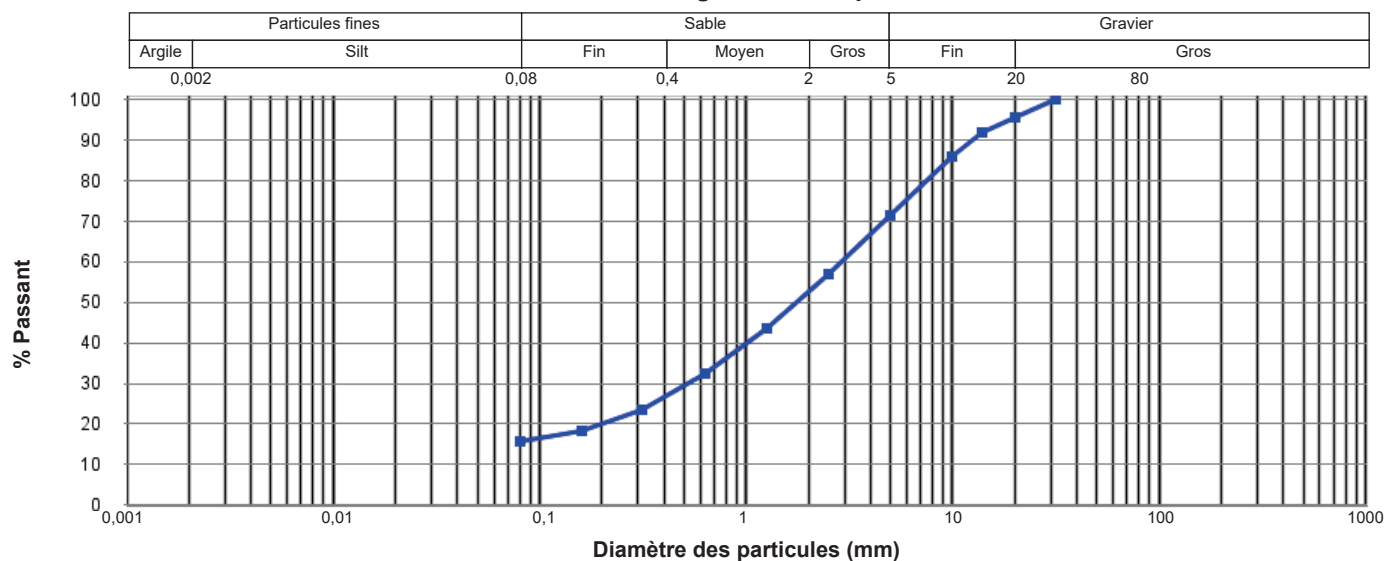
Vérifié par : _____
Isabelle Coulombe
Chef de laboratoire

Approuvé par : _____
Philippe Tétreault
Chargé de projet

Date : 2019-11-21

Client : Services publics et Approvisionnement Canada	Dossier n° : TPSGC-255784-005021	
Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° : MO-14566	
	Réf. client :	
Sondage n° : F-19-01	Prélevé le : 2019-10-16 par EXP	
Échantillon : CF-25	Reçu le : 2019-10-16	
Profondeur : 22,86 à 23,47 mètres		

Courbe granulométrique



**Analyse granulométrique
LC 21-040**

Description

Autres essais

Tamis (mm)	Tamisat %passant mesuré		
112		D ₁₀ :	
80		D ₃₀ :	0,544 mm
56		D ₆₀ :	3,005 mm
40		Coefficient d'uniformité (Cu) :	
31,5	100	Coefficient de courbure (Cc) :	
20	96		
14	92	Gravier:	28 %
10	86	Sable:	56 %
5	72	Silt et argile:	16 %
2,5	57		
1,25	44	Description : Sable graveleux, un peu de silt	
0,630	32		
0,315	23	Classification unifiée : SM	
0,160	18		
0,080	15,6		

Remarques :

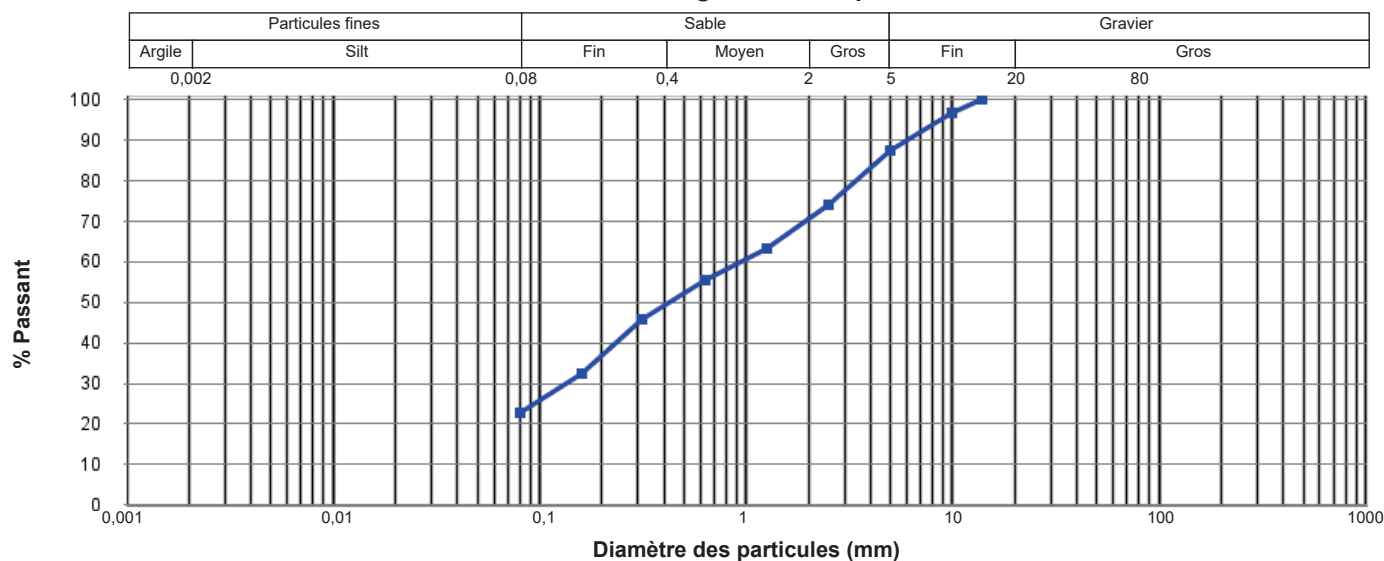
Vérifié par : _____
Isabelle Coulombe
Chef de laboratoire

Approuvé par : _____
Philippe Tétreault
Chargé de projet

Date : 2019-11-21

Client :	Services publics et Approvisionnement Canada	Dossier n° :	TPSGC-255784-005021
Projet :	Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° :	MO-14567
		Réf. client :	
Sondage n° :	F-19-01	Prélevé le :	2019-10-16 par EXP
Échantillon :	CF-30	Reçu le :	2019-10-16
Profondeur :	30,48 à 31,09 mètres		

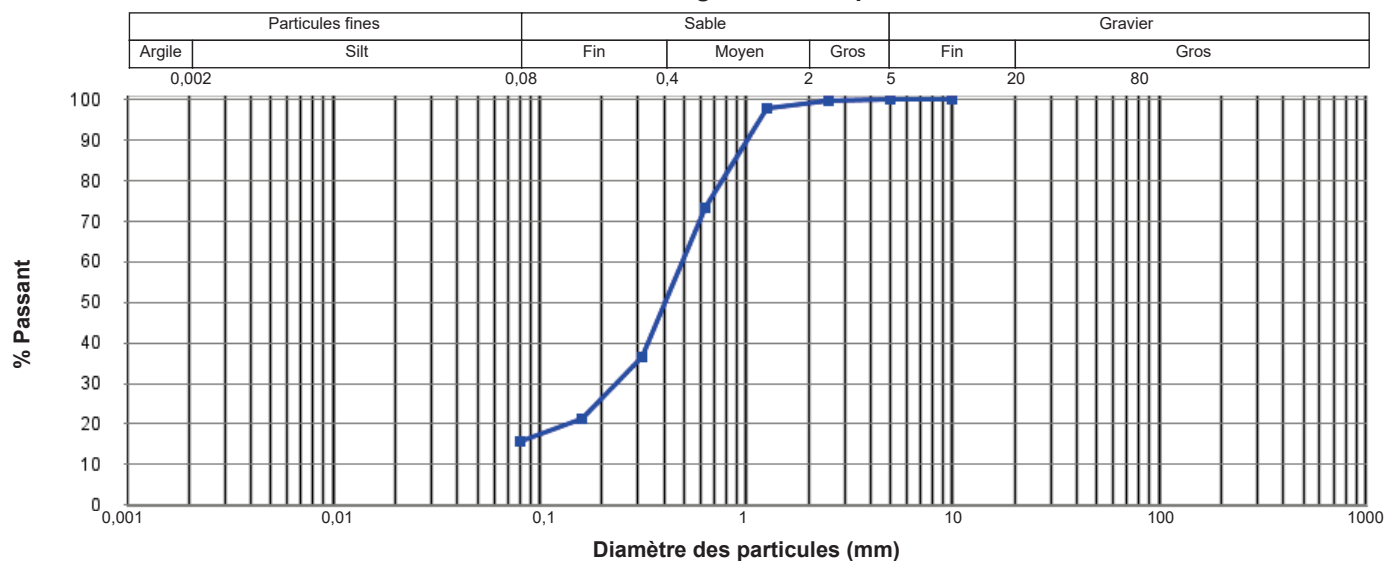
Courbe granulométrique



Analyse granulométrique LC 21-040		Description	Autres essais
Tamis (mm)	Tamisat %passant mesuré		
112		D ₁₀ :	
80		D ₃₀ :	0,140 mm
56		D ₆₀ :	0,990 mm
40		Coefficient d'uniformité (Cu) :	
31,5		Coefficient de courbure (Cc) :	
20			
14	100	Gravier:	13 %
10	97	Sable:	64 %
5	87	Silt et argile:	23 %
2,5	74	Description :	Sable silteux, un peu de gravier
1,25	63	Classification unifiée :	SM
0,630	55		
0,315	46		
0,160	32		
0,080	22,8		
Remarques :			

Client : Services publics et Approvisionnement Canada	Dossier n° : TPSGC-255784-005021	
Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° : MO-14569	
	Réf. client :	
Sondage n° : F-19-02	Prélevé le : 2019-10-09 par EXP	
Échantillon : CF-9	Reçu le : 2019-10-09	
Profondeur : 4,27 à 4,88 mètres		

Courbe granulométrique



**Analyse granulométrique
LC 21-040**

Description

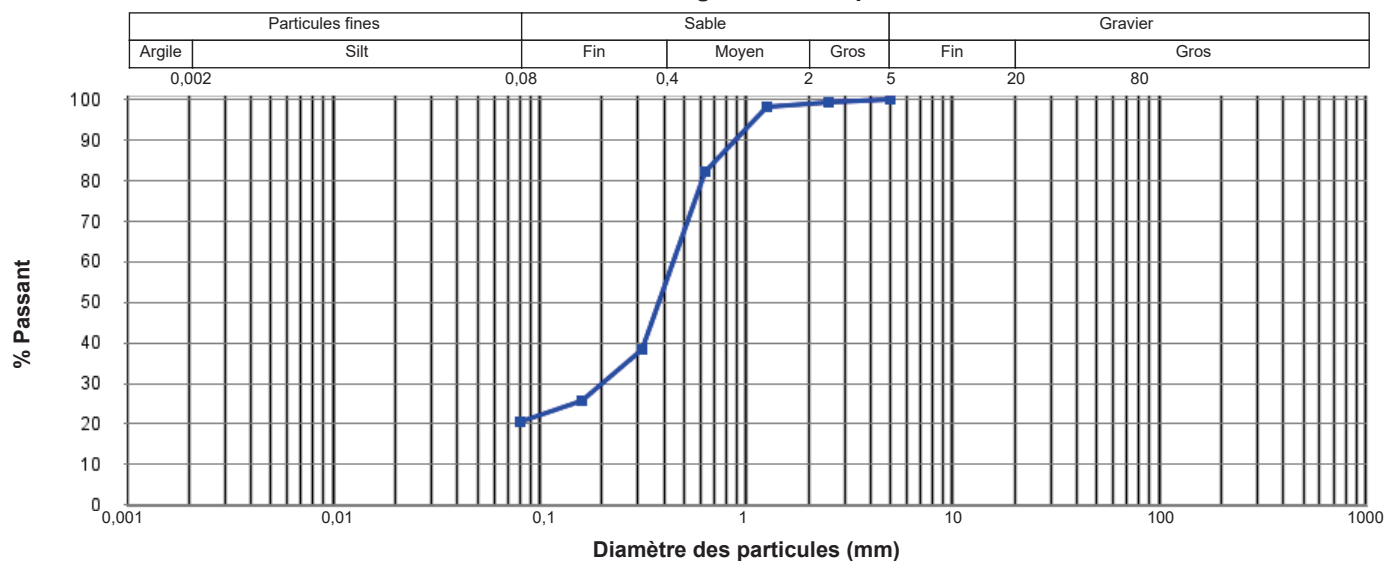
Autres essais

Tamis (mm)	Tamisat %passant mesuré		
112		D ₁₀ :	
80		D ₃₀ :	0,248 mm
56		D ₆₀ :	0,515 mm
40		Coefficient d'uniformité (Cu) :	
31,5		Coefficient de courbure (Cc) :	
20			
14		Gravier:	0 %
10	100	Sable:	84 %
5	100	Silt et argile:	16 %
2,5	100	Description :	Sable, un peu de silt
1,25	98	Classification unifiée :	SM
0,630	73		
0,315	37		
0,160	21		
0,080	15,7		

Remarques :

Client : Services publics et Approvisionnement Canada	Dossier n° : TPSGC-255784-005021	
Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° : MO-14570	
	Réf. client :	
Sondage n° : F-19-02	Prélevé le : 2019-10-09 par EXP	
Échantillon : CF-15	Reçu le : 2019-10-09	
Profondeur : 8,38 à 8,99 mètres		

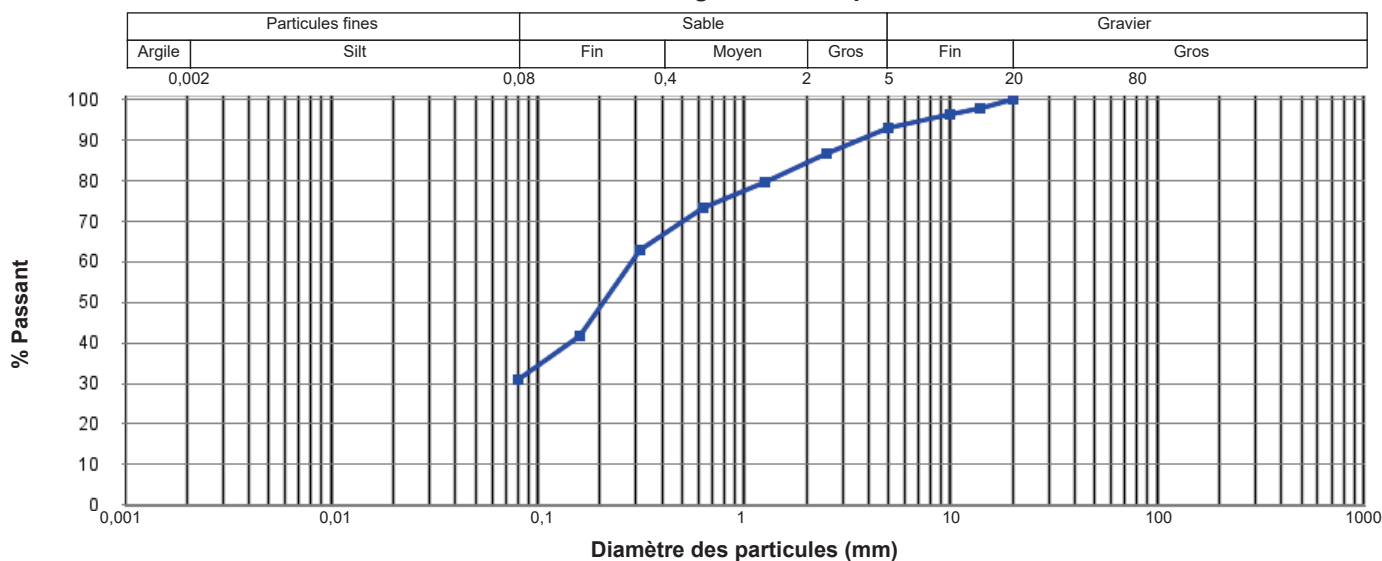
Courbe granulométrique



Analyse granulométrique LC 21-040		Description	Autres essais
Tamis (mm)	Tamisat %passant mesuré		
112		D ₁₀ :	
80		D ₃₀ : 0,212 mm	
56		D ₆₀ : 0,470 mm	
40		Coefficient d'uniformité (Cu) :	
31,5		Coefficient de courbure (Cc) :	
20			
14		Gravier: 0 %	
10		Sable: 79 %	
5	100	Silt et argile: 21 %	
2,5	99	Description : Sable silteux	
1,25	98		
0,630	82	Classification unifiée : SM	
0,315	38		
0,160	26		
0,080	20,7		
Remarques :			

Client :	Services publics et Approvisionnement Canada	Dossier n° :	TPSGC-255784-005021
Projet :	Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° :	MO-14571
		Réf. client :	
Sondage n° :	F-19-02	Prélevé le :	2019-10-09 par EXP
Échantillon :	CF-22	Reçu le :	2019-10-09
Profondeur :	15,24 à 15,85 mètres		

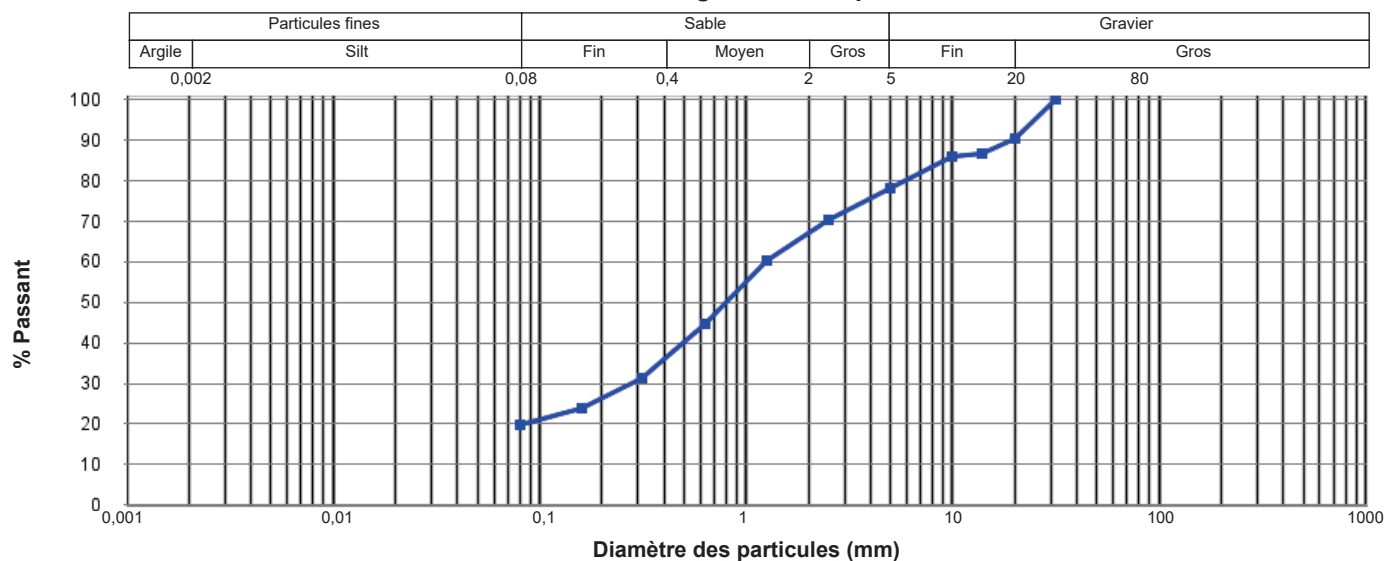
Courbe granulométrique



Analyse granulométrique LC 21-040		Description	Autres essais
Tamis (mm)	Tamisat %passant mesuré	<p>D₁₀ :</p> <p>D₃₀ :</p> <p>D₆₀ : 0,294 mm</p> <p>Coefficient d'uniformité (Cu) :</p> <p>Coefficient de courbure (Cc) :</p> <p>Gravier: 7 %</p> <p>Sable: 62 %</p> <p>Silt et argile: 31 %</p> <p>Description : Sable silteux, traces de gravier</p> <p>Classification unifiée : SM</p>	
112			
80			
56			
40			
31,5			
20	100		
14	98		
10	96		
5	93		
2,5	87		
1,25	80		
0,630	73		
0,315	63		
0,160	42		
0,080	30,8		
Remarques :			

Client : Services publics et Approvisionnement Canada	Dossier n° : TPSGC-255784-005021	
Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° : MO-14572	
	Réf. client :	
Sondage n° : F-19-02	Prélevé le : 2019-10-09 par EXP	
Échantillon : CF-26	Reçu le : 2019-10-09	
Profondeur : 21,34 à 21,95 mètres		

Courbe granulométrique



Analyse granulométrique LC 21-040		Description	Autres essais
Tamis (mm)	Tamisat %passant mesuré		
112		D ₁₀ :	
80		D ₃₀ : 0,287 mm	
56		D ₆₀ : 1,242 mm	
40		Coefficient d'uniformité (Cu) :	
31,5	100	Coefficient de courbure (Cc) :	
20	90		
14	87	Gravier: 22 %	
10	86	Sable: 58 %	
5	78	Silt et argile: 20 %	
2,5	70	Description : Sable graveleux, un peu de silt	
1,25	60	Classification unifiée : SM	
0,630	45		
0,315	31		
0,160	24		
0,080	19,6		
Remarques :			

Client : Services publics et Approvisionnement Canada

Dossier n° : TPSGC-255784-005021

Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal

Échantillon n° : MO-14573

Réf. client :

Sondage n° : F-19-02

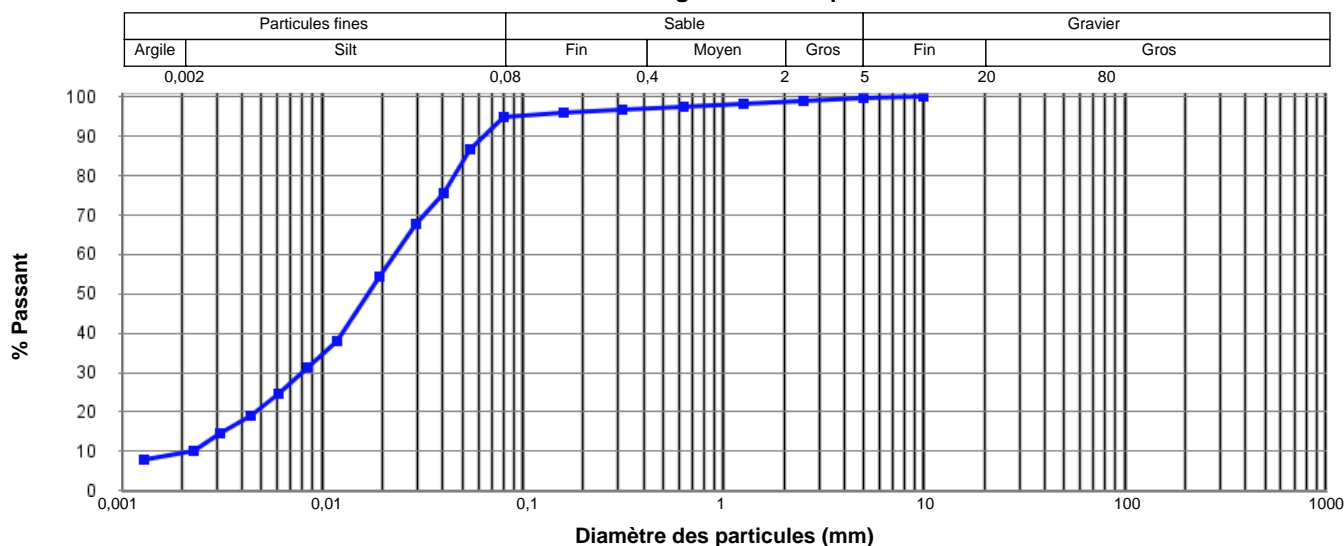
Prélevé le : 2019-10-09 par EXP

Échantillon : CF-20

Reçu le : 2019-10-09

Profondeur : 12,19 - 12,80 m

Courbe granulométrique



Analyse granulométrique LC 21-040

Description

Tamis (mm)	Tamisat %passant mesuré	Tamis (mm)	Tamisat %passant mesuré		
112		0.0545	86,6	D ₁₀ :	0,002 mm
80		0.0403	75,6	D ₃₀ :	0,008 mm
56		0.0293	67,8	D ₆₀ :	0,023 mm
40		0.0194	54,5	Coefficient d'uniformité (Cu) :	
31,5		0.0118	37,9	Coefficient de courbure (Cc) :	
20		0.0085	31,2	Gravier:	0 %
14		0.0061	24,6	Sable:	5 %
10		0.0044	19,0	Silt:	86 %
5	100	0.0031	14,6	Argile:	9 %
2,5	99	0.0023	10,1	Description :	Silt, traces d'argile, traces de sable
1,25	98	0.0013	7,9	Classification unifiée :	
0,630	98				
0,315	97				
0,160	96				
0,080	95,0				

Remarques :

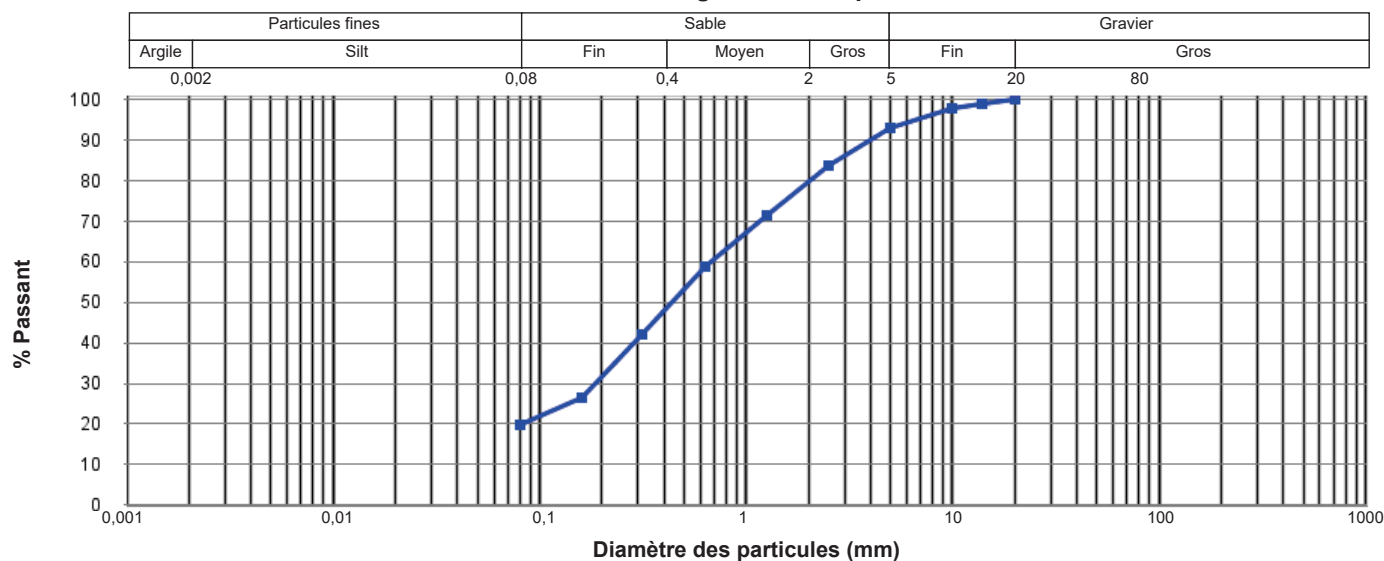
Vérifié par : Isabelle Coulombe
Chef de laboratoire

Approuvé par : Philippe Tétreault
Ingénieur - Géotechnique

Date : 2019-11-27

Client : Services publics et Approvisionnement Canada	Dossier n° : TPSGC-255784-005021	
Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° : MO-14574	
	Réf. client :	
Sondage n° : F-19-04	Prélevé le : 2019-10-16 par EXP	
Échantillon : CF-10	Reçu le : 2019-10-16	
Profondeur : 4,88 à 5,49 mètres		

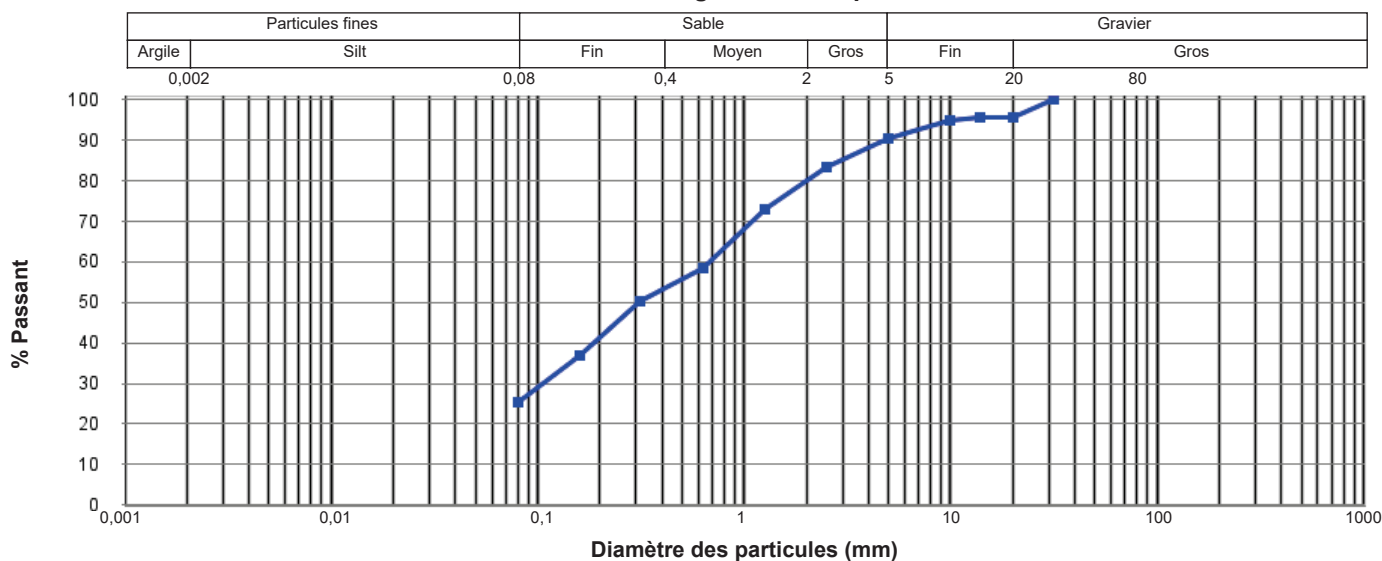
Courbe granulométrique



Analyse granulométrique LC 21-040		Description	Autres essais
Tamis (mm)	Tamisat %passant mesuré		
112		D ₁₀ :	
80		D ₃₀ : 0,194 mm	
56		D ₆₀ : 0,686 mm	
40		Coefficient d'uniformité (Cu) :	
31,5		Coefficient de courbure (Cc) :	
20	100		
14	99	Gravier: 7 %	
10	98	Sable: 73 %	
5	93	Silt et argile: 20 %	
2,5	84	Description : Sable silteux, traces de gravier	
1,25	72	Classification unifiée : SM	
0,630	59		
0,315	42		
0,160	27		
0,080	20,0		
Remarques :			

Client : Services publics et Approvisionnement Canada	Dossier n° : TPSGC-255784-005021	
Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° : MO-14575	
	Réf. client :	
Sondage n° : F-19-04	Prélevé le : 2019-10-16 par EXP	
Échantillon : CF-13	Reçu le : 2019-10-16	
Profondeur : 6,86 à 7,47 mètres		

Courbe granulométrique



**Analyse granulométrique
LC 21-040**

Description

Autres essais

Tamis (mm)	Tamisat %passant mesuré		
112		D ₁₀ :	
80		D ₃₀ :	0,113 mm
56		D ₆₀ :	0,702 mm
40		Coefficient d'uniformité (Cu) :	
31,5	100	Coefficient de courbure (Cc) :	
20	96		
14	96	Gravier:	10 %
10	95	Sable:	65 %
5	90	Silt et argile:	25 %
2,5	83	Description :	Sable silteux, un peu de gravier
1,25	73	Classification unifiée :	SM
0,630	58		
0,315	50		
0,160	37		
0,080	25,3		

Remarques :

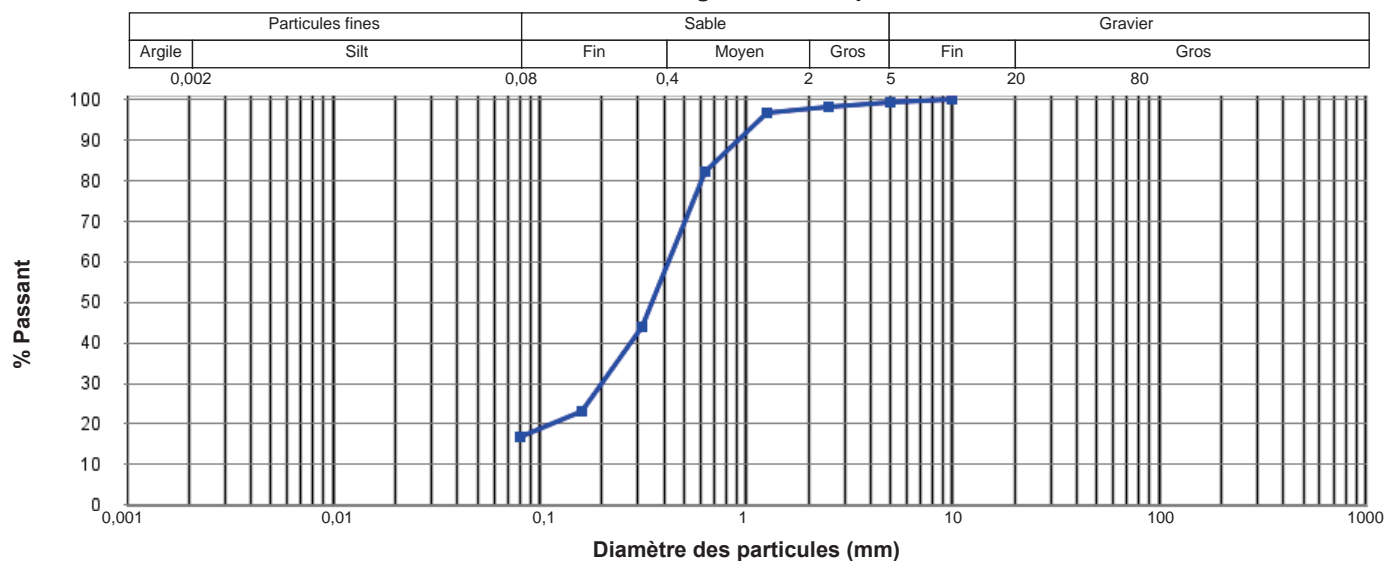
Vérifié par : _____
Isabelle Coulombe
Chef de laboratoire

Approuvé par : _____
Philippe Tétreault
Chargé de projet

Date : 2019-11-21

Client : Services publics et Approvisionnement Canada	Dossier n° : TPSGC-255784-005021	
Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° : MO-14576	
	Réf. client :	
Sondage n° : F-19-04	Prélevé le : 2019-10-16 par EXP	
Échantillon : CF-17	Reçu le : 2019-10-16	
Profondeur : 10,67 à 11,28 mètres		

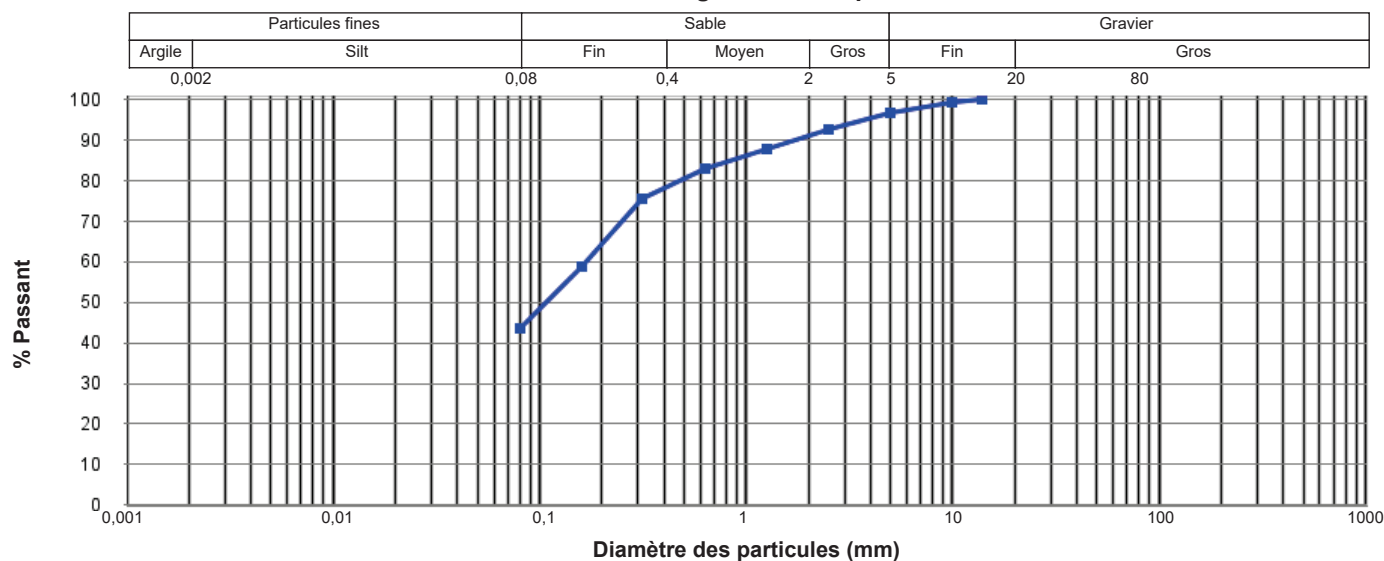
Courbe granulométrique



Analyse granulométrique LC 21-040		Description	Autres essais
Tamis (mm)	Tamisat %passant mesuré	<div>D₁₀ :</div> <div>D₃₀ :0,212 mm</div> <div>D₆₀ :0,447 mm</div> <div>Coefficient d'uniformité (Cu) :</div> <div>Coefficient de courbure (Cc) :</div> <div></div> <div>Gravier:1 %</div> <div>Sable:82 %</div> <div>Silt et argile:17 %</div> <div>Description : Sable, un peu de silt, traces de </div>	

Client :	Services publics et Approvisionnement Canada	Dossier n° :	TPSGC-255784-005021
Projet :	Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° :	MO-14577
		Réf. client :	
Sondage n° :	F-19-04	Prélevé le :	2019-10-16 par EXP
Échantillon :	CF-19	Reçu le :	2019-10-16
Profondeur :	13,72 à 14,33 mètres		

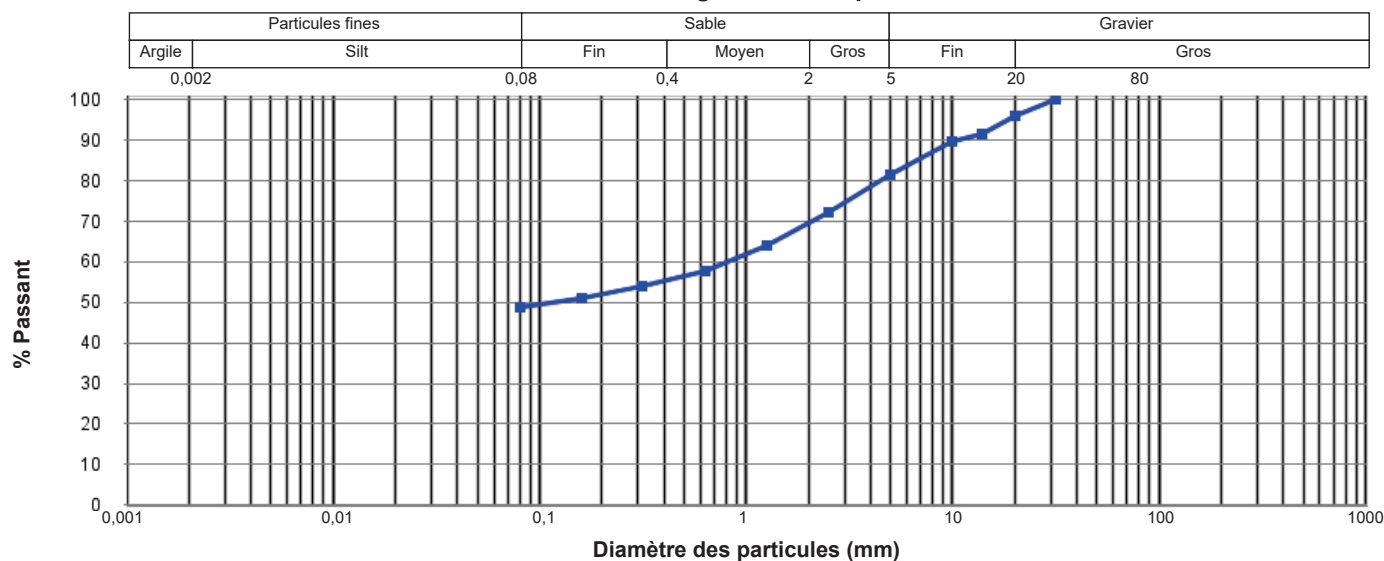
Courbe granulométrique



Analyse granulométrique LC 21-040		Description	Autres essais
Tamis (mm)	Tamisat %passant mesuré	<p>D₁₀ :</p> <p>D₃₀ :</p> <p>D₆₀ : 0,171 mm</p> <p>Coefficient d'uniformité (Cu) :</p> <p>Coefficient de courbure (Cc) :</p> <p>Gravier: 3 %</p> <p>Sable: 53 %</p> <p>Silt et argile: 44 %</p> <p>Description : Sable et silt, traces de gravier</p> <p>Classification unifiée : SM</p>	
112			
80			
56			
40			
31,5			
20			
14	100		
10	99		
5	97		
2,5	93		
1,25	88		
0,630	83		
0,315	75		
0,160	59		
0,080	43,7		
Remarques :			

Client :	Services publics et Approvisionnement Canada	Dossier n° :	TPSGC-255784-005021
Projet :	Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° :	MO-14578
		Réf. client :	
Sondage n° :	F-19-04	Prélevé le :	2019-10-16 par EXP
Échantillon :	CF-23	Reçu le :	2019-10-16
Profondeur :	18,29 à 18,90 mètres		

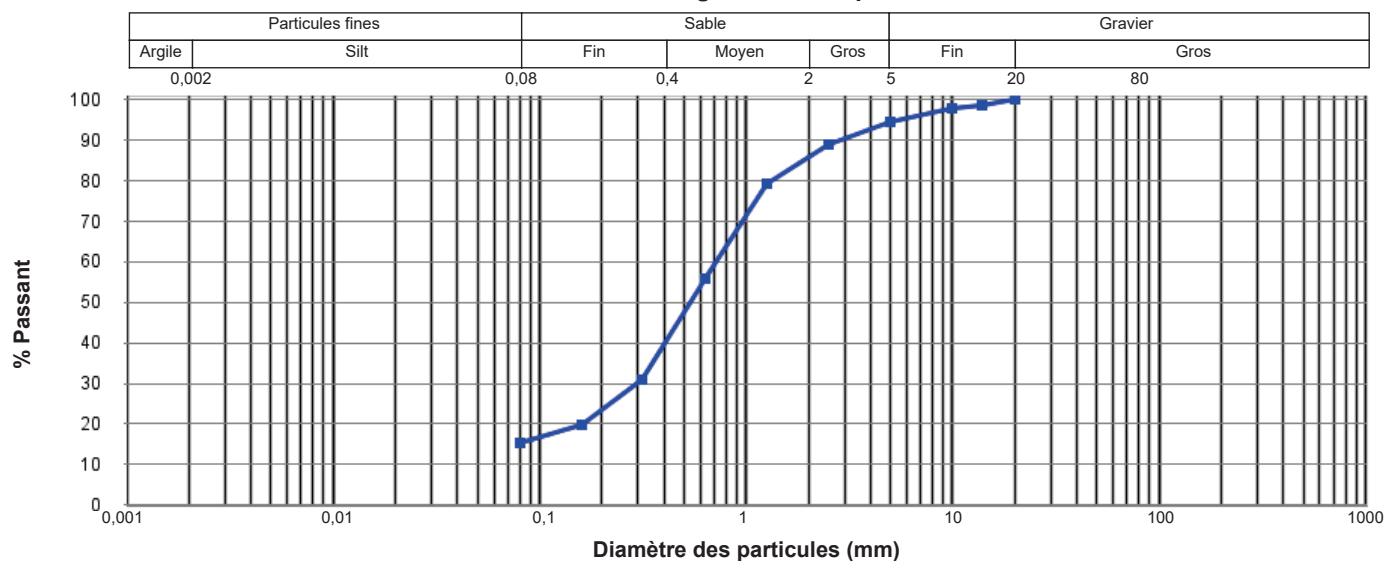
Courbe granulométrique



Analyse granulométrique LC 21-040		Description	Autres essais
Tamis (mm)	Tamisat %passant mesuré	<p>D₁₀ :</p> <p>D₃₀ :</p> <p>D₆₀ : 0,861 mm</p> <p>Coefficient d'uniformité (Cu) :</p> <p>Coefficient de courbure (Cc) :</p> <p>Gravier: 19 %</p> <p>Sable: 32 %</p> <p>Silt et argile: 49 %</p> <p>Description : Silt sableux, un peu de gravier</p> <p>Classification unifiée : SM</p>	
112			
80			
56			
40			
31,5	100		
20	96		
14	92		
10	90		
5	81		
2,5	72		
1,25	64		
0,630	58		
0,315	54		
0,160	51		
0,080	48,7		
Remarques :			

Client : Services publics et Approvisionnement Canada	Dossier n° : TPSGC-255784-005021	
Projet : Étude géotechnique- Nouveau complexe judiciaire de Montréal	Échantillon n° : MO-14579	
	Réf. client :	
Sondage n° : F-19-04	Prélevé le : 2019-10-16 par EXP	
Échantillon : CF-27	Reçu le : 2019-10-16	
Profondeur : 24,38 à 24,99 mètres		

Courbe granulométrique



Analyse granulométrique LC 21-040		Description	Autres essais
Tamis (mm)	Tamisat %passant mesuré		
112		D ₁₀ :	
80		D ₃₀ : 0,302 mm	
56		D ₆₀ : 0,742 mm	
40		Coefficient d'uniformité (Cu) :	
31,5		Coefficient de courbure (Cc) :	
20	100		
14	99	Gravier: 6 %	
10	98	Sable: 79 %	
5	94	Silt et argile: 15 %	
2,5	89	Description : Sable, un peu de silt, traces de gravier	
1,25	79	Classification unifiée : SM	
0,630	56		
0,315	31		
0,160	20		
0,080	15,2		
Remarques :			



8487, Albert-Louis-Van Houtte
Montréal (Québec) H1Z 4J2
Téléphone : 514-521-4290
Télécopieur : 514-521-4637
www.exp.com

**Résistance à la compression
de carottes de roc
ASTM D7012**

Client :	Services publics et Approvisionnement	Date :	26 novembre 2019
	Canada	Dossier :	TPSGC-255784-005021
Projet :	Étude faisabilité et PFT – Nouveau complexe	Labo n° :	MO-14568-14580
	judiciaire de Montréal	Réf. client :	F-19-01/CR-32, F-19-04/CR-31

1.0 INFORMATIONS

Carottage réalisé le	: 2019-10-16	par :	Exp
Localisation des carottes	: 46, rue St-Jacques, Montréal (Québec)		

2.0 RÉSULTATS

Échantillon : N° labo	MO-14568	MO-14580	
N° référence	F-19-01 / CR-32	F-19-04 / CR-31	
Profondeur (m)	33,10 – 33,22	30,72 – 30,82	
Date de l'essai	2019-11-22	2019-11-22	
Cure (type)	Sèche	Sèche	
Longueur totale (mm)	209,44	133,41	
Longueur meulée (mm)	108,44	101,17	
Masse de la carotte meulée (kg)	0,575	0,469	
Diamètre de la carotte (mm)	47,41	47,17	
Rapport hauteur/diamètre (2,0 - 2,5)	2,29	2,14	
Masse volumique (kg/m³)	3 004	2 653	
Charge (Newton)	311 229	69 241	
Résistance à la compression (MPa)	176,3	39,6	

3.0 REMARQUES

Essai réalisé selon la méthode «C» de la norme
--

Vérifié par : _____ Approuvé par : _____
Isabelle Coulombe, tech
Chef de laboratoire
Philippe Tétreault, ing.
Ingénieur - Géotechnique
N° OIQ 5041122

Appendix D – Compilation table of the chemical analysis results





Tableau D.1

Interprétation des résultats (mg/kg ou ppm)
des analyses chimiques d'échantillons de sols
Localisation : 46, rue St-Jacques, Montréal
N/Réf. : MTR-00255784-A0

Paramètres	Critères génériques			RESC	RPRT		F-19-02 CF-17	F-19-02 CF-18	F-19-02 CF-21
	A	B	C				9,91 - 10,21 m	10,67 - 11,28 m	13,72 - 14,33 m
					Date d'échantillonnage	Date d'échantillonnage	Date d'échantillonnage		
					I	II	2019-10-10 ID Maxxam HF7089	2019-10-10 ID Maxxam HF7090	2019-10-10 ID Maxxam HF7091
Hydrocarbures pétroliers C10 à C50	100	700	3500	10000	700	3500	5200	880	<100
Métaux									
Argent (Ag)	2	20	40	200	20	40	<0,50	<0,50	<0,50
Arsenic (As)	6	30	50	250	30	50	<5,0	<5,0	5,3
Baryum (Ba)	340	500	2000	10000	500	2000	74	37	78
Cadmium (Cd)	1.5	5	20	100	5	20	<0,50	<0,50	<0,50
Chrome total (Cr)	100	250	800	4000	250	800	13	14	18
Cobalt (Co)	25	50	300	1500	50	300	7,3	7,9	10
Cuivre (Cu)	50	100	500	2500	100	500	27	36	36
Étain (Sn)	5	50	300	1500	50	300	<4,0	<4,0	<4,0
Manganèse (Mn)	1000	1000	2200	11000	1000	2200	490	630	760
	1210	3000	3000				490	630	760
Molybdène (Mo)	2	10	40	200	10	40	1,6	<1,0	2.2
Nickel (Ni)	50	100	500	2500	100	500	22	21	31
Plomb (Pb)	50	500	1000	5000	500	1000	7,3	9,2	11
Sélénium (Se)	1	3	10	50	3	10	<1,0	<1,0	<1,0
Zinc (Zn)	140	500	1500	7500	500	1500	68	84	83
Hydrocarbures aromatiques monocycliques (HAM)									
Benzène	0.2	0.5	5	5	0.5	5	<0,020	<0,020	<0,020
Chlorobenzène (mono)	0.2	1	10	10	1	10	<0,20	<0,20	<0,20
Dichloro-1,2 benzène	0.2	1	10	10	1	10	<0,20	<0,20	<0,20
Dichloro-1,3 benzène	0.2	1	10	10	1	10	<0,20	<0,20	<0,20
Dichloro-1,4 benzène	0.2	1	10	10	1	10	<0,20	<0,20	<0,20
Éthylbenzène	0.2	5	50	50	5	50	0.22	<0,020	<0,020
Styrène	0.2	5	50	50	5	50	<0,20	<0,20	<0,20
Toluène	0.2	3	30	30	3	30	<0,050	0,16	0,092
Xylènes	0.4	5	50	50	5	50	0.64	0,043	0,054
Hydrocarbures aromatiques polycycliques (HAP)									
Acénaphène	0.1	10	100	100	10	100	0.83	0.20	<0,10
Acénaphtylène	0.1	10	100	100	10	100	<0,10	<0,10	<0,10
Anthracène	0.1	10	100	100	10	100	0.19	<0,10	<0,10
Benzo(a)anthracène	0.1	1	10	34	1	10	<0,10	<0,10	<0,10
Benzo(a)pyrène	0.1	1	10	34	1	10	<0,10	<0,10	<0,10
Benzo(b)fluoranthène	0.1	1	10	=	1	10	<0,10	<0,10	<0,10
Benzo(j)fluoranthène	0.1	1	10	=	1	10	<0,10	<0,10	<0,10
Benzo(k)fluoranthène	0.1	1	10	=	1	10	<0,10	<0,10	<0,10
Benzo(b+j+k)fluoranthène	=	=	=	136	=	=	<0,10	<0,10	<0,10
Benzo(c)phénanthrène	0.1	1	10	56	1	10	<0,10	<0,10	<0,10
Benzo(ghi)peryène	0.1	1	10	18	1	10	<0,10	<0,10	<0,10
Chrysène	0.1	1	10	34	1	10	<0,10	<0,10	<0,10
Dibenzo(a,h)anthracène	0.1	1	10	82	1	10	<0,10	<0,10	<0,10
Dibenzo(a,i)pyrène	0.1	1	10	34	1	10	<0,10	<0,10	<0,10
Dibenzo(a,h)pyrène	0.1	1	10	34	1	10	<0,10	<0,10	<0,10
Dibenzo(a,l)pyrène	0.1	1	10	34	1	10	<0,10	<0,10	<0,10
Diméthyl-7,12 Benzo (a) anthracène	0.1	1	10	34	1	10	<0,10	<0,10	<0,10
Fluoranthène	0.1	10	100	100	10	100	0.26	<0,10	<0,10
Fluorène	0.1	10	100	100	10	100	1.9	0.44	<0,10
Indéno(1,2,3-cd)pyrène	0.1	1	10	34	1	10	<0,10	<0,10	<0,10
Méthyl-3 cholanthrène	0.1	1	10	150	1	10	<0,10	<0,10	<0,10
Naphtalène	0.1	5	50	56	5	50	0.59	0.99	<0,10
Phénanthrène	0.1	5	50	56	5	50	2.9	0.65	<0,10
Pyrène	0.1	10	100	100	10	100	0.47	<0,10	<0,10
Méthyl-2 naphtalène	0.1	1	10	56	1	10	3,3	3,7	0.12
Méthyl-1 naphtalène	0.1	1	10	56	1	10	3,9	2,6	<0,10
Diméthyl-1,3 naphtalène	0.1	1	10	56	1	10	9,0	4,2	<0,10
Triméthyl-2,3,5 naphtalène	0.1	1	10	56	1	10	5,2	1,2	<0,10
Autres substances									
F1 (C6-C10)	=	=	=	=	=	=	330	33	<10
F1 (C6-C10) - BTEX	=	=	=	=	=	=	330	32	<10
o-Xylène	=	=	=	50	=	=	0,30	<0,020	<0,020
p+m-Xylène	=	=	=	=	=	=	0,34	0,043	0,054
F2 (C10-C16)	=	=	=	=	=	=	3000	4600	15
F3 (C16-C34)	=	=	=	=	=	=	3500	3700	<50
F4 (C34-C50)	=	=	=	=	=	=	<50	<50	<50
Ligne de base atteinte à C50	=	=	=	=	=	=	OUI	OUI	OUI

DC : Duplicata de chantier DL : Duplicata de laboratoire
= : Paramètre non réglementé
- : Paramètre non analysé

: Résultat A-B : Résultat C-RESC
 : Résultat B-C : Résultat ≥ RESC

Note : Les critères du manganèse ont fait l'objet d'un cadre de gestion spécifique le 28 mars 2012; des critères différents sont applicables dans le cas de teneurs naturelles



Tableau D.2
Interprétation des résultats (mg/kg ou ppm)
des analyses chimiques d'échantillons de sols

Critères du Conseil canadien des ministères de l'environnement (CCME)
Et Recommandations canadiennes pour la qualité des sols : Environnement et santé humaine
Localisation : 46, rue St-Jacques, Montréal
N/Réf. : MTR-00255784-A0

Paramètres	Standards pancanadiens CCME 2008 et supplément technique 2008		RQS _E	F-19-02 CF-17	F-19-02 CF-18	F-19-02 CF-21
	Sols grossiers, utilisation commerciale		Utilisation commerciale	9,91 - 10,21 m	10,67 - 11,28 m	13,72 - 14,33 m
	Voie d'exposition			Date	Date	Date
	Inhalation des vapeurs		Sols grossiers	2019-10-10	2019-10-10	2019-10-10
	(mg/kg)	(mg/kg)		ID Maxxam	ID Maxxam	ID Maxxam
	(mg/kg)	(mg/kg)	(mg/kg)	HF7089	HF7090	HF7091
Hydrocarbures pétroliers C10 à C50	X	X	X	5200	880	<100
Métaux						
Argent (Ag)	X	X	40	<0,50	<0,50	<0,50
Arsenic (As)	X	X	12	<5,0	<5,0	5,3
Baryum (Ba)	X	X	2000	74	37	78
Cadmium (Cd)	X	X	22	<0,50	<0,50	<0,50
Chrome total (Cr)	X	X	87	13	14	18
Cobalt (Co)	X	X	300	7,3	7,9	10
Cuivre (Cu)	X	X	91	27	36	36
Étain (Sn)	X	X	300	<4,0	<4,0	<4,0
Manganèse (Mn)	X	X	---	490	630	760
Molybdène (Mo)	X	X	40	1,6	<1,0	2,2
Nickel (Ni)	X	X	89	22	21	31
Plomb (Pb)	X	X	260	7,3	9,2	11
Sélénium (Se)	X	X	2,9	<1,0	<1,0	<1,0
Zinc (Zn)	X	X	410	68	84	83
Hydrocarbures aromatiques monocycliques (HAM)						
Benzène	X	X	360	<0,020	<0,020	<0,020
Chlorobenzène (mono)	X	X	10	<0,20	<0,20	<0,20
Dichloro-1,2 benzène	X	X	10	<0,20	<0,20	<0,20
Dichloro-1,3 benzène	X	X	10	<0,20	<0,20	<0,20
Dichloro-1,4 benzène	X	X	10	<0,20	<0,20	<0,20
Éthylbenzène	X	X	600	0,22	<0,020	<0,020
Styrène	X	X	50	<0,20	<0,20	<0,20
Toluène	X	X	500	<0,050	0,16	0,092
Xylènes	X	X	700	0,64	0,043	0,054
Hydrocarbures aromatiques polycycliques (HAP)						
Acénaphène	X	X	X	0,83	0,20	<0,10
Acénaphylène	X	X	X	<0,10	<0,10	<0,10
Anthracène	X	X	32	0,19	<0,10	<0,10
Benzo(a)anthracène	X	X	10	<0,10	<0,10	<0,10
Benzo(a)pyrène	X	X	72	<0,10	<0,10	<0,10
Benzo(b)fluoranthène	X	X	10	<0,10	<0,10	<0,10
Benzo(j)fluoranthène	X	X	X	<0,10	<0,10	<0,10
Benzo(k)fluoranthène	X	X	10	<0,10	<0,10	<0,10
Benzo(b+j+k)fluoranthène	X	X	10	<0,10	<0,10	<0,10
Benzo(c)phénanthrène	X	X	X	<0,10	<0,10	<0,10
Benzo(ghi)peryène	X	X	X	<0,10	<0,10	<0,10
Chrysène	X	X	X	<0,10	<0,10	<0,10
Dibenzo(a,h)anthracène	X	X	10	<0,10	<0,10	<0,10
Dibenzo(a,i)pyrène	X	X	X	<0,10	<0,10	<0,10
Dibenzo(a,h)pyrène	X	X	X	<0,10	<0,10	<0,10
Dibenzo(a,l)pyrène	X	X	X	<0,10	<0,10	<0,10
Diméthyl-7,12 Benzo (a) anthracène	X	X	X	<0,10	<0,10	<0,10
Fluoranthène	X	X	180	0,26	<0,10	<0,10
Fluorène	X	X	X	1,9	0,44	<0,10
Indéno(1,2,3-cd)pyrène	X	X	10	<0,10	<0,10	<0,10
Méthyl-3 cholanthrène	X	X	X	<0,10	<0,10	<0,10
Naphtalène	X	X	0.013	0,59	0,99	<0,10
Phénanthrène	X	X	0.046	2,9	0,65	<0,10
Pyrène	X	X	100	0,47	<0,10	<0,10
Méthyl-2 naphtalène	X	X	X	3,3	3,7	0,12
Méthyl-1 naphtalène	X	X	X	3,9	2,6	<0,10
Diméthyl-1,3 naphtalène	X	X	100	9,0	4,2	<0,10
Triméthyl-2,3,5 naphtalène	X	X	X	5,2	1,2	<0,10
ETT du benzo(a)pyrène	X	X	5,3	0	0	0
Autres substances						
F1 (C6-C10)	320	700	X	330	33	<10
F2 (C10-C16)	1700	1000	X	3000	4600	15
F3 (C16-C34)	S.O.	3500	X	3500	3700	<50
F4 (C34-C50)	S.O.	10000	X	<50	<50	<50
Ligne de base atteinte à C50				OUI	OUI	OUI

X : Paramètre non réglementé

Appendix E – Certificate of chemical analyses



Votre # du projet: MTR-00255784-A0
Adresse du site: 46, rue St-Jacques, Montréal
Votre # Bordereau: 22370

Attention: Philippe Tetreault

Les Services exp Inc.
8487 Ave A.-Louis-Van Houtte
Montréal, QC
Canada H1Z 4J2

Date du rapport: 2019/11/12

Rapport: R2516913

Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER LAB BV: B954965

Reçu: 2019/11/04, 14:55

Matrice: Sol
Nombre d'échantillons reçus: 3

Analyses	Quantité	Date de l' extraction	Date Analysé	Méthode de laboratoire	Méthode d'analyse
Hydrocarbures pétroliers (C10-C50)	3	2019/11/08	2019/11/09	STL SOP-00172	MA.400-HYD. 1.1 R3 m
CCME F1/BTEX - MeOH sur le terrain (1)	3	N/A	2019/11/07	STL SOP-00131	CCME PHC-CWS m
Hydrocarbures pétroliers (F2-F4) (2)	3	2019/11/07	2019/11/08	STL SOP-00170	CCME PHC-CWS m
HAM-Conservation au MeOH sur le terrain (3)	3	N/A	2019/11/07	STL SOP-00145	MA.400-COV 2.0 R4 m
Métaux extractibles totaux par ICP	3	2019/11/06	2019/11/08	STL SOP-00069	MA.200-Mét. 1.2 R5 m
Hydrocarbures aromatiques polycycliques	3	2019/11/08	2019/11/09	STL SOP-00178	MA.400-HAP 1.1 R5 m

Remarques:

Laboratoires Bureau Veritas sont certifiés ISO/IEC 17025 pour certains paramètres précis des portées d'accréditation. Sauf indication contraire, les méthodes d'analyses utilisées par Labs BV s'inspirent des méthodes de référence d'organismes provinciaux, fédéraux et américains, tels que le CCME, le MELCC, l'EPA et l'APHA.

Toutes les analyses présentées ont été réalisées conformément aux procédures et aux pratiques relatives à la méthodologie, à l'assurance qualité et au contrôle de la qualité généralement appliqués par les employés de Labs BV (sauf s'il en a été convenu autrement par écrit entre le client et Labs BV). Toutes les données de laboratoire rencontrent les contrôles statistiques et respectent tous les critères de CQ et les critères de performance des méthodes, sauf s'il en a été signalé autrement. Tous les blancs de méthode sont rapportés, toutefois, les données des échantillons correspondants ne sont pas corrigées pour la valeur du blanc, sauf indication contraire. Le cas échéant, sauf indication contraire, l'incertitude de mesure n'a pas été prise en considération lors de la déclaration de la conformité à la norme de référence.

Les responsabilités de Labs BV sont restreintes au coût réel de l'analyse, sauf s'il en a été convenu autrement par écrit. Il n'existe aucune autre garantie, explicite ou implicite. Le client a fait appel à Labs BV pour l'analyse de ses échantillons conformément aux méthodes de référence mentionnées dans ce rapport. L'interprétation et l'utilisation des résultats sont sous l'entière responsabilité du client et ne font pas partie des services offerts par Labs BV, sauf si convenu autrement par écrit. Labs BV ne peut pas garantir l'exactitude des résultats qui dépendent des renseignements fournis par le client ou son représentant.

Les résultats des échantillons solides, sauf les biotes, sont rapportés en fonction de la masse sèche, sauf indication contraire. Les analyses organiques ne sont pas corrigées en fonction de la récupération, sauf pour les méthodes de dilution isotopique.

Les résultats s'appliquent seulement aux échantillons analysés. Si l'échantillonnage n'est pas effectué par Labs BV, les résultats se rapportent aux échantillons fournis pour analyse.

Le présent rapport ne doit pas être reproduit, sinon dans son intégralité, sans le consentement écrit du laboratoire.

Lorsque la méthode de référence comprend un suffixe « m », cela signifie que la méthode d'analyse du laboratoire contient des modifications validées et appliquées afin d'améliorer la performance de la méthode de référence.

Notez: Les données brutes sont utilisées pour le calcul du RPD (% d'écart relatif). L'arrondissement des résultats finaux peut expliquer la variation apparente.

(1) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Lab BV respectent tous les

Votre # du projet: MTR-00255784-A0
Adresse du site: 46, rue St-Jacques, Montréal
Votre # Bordereau: 22370

Attention: Philippe Tetreault

Les Services exp Inc.
8487 Ave A.-Louis-Van Houtte
Montréal, QC
Canada H1Z 4J2

Date du rapport: 2019/11/12
Rapport: R2516913
Version: 1 - Finale

CERTIFICAT D'ANALYSES

DE DOSSIER LAB BV: B954965

Reçu: 2019/11/04, 14:55

éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.

Aucune date d'extraction n'est fournie pour les analyses de F1/BTEX et COV lorsque les sols sont conservés dans le méthanol sur le terrain. La date d'extraction correspond à la date d'échantillonnage à moins d'indication contraire.

(2) Tous les résultats pour le CCME répondent aux critères exigés, sauf indication contraire dans le rapport. Les méthodes du SP-HCP utilisées par Lab BV respectent tous les éléments imposés par la méthode de référence et les éléments se rapportant à la performance ont été validés. Toutes les modifications ont été validées et jugées équivalentes d'après l'Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods, September 2003. La documentation est fournie sur demande. Différence par rapport à la Méthode de référence pour le standard pancanadien relatif aux hydrocarbures pétroliers dans le sol – méthode du 1er volet : les résultats pour les fractions F2/F3/F4 sont rapportés à l'aide d'une extraction à froid par solvant au lieu d'une extraction avec un appareil Soxhlet.

(3) Aucune date d'extraction n'est fournie pour les analyses de F1/BTEX et COV lorsque les sols sont conservés dans le méthanol sur le terrain. La date d'extraction correspond à la date d'échantillonnage à moins d'indication contraire.

Note : Les paramètres inclus dans le présent certificat sont accrédités par le MELCC, à moins d'indication contraire.

clé de cryptage



AUTHORIZED REPORT
RAPPORT AUTORISÉ

Laboratoires Bureau Veritas

12 Nov 2019 16:01:13

Veuillez adresser toute question concernant ce certificat d'analyse à votre chargé(e) de projets

Lauriane Bernard, M.Sc. Biochimie, Chargée de projets

Courriel: Lauriane.BERNARD@bvlab.com

Téléphone (514)448-9001 Ext:7066251

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Ce rapport a été produit et distribué en utilisant une procédure automatisée sécuritaire.

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Dossier Lab BV: B954965

Date du rapport: 2019/11/12

Les Services exp Inc.

Votre # du projet: MTR-00255784-A0

Adresse du site: 46, rue St-Jacques, Montréal

HYDROCARBURES PÉTROLIERS F1BTX (SOL)

ID Lab BV		HF7089	HF7090	HF7091		
Date d'échantillonnage		2019/10/10	2019/10/10	2019/10/10		
# Bordereau		22370	22370	22370		
	Unités	F-19-02 CF-17	F-19-02 CF-18	F-19-02 CF-21	LDR	Lot CQ
% HUMIDITÉ	%	7.9	15	13		
VOLATILS						
Benzène	mg/kg	<0.020	<0.020	<0.020	0.020	2047672
Toluène	mg/kg	<0.050	0.16	0.092	0.050	2047672
Éthylbenzène	mg/kg	0.22	<0.020	<0.020	0.020	2047672
p+m-Xylène	mg/kg	0.34	0.043	0.054	0.040	2047672
o-Xylène	mg/kg	0.30	<0.020	<0.020	0.020	2047672
Xylènes (o,m,p) †	mg/kg	0.64	0.043	0.054	0.040	2047672
F1 (C6-C10) †	mg/kg	330	33	<10	10	2047672
F1 (C6-C10) - BTEX †	mg/kg	330	32	<10	10	2047672
Récupération des Surrogates (%)						
1,4-Difluorobenzène	%	102	100	100		2047672
4-Bromofluorobenzène	%	101	103	99		2047672
D10-Ethylbenzène	%	104	111	95		2047672
D4-1,2-Dichloroéthane	%	103	99	101		2047672
LDR = Limite de détection rapportée						
Lot CQ = Lot contrôle qualité						
† Accréditation non existante pour ce paramètre						



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Dossier Lab BV: B954965

Date du rapport: 2019/11/12

Les Services exp Inc.

Votre # du projet: MTR-00255784-A0

Adresse du site: 46, rue St-Jacques, Montréal

HAP PAR GCMS (SOL)

ID Lab BV		HF7089	HF7090	HF7091		
Date d'échantillonnage		2019/10/10	2019/10/10	2019/10/10		
# Bordereau		22370	22370	22370		
	Unités	F-19-02 CF-17	F-19-02 CF-18	F-19-02 CF-21	LDR	Lot CQ
% HUMIDITÉ	%	7.9	15	13		
HAP						
Acénaphène	mg/kg	0.83	0.20	<0.10	0.10	2048316
Acénaphthylène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Anthracène	mg/kg	0.19	<0.10	<0.10	0.10	2048316
Benzo(a)anthracène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Benzo(a)pyrène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Benzo(b)fluoranthène †	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Benzo(j)fluoranthène †	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Benzo(k)fluoranthène †	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Benzo(b+j+k)fluoranthène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Benzo(c)phénanthrène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Benzo(ghi)pérylène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Chrysène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Dibenzo(a,h)anthracène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Dibenzo(a,i)pyrène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Dibenzo(a,h)pyrène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Dibenzo(a,l)pyrène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
7,12-Diméthylbenzanthracène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Fluoranthène	mg/kg	0.26	<0.10	<0.10	0.10	2048316
Fluorène	mg/kg	1.9	0.44	<0.10	0.10	2048316
Indéno(1,2,3-cd)pyrène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
3-Méthylcholanthrène	mg/kg	<0.10	<0.10	<0.10	0.10	2048316
Naphtalène	mg/kg	0.59	0.99	<0.10	0.10	2048316
Phénanthrène	mg/kg	2.9	0.65	<0.10	0.10	2048316
Pyrène	mg/kg	0.47	<0.10	<0.10	0.10	2048316
2-Méthylnaphtalène	mg/kg	3.3	3.7	0.12	0.10	2048316
1-Méthylnaphtalène	mg/kg	3.9	2.6	<0.10	0.10	2048316
1,3-Diméthylnaphtalène	mg/kg	9.0	4.2	<0.10	0.10	2048316
2,3,5-Triméthylnaphtalène	mg/kg	5.2	1.2	<0.10	0.10	2048316
Récupération des Surrogates (%)						
D10-Anthracène	%	70	84	76		2048316
D12-Benzo(a)pyrène	%	80	80	76		2048316
D14-Terphenyl	%	86	88	90		2048316
D8-Acenaphthylene	%	86	86	88		2048316
D8-Naphtalène	%	84	92	92		2048316
LDR = Limite de détection rapportée						
Lot CQ = Lot contrôle qualité						
† Accréditation non existante pour ce paramètre						



BUREAU
VERITAS

Dossier Lab BV: B954965

Date du rapport: 2019/11/12

Les Services exp Inc.

Votre # du projet: MTR-00255784-A0

Adresse du site: 46, rue St-Jacques, Montréal

HYDROCARBURES PAR GCFID (SOL)

ID Lab BV		HF7089	HF7090	HF7091		
Date d'échantillonnage		2019/10/10	2019/10/10	2019/10/10		
# Bordereau		22370	22370	22370		
	Unités	F-19-02 CF-17	F-19-02 CF-18	F-19-02 CF-21	LDR	Lot CQ
% HUMIDITÉ	%	7.9	15	13		
HYDROCARBURES PÉTROLIERS						
Hydrocarbures pétroliers (C10-C50)	mg/kg	5200	880	<100	100	2048312
F2 (C10-C16) †	mg/kg	3000	4600	15	10	2047820
F3 (C16-C34) †	mg/kg	3500	3700	<50	50	2047820
F4 (C34-C50) †	mg/kg	<50	<50	<50	50	2047820
Ligne de base atteinte à C50 †	mg/kg	OUI	OUI	OUI	N/A	2047820
Récupération des Surrogates (%)						
1-Chlorooctadécane	%	87	87	99		2048312
O-Terphenyl	%	108	110	108		2047820
LDR = Limite de détection rapportée Lot CQ = Lot contrôle qualité † Accréditation non existante pour ce paramètre N/A = Non Applicable						



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Les Services exp Inc.

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Adresse du site: 46, rue St-Jacques, Montréal

HAM PAR GC/MS (SOL)

ID Lab BV		HF7089	HF7090	HF7091		
Date d'échantillonnage		2019/10/10	2019/10/10	2019/10/10		
# Bordereau		22370	22370	22370		
	Unités	F-19-02 CF-17	F-19-02 CF-18	F-19-02 CF-21	LDR	Lot CQ
% HUMIDITÉ	%	7.9	15	13		
VOLATILS						
Benzène	mg/kg	<0.10	<0.10	<0.10	0.10	2047658
Chlorobenzène	mg/kg	<0.20	<0.20	<0.20	0.20	2047658
Dichloro-1,2 benzène	mg/kg	<0.20	<0.20	<0.20	0.20	2047658
Dichloro-1,3 benzène	mg/kg	<0.20	<0.20	<0.20	0.20	2047658
Dichloro-1,4 benzène	mg/kg	<0.20	<0.20	<0.20	0.20	2047658
Éthylbenzène	mg/kg	0.24	<0.20	<0.20	0.20	2047658
Styrène	mg/kg	<0.20	<0.20	<0.20	0.20	2047658
Toluène	mg/kg	<0.20	<0.20	<0.20	0.20	2047658
Xylènes (o,m,p) †	mg/kg	0.69	<0.20	<0.20	0.20	2047658
Récupération des Surrogates (%)						
4-Bromofluorobenzène	%	93	93	92		2047658
D10-Ethylbenzène	%	110	102	100		2047658
D4-1,2-Dichloroéthane	%	87	92	92		2047658
D8-Toluène	%	99	103	97		2047658
LDR = Limite de détection rapportée						
Lot CQ = Lot contrôle qualité						
† Accréditation non existante pour ce paramètre						



BUREAU
VERITAS

Dossier Lab BV: B954965

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Les Services exp Inc.

Votre # du projet: MTR-00255784-A0

Adresse du site: 46, rue St-Jacques, Montréal

MÉTAUX EXTRACTIBLES TOTAUX (SOL)

ID Lab BV		HF7089	HF7090	HF7091		
Date d'échantillonnage		2019/10/10	2019/10/10	2019/10/10		
# Bordereau		22370	22370	22370		
	Unités	F-19-02 CF-17	F-19-02 CF-18	F-19-02 CF-21	LDR	Lot CQ
% HUMIDITÉ	%	7.9	15	13		
MÉTAUX						
Argent (Ag)	mg/kg	<0.50	<0.50	<0.50	0.50	2047326
Arsenic (As)	mg/kg	<5.0	<5.0	5.3	5.0	2047326
Baryum (Ba)	mg/kg	74	37	78	5.0	2047326
Cadmium (Cd)	mg/kg	<0.50	<0.50	<0.50	0.50	2047326
Chrome (Cr)	mg/kg	13	14	18	2.0	2047326
Cobalt (Co)	mg/kg	7.3	7.9	10	2.0	2047326
Cuivre (Cu)	mg/kg	27	36	36	2.0	2047326
Etain (Sn)	mg/kg	<4.0	<4.0	<4.0	4.0	2047326
Manganèse (Mn)	mg/kg	490	630	760	2.0	2047326
Molybdène (Mo)	mg/kg	1.6	<1.0	2.2	1.0	2047326
Nickel (Ni)	mg/kg	22	21	31	1.0	2047326
Plomb (Pb)	mg/kg	7.3	9.2	11	5.0	2047326
Sélénium (Se)	mg/kg	<1.0	<1.0	<1.0	1.0	2047326
Zinc (Zn)	mg/kg	68	84	83	10	2047326
LDR = Limite de détection rapportée						
Lot CQ = Lot contrôle qualité						



BUREAU
VERITAS

Dossier Lab BV: B954965

Date du rapport: 2019/11/12

Les Services exp Inc.

Votre # du projet: MTR-00255784-A0

Adresse du site: 46, rue St-Jacques, Montréal

REMARQUES GÉNÉRALES

Contenant d'échantillonnage brisé pendant le transport.: HF7089

Hydrocarbures pétroliers (C10-C50): Délai maximum de conservation dépassé sur réception.: HF7089

Hydrocarbures pétroliers (F2-F4): Délai maximum de conservation dépassé sur réception.: HF7089

Hydrocarbures aromatiques polycycliques: Délai maximum de conservation dépassé sur réception.: HF7089

Contenant d'échantillonnage brisé pendant le transport.: HF7089

CCME F1/BTEX - MeOH sur le terrain: Délai maximum de conservation dépassé sur réception.: HF7089

HAM-Conservation au MeOH sur le terrain: Délai maximum de conservation dépassé sur réception.: HF7089

Contenant d'échantillonnage brisé pendant le transport.: HF7090

Hydrocarbures pétroliers (C10-C50): Délai maximum de conservation dépassé sur réception.: HF7090

Hydrocarbures pétroliers (F2-F4): Délai maximum de conservation dépassé sur réception.: HF7090

Hydrocarbures aromatiques polycycliques: Délai maximum de conservation dépassé sur réception.: HF7090

Contenant d'échantillonnage brisé pendant le transport.: HF7090

CCME F1/BTEX - MeOH sur le terrain: Délai maximum de conservation dépassé sur réception.: HF7090

HAM-Conservation au MeOH sur le terrain: Délai maximum de conservation dépassé sur réception.: HF7090

Contenant d'échantillonnage brisé pendant le transport.: HF7091

Hydrocarbures pétroliers (C10-C50): Délai maximum de conservation dépassé sur réception.: HF7091

Hydrocarbures pétroliers (F2-F4): Délai maximum de conservation dépassé sur réception.: HF7091

Hydrocarbures aromatiques polycycliques: Délai maximum de conservation dépassé sur réception.: HF7091

Contenant d'échantillonnage brisé pendant le transport.: HF7091

CCME F1/BTEX - MeOH sur le terrain: Délai maximum de conservation dépassé sur réception.: HF7091

HAM-Conservation au MeOH sur le terrain: Délai maximum de conservation dépassé sur réception.: HF7091

HYDROCARBURES PÉTROLIERS F1BTEX (SOL)

Noter que les résultats totaux sont arrondis à deux chiffres significatifs.

Veuillez noter que les résultats ci-dessus ont été corrigés pour le blanc d'instrument.

HAP PAR GCMS (SOL)

Les résultats bruts non-arrondis sont utilisés dans le calcul du benzo(b+j+k)fluoranthène. Ce résultat total est alors arrondi à deux chiffres significatifs.

Les résultats ne se rapportent qu'aux échantillons soumis pour analyse



BUREAU
VERITAS

Dossier Lab BV: B954965

Date du rapport: 2019/11/12

Les Services exp Inc.

Votre # du projet: MTR-00255784-A0

Adresse du site: 46, rue St-Jacques, Montréal

RAPPORT ASSURANCE QUALITÉ

Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
2047326	KK	Blanc fortifié	Argent (Ag)	2019/11/08		97	%
			Arsenic (As)	2019/11/08		99	%
			Baryum (Ba)	2019/11/08		99	%
			Cadmium (Cd)	2019/11/08		99	%
			Chrome (Cr)	2019/11/08		96	%
			Cobalt (Co)	2019/11/08		95	%
			Cuivre (Cu)	2019/11/08		99	%
			Etain (Sn)	2019/11/08		91	%
			Manganèse (Mn)	2019/11/08		100	%
			Molybdène (Mo)	2019/11/08		97	%
			Nickel (Ni)	2019/11/08		99	%
			Plomb (Pb)	2019/11/08		94	%
			Sélénium (Se)	2019/11/08		97	%
			Zinc (Zn)	2019/11/08		99	%
2047326	KK	Blanc de méthode	Argent (Ag)	2019/11/08	<0.50		mg/kg
			Arsenic (As)	2019/11/08	<5.0		mg/kg
			Baryum (Ba)	2019/11/08	<5.0		mg/kg
			Cadmium (Cd)	2019/11/08	<0.50		mg/kg
			Chrome (Cr)	2019/11/08	<2.0		mg/kg
			Cobalt (Co)	2019/11/08	<2.0		mg/kg
			Cuivre (Cu)	2019/11/08	<2.0		mg/kg
			Etain (Sn)	2019/11/08	<4.0		mg/kg
			Manganèse (Mn)	2019/11/08	<2.0		mg/kg
			Molybdène (Mo)	2019/11/08	<1.0		mg/kg
			Nickel (Ni)	2019/11/08	<1.0		mg/kg
			Plomb (Pb)	2019/11/08	<5.0		mg/kg
			Sélénium (Se)	2019/11/08	<1.0		mg/kg
			Zinc (Zn)	2019/11/08	<10		mg/kg
2047658	KST	Blanc fortifié	4-Bromofluorobenzène	2019/11/07		98	%
			D10-Ethylbenzène	2019/11/07		103	%
			D4-1,2-Dichloroéthane	2019/11/07		88	%
			D8-Toluène	2019/11/07		98	%
			Benzène	2019/11/07		95	%
			Chlorobenzène	2019/11/07		99	%
			Dichloro-1,2 benzène	2019/11/07		101	%
			Dichloro-1,3 benzène	2019/11/07		107	%
			Dichloro-1,4 benzène	2019/11/07		103	%
			Éthylbenzène	2019/11/07		102	%
			Styrène	2019/11/07		102	%
			Toluène	2019/11/07		98	%
			Xylènes (o,m,p)	2019/11/07		101	%
2047658	KST	Blanc de méthode	4-Bromofluorobenzène	2019/11/07		98	%
			D10-Ethylbenzène	2019/11/07		104	%
			D4-1,2-Dichloroéthane	2019/11/07		90	%
			D8-Toluène	2019/11/07		89	%
			Benzène	2019/11/07	<0.10		mg/kg
			Chlorobenzène	2019/11/07	<0.20		mg/kg
			Dichloro-1,2 benzène	2019/11/07	<0.20		mg/kg
			Dichloro-1,3 benzène	2019/11/07	<0.20		mg/kg
			Dichloro-1,4 benzène	2019/11/07	<0.20		mg/kg
			Éthylbenzène	2019/11/07	<0.20		mg/kg
			Styrène	2019/11/07	<0.20		mg/kg



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Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
2047672	ABE	Blanc fortifié	Toluène	2019/11/07	<0.20		mg/kg
			Xylènes (o,m,p)	2019/11/07	<0.20		mg/kg
			1,4-Difluorobenzène	2019/11/07		102	%
			4-Bromofluorobenzène	2019/11/07		101	%
			D10-Ethylbenzène	2019/11/07		108	%
			D4-1,2-Dichloroéthane	2019/11/07		106	%
			Benzène	2019/11/07		105	%
			Toluène	2019/11/07		92	%
			Éthylbenzène	2019/11/07		104	%
			p+m-Xylène	2019/11/07		93	%
			o-Xylène	2019/11/07		100	%
			Xylènes (o,m,p)	2019/11/07		96	%
			F1 (C6-C10)	2019/11/07		89	%
2047672	ABE	Blanc de méthode	1,4-Difluorobenzène	2019/11/07		102	%
			4-Bromofluorobenzène	2019/11/07		101	%
			D10-Ethylbenzène	2019/11/07		106	%
			D4-1,2-Dichloroéthane	2019/11/07		102	%
			Benzène	2019/11/07	<0.020		mg/kg
			Toluène	2019/11/07	<0.050		mg/kg
			Éthylbenzène	2019/11/07	<0.020		mg/kg
			p+m-Xylène	2019/11/07	<0.040		mg/kg
			o-Xylène	2019/11/07	<0.020		mg/kg
			Xylènes (o,m,p)	2019/11/07	<0.040		mg/kg
			F1 (C6-C10)	2019/11/07	<10		mg/kg
			F1 (C6-C10) - BTEX	2019/11/07	<10		mg/kg
2047820	SHA	Blanc fortifié	O-Terphenyl	2019/11/08		113	%
			F2 (C10-C16)	2019/11/08		111	%
			F3 (C16-C34)	2019/11/08		111	%
			F4 (C34-C50)	2019/11/08		111	%
			O-Terphenyl	2019/11/08		101	%
2047820	SHA	Blanc de méthode	F2 (C10-C16)	2019/11/08	<10		mg/kg
			F3 (C16-C34)	2019/11/08	<50		mg/kg
			F4 (C34-C50)	2019/11/08	<50		mg/kg
2048312	CG2	Blanc fortifié	1-Chlorooctadécane	2019/11/09		89	%
			Hydrocarbures pétroliers (C10-C50)	2019/11/09		89	%
2048312	CG2	Blanc de méthode	1-Chlorooctadécane	2019/11/09		85	%
			Hydrocarbures pétroliers (C10-C50)	2019/11/09	<100		mg/kg
2048316	AMN	Blanc fortifié	D10-Anthracène	2019/11/09		94	%
			D12-Benzo(a)pyrène	2019/11/09		86	%
			D14-Terphenyl	2019/11/09		92	%
			D8-Acenaphthylene	2019/11/09		86	%
			D8-Naphtalène	2019/11/09		88	%
			Acénaphène	2019/11/09		87	%
			Acénaphthylène	2019/11/09		91	%
			Anthracène	2019/11/09		98	%
			Benzo(a)anthracène	2019/11/09		101	%
			Benzo(a)pyrène	2019/11/09		84	%
			Benzo(b)fluoranthène	2019/11/09		93	%
			Benzo(j)fluoranthène	2019/11/09		83	%
			Benzo(k)fluoranthène	2019/11/09		83	%
			Benzo(b+j+k)fluoranthène	2019/11/09		87	%
			Benzo(c)phénanthrène	2019/11/09		95	%

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Lot AQ/CQ	Init	Type CQ	Groupe	Date Analysé	Valeur	Réc	Unités
2048316	AMN	Blanc de méthode	Benzo(ghi)pérylène	2019/11/09		88	%
			Chrysène	2019/11/09		100	%
			Dibenzo(a,h)anthracène	2019/11/09		90	%
			Dibenzo(a,i)pyrène	2019/11/09		81	%
			Dibenzo(a,h)pyrène	2019/11/09		78	%
			Dibenzo(a,l)pyrène	2019/11/09		87	%
			7,12-Diméthylbenzanthracène	2019/11/09		59	%
			Fluoranthène	2019/11/09		86	%
			Fluorène	2019/11/09		92	%
			Indéno(1,2,3-cd)pyrène	2019/11/09		93	%
			3-Méthylcholanthrène	2019/11/09		73	%
			Naphtalène	2019/11/09		91	%
			Phénanthrène	2019/11/09		100	%
			Pyrène	2019/11/09		86	%
			2-Méthylnaphtalène	2019/11/09		64	%
			1-Méthylnaphtalène	2019/11/09		78	%
			1,3-Diméthylnaphtalène	2019/11/09		81	%
			2,3,5-Triméthylnaphtalène	2019/11/09		87	%
			D10-Anthracène	2019/11/09		116	%
			D12-Benzo(a)pyrène	2019/11/09		88	%
			D14-Terphenyl	2019/11/09		94	%
			D8-Acenaphthylene	2019/11/09		90	%
			D8-Naphtalène	2019/11/09		90	%
			Acénaphène	2019/11/09	<0.10		mg/kg
			Acénaphthylène	2019/11/09	<0.10		mg/kg
			Anthracène	2019/11/09	<0.10		mg/kg
			Benzo(a)anthracène	2019/11/09	<0.10		mg/kg
			Benzo(a)pyrène	2019/11/09	<0.10		mg/kg
			Benzo(b)fluoranthène	2019/11/09	<0.10		mg/kg
			Benzo(j)fluoranthène	2019/11/09	<0.10		mg/kg
			Benzo(k)fluoranthène	2019/11/09	<0.10		mg/kg
			Benzo(b+j+k)fluoranthène	2019/11/09	<0.10		mg/kg
			Benzo(c)phénanthrène	2019/11/09	<0.10		mg/kg
			Benzo(ghi)pérylène	2019/11/09	<0.10		mg/kg
			Chrysène	2019/11/09	<0.10		mg/kg
			Dibenzo(a,h)anthracène	2019/11/09	<0.10		mg/kg
			Dibenzo(a,i)pyrène	2019/11/09	<0.10		mg/kg
			Dibenzo(a,h)pyrène	2019/11/09	<0.10		mg/kg
			Dibenzo(a,l)pyrène	2019/11/09	<0.10		mg/kg
			7,12-Diméthylbenzanthracène	2019/11/09	<0.10		mg/kg
			Fluoranthène	2019/11/09	<0.10		mg/kg
			Fluorène	2019/11/09	<0.10		mg/kg
			Indéno(1,2,3-cd)pyrène	2019/11/09	<0.10		mg/kg
			3-Méthylcholanthrène	2019/11/09	<0.10		mg/kg
			Naphtalène	2019/11/09	<0.10		mg/kg
			Phénanthrène	2019/11/09	<0.10		mg/kg
			Pyrène	2019/11/09	<0.10		mg/kg
			2-Méthylnaphtalène	2019/11/09	<0.10		mg/kg
			1-Méthylnaphtalène	2019/11/09	<0.10		mg/kg
			1,3-Diméthylnaphtalène	2019/11/09	<0.10		mg/kg



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			2,3,5-Triméthylnaphtalène	2019/11/09	<0.10		mg/kg
<p>Blanc fortifié: Un blanc, d'une matrice exempte de contaminants, auquel a été ajouté une quantité connue d'analyte provenant généralement d'une deuxième source. Utilisé pour évaluer la précision de la méthode.</p> <p>Blanc de méthode: Une partie aliquote de matrice pure soumise au même processus analytique que les échantillons, du prétraitement au dosage. Sert à évaluer toutes contaminations du laboratoire.</p> <p>Surrogate: Composé se comportant de façon similaire aux composés analysés et ajouté à l'échantillon avant l'analyse. Sert à évaluer la qualité de l'extraction.</p> <p>Réc = Récupération</p>							



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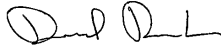

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PAGE DES SIGNATURES DE VALIDATION

Les résultats analytiques ainsi que les données de contrôle-qualité contenus dans ce rapport furent vérifiés et validés par les personnes suivantes:



Corina Tue, B.Sc. Chimiste

David Provencher, B.Sc., Chimiste, Ste-Foy, Analyste Senior



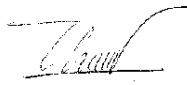


Jean-Frédéric Lamy, B.Sc., Chimiste, Spécialiste Scientifique

Melanie Alexandra Ruck, B.Sc., Chimiste




Noureddine Chafiai, B.Sc., Chimiste

Ngoc-Thuy Do, B.Sc., Chimiste

Lab BV a mis en place des procédures qui protègent contre l'utilisation non autorisée de la signature électronique et emploie les «signataires» requis, conformément à l'ISO/CEI 17025. Veuillez vous référer à la page des signatures de validation pour obtenir les détails des validations pour chaque division.



Chaîne de responsabilité



022370

Veillez utiliser ce formulaire en guise de référence de suivi des envois lorsque les instructions concernant le dossier sont transmis électroniquement via l'eCDR (chaîne de responsabilité électronique). Assurez-vous que votre formulaire contient un code barres ou qu'un numéro de confirmation d'eCDR des Lab BV est inscrit dans le coin supérieur droit. Ce numéro permet de lier votre envoi électronique avec vos échantillons. Ce formulaire doit être placé dans la glacière avec vos échantillons.

Premier échantillon: F-19-02 CF-17
Dernier échantillon: F-19-02 CF-21
Nombre d'échantillons: 3

Détails par				Reçu par			
Date				Date			
Heure (24 h)				Heure (24 h)			
Date				Date			
Heure (24 h)				Heure (24 h)			
Date				Date			
Heure (24 h)				Heure (24 h)			

Information pour le tri des échantillons

Échantillonneur

M. Grenier-Houde

d'emballages/glacières:

1

Urgent ☐

Analyse immédiate ☐

Résidus alimentaires ☐
Chimie alimentaire ☐

*** LABORATOIRE SEULEMENT ***

Reçu à

Commentaires:

Étiqueté par

Vérifié par

Sceau de sécurité		présence de		Température °C		
Présent(O/N)	Intact (O/N)	glace		1	2	3
✓	-	oui		0	0	0

04-Nov-19 14:55

Lauriane Bernard

B954965

AAC

P954965_COC

WTS33
Diver

Appendix F – Management grid of the excavated soils



Grille de gestion des sols excavés

(tirée du *Guide d'intervention – Protection des sols et réhabilitation des terrains contaminés* du MDDELCC, Juillet 2016, annexe 5, pages 159 à 161)

La grille de gestion des sols excavés ne s'applique, pour les critères supérieurs à A, que pour une contamination de nature anthropique. Si la concentration naturelle dans le sol est supérieure à A, la gestion des sols contenant cette concentration naturelle est considérée comme équivalente à celle attribuable au critère A.

≤ critère A (note 1)

Utilisés sans restriction sur tout terrain.

< critère B (valeurs limites de l'annexe I du RPRT)

1. Ailleurs que sur le terrain d'origine, les sols ne peuvent être déposés que sur des sols dont la concentration en contaminants est égale ou supérieure à celle des sols remblayés (article 4 du RSCTSC) et s'ils n'émettent pas d'odeurs d'hydrocarbures perceptibles.
2. Aux mêmes conditions, déposés sur ou dans des terrains destinés à l'habitation s'ils sont utilisés comme matériau de remblayage dans le cadre de travaux de réhabilitation de terrains faits conformément à la LQE.

≤ critère B (valeurs limites de l'annexe I du RPRT)

1. Valorisés sur le terrain d'origine ou sur le terrain à partir duquel a eu lieu l'activité à l'origine de la contamination.
2. Valorisés comme matériau de recouvrement journalier ou final dans un lieu d'enfouissement technique (LET) ou comme matériau de recouvrement hebdomadaire ou final dans un lieu d'enfouissement en tranchée ou comme recouvrement mensuel ou final dans un lieu d'enfouissement de débris de construction ou de démolition, conformément au REIMR aux conditions des articles 42, 50, 90, 91, 105 ou 106.
3. Valorisés comme recouvrement final dans un lieu d'enfouissement de sols contaminés (LESC) aux conditions décrites à l'article 38 du RESC ou valorisés dans un système de captage des gaz prévu à l'article 13 du RESC.
4. Valorisés comme recouvrement final d'un lieu de dépôt définitif de matières dangereuses aux conditions de l'article 101 du RMD.
5. Valorisés comme matériau de recouvrement final dans un système de gestion qui comporte le dépôt définitif par enfouissement de déchets de fabriques de pâtes et papiers, aux conditions de l'article 116 du Règlement sur les fabriques de pâtes et papiers (RFPP).
6. Valorisés sur un lieu d'élimination nécessitant un recouvrement, aux conditions prévues au certificat d'autorisation en vertu de l'article 22 de la LQE.
7. Valorisés avec ou sans MRF, comme matériau apte à la végétation dans des projets de restauration d'aires d'accumulation de résidus minier (note 2) ou dans la couverture de lieux visés par le RFPP, le RESC ou le RMD. Ne doit dégager aucune odeur d'hydrocarbures perceptible. Dans le cas d'ajout de MRF, le projet doit être autorisé et respecter le *Guide sur l'utilisation de matières résiduelles fertilisantes pour la restauration de la couverture végétale de lieux dégradés* (note 3).

8. Valorisés comme couche de protection d'une géomembrane utilisée dans un système multicouche lors de la restauration d'une aire d'accumulation de résidus miniers générateurs d'acide ^(note 2).
9. Éliminés dans un lieu d'enfouissement visé par le RESC.
10. Éliminés dans un LET, un lieu d'enfouissement en tranchée, un lieu d'enfouissement en milieu nordique, un lieu d'enfouissement de débris de construction ou de démolition ou un lieu d'enfouissement en territoire isolé, conformément à l'article 4 du REIMR.

≥ critère B et ≤ critère C

1. Utilisés sur le terrain d'origine comme matériau de remblayage à la condition que les concentrations mesurées respectent les critères ou valeurs limites réglementaires applicables aux sols selon l'usage et le zonage.
2. Valorisés comme matériau de recouvrement dans un LET ou comme matériau de recouvrement hebdomadaire dans un lieu d'enfouissement en tranchée, aux conditions des articles 42, 50 ou 90 du REIMR. Ces conditions incluent notamment que les concentrations de composés organiques volatils soient égales ou inférieures aux critères B.
3. Traités sur place ou dans un lieu de traitement autorisé.
4. Éliminés dans un lieu d'enfouissement visé par le RESC.

< annexe I du RESC

1. Utilisés pour remplir des dépressions naturelles ou des excavations sur le terrain d'origine lors de travaux de réhabilitation aux conditions prévues dans le plan de réhabilitation approuvé dans le cadre d'une analyse de risques (dossiers GTE), à la condition que les C_{10} - C_{50} et les COV respectent les critères d'usage.
2. Traités sur place ou dans un lieu de traitement autorisé.
3. Éliminés dans un lieu d'enfouissement visé par le RESC.

≥ annexe I du RESC

1. Décontaminés sur place ou dans un lieu de traitement autorisé et gestion selon le résultat obtenu. Si cela est impossible, éliminés dans un lieu d'enfouissement visé par le RESC pour les exceptions mentionnées à l'article 4.1° a, b ou c.

Cas particuliers

1. Des sols contaminés peuvent être utilisés, à condition de ne dégager aucune odeur d'hydrocarbures perceptible, pour la construction d'un écran visuel ou antibruit dont l'utilité est démontrée :
 - a. Sur un terrain résidentiel avec des sols du terrain d'origine :
 - i. dont les concentrations sont $\leq B$;
 - ii. dont les concentrations sont $\leq C$, lors de travaux de réhabilitation sur le terrain réalisés conformément au plan de réhabilitation approuvé dans le cadre d'une analyse de risque (dossiers GTE), sous les mesures de confinement, à condition que les sols contiennent des concentrations $\leq B$ en C_{10} - C_{50} et en composés organiques volatils (COV) ^(note 4);

- iii. dont les concentrations sont < annexe I du RESC, lors de travaux de réhabilitation sur le terrain réalisés conformément au plan de réhabilitation approuvé dans le cadre d'une analyse de risque (dossiers GTE), sous les mesures de confinement, à condition que les sols en place soient de niveau > C et que les sols déposés contiennent des concentrations $\leq B$ en C_{10} - C_{50} et en COV ^(note 4).
- b. Sur un terrain commercial/industriel avec des sols du terrain d'origine :
 - i. dont les concentrations sont $\leq C$;
 - ii. dont les concentrations sont $\leq C$, lors de travaux de réhabilitation sur le terrain réalisés conformément au plan de réhabilitation approuvé dans le cadre d'une analyse de risque (dossiers GTE), sous les mesures de confinement;
 - iii. dont les concentrations sont < annexe I du RESC, lors de travaux de réhabilitation sur le terrain réalisés conformément au plan de réhabilitation approuvé dans le cadre d'une analyse de risque (dossiers GTE), sous les mesures de confinement, à condition que les sols en place soient > C, et que les sols déposés contiennent des concentrations $\leq C$ en C_{10} - C_{50} et en COV⁴.
- 2. La valorisation de sols contaminés dans un procédé en remplacement d'une matière vierge est possible aux conditions de l'autorisation.
- 3. Les sols $\geq B$ peuvent être acheminés sur les aires de résidus miniers, s'ils sont contaminés exclusivement par des métaux ou métalloïdes résultant des activités minières de l'entreprise responsable de l'aire, aux conditions de l'autorisation délivrée par le Ministère (article 6 du RSCTSC).
- 4. Les sols $\geq B$ peuvent être acheminés dans un lieu de dépôt définitif de matières dangereuses aux conditions du certificat d'autorisation détenu par ce lieu pour recevoir des sols.

Note : S'il y a présence de matières résiduelles dans les sols, se référer à la figure 12 de la section 7.7.2.

1. S'il est établi que la concentration naturelle dans le sol importé est supérieure au critère A et à la concentration du sol récepteur, il est recommandé au propriétaire du terrain récepteur de garder une trace du remblayage (localisation, niveau de contamination, provenance des sols importés), de façon à ce qu'il puisse, le cas échéant, démontrer qu'il ne s'agit pas d'une contamination anthropique. Faute de l'existence d'une telle trace, le Ministère considérera que les sols ont été contaminés par l'activité humaine et ils devront donc être gérés comme tels. Advenant le cas où les concentrations naturelles excèdent largement les critères génériques recommandés pour l'usage qui est fait du terrain récepteur, un avis sur les possibles risques à la santé et l'à-propos du remblayage avec de tels sols pourra être demandé à la direction de santé publique.
2. Ne s'applique pas aux sols contaminés = B, à moins que ces sols n'aient d'abord transité par un lieu visé à l'article 6 du Règlement sur le stockage et les centres de transfert de sols contaminés. Les sols excavés $\geq B$ ne peuvent en effet être acheminés directement que dans des lieux légalement autorisés à les recevoir et listés à l'article 6 du RSCTSC.
3. Il faudra toutefois s'assurer que la valorisation de sols A-B, auxquels on aura ajouté des matières fertilisantes ou non, entraîne un effet bénéfique, par exemple, sur la croissance de la végétation, et que ces sols répondent à un besoin réel, l'ajout de sols n'étant pas essentiel dans tous les cas de restauration minière. Il sera possible de s'assurer du bien-fondé du projet de valorisation et de son contrôle dans le cadre du certificat d'autorisation délivré préalablement à sa réalisation.
4. L'écran visuel ou antibruit doit être recouvert de 1 m de sols $\leq A$ ou de 40 cm $\leq A$ aux endroits recouverts d'une structure permanente (asphalte ou béton). Il est possible d'utiliser des MRF dans la couche apte à la végétation selon les orientations du *Guide sur l'utilisation des matières résiduelles fertilisantes pour la restauration de la couverture végétale des lieux dégradés* si la résultante est $\leq A$.

.6 Environmental Study – Akifer Génie-conseil (excerpts)

Boucherville, March 18, 2019

Karine Chénier
Environmental Specialist
Environmental Services
Public Services and Procurement Canada
Place Bonaventure, South-West Portal
800 De la Gauchetière Street West, Suite 7300
Montreal, Quebec H5A 1L6

**Subject: Final report
Supplementary Environment Characterization
Lot 1 180 954 in Montréal, Ville-Marie Borough, Quebec
N/Réf. : 18281-101**

Dear Madam,

We are pleased to provide you with an electronic copy of our final report on the Complementary Environmental Characterization of the above-mentioned site.

We hope that this will be to your complete satisfaction, and we remain at your disposal for any additional information that may be useful to you.

Sincerely,

[signature]

Chantal Jetté, Biologist, M.Sc. Env.

Senior Project Manager

PUBLIC SERVICES AND PROCUREMENT CANADA

FINAL REPORT

Complementary Environmental Characterization
Lot 1 180 954 in Montreal, Ville-Marie Borough, Quebec

REF. #: 18281-101 | MARCH 18, 2019

Written by:

Chantal Jetté, Biologist, M.Sc. Env.
Seniro Project Manager

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SUMMARY

Groupe Akifer Inc. (Akifer) received a mandate from Public Services and Procurement Canada (PSPC) to conduct a complementary environmental characterization of the site located between Saint-Jacques Street West and Notre-Dame Street West, i.e. lot 1 180 954, in the Ville-Marie borough of Montreal, Quebec. The site is currently used as a parking lot and is owned by the City of Montreal. The mandate governing the conduct of this study was defined under the terms and conditions of an agreement with Karine Chénier, PSPC representative, in accordance with work proposal PR18-415 dated October 12, 2018.

Description of the site

The site studied is a parking lot located in Old Montreal, on Lot 1 180 954 of the Cadastre du Québec. The lot has a surface area of approximately 2,060 m² and its geographic coordinates are 45° 30' 20.69" (latitude) and 73° 33' 23.87" (longitude). The lot is of irregular shape and its surface is relatively flat and at the same level as the neighbouring lots. The site is covered with asphalt (95%) and grass (5%) and has 53 parking spaces. A small reception building (guard house) is located in the centre of the lot.

The site is located in Zones 0128 and 0390, category M.7, which include residential uses, retail and service establishments, light industries characteristic of downtown Montreal, and community and institutional facilities. The zoning of the site is mixed (residential and commercial). Should PSPC purchase the land, the intended use of the site is commercial (an office building).

The site studied is located approximately 350 metres west of the St. Lawrence River. Underground water is expected to flow eastward, i.e., toward the St. Lawrence River. There are no potable water supply wells listed in MELCC's hydrogeological information system within a one-kilometre radius of the site [Translator's note: "MELCC" refers to Quebec's department of the environment and the fight against climate change]. In addition, the district is served by a municipal water supply, but the site studied here is not currently connected to such water supply because it is currently being used as a parking lot.

Brief history of the site

Part of the land is known to have been occupied by three houses from 1651 until about 1900, two of which burned to the ground, one in 1768 and the second in 1856. There were also sheds, a barn, a stable, a chicken coop, a stable and backyards and gardens. The archaeological reports note the presence of a former domestic ice house, a former garbage pit and a former reservoir (probably for heating oil).

The land was also occupied by various factories and shops (shoes, church ornaments, briefcases, school equipment) and offices from around 1909 to at least 1950. From 1950 to 1964, several buildings were gradually demolished to make way for parking spaces. Since 1964, the site appears to have been used for parking space by various entities, including the City of Montreal since 2001.

Results

Concerning the comparison of the results obtained according to MELCC's provincial criteria, at the locations where the three boreholes were drilled (2018-F1 to 2018-F3) the results show that out of the six samples tested, three soil samples showed PAH concentrations in the "B-C" range of the MELCC criteria. These were sample 2018-F1-CF3 (taken at 1.2 m to 1.8 m deep) in hole 2018-F1 and samples 2018-F3-CF2-1 (taken at 0.6 m to 0.7 m deep) and 2018-F3-CF5 (taken at 2.4 m to 3.0 m deep) in hole 2018-F3. The other results obtained showed concentrations below MELCC's "B" criteria.

In terms of comparing the results to CCME federal guidelines, the same three samples (2018-F1-CF3, 2018-F3-CF2-1 and 2018-F3-CF5) showed concentrations of benzo(a)pyrene TPEs surpassing the CCME guideline (commercial). In addition, the 2018-F3-CF3 sample does not meet the CCME guidelines (commercial) for lead and zinc. Other results showed concentrations below the federal CCME (commercial) guidelines and the Canada-wide Standards (commercial).

Extent of soil contamination

A total of 17 areas of contamination were identified, two areas of contaminated soil in the "A-B" range, five areas of contaminated soil in the "B-C" range, seven areas of contaminated soil in the "C-RESC" range and three areas of contaminated soil above the RESC Schedule I limit values [Translator's note: "RESC" refers to Quebec's *Regulation respecting the burial of contaminated soils*]. Of these areas, a total of 13 areas do not comply the CCME federal guidelines for commercial use.

Two remediation scenarios were considered: Scenario #1, meeting the provincial criteria for residential use ("B" criteria in the MELCC *Guide d'intervention*), and Scenario #2, meeting the provincial criteria for commercial use ("C" criteria in the MELCC *Guide d'intervention*) and the CCME federal guidelines for commercial use (RCSQ guidelines/Canada-wide Standards).

For Scenario #1, a total volume of 4,059.92 cubic metres of soil in place (not bulked), covering an area estimated at approximately 1,884 square metres and exceeding the MELCC "B" criteria, was estimated for the site (including all zones except "A-B" zones, i.e. zones 005 and 2018-F2). Of this volume, 1,894.99 cubic meters of soil are in the "B-C" range, 1,843.49 cubic meters of soil are in the "C-RESC" range and 321.44 cubic meters of soil are above the RESC Schedule I limits. In addition, 446.87 cubic metres of soil below the "B" criteria was estimated above the contaminated soils. Lastly, there are estimated volumes of 134.25 cubic metres of bituminous coated material (asphalt) and 304.72 cubic metres of residual material (>50%).

For Scenario #2, a total volume of 3,197.27 cubic metres of undisturbed soil (not bulked), covering an estimated area of approximately 1,595 square metres and exceeding the MELCC "C" criteria and/or the CCME federal RCSQ guidelines (commercial), was estimated for the site (including all zones except zones 001, FE-7, FE-13 and 2018-F2). In addition, a volume of 656.31 cubic metres of soil meeting the CCME federal RCSQ guidelines was estimated above the contaminated soils. Finally, there are estimated volumes of 91.98 cubic metres of bituminous coated material (asphalt) and 304.72 cubic metres of residual material (>50%).

Results on the detection of asbestos fibres

A total of six samples, from the three drill holes 2018-F1 to 2018-F3, were tested to detect asbestos fibres. Only one of the six samples contained traces of chrysotile asbestos. This was sample 2018-F1-CF4-2, from hole 2018-F1, in a residual material horizon (75-80%) at a depth of 1.9 metres to 2.4 metres. The remaining five samples (2018-F1-CF2-2, 2018-F2-CF4, 2018-F2-CF5, 2018-F3-CF2-2 and 2018-F3-CF3) were negative, i.e. asbestos was "undetected."

On the basis of the IRSST document *Méthodes de laboratoire, Caractérisation des fibres dans les poussières déposées ou dans les matériaux en vrac, méthode analytique 244*, the presence of 1 to 4 asbestos fibres in a sample is considered a trace result. A sample is negative (absence of asbestos) when the percentage is less than 0.1%. In test reports issued by testing laboratories in Quebec, the term "trace" corresponds to < 0.1%. Therefore, sample 2018-F1-CF4-2 is negative and does not contain asbestos fibre.

Recommendations

On the basis of the above conclusions, no further action is recommended in the context of this mandate.

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The results from the quality assurance program are presented in the test certificates in Appendix 7 and Tables 3 and 4 of Appendix 1.

Internal laboratory quality control

In addition, the results of the laboratory's internal quality assurance program were within acceptable limits. The results from the testing of laboratory duplicates and certified control samples are within the expected intervals.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Akifer received a mandate from Karine Chénier, PSPC representative, to conduct a complementary environmental characterization of the site located between Saint-Jacques Street West and Notre-Dame Street West, in the Ville-Marie borough of Montréal, and occupying lot 1 180 954 of the Cadastre du Québec. The mandate governing the conduct of this study was defined in accordance with the terms and conditions of the agreement with Karine Chénier in accordance with work proposal PR18-415, dated October 12, 2018, and the PSPC document "Statement of Work" dated September 2018 (Ref. #: R.090448.023).

The work consisted of taking soil and residual material samples from three holes, identified 2018-F1 to 2018-F3.

Local stratigraphy

The stratigraphic profile is similar from one borehole to the next, apart from the depths of the types of fill, which vary from one borehole to the next. Generally speaking, under the asphalt there is a grey gravelly sand fill with the presence of residual material (10%) (pieces of concrete and brick or terracotta or sandstone). Under the asphalt, there is an 80% to 100% residual material horizon (pieces of brick or clay or sandstone) and then a gravelly sand fill to the end of the boreholes, 4.2 metres deep, with the presence of 5% to 20% residual material. A rejection was noted during the completion of hole 2018-F1 at 2.85 metres, preventing further drilling. A void was encountered at a depth of 1.2 metres to 1.8 metres in borehole 2018-F2.

Soil results

Concerning the comparison of the results obtained for the provincial standards, the results showed that three out of six soil samples collected and tested from the three drill holes showed PAH concentrations in the "B-C" range of the MELCC criteria. These were sample 2018-F1-CF3 from hole 2018-F1 and samples 2018-F3-CF2-1 and 2018-F3-CF5 from hole 2018-F3. The other results obtained were below the MELCC "B" criteria.

In terms of comparing the results to CCME federal guidelines, the same three samples (2018-F1-CF3, 2018-F3-CF2-1 and 2018-F3-CF5) showed concentrations of benzo(a)pyrene TPEs that exceeded the CCME guideline (commercial). In addition, the 2018-F3-CF3 sample does not meet the CCME guidelines (commercial) for lead and zinc. Other results presented concentrations below the federal CCME guidelines (commercial) and the Canada-wide Standards (commercial).

Extent of soil contamination

The study identified two areas of contaminated soil in the "A-B" range, five areas of contaminated soil in the "B-C" range, seven contaminated soil zones in the "C-RESC" range and three contaminated soil zones above the RESC Schedule I limits. Of these 17 areas, 13 do not meet the CCME federal guidelines for commercial use (RCSQ and Canada-wide Standards).

For Scenario #1, a total volume of 4,059.92 cubic metres of undisturbed soil (not bulked), covering an area estimated at approximately 1,884 square metres and exceeding the MELCC "B" criteria, was estimated for the site (including all zones except the "A-B" zones, i.e. zones 005 and 2018-F2). Of this volume, 1,894.99 cubic meters of soil were in the "B-C" range, 1,843.49 cubic meters of soil were in the "C-RESC" range and 321.44 cubic meters of soil were above the RESC Schedule I limits. In addition, there is an estimated 446.87 cubic metres of soil that is below the "B" criteria above the contaminated soils. Lastly, there is an estimated volume of 134.25 cubic metres of bituminous coated material (asphalt) and a volume of 304.72 cubic metres of residual materials (>50%).

For Scenario #2, a total volume of 3,197.27 cubic metres of undisturbed soil (not bulked), covering an area estimated at approximately 1,595 square metres and exceeding the MELCC "C" criteria and/or the CCME federal RCSQ guidelines (commercial), was estimated for the site (including all zones except zones 001, FE-7, FE-13 and 2018-F2). In addition, there is an estimated volume of 656.31 cubic metres of soil meeting the CCME RCSQ guidelines above the contaminated soils. Lastly, there is an estimated volume of 91.98 cubic metres of bituminous coated material (asphalt) and a volume of 304.72 cubic metres of residual materials (>50%).

Results on the detection of asbestos fibres

With respect to the results from the tests to detect asbestos fibres, only one sample in six contained traces of chrysotile asbestos. This was sample 2018-F1-CF4-2, taken from hole 2018-F1 in a residual material horizon (75% to 80%), from 1.9 metres to 2.4 metres deep. The remaining five samples (2018-F1-CF2-2, 2018-F2-CF4, 2018-F2-CF5, 2018-F3-CF2-2 and 2018-F3-CF3) returned negative "undetected" results.

On the basis of the IRSST document *Méthodes de laboratoire, Caractérisation des fibres dans les poussières déposées ou dans les matériaux en vrac, méthode analytique 244*, the presence of 1 to 4 asbestos fibres in a sample is considered a trace result. A sample is negative (absence of asbestos) when the percentage is less than 0.1%. In test reports issued by Quebec testing laboratories, the term “trace” corresponds to < 0.1%. Therefore, sample 2018-F1-CF4-2 is considered negative and does not contain asbestos fibres.

5.2 Recommendations

Based on the above conclusions, no further action is recommended under this mandate.

.7 Environmental Study – Groupe ABS (excerpts)

**COMPLEMENTARY ENVIRONMENTAL
CHARACTERIZATION OF SOILS (PHASE II)**

Lot 1 180 954
between St-Jacques Street West and Notre-Dame Street West
in the Ville-Marie borough of Montréal, Quebec

Client code: MTL103
File version: Site #637
File #: E4-10-1445
February 2011

CONFIDENTIAL

Final report prepared for:



**Eddy Hunter
Planning Advisor**

303 Notre-Dame Street East, 4th Floor,
Montréal, Quebec H2Y 3Y8

Written and prepared by:

_____ Original signed _____

**Irina Negoita, M. Sc., EESA
Project Manager**

Revised by:

_____ Original signed _____

**Yves Delisle, Geo.
Team Leader – Environment Division**

Distribution: City of Montréal (1 original, 5 copies, 1 CD)
Groupe ABS Inc. (1 copy)

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SUMMARY

Identification of the site

Address: Parking lot between St-Jacques Street West and Notre-Dame Street West in the Ville-Marie borough of Montréal, Quebec

Lot number: 1 180 954 of the Cadastre du Québec

Type of activity: Parking lot

Proposed activity: Mixed (commercial and residential)

Reference (study #): Site #637

Central geodetic coordinates: North: 300381.90
West: 5040664.90

Date of the work

December 8, 15 and 16, 2010

Highlights

- 1) ABS drilled six boreholes (numbered 001 to 006) to depths of 1.22 m to 4.27 m to reach natural soils (or to the point of rejection).
- 2) In holes 001, 002, 003 and 005, a backfill horizon consisting essentially of silty and/or gravelly brown sand was intercepted at the surface under the layer of bituminous coated materials. The thickness of this backfill horizon varies from 1.07 m to 3.62 m. Residual materials (construction debris (concrete, brick), slag and ash) were identified in this layer of backfill in proportions of 5% to 40%. Under the backfill was found natural soil, consisting of coarse sand with traces of brown gravel at depths of 1.22 m to 3.66 m. Orange oxidation stains were observed on this material in various locations.
- 3) An RM horizon (brick, coal and ash), showing proportions varying between 60% and 80% of the material found, was encountered between 2.44 m and 3.66 m deep (resting on natural soils) in hole 006.
- 4) In hole 004, a backfill horizon consisting of crushed stone and sand, grey, with some brick debris (5%), was intercepted on surface, under the layer of bituminous coated material. These soils rest on a 16 cm thick concrete slab followed by a void to a depth of approximately 2.8 m.
- 5) This investigation found PAH and metal contamination in holes 001, 003, 004 and 006 that was in excess of the allowable "B" level for commercial and residential use.
- 6) For information purposes and for the purposes of managing the excavated soils, we should mention that:

- > Based on the test results, soils considered to be above the RESC Schedule I limit value were detected in sample 006-04, at between 1.83 m and 2.44 m in depth;
 - > Based on the test results, concentrations above the "C" level of the Policy criteria, but below the values listed in Schedule I of the RESC, were obtained in samples 003-04 and 004-02;
 - > Based on the test results, concentrations in the "B-C" range concentrations were obtained in samples 001-02 and 001-04;
 - > Based on the test results, soils considered to be in the "A-B" range of the Policy criteria were detected at the location of samples 002-01, 002-02, 005-02 and 005-04; and
 - > Based on the test results, soils considered to be below the "A" level of the Policy criteria were found at hole 002, at between 0.61 m and 1.22 m in depth.
- 7) The volumes of backfill soil for the proposed development, estimated based on the level of contamination, are as follows:
- > 806.13 m³ of soil with contaminant concentrations in the "A-B" range of the Policy criteria;
 - > 1,728.90 m³ of soil with contaminant concentrations in the "B-C" range of the Policy criteria;
 - > 2,042.43 m³ of soil with contaminant concentrations above the "C" level of the Policy criteria but below the limit values cited in Schedule I of the RESC; and
 - > 235.94 m³ of soil with contaminant concentrations above the limit values cited in Schedule I of the RESC.

Conclusions/Recommendations

On the basis of the results obtained from this complementary environmental characterization of the soils (Phase II), Groupe ABS Inc. recommends proceeding with the environmental remediation of soils that are non-compliant for the purposes of the proposed use (commercial and residential) of the site (above level "B" of the Policy's criteria).

For proper management of the excavated materials (if any) in the work planned by the City of Montréal (within the confines of the lot under study), reference should be made to the areas of contamination established in Plan E4101445-01 in Appendix 3 and in Sections 9 and 10 of this report. In the event that soils showing evidence of petroleum product contamination (visual evidence or perceptible odours) are found during excavation work carried out to develop the site, such soils must be separated from unaffected soils and characterized for the purpose of their management.

11.0 CONCLUSION

On November 3, 2010, **ABS Group (ABS)** received a mandate from **Eddy Hunter**, on behalf of the City of Montreal (CoM), promisor-buyer, to carry out a complementary environmental soil characterization (Phase II) of a vacant lot located between St-Jacques Street West and Notre-Dame Street West in the Ville-Marie borough of Montréal, Quebec. The present study follows up on the conclusions and recommendations of the preliminary environmental site assessment (Phase II) (Ref.: 13262) conducted by Groupe SOLROC in 2007.

The study had detected the presence on the study site of contamination in the form of petroleum hydrocarbons PH (C_{10} - C_{50}), polycyclic aromatic hydrocarbons (PAHs) and heavy metals, exceeding the "C" level of the criteria established in MDDEP's Policy for the commercial use of the property.

Six holes (identified as 001 to 006) were drilled on December 8, 15 and 16, 2010. They were drilled using a truck-mounted drill rig equipped with a 200 mm hollow-shank auger train from Explora-Sol Inc. All the holes were drilled down to natural soils (or down to rejection) to a depth of between 1.22 m and 4.27 m.

The results of the soil tests were compared to level "B" of the MDDEP Policy's criteria, i.e. the maximum limit for the proposed use of the site (mixed (commercial and residential)).

The information gathered and the results achieved during this mandate can be summarized as follows:

- 1) In holes 001, 002, 003 and 005, a backfill horizon consisting essentially of silty and/or gravelly, brown sand was encountered at the surface, under the layer of bituminous coated material. The thickness of this backfill horizon varies from 1.07 m to 3.62 m. Residual materials (construction debris (concrete, brick), slag and ash) in proportions of 5% to 40% were identified in this backfill layer. Under the backfill was found natural soil, consisting of coarse sand with traces of brown gravel, at a depth from 1.22 m to 3.66 m. There were places where orange oxidation stains were observed on this material.
- 2) In hole 006, a residual material horizon (brick, coal and ash) showing proportions varying from 60% to 80% of the intercepted material was encountered between 2.44 m and 3.66 m deep (resting on natural soils).
- 3) In hole 004, a backfill horizon consisting of crushed stone and sand, grey, with the presence of brick debris (5%), was intercepted on the surface under the layer of bituminous coated material. These soils rest on a 16 cm thick concrete slab followed by a void to a depth of approximately 2.8 m.
- 4) This investigation found PAH and metal contamination in excess of the allowable "B" level for commercial and residential use in holes 001, 003, 004 and 006.
- 5) For information purposes and for the purposes of managing the excavated soils, we should mention that:
 - Based on the test results, soils considered to be above the RESC Schedule I limit value were detected in sample 006-04, at between 1.83 m and 2.44 m in depth;
 - Based on the test results, concentrations above the "C" level of the Policy criteria, but below the values listed in Schedule I of the RESC, were obtained in samples 003-04 and 004-02;
 - Based on the test results, concentrations in the "B-C" range concentrations were obtained in samples 001-02 and 001-04;
 - Based on the test results, soils considered to be in the "A-B" range of the Policy criteria were detected at the location of samples 002-01, 002-02, 005-02 and 005-04; andBased on the test results, soils considered to be below the "A" level of the Policy criteria were found at hole 002, at between 0.61 m and 1.22 m in depth.
- 6) The volumes of backfill soil for the proposed development, estimated based on the level of contamination, are as follows:

- > 806.13 m³ of soil with contaminant concentrations in the "A-B" range of the Policy criteria;
- > 1,728.90 m³ of soil with contaminant concentrations in the "B-C" range of the Policy criteria;
- > 2,042.43 m³ of soil with contaminant concentrations above the "C" level of the Policy criteria but below the limit values cited in Schedule I of the RESC; and
- > 235.94 m³ of soil with contaminant concentrations above the limit values cited in Schedule I of the RESC.

On the basis of the results obtained from this complementary environmental characterization of the soils (Phase II), Groupe ABS Inc. recommends proceeding with the environmental remediation of soils that are non-compliant for the purposes of the proposed use (commercial and residential) of the site (above level "B" of the Policy's criteria).

For proper management of the excavated materials (if any) in the work planned by the City of Montréal (within the right-of-way of the lot under study), reference should be made to the areas of contamination established in Plan E4101445-01 in Appendix 3 and in Sections 9 and 10 of this report. In the event that soils showing evidence of petroleum product contamination (visual evidence or perceptible odours) are found during excavation work carried out to develop the site, such soils must be separated from unaffected soils and characterized for the purpose of their management.

Written and prepared by:

Verified by:

_____Original signed_____

_____Original signed_____

Irina Negoita, M.Sc., EESA
Project Manager

Yves Delisle, Geo.
Team Leader – Environment Department

1.8 Environmental Study – Groupe Solroc (excerpts)

LE GROUPE SOLROC

SOGEVEM ASSOCIÉS EXPERTS CONSEILS LTEE

Montreal, April 4, 2007

Reference #: MA350-070310C
Project #: 13262

Alex Toffan
136 991 CANADA INC.
1134 Ste-Catherine Street East
Suite 1010
Montreal, Quebec
H3B 1H4

Subject: Environmental Site Assessment - Preliminary Phase II of the property occupying lot 1 180 954 located in the city block bounded by St-Jacques Street West, Notre-Dame Street West, Saint-Laurent Boulevard and Place d'Armes Street in Montreal, Quebec

Dear Sir,

We are pleased to provide our report on the Environmental Site Assessment - Preliminary Phase II for the above-mentioned project.

We would like to thank you for this opportunity to serve you, and we look forward to working with you again in your future projects.

Sincerely,

Groupe Solroc

Aimé Bensoussan
President
AB/NS

SUMMARY

The property that is the subject of this study is located in the city block bounded by St-Jacques Street West, Notre-Dame Street West, Saint-Laurent Boulevard and Place d'Armes Street in the Ville-Marie borough of Montréal, Quebec and covers an area of 2,019.1 m² (21,733.21 ft²). It is legally represented by Lot 1 180 954 of the Cadastre Officiel du Québec. The property is occupied by a private paid parking lot that can be accessed from Saint-Jacques Street West and Notre-Dame Street West, and there is a small guard house located in the center of the lot. The district is zoned for commercial and institutional uses.

An Environmental Site Assessment - Phase I and a geotechnical study are being conducted in conjunction with this study (Le Groupe Solroc, Ref. CA601-070309E1 and CA601-070308G).

The conclusions of the Environmental Site Assessment – Phase I were as follows:

“Interpretation of the aerial photographs and research with the institutions and individuals interviewed did not reveal any documents related to accidental environmental events.

Based on the documents and information obtained during our research and site visit, we are of the opinion that the study revealed a potential risk of contamination on the property in question in relation to structures on the property in the past.

It is possible that construction debris and backfill material may have been buried on the property when buildings were demolished to develop the parking lot. These materials, if present, could contain lead-based or asbestos-based construction debris as well as residue from the heating systems formerly on the site. In addition, according to the dates of construction of the buildings that had previously stood on the property, it is suspected that they were heated by a coal and/or oil-fired system.

It is therefore recommended that a preliminary Environmental Site Assessment - Phase 2 be carried out to verify the impacts of the heating system and the demolition of former buildings on the site on the environmental quality of the soil.” [translation]

This study was carried out on March 19 and 25, 2007 under the constant supervision of our qualified personnel. Robert Paradis and Ismael Boukerou were responsible, in succession, for the work carried out on the site. The study was carried out by means of ten (10) drill holes to depths ranging from 2.6 meters to 4.9 meters. A total of fifty (50) soil samples were collected and eighteen (18) representative soil samples were selected and sent to the Maxxam Analytics' laboratory for chemical testing in order to detect their content in petroleum hydrocarbons (C₁₀-C₅₀), polycyclic aromatic hydrocarbons (PAHs) and/or heavy metals (Mtx).

The results of the chemical analyses of the soil samples revealed contamination by petroleum hydrocarbons (C₁₀-C₅₀), polycyclic aromatic hydrocarbons (PAHs) and heavy metals, exceeding the generic criterion “C” established by the Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP) for commercial use of the property. In addition, soils were discovered with concentrations of C₁₀-C₅₀, PAHs and heavy metals in the MDDEP's “B-C” range.

During the future development of the property (construction of a multi-storey building with six (6) parking levels), soils contaminated beyond the MDDEP's “C” criteria will need to be excavated

and disposed of in an authorized treatment centre in accordance with current regulations. Contaminated soils in the "B-C" range established by the MDDEP, which should ideally be excavated and disposed of in an authorized treatment centre, could be used as backfill material only if their use does not increase the level of contamination of the soils left in place.

Finally, the soils remaining in place after the excavation work will need to be characterized in order to verify their compliance with the generic criteria defined by the MDDEP for the commercial and/or industrial use of the property.

PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT - PHASE II
City block bound by St-Jacques Street West, Notre-Dame Street West,
Saint-Laurent Boulevard and Place d'Armes Street, Montreal, Quebec

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1. INTRODUCTION

The services of Groupe Solroc were retained by Alex Toffan, duly authorized representative of 136 991 Canada Inc. for Phase II of the preliminary environmental site assessment of the property on lot 1 180 954, located in the city block bounded by St-Jacques Street West, Notre-Dame Street West, Saint-Laurent Boulevard and Place-d'Armes Street in Montréal, Quebec.

The site is owned by the City of Montréal and is currently occupied by a private paid parking lot with a small guardhouse located in the center of the lot.

1.1 Mandate

On March 2, 2007, Groupe Solroc received a mandate from Alex Toffan of 136 991 Canada Inc. to carry out Phase II of the preliminary environmental site assessment of the property for the purposes of future commercial development of the property.

1.2 Objective of the study

The objective of this study is to provide the client with information on the environmental quality of the property's soil and groundwater in preparation for development of the site.

This document provides a brief description of the property, includes a future recap of prior work carried out on the site, describes the nature of Groupe Solroc's mandate, presents the sampling procedures and chemical tests of the soil, and discusses the results obtained. It is based on the government directives presented in the *Politique de protection des sols et réhabilitation des terrains contaminés* from the Ministère du Développement Durable, de l'Environnement et des Parcs (MDDEP, 1988, revised in 1999, Phase II - Environmental Site Assessment (CSA, 2000) and on *An Act to Amend the Environmental Quality Act and other legislative provisions with regard to land protection and rehabilitation* (Bill 72).

1.3 Other studies

An Environmental Site Assessment - Phase I and a geotechnical study are being conducted in conjunction with this study (Groupe Solroc, Ref: CA601-070309E1 and CA601-070308G).

The conclusions of the Phase I of the environmental site assessment were as follows:

"Interpretation of the aerial photographs and research with the institutions and individuals interviewed did not reveal any documents related to accidental environmental events.

Based on the documents and information obtained during our research and site visit, we are of the opinion that the study revealed a potential risk of contamination on the property in question in relation to structures on the property in the past.

It is possible that construction debris and backfill material may have been buried on the property when buildings were demolished to develop the parking lot. These materials, if present, could contain lead-based or asbestos-based

construction debris as well as residue from the heating systems formerly on the site. In addition, according to the dates of construction of the buildings that had previously stood on the property, it is suspected that they were heated by a coal and/or oil-fired system.

It is therefore recommended that a preliminary Environmental Site Assessment - Phase 2 be carried out to verify the impacts of the heating system and the demolition of former buildings on the site on the environmental quality of the soil." [translation]

2. GENERAL DESCRIPTION OF THE SITE

The property that is the subject of this study is located in the city block bounded by St-Jacques Street West, Notre-Dame Street West, Saint-Laurent Boulevard and Place d'Armes Street in the Ville-Marie borough of Montréal, Quebec and covers an area of 2,019.1 m² (21,733.21 ft²). It is legally represented by Lot 1 180 954 of the Cadastre Officiel du Québec. The property is occupied by a private paid parking lot that can be accessed from Saint-Jacques Street West and Notre-Dame Street West, and there is a small guard house located in the center of the lot. The district is zoned for commercial and institutional uses.

A general location plan for the property is presented in Appendix A of this report.

6. CONCLUSION AND RECOMMENDATIONS

On March 2, 2007, Groupe Solroc received a mandate from Alex Toffan of 136 991 Canada Inc. to carry out Phase II of the preliminary environmental site assessment of the property for the purposes of future commercial development of the property.

An Environmental Site Assessment - Phase I and a geotechnical study are being conducted in conjunction with this study (Le Groupe Solroc, Ref. CA601-070309E1 and CA601-070308G).

The conclusions of the Environmental Site Assessment – Phase I were as follows:

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It is possible that construction debris and backfill material may have been buried on the property when buildings were demolished to develop the parking lot. These materials, if present, could contain lead-based or asbestos-based construction debris as well as residue from the heating systems formerly on the site. In addition, according to the dates of construction of the buildings that had previously stood on the property, it is suspected that they were heated by a coal and/or oil-fired system.

It is therefore recommended that a preliminary Environmental Site Assessment - Phase 2 be carried out to verify the impact of the heating system and the demolition of the buildings that had stood on the site on the environmental quality of the soil.” [translation]

This study was carried out on March 19 and 25, 2007 under the constant supervision of our qualified personnel. Robert Paradis and Ismael Boukerou were responsible, in succession, for the work carried out on the site. The study was carried out by means of ten (10) drill holes to depths ranging from 2.6 meters to 4.9 meters. A total of fifty (50) soil samples were collected and eighteen (18) representative soil samples were selected and sent to the Maxxam Analytics’ laboratory for chemical testing in order to detect their content in petroleum hydrocarbons (C₁₀-C₅₀), polycyclic aromatic hydrocarbons (PAHs) and/or heavy metals (Mtx).

The results of the chemical testing of the soil samples revealed contamination by petroleum hydrocarbons (C₁₀-C₅₀), polycyclic aromatic hydrocarbons (PAHs) and heavy metals, exceeding the generic criterion “C” established by the Ministère du Développement durable, de l’Environnement et des Parcs (MDDEP) for commercial use of the property. In addition, soils were discovered with concentrations of C₁₀-C₅₀, PAHs and heavy metals in the MDDEP’s “B-C” range.

During the future development of the property (construction of a multi-storey building with six (6) parking levels), soils contaminated beyond the MDDEP’s “C” criteria will need

to be excavated and disposed of in an authorized treatment centre in accordance with current regulations. Contaminated soils in the “B-C” range established by the MDDEP, which should ideally be excavated and disposed of in an authorized treatment centre, could be used as backfill material only if their use does not increase the level of contamination of the soils left in place.

Finally, the soils remaining in place after the excavation work will need to be characterized in order to verify their compliance with the generic criteria defined by the MDDEP for the commercial and/or industrial use of the property.

7. LIMITATIONS OF THE STUDY

This report has been prepared following best practices in environmental consultation and is for the exclusive use of 136 991 Canada Inc. The study's conclusions and recommendations are based on the veracity of the test results obtained at the precise location of the work carried out on March 19 and 25, 2007 for the selected parameters and, where possible, on the current data of the proposed project and on the information obtained from the various parties. It is not unusual for subsurface and water table geological conditions to vary from one borehole location to the next. These results are not a guarantee against contamination from other sources of contamination or from other areas of the property that have not been investigated.

8. EXPERTS' QUALIFICATIONS

Nicolas Sbarrato is an environmental specialist, specializing in in situ restoration. He holds a Bachelor of Chemical Engineering degree and a Master's degree in Environmental Sciences. Mr. Sbarrato is participating in the follow-up environmental studies of the site (Phase I), the preliminary and exhaustive characterizations (Phase II and III) and the environmental remediation.

Gilles Béland is a senior biologist (1981) specializing in Phase II, Phase III environmental site assessments, site remediation and environmental management systems (ISO) in the agricultural and industrial sectors. He is a seasoned manager with more than 20 years of experience, and leads a multidisciplinary project team that conducts environmental site assessments for the residential, institutional, commercial and industrial sectors. In addition, he collaborates on revising environmental study reports. Mr. Béland has taken part in numerous environmental studies related to groundwater characterization, in response to the Board of Directors' request related to the diversion of watercourses and wetlands, as well as waste management for hospitals and the industrial sector.

9. BIBLIOGRAPHY

Standards, methodological guides, regulations and guidelines

Politique de protection des sols et réhabilitation des terrains contaminés, Ministère du Développement Durable, de l'Environnement et des Parcs (MDDEP, 1988, revised in 1999)

By-law 87 of the Montreal Urban Community (CUM, 1986)
Standard CSA Z769-00, PHASE I Environmental Site Assessment, Canadian Standards Association (CSA, 2000)
Guide de caractérisation des terrains (MENV 2003)
Échantillonnage des eaux souterraines, cahier 3 du guide d'échantillonnage à des fins d'analyse environnementale, Ministère du Développement Durable, de l'Environnement et des Parcs, (MDDEP, 1995)
Échantillonnage des sols, Book 5 of the *Guide d'échantillonnage à des fins d'analyse environnementale*, Ministère du Développement Durable, de l'Environnement et des Parcs, (MDDEP, 1995)

Maps

Géologie des dépôts meubles, Île de Montréal, map #1426A, J. Hode Keyser and V.K. Prest (1978)
Épaisseur des dépôts meubles, île de Montréal, map #1427A, J. Hode Keyser and V.K. Prest (1978)
Carte hydrogéologique de l'île de Montréal et des îles Perrot et Bizard, A. Bériault and G. Simard (1978)

.9 Archaeological Supervision of Geotechnical Boreholes – Arkéos Inc. (excerpts)

7.9.1 Excerpt from the Arkéos report (2007 archeological excavations)

SUMMARY

This report records the results of the archaeological excavation carried out during the months of May and June 2007. This excavation took place within the limits of site BjFj-119 (lot 4B), located in the approximate centre of the city block formed by Notre-Dame Street West, Place d'Armes, Saint-Jacques Street West and Saint-Laurent Boulevard. This work was carried out as part of a program of excavations in vacant lots in the historical district of Old Montréal.

The excavation of the central part of site BjFj-119 follows an archeological inventory conducted in 2002 and 2003 (Arkéos inc., 2006). This inventory demonstrated the presence of archaeological soils and architectural vestiges from the 18th century, but only in the central part of the site. The southwest corner of a semi-subterranean masonry structure and artifacts from the French Regime were uncovered in the summer of 2002.

During the 2007 archaeological excavation, several vestiges of secondary structures — including latrines, waste pits, sheds and other buildings, sitting on 19th century wooden piles — were unearthed in the former 18th century garden areas of the Gervaise and Dessaulles houses. Further excavation of the interior of the semi-subterranean masonry structure uncovered in 2002 demonstrated that it was the ice pit of a small domestic ice house belonging to the Gervaise family and dating to the first half of the 18th century. The floors of the ice pit contained a large quantity and variety of artefacts dating from the second quarter and the middle of the 18th century (ca. 1740-1760).

The diversity of domestic objects (for table service, food preparation and storage) from the ice pit has proved to be one of the most interesting collections of Montreal artifacts discovered in recent memory. The unearthing of this ice house and the artifacts that were deposited there after it was abandoned has prompted further research in the archives and archaeological documentation to understand the presence of these items on a site occupied by the family of master baker Charles Gervaise.

7.9.2 Arkéos archeological report, March 2020 99%

.10 Archaeological and Historical Resource Enhancement Analysis - PSPC



Montréal's New Judiciary Building

Archaeological and Historical Resource Enhancement Analysis

Jessika Poirier, CST – Heritage, Quebec Region

April 2020



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Summary

Public Services and Procurement Canada (PSPC) would like to use the vacant lot at 46 Saint-Jacques Street in Montréal to erect a building measuring approximately 14,500 m² (gross) in order to house the Courts Administration Service (CAS) and the Administrative Tribunals Support Service of Canada (ATSSC). A feasibility study is currently being carried out in connection with this building, which will be Montréal's New Judiciary Building (MNJB). As part of the land acquisition process with the City of Montréal, city council expressed expectations regarding archaeological heritage integration and enhancement. In our opinion, all data on the site's past should be valued, whether that data comes from archaeological or documentary sources. We therefore recommend expanding the scope of the mandate to include the enhancement of the archaeological and historical heritage of the current site at 46 Saint-Jacques Street. Consultants will be entrusted with designing the enhancement project. This document provides content and guidance to facilitate their work, including historical information about the neighbourhood and the site, a summary of the heritage features and proposals for enhancement projects.

The MNJB design and the accompanying enhancement project should take into account the site's location within the perimeter of Montréal's designated heritage site (Old Montréal), whose heritage value and character-defining features are officially recognized at the municipal and provincial levels. Although the federal government is not subject to their jurisdictions, the protection statuses of other public bodies should prove a strong incentive for PSPC and its consultants to be mindful of the historical and architectural features of the urban landscape. Although the site under study does not itself have a heritage designation, it is of historical interest by virtue of its location and the archaeological interest confirmed by a number of archaeological digs in the 2000s. The site's occupation since the 17th century is reflective of major phases in Old Montréal's development, even though all that is left today are documentary and archaeological traces. It is these traces that must be enhanced to foster a better understanding and greater appreciation by the public of the heritage of previous generations of Montrealers.

To support the consultants in this undertaking, we have provided some general enhancement principles and proposed specific project subjects and types. Among the points addressed, we recommend that at least part of the enhancement project be accessible to the general public (tourists, local residents and individuals who work in the area), while not excluding the possibility that another part of the project target the building's users. We suggest three types of projects: exhibition, integration into design and artistic initiatives. We recommend having at least one part of the project focus on exhibition strategies, that is, an intention to explicitly convey the significance of the site's heritage and interpret the meaning of visual aids. In reality, a single project can combine concepts from all three categories. As for content selection, the Gervaise icehouse collection and the resulting subjects for interpretation are best suited for an enhancement project, considering the findings of previous archaeological digs and the current state of knowledge. That said, we have proposed many other options because there is also the possibility of combinations or sub-projects with different thematic approaches.

It is important to remember that approaches or subjects can be combined into an overall project that reaches multiple audiences and achieves various communication aims. Despite our efforts, our list of proposed options is not exhaustive, and we encourage the consultants to use it as a basis to stimulate reflection. The information presented in the first two parts of the document on historical understanding and heritage considerations should inspire them not only for the building's architectural integration into the historical urban landscape, but also for the archaeological and historical resource enhancement project.

Introduction

Implementation context

In the fall of 2019, Bisson Fortin Architecture + Design submitted a 50% feasibility study on the construction of Montréal's New Judiciary Building (MNJB) at 46 Saint-Jacques Street in Montréal.¹ Public Services and Procurement Canada (PSPC) would like to use this vacant lot to erect a building measuring approximately 14,500 m² (gross) in order to house the Courts Administration Service (CAS) and the Administrative Tribunals Support Service of Canada (ATSSC). The lot's location in the historical Old Montréal district means that the sector and site's heritage must be taken into consideration. As part of the land acquisition process with the City of Montréal, city council expressed expectations that archaeological heritage be integrated into the construction project. PSPC therefore wants to include measures in the MNJB project to enhance the site's archaeological resources and historical interest. While the department will task its consultants with determining the exact strategies to be adopted, this document provides some content and guidelines to facilitate their approach.

On the one hand, this report seeks to increase understanding of the historical context and heritage of Old Montréal and the site of the future MNJB. On the other, it aims to guide and inspire the creation of a heritage resource enhancement project. The first part of the document focuses on the evolution of the built environment of Old Montréal and the site at 46 Saint-Jacques Street. Based on this background, the second part focuses on several heritage considerations across the district, the block and the site under study. Lastly, the guidelines in the third part provide leads that stakeholders will be able to use to determine which subjects and types of enhancement projects are conceivable. The references consulted during each phase of the work are compiled in a bibliography at the end of the document.

Information on the site under study

The site is located in Montréal's Ville-Marie borough, in the block bounded by Saint-Jacques Street, Saint-Laurent Boulevard, Notre-Dame Street West and Place d'Armes (Figure 1). Its most recent owner is the City of Montréal. Its "L" shape is irregular and crosses Saint-Jacques Street to Notre-Dame Street. The site covers 2,023.8 m² and is currently being used as a parking lot. It is fully paved, with a small gatehouse as the only built structure. The rest of the quadrangle is densely built up and is used primarily for commercial purposes.

The current site corresponds to lot 1,180,954 in Quebec's official cadastre. On the archaeological report template, we will sometimes use references to the parcel division of Montréal's second *terrier* dating back to 1792, which identified lots 232A, 233, 234, 240, 241 and 242 for the same site (Figure 2). In the archaeological community, the property is registered under code Borden BjFj-119. Two archaeological surveys were taken in 2002 and 2003, a partial dig was carried out in 2007, and archaeological supervision occurred during drilling work in 2019.² Archaeologists sometimes subdivided the site into zones or assigned ratings to some areas according to their research needs. While there is no use going over all these designations, we should point out that the 2002 and 2003 dig report divided the site into four areas of archaeological potential (Figure 3). The

¹ Bisson Fortin, *Étude de faisabilité (50%)*, December 4, 2020, online (<https://gcdocs.gc.ca/tpsgc-pwgsc/lisapi.dll/open/231531364>).

² The archaeological reports produced as a result of this research will be cited many times in this document: Arkéos, *Étude de potentiel et inventaire archéologiques, terrain 4B BjFj-119, 2002-2003*, January 2006, 307 p.; Arkéos, *Fouille archéologique au site BjFj-119 (terrain vacant 4B)*, 2007, March 2012, 265 p.; Arkéos, *Nouveau complexe judiciaire de Montréal, Supervision archéologique de forages géotechniques*, preliminary version, March 2020.

area of high potential, also called the “central part,” will be mentioned multiple times in this document because it is of greatest archaeological interest. This potential was confirmed by digs in 2007 and by the findings of archaeological supervision of geotechnical drilling in 2019. Please refer to the archaeological reports for more detail.

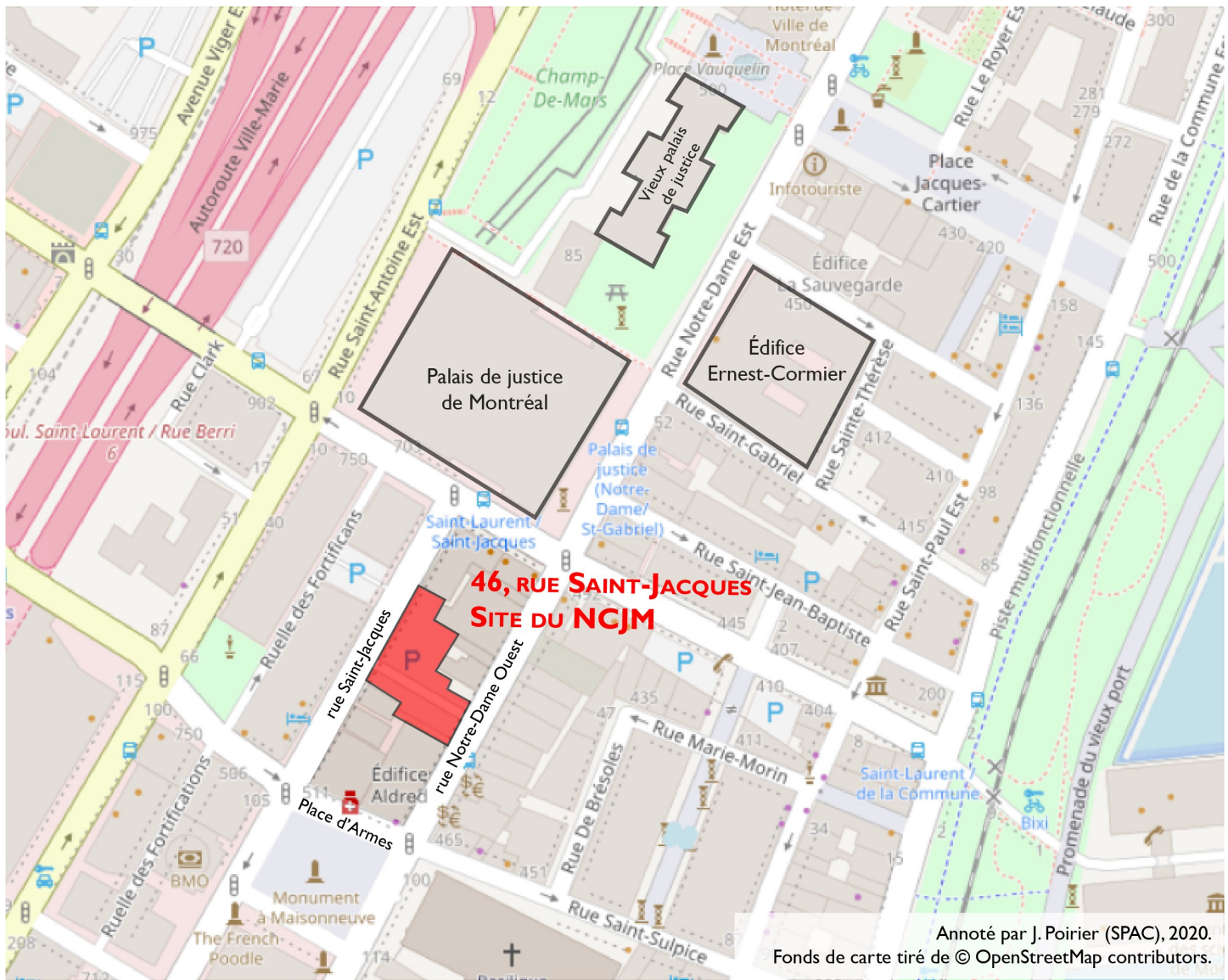


Figure 1. Location of MNJB site and other judicial buildings in the area.



Figure 2. Cadastral lots of Montréal's second terrier (1792–1874).

Taken from Arkéos, Étude de potentiel et inventaire archéologiques, terrain 4B BjFj-119, 2002-2003, January 2006, 307 p.



Figure 3. Identification of areas of interest where recent construction did not disturb archaeological soils. Taken from Arkéos, Étude de potentiel et inventaire archéologiques, terrain 4B BfJ-119, 2002-2003, January 2006, 307 p.

1. Historical understanding

1.1 Evolution of Old Montréal's historical urban landscape

Before 1642: Indigenous occupation

The Old Montréal sector has many sites with evidence of Indigenous occupation. The oldest evidence of human presence found thus far dates back more than 4,000 years. For example, the site at Saint-Éloi Lane confirms the presence of a small hunter-gatherer camp from that period. Some artifacts found under today's Place Royale in the Pointe-à-Callière sector also show that groups of people stopped there for longer or shorter periods. Montréal Island therefore started out as a temporary stop for hunting or fishing, but gradually attracted groups of settlers who lived off farming. Between 1,000 and 1,500 AD, the St. Lawrence Iroquoians settled on the island. Archaeologists have found an exceptional concentration of evidence of their presence at Place Royale in the form of projectile tips, tool fragments, pottery, pipes and other objects. Although this site and the banks were quite heavily frequented in the course of everyday activities, Iroquoian villages were located inland. In 1535, explorer Jacques Cartier visited the village of Hochelaga and described it in his travel accounts. Presumably around 1580, the St. Lawrence Iroquoians left Montréal Island. A number of other Amerindian nations continued to set up temporary camps on the Island.

Generally speaking, there is little archaeological evidence left of Amerindian occupation before the arrival of the Europeans because the Old Montréal sector was densely built up and rebuilt over time, which destroyed the oldest remains. It should also be noted that there is no indication that the Old Montréal sector was favoured by Indigenous populations compared with other locations on Montréal Island or in the region.

1642 to 1760: Ville-Marie and the French Regime

At the beginning of the 16th century, Samuel de Champlain chose what is known today as Pointe-à-Callière as a seasonal trading location for the fur trade between the French and the Amerindians. In 1642, a permanent settlement was established in Montréal, again at Pointe-à-Callière. This was a missionary colony headed by the Société de Notre-Dame de Montréal to convert Indigenous peoples to Catholicism. Ville-Marie grew from a small missionary post into a farming town, becoming the Mecca of the fur trade as of 1665. In 1663, the Société de Notre-Dame assigned the seigniorship of Montréal to the Saint-Sulpice Seminary. Its superior, François Dollier de Casson, took it upon himself to give structure to the urban space by drawing up the first official town plan in 1672. His plan had two main east-west axes, namely Saint-Paul and Notre-Dame streets, creating a trading hub in the already more developed sector of Lower Town and a religious centre on the ridge where the parish church would be built. He added a second east-west axis—Saint-Jacques Street—as well as cross streets. The influence of this plan is still visible in the current city's spatial organization.

In 1685, Montréal governor Louis-Hector de Callière had a palisade of stakes built to protect the urban area. In 1688, large landowners were required to split their land to increase urban density. The end of the 17th century and the 18th century were also marked by the construction of a number of buildings for various religious institutions, particularly around Notre-Dame Street and its church. Between 1717 and 1744, Montréal was fortified in stone, according to the plans of Gaspard-Joseph Chaussegros de Léry. The plan for the outer wall encompassed the already urbanized space (with the exception of Pointe-à-Callière), and the walled city would henceforth develop separately from the *faubourgs*. Contrary to belief, this did not lead to a substantial densification of the inner city, but rather to the development of areas outside its walls. As a result of a number of major fires, the administration enacted regulations in 1721 and 1727 requiring masonry construction and fire-resistant demising walls in the inner city. This measure would not only change the appearance of Montréal's buildings, but it would also encourage the less fortunate to migrate toward the *faubourgs*, where less expensive wood construction was still permitted. The fortified city therefore gradually became a place of

residence for the elite and religious communities, who could have large grounds with a stone residence, outbuildings and gardens.

1760 to 1850: A trading city in the British Empire

In the early decades after the British Conquest, the look of the heart of the city did not change much, but the construction market gradually adapted to the tastes of the Anglophone population. For example, rough-cut stone facings were replaced on new buildings with dressed stone facings. Despite strict rules, fires broke out periodically. They were an opportunity to rebuild larger buildings in a style that was more fashionable among the British. Under these conditions, the city became denser and the inhabitants sometimes added warehouses at the back of their property. In the early 19th century, the construction of a courthouse, a customs building and a new prison in the neoclassical style reinforced British architectural influences. This was also an opportunity to confirm the symbolic status of old districts as the centre of power. Over time, the gap between Old Montréal's business and religious elite and the growing number of inhabitants of the poor *faubourgs* widened.

The end of the fur trade at the turn of the 19th century had very little effect on Montréal's economy, which had already shifted to other goods. Canadian merchants supplied the United Kingdom with agricultural products in exchange for manufactured goods. The city's ramparts, which had become obsolete and cumbersome, were demolished in the first decade of the 19th century. The urban organization was then redesigned. McGill and Craig streets (today Saint-Antoine Street) were built, and Victoria and Dalhousie squares replaced the old bastions. Place du Marché-Neuf was cleared in 1807 and renamed Jacques-Cartier in 1847. The emblematic Champ-de-Mars esplanade was also cleared at the beginning of the century. In 1815, Montréal experienced a period of rapid economic and population growth. The large influx of Anglophone immigrants changed the dominant cultural codes. This led to the erection of Anglican and Presbyterian churches, including the Anglican Christ Church on Notre-Dame Street. Despite everything, the Catholic Church remained a major landowner and real estate investor in the old city. The construction between 1824 and 1829 of the new Notre-Dame Church (today the Notre-Dame Basilica) was a powerful marker in the urban space. Built in the neo-Gothic style, it was designed by Irish architect James O'Donnell and its extraordinary dimensions allow it to accommodate several thousand worshippers. Completed in the 1840s, its two towers became effective land markers for Montrealers. In 1843, Montréal officially became the capital of the province of Canada. However, it held this title for just five years, too short a time to affect the urban space. In the 19th century, the development of transportation infrastructure—the Lachine Canal and the St. Lawrence Seaway, as well as the railway network—solidified Montréal's status as a trading city. The founding of the Bank of Montreal in 1817 reflects this reality. Initially located on Saint-Paul Street, its head office was moved in 1847 to a grand new building at Place d'Armes along Saint-Jacques Street. This was the first in a series of financial institutions to settle in Old Montréal.

1850 to 1963: The rise and fall of Old Montréal as the centre of a metropolis

Economic development changed the look of Old Montréal the most. Starting in 1854, trade with the United States was boosted by a reciprocity treaty with that country and Canada's domestic market was on the rise. These prospects allowed for mass production, and Montréal's industry was booming. Before moving to the banks of the Lachine Canal, factories were often located in Old Montréal. The many shop houses that combined residential and commercial functions were expanded or demolished to make room for a large number of warehouse stores. This new type of property was a large building with the ground floor serving as a store and the upper floors as the warehouse or workshop. The number of warehouse stores and the relative uniformity of their grey stone facades with large bay windows gave Old Montréal a visual identity that is still striking today. At the same time, growing business and transportation activities prompted religious communities and inhabitants to move out of the old city. For the most part, Old Montréal therefore lost its residential function.

During the first half of the 20th century, Old Montréal was home to the head offices of most of the city's major companies, which had factories or branches in the suburbs. The financial institutions that had begun settling in Old Montréal in the 19th century were now well established and had increased in number. In 1901, the municipal administration increased the maximum building height to ten storeys and, in 1924, authorized buildings over ten storeys, provided that they were pyramid shaped. Two skyscrapers over ten storeys were built in Old Montréal: the Royal Bank head office on Saint-Jacques Street and the Aldred Building at Place d'Armes. Although they were few of them, these high-rise buildings left a lasting mark on the built landscape. Many other office buildings three to ten storeys high were built in Old Montréal. They replaced warehouse stores as retailers moved to other parts of the city, such as Sainte-Catherine Street. This new attractive location was a prelude to the appearance of a new business centre further west.

Starting in the second half of the 20th century, financial institutions and the head offices of major companies located in Old Montréal moved to Toronto, which had become Canada's new metropolis, or to Montréal's new city centre, with Dorchester Boulevard (today René-Lévesque) as its backbone. Old Montréal retained its administrative and judicial functions, but it was abandoned by the business community. In addition to this loss of momentum, its infrastructure began ageing and the construction of the new Bonaventure and Ville-Marie highways isolated it from the rest of the urban space.

1964 to 2020: A heritage and tourist district

In 1964, the Government of Quebec granted historical district (now "heritage site") status to the portion of Old Montréal between Notre-Dame and Des Communes streets. In the decades that followed, municipal authorities put a number of measures in place and supported many initiatives to revitalize Old Montréal and the Old Port. From the 1980s onward, major archaeological discoveries at Place Royale prompted the City of Montréal to incorporate archaeological research into its urban development approach. In 1990, the Pointe-à-Callière Museum of Archaeology and History was founded with a mission to highlight past human occupation in the Montréal area.

The protected heritage site grew in 1995 to the current boundaries and the revitalization efforts paid off. At the turn of the 2000s, Old Montréal regained its foothold as a mainstay of the metropolis: the number of inhabitants more than tripled since the 1970s, the recreation and tourism sector attracted several million visitors and many shops sprung up. Old Montréal also has a strong institutional character owing to the presence of museums, on the one hand, and municipal, provincial and federal government offices and service points, on the other.

1.2 Administration of justice in Old Montréal

The Old Montréal sector has had a connection to the administration of justice since the 18th century. Today, three buildings reflect the city's judicial past and present: the old courthouse, the Ernest-Cormier Building and the Montréal courthouse (Figure 1). Although they are no longer part of the federal portfolio, the old courthouse and the Ernest-Cormier Building are the achievements of Public Works Canada (now PSPC). The MNJB will be located in the centre of the block next to the Montréal courthouse, on the other side of Saint-Laurent Boulevard. There is no question that this exceptional concentration of judicial buildings contributes to the identity of this part of Old Montréal and its built environment.

Old courthouse

Designed by architects John Ostell and Henri-Maurice Perreault, the old courthouse (or Lucien-Saulnier Building) was built between 1851 and 1857, then expanded in 1890. This is an imposing, Palladian-inspired building with heritage status under Quebec's *Cultural Heritage Act*. It is located between Champ-de-Mars and Notre-Dame Street East and is the third building dedicated to the administration of justice in this area. The site was first occupied by the Society of Jesus Monastery in 1692. Following the British Conquest in 1760, the authorities used the Jesuit residence as the seat of judicial activities. In 1800, the Jesuits officially lost

ownership of the building, and the government demolished it to build the first courthouse. This building was destroyed by fire in 1844, and the courtroom was moved to Château Ramezay until the second courthouse opened in 1857. That same year, a judicial reform was adopted, and district courthouse plans were standardized by the federal Department of Public Works. In that respect, the old 1857 courthouse is one of the most recent examples of courthouses built under the old judicial system. After the addition of a storey and a dome in 1890 to increase the usable area, the lack of space forced Public Works to build an annex on the west side in 1903–1905. In the early 1970s, the building lost its judicial use to the current courthouse. The City of Montréal is its occupant today.

Ernest-Cormier Building

The Ernest-Cormier Building was built between 1921 and 1926 as a complement to the old courthouse and its annex in 1905, particularly by serving as the premises for criminal courts, magistrates' offices and other offices. It takes up the entire quadrangle between Notre-Dame, Saint-Gabriel, Sainte-Thérèse and Saint-Vincent streets. Rather than having the plans drawn up internally, the Department of Public Works entrusted the design to architects in the private sector: Louis-Auguste Amos, Charles Jewett Saxe and Ernest Cormier. In 1972, the judicial activities that took place in the Ernest-Cormier Building were transferred to the new courthouse, and the Ernest-Cormier Building housed the Centre d'archives de Montréal, the Conservatoire d'art dramatique and the Conservatoire de musique at different points in time. Between 2002 and 2004, the building was restored and rehabilitated so that the Court of Appeal could be moved there, thus restoring the building's judicial purpose. Owing to its historical and architectural values, the Ernest-Cormier Building was designated a heritage building by the province in 2014.

Montréal courthouse

Built by the Government of Quebec, the current Montréal courthouse was unveiled in 1971. The intention was for a single property to house all justice administration activities for the District of Montréal, thereby replacing the old courthouse, its 1905 annex and the Ernest-Cormier Building, which were deemed obsolete. It is west of Champ-de-Mars, between Saint-Laurent Boulevard, and Saint-Antoine East and Notre-Dame East streets.

1.3 MNJB block and its neighbouring streets

The site on which the MNJB will be built is located on a block bounded to the north by Saint-Jacques Street, to the east by Saint-Laurent Boulevard, to the south by Notre-Dame Street and to the west by Place d'Armes (in the extension of Saint-Sulpice and Saint-Urbain streets). It is at the heart of one of the oldest areas of the French colonial city. The architectural and landscape features of the block of the future MNJB derive from the historical evolution of public roads and the specific features of neighbouring buildings. These elements form the physical framework in which the federal government's project will be located.

Notre-Dame Street

In July 1672, François Dollier de Casson defined the urban fabric of Ville-Marie. The first road that he plotted was Notre-Dame Street to access the church of the same name. His east-west axis ran along the old Du Coteau Saint-Louis Road, making it one of the colonial city's two main arteries. Under British rule, this was the axis around which the civil administration was developed: prisons, courthouse, city hall, etc. In the 1860s, it became a major trade route, a character confirmed over the course of the 19th century. A number of buildings in the section between Saint-Laurent Boulevard and Saint-Sulpice Street were warehouse stores dating back to the 1860s or subsequent decades. Because it connects Place d'Armes at the administrative centre of Old Montréal, the stretch of Notre-Dame Street across from the MNJB site is one of the busiest public roads. In the past, this strategic route made it suitable for religious processions, demonstrations and parades.

Saint-Jacques Street

The layout of Saint-Jacques Street was also established when the basic grid was drawn in 1672. Its name might refer to Jean-Jacques Olier de Verneuil, founder of the Société Notre-Dame, or to Jacques Archambault, one of the first inhabitants of the city whose land was crossed by the new street. While Saint-Jacques Street has long had a residential character, it was transformed during the second half of the 19th century to become the backbone of Montréal's first business centre. Many financial institutions set up their corporate hubs there. Over time, newspapers such as the *Montreal Star*, *La Presse* and *La Patrie* would also establish their offices in that area. In the 1950s and 1960s, the relocation of many financial institutions tarnished the appeal of Saint-Jacques Street. Nevertheless, the section where the MNJB will be built was revitalized by the construction of the new courthouse in the early 1970s and the renovation of the New York Life Insurance Building in the 1980s to house law firms.

Place d'Armes

The Sulpicians, seigneurs of Montréal Island, became owners of the land north of Notre-Dame Church in 1693 with the aim of turning it into a public place. Nicknamed “Place de la Fabrique” at the time, this gathering place was quickly embraced. In 1721, a fire near Place Royale forced the administration to hold military exercises at “Place de la Fabrique.” It was expanded for the occasion and renamed “Place d'Armes.” However, it would subsequently switch between commercial and military use. In 1836, the City of Montréal bought the former Notre-Dame Church land to expand Place d'Armes and create a public garden to resemble a Victorian square. In the early 20th century, the vegetation was removed and Place d'Armes became a central point of the tramway network in the 1920s. It was a paved space that no longer had anything in common with the previous landscaping. In the early 2000s, Place d'Armes was redesigned to restore its appeal. In addition to hosting a very large number of visitors, it was the site of countless ceremonies and gatherings throughout its history. Although the Notre-Dame Basilica is the current anchor point of the sense of place, the other buildings contribute just as much to the prestigious identity of Place d'Armes: the Bank of Montreal, the Royal Trust Building, the New York Life Insurance Building, the Aldred Building and the National Bank of Canada Building.

Saint-Laurent Boulevard (Saint-Lambert Street)

In 1672, François Dollier de Casson connected Notre-Dame and Saint-Jacques streets with a short perpendicular road that he named Saint-Lambert Street. After the fortifications were built in the 1720s and 1730s, the Saint-Laurent gateway linked Saint-Lambert Street, which was walled, to Saint-Laurent Road, which was beyond the walls and led to the Saint-Laurent parish. Even after the fortifications were demolished in the 19th century, a distinction between Saint-Laurent Road and Saint-Lambert Street remained. In 1792, the axis acquired its symbolic role as a divider between the city's east and west ends. In 1905, the municipal administration decided to name the entire stretch Saint-Laurent Boulevard. In 1914, the section of the former Saint-Lambert Street was expanded and stretched beyond Notre-Dame Street, all the way to the edge of the river. Saint-Laurent Boulevard, nicknamed *Main*, gained iconic status due to the integration of immigrants, the city's social and economic development, and Montréal's cultural performances. Nevertheless, the section of the artery located in Old Montréal contributed little to this iconic role.

Buildings on the block

The most distinctive buildings on the block are those close to Place d'Armes: the New York Life Insurance Building at the corner of Saint-Jacques Street and the Aldred Building at the corner of Notre-Dame Street. Although less spectacular, the other buildings also show the evolution of the built environment between the 1860s and 1930s.

Built in 1887–1889 according to plans drawn up by Babb, Cook & Willard, the New York Life Insurance Building (at 511 Place d'Armes) has eight full storeys, plus two additional ones if you include the clock tower. Many consider it to be Canada's first skyscraper. Its height, impressive for its time, is due to the invention of

elevators and the use of a hybrid structure involving brick load-bearing walls and an iron frame. While it served as New York Life Insurance headquarters, most of the floors were leased by prestigious notary and law firms and other professional offices. The eighth floor held a law library open to all tenants. The building was sold in 1909 to the Quebec Bank and then transferred to Royal Bank's Montréal Trust until 1963. In the 1980s, work was undertaken to rehabilitate the premises while preserving its historical character. Today, it is an office building occupied primarily by law firms. Since 2006–2007, it has also had two private penthouses at the top.

Designed by architectural firm Barott and Blackader, the Aldred Building (at 501-507 Place d'Armes) was built between 1929 and 1931 for financial firm Aldred and Co. Limited, whose president, John Edward Aldred, also owned the Shawinigan Water and Power Company. The Aldred Building is one of Montréal's first modern skyscrapers. It has a very slender pyramidal shape with narrow spans of double windows that accentuate the vertical lines. Its rich ornamentation with plant and geometric patterns, its symmetry-focused composition and the quality of its materials make it an excellent example of an Art Deco skyscraper. Despite the challenging economic climate, more than a hundred companies and professional offices, predominantly in the fields of law and finance, would lease offices there in the 1930s. Aldred and Co. Limited occupied the 17th and 18th floors until 1945, but in 1941, ownership of the building was transferred to the Prudential Insurance Company of America. In 1960, insurance company Prévoyance purchased the building, later selling it in 1980 to a property management company that gave it back its original name. Today, the Aldred Building continues to be the headquarters for many businesses.

Along Notre-Dame Street, the building numbers between 7 and 39 historically belonged to what was called Cathedral Block. Built in 1859–1860, Cathedral Block was a warehouse store where the Christ Church Cathedral used to stand before it burned down in 1856. The block consisted of eight units, grouped into three sub-blocks with different owners. Cathedral Block is currently divided into four properties. These buildings stand three to five storeys high, with dressed stone facings and an abundance of windows. Many other warehouse stores of similar size can be found on the south side of Notre-Dame Street.

The building at the corner of Notre-Dame Street and Saint-Laurent Boulevard is known as the Mussen or Leeming Miles Co. Building. Built between 1904 and 1905 by architectural firm MacVicar and Heriot, it replaced the old building of wholesale merchant Thomas Mussen. The building has floors of offices and commercial space. It was originally home to National Cash Register, a cash register manufacturer, and Leeming Miles Co., a wholesaler of pharmaceutical and food products. Leeming Miles Co. became the building's owner in 1925 and held ownership until the mid-20th century.

On Saint-Jacques Street, the building next to the New York Life Insurance Building is called the Versailles Building (at 60 Saint-Jacques Street). Designed by architects Ross and MacFarlane, it is a ten-storey building built in 1913–1914. It was occupied by the brokerage firm of owner Joseph Versailles and other tenants, including large law and notary offices. Inspired by the Beaux-Arts style, the building's architecture has a tripartite composition and classic details. Its facades, which can be seen from the street, are clad with sandstone. Next to the Versailles Building, at 50-54 Saint-Jacques Street, is a small two-storey masonry building built in 1928. From 1929 to 1945, it was occupied by Café Paul. Today, it is home to a dance school and yoga studio.

The Thémis Building (at 10-12 Saint-Jacques Street) is on the corner of the block with Saint-Laurent Boulevard. It was built in 1927–1928. Its owner, real estate firm Thémis, leased its office space to lawyers and legal professionals. It was not until 2005 that its purpose changed and the building became a residential condominium. The building is made of brick and is of classic proportions, but its subdued appearance contrasts with the richness of the Beaux-Arts decor.

1.4 Occupation of the current site at 46 Saint-Jacques Street

This section follows the chronological changes in the occupation of the site on which PSPC wants to erect the MNJB. The information presented is taken from archaeological reports and their annexes. The site is currently identified as lot 1,180,954 in Quebec's official cadastre. However, it had undergone various divisions over time. To clarify, we will often refer to the division into six lots of Montréal's second *terrier* adopted in 1792: lots 232A, 233, 234, 240, 241 and 242 (Figure 2).

Before 1642: Potential Indigenous occupation

To date, no evidence of Indigenous occupation has been found on the site of the future MNJB or in the block where it is located. However, discoveries of an Iroquoian pipe on the site of the first Notre-Dame Church, bone fragments on the site of the Saint-Sulpice Seminary and other artifacts on the former Versant Sud site have been made near the site under study and reinforce the plausibility of discovering new evidence of Indigenous presence at 46 Saint-Jacques Street. Although nothing has come of it, Arkéos believes that the site has a “moderate” potential for occupation by Indigenous populations.³

1642 to 1768: Horticultural and residential use

This period is characterized by residential use, including the presence of private subsistence gardens. There is also a gradual division of the site under study into parcels on which different owners would build their homes.

In the 1640s, the Hôtel-Dieu de Montréal estate stretched to the site under study. The Société de Notre-Dame had parcelled out its property and sold lots to individuals. In 1651, the section of the site under study was granted to Jacques Archambault. Most of this property would then be sold to the Messieurs de Saint-Sulpice in 1675, with the exception of lot 234, which would be bequeathed to Anne Archambault and her merchant husband, Jean Gervaise. The space had initially been developed into orchards and gardens, and it was not until 1694 that master baker Charles Gervaise, the son of Jean Gervaise, had a house built at the edge of Saint-Jacques Street. He lived there for 60 years, until his death in 1753. We know that at the time, the land also had a barn, a stable, an icehouse, a dairy, two chicken coops and a garden. The Gervaise family continued to own it all and leased it out to various occupants until 1758. It was then sold to Augustin Viger, Montréal's master surgeon. Viger subsequently passed it down to a Chambly merchant, Pierre Boileau. In 1768, 10 years after the sale by the Gervaise heirs, a fire in the neighbourhood destroyed the house and close to 100 others.

Aside from lot 234, the rest of the original property was sold in 1675 to the Messieurs de Saint-Sulpice and remained in their possession until 1682. It was then purchased by merchant Charles Aubert de Lachenaie, who sold it in 1689 to Pierre d'Ailleboust d'Argenteuil, a military officer. A house was built that same year, but it was off the current site, at the location of the Aldred Building. Lots 232A, 233, 240, 241 and 242 were occupied primarily by the D'Argenteuil family gardens. The parcelling of this property began in 1710. That year, lot 242 was sold and a house was built there in 1711. Lot 241 was put up for sale in 1715. There was also a residence there between 1718 and 1770. In 1729, the D'Argenteuil family sold lots 233 and 232. Lot 233 was bought by Jacques Denis, a master mason, and then by Paul Tessier in 1736. A residence was built there at an unspecified time. As for lot 232, master carpenter Charles Renaux and builder Mathieu Gay, also known as Castonguay, purchased it in 1729 and split it in two. It was the east portion of this lot (232A) belonging to Gay that is on the site of the future MNJB. The property would pass into the hands of Eustache Dumest in the years that followed. During this period, a house was built on lot 232A and was the source of the 1768 fire that destroyed the neighbourhood.

³ Arkéos, 2020, pp. 7 and 8.

1769 to 1856: Transition phase

There was a transition phase between the 1768 fire and the second fire in 1856. During this interval, the lots near Saint-Jacques Street retained their residential use, albeit sometimes through leasing. The residences there were low (one or two storeys high), and there were outbuildings. On Notre-Dame Street, the buildings had more of a commercial purpose, with sheds and warehouses in the back. These buildings were higher and had three to four storeys.

After the 1768 fire, lot 232A on Saint-Jacques Street was left abandoned for 60 years. In 1828, Tancrede Bouthilier acquired the land and built a house. Four years later, he sold his property to John Samuel McCord, whose family retained ownership until 1884. The building on lot 233 was rebuilt a few years after the 1768 fire and bought in 1792 by justice of the peace François-Marie Picoté de Bélestre. He rented the residence to someone else for a number of years before selling it to Pierre Berthelet in 1815. In the early 1840s, the house on lot 233 was demolished because of its poor state and was replaced by two other residences. This land was eventually bought by Joseph Masson.

As for lot 234, the Gervaise property and its dilapidated buildings were bought by trader Jonas Dessaulles. In 1770, he built a new masonry house in the same location as the previous residence and a stable. The property was transferred to notary Louis Guy in 1801 and then to Joseph Masson, a successful businessman, in 1856. He also owned lots 240A, 241 and 242 on Notre-Dame Street, which were merged in 1815; a fire in 1841 destroyed some buildings. Some months later, in December 1856, another major fire destroyed lot 234.

1856 to 1962: Commercial use

After the 1841 and 1856 fires on his land, Joseph Masson entrusted architect John Ostell with designing a large dressed-stone building on Notre-Dame Street (the equivalent of former lots 241 and 242) with space that could be leased to merchants. This new type of commercial building was akin to a warehouse store, a building with an open-plan structure and an abundance of windows on the facade. Named Crystal Block, Masson's warehouse store had four storeys that were leased to various businesses, such as restaurants, jewellers, hat makers and tobacconists. Crystal Block was around until 1965.

On Saint-Jacques Street, the Masson family had a new generation of buildings built. These residential buildings would be increasingly occupied by small legal offices: lawyers, bailiffs, deputy judges, notaries etc. Other professionals, such as architects, a stockbroker, a construction company and immigration agents, were also tenants. Many buildings had one or two storeys added to maximize the available space.

1963 to 2020: Parking lot

On January 31, 1963, a fierce fire destroyed many businesses on Notre-Dame Street, which were not rebuilt but instead turned into parking space. In 1964, aerial photographs showed that the parking area stretched all the way to Saint-Jacques Street. Since the 1960s, 46 Saint-Jacques Street has had no other use. The construction of the MNJB will be a new chapter in the history of the site's occupation.

2. Heritage considerations

2.1 Old Montréal's heritage value

The site on which the MNJB will be built is located in an area of Montréal that has been designated a heritage site (Old Montréal) under Quebec's *Cultural Heritage Act* and in a sector of exceptional heritage value, according to Montréal urban planning documents. This means that all owners in this sector must obtain authorization from the city or Quebec's Ministère de la Culture et des Communications to carry out various types of work, such as dividing land, erecting a structure, repairing or changing the appearance of the outside

of a building, etc.⁴ The federal government is not subject to provincial and municipal jurisdiction, meaning that it is not required to obtain such authorization, unless it wants to make a good will gesture under the Good Neighbour Policy or a predetermined agreement with the stakeholders involved.

The heritage value of the Old Montréal heritage site is based on the presence of and the interaction between successive layers of land occupancy in the sector from past centuries to present day: Indigenous crossing points; Catholic missionary project; farming settlement; fortified colonial city; port and trade city; place of power and justice; business hub in an industrial and financial metropolis; and tourist and cultural district. In other words, Old Montréal's identity is at the confluence of these various facets of its historical evolution and the imprint they left on the collective memory and built environment. Based on the official features of the Montréal heritage site⁵ and our own interpretation of the site's heritage value, below are a few essential features of the old city:

- its strategic location and its relationship to the St. Lawrence River;
- its archaeological remains from earlier times to modern age;
- its urban design features, which still reflect 17th century subdivision decisions, particularly the density of its built environment and the demi-detached layout of buildings, the tight street grid, and the depth of the lots, encouraging buildings with no setback and courtyards or gardens in the centre of the lots;
- the toponymy, layout of the roads and general organization of public space, particularly historical public places, such as Place d'Armes, Place Jacques-Cartier, Champ-de-Mars and others;
- the diversity of building styles and sizes not only of prestigious buildings, but also of more modest ones, including specific types such as warehouse stores and skyscrapers;
- preferred material such as stone (especially Montréal grey stone), brick and, for some time, cast iron and steel structures;
- the presence and use of buildings in the administrative and judicial hub of the metropolis;
- the outstanding views from or of Old Montréal;
- the uses and appropriation of the area as a tourist and heritage space for visitors, but also as a living environment for residents and individuals who work in the area.

The fact that the MNJB site is located on a heritage site of great national and municipal interest should provide a strong incentive for the federal government to be mindful of the historical and archaeological features of the built environment, both during the MNJB design phase and during its subsequent management. The new building's effect on Old Montréal's urban landscape and its relationship with the structures surrounding it must be considered in the decision-making process throughout its lifespan. From a usage perspective, the MNJB is already very compatible with the sector where it will be installed; the presence of judicial administration buildings has characterized Old Montréal since the 18th century. In that respect, the MNJB will be a new urban landscape chapter in the history and architecture of judicial buildings.

2.2 The block's heritage value

On the block bound by Saint-Jacques Street, Saint-Laurent Boulevard, Notre-Dame Street and Place d'Armes, no buildings have a municipal or provincial heritage designation. However, since they are all located in Montréal's heritage site, their external appearance and the integrity of the land are protected by measures set forth in Quebec's *Cultural Heritage Act*. Moreover, they are subject to specific requirements under the Urban

⁴ For more information: <https://www.mcc.gouv.qc.ca/index.php?id=5089>.

⁵ For more information: <http://www.patrimoine-culturel.gouv.qc.ca/rpcq/detail.do?methode=consulter&id=93528&type=bien>.

Planning By-Law for Ville-Marie Borough, particularly in connection with the Old Montréal landscape unit. Beyond the protection statuses, it is clear that a number of buildings on the block are of significant historical interest because they are representative of the period during which they were built. This interest comes with a certain cachet as well, which many owners find it advantageous to preserve to maintain the value and attractiveness of their asset.

To preserve the heritage qualities of the block, MNJB design and management decisions should take adjacent buildings into account as well as views from the street to ensure the building's harmonious integration into the built environment. This does not mean that the design should entail imitation architecture; rather, it should factor in the dimensions, proportions, materials, openings, etc. The fact that all these buildings, even the more modest ones, contribute to the value of the urban landscape should be respected. While not exclusive or official, the following points can be considered features of the block under study:

- the more commercial nature of Notre-Dame Street, particularly the use of ground-floor space;
- the architectural features of warehouse stores on Notre-Dame Street and the effect that the uniformity of their shape, size and appearance creates on the street;
- the historical connection of Saint-Jacques Street to the finance industry and judicial administration, as well as the continued presence and use of these office buildings by professionals in these fields since the 18th century;
- the monumentality, splendour of architecture and quality of materials in the high-rise buildings on the ends of the block, which reflect the prestigious aspect of a building fronting Place d'Armes;
- the architectural features of classically inspired buildings, such as tripartite composition, the symmetry of openings, cornices and ornamental details;
- the material used, such as dressed stone (including Montréal grey stone) and brick; and
- the layout of buildings, comprising demising walls and grouped at the outer end of parcels.

2.3 The property's heritage interest

Historical interest

The lot at 46 Saint-Jacques Street is located in an area of Montréal that has been designated a heritage site under Quebec's *Cultural Heritage Act*. Although it does not have its own heritage designation from official bodies, the land does carry historical interest because of its location and evolution. Located between Notre-Dame and Saint-Jacques streets, it is positioned in the original area of Ville-Marie and inside the walls of the 18th century fortified city. The history of its occupation and owners, of which only documentary and archaeological evidence remains today, reflects major phases in Old Montréal's evolution: the Hôtel-Dieu property; private horticultural gardens; residential land with bourgeois houses, courtyards and outbuildings; residences on Saint-Jacques Street leased as office space to professionals, particularly in finance or legal circles; and warehouse stores for commercial and manufacturing purposes next to Notre-Dame Street. The street is also associated with interesting figures, such as Charles Gervaise and his family, who owned the lot for 83 years, and Joseph Masson, who was one of the most illustrious French-Canadian businessmen of his time.

Archaeological interest

Archaeological digs carried out by Arkéos in 2002, 2003 and 2007 on site BjFj-119 confirmed the site's archaeological interest. The purpose of the first dig in 2002 was to determine the site's potential. The archaeologists determined that there were still archaeological soils in place, but only in the central part of the site. A small amount of masonry remains and objects from the French Regime were identified. The purpose of the second dig in July 2003 was to determine whether older elements had been incorporated into the foundations of the current buildings or whether old cellars still existed under recent concrete slabs. The findings refuted this hypothesis; the construction of new buildings destroyed any evidence of previous structures.

The 2007 archaeological dig picked up where the 2002 discovery of the masonry structure left off. It turned out to be the ice pit of an icehouse that had belonged to the Gervaise family in the 18th century. A wide variety of objects from the French Regime were found in the ice pit soils. This collection is considered [*translation*] “one of the most interesting recent discoveries in Montréal and one of Quebec’s largest collections.”⁶ The 2007 dig also uncovered wooden stakes from the 19th century from the remains of other secondary structures: latrines, waste pits, sheds and other buildings.

The central part of the site is one of the rare portions of Old Montréal where no massive construction disturbed the soils, and its archaeological potential is high. However, the construction of the MNJB will put this to an end, as it involves unearthing the archaeological resources found underground. Given the discoveries of the 2007 dig, the Archéos report recommends further digs, and it is imperative that these be carried out. Overall, the archaeological interest of the central part of the site is proven, which is why its scientific and educational potential should be tapped as part of an enhancement project.

3. Enhancement guidelines

As part of the acquisition of the site on which the MNJB is to be built, the City of Montréal requested that the federal government include archaeological resource enhancement measures. These resources are remains⁷ from archaeological work carried out in the first decade of the 2000s. They also include research data and elements of historical understanding that archaeologists documented in their publications on these discoveries. Planned at the beginning of MNJB construction work, digs in the central part of the lot will likely reveal new finds and may confirm assumptions about the property’s past. That said, it is the combination of archaeological evidence and archival documents that paints a more accurate picture of the history of the site under study and the meaning it carries. For this reason, aside from the City of Montréal’s request regarding the archaeological component, all data on the past derived from archaeological or documentary sources should be enhanced. We therefore recommend expanding the scope of the archaeological and historical heritage enhancement mandate. The following pages lay out a few general principles to guide the creation of an enhancement project as well as ideas of subjects to be addressed and types of projects. Without being restrictive, these recommendations could underpin the approaches taken by PSPC consultants.

3.1 General enhancement principles

Work approach

The enhancement strategies should be based on scientific studies of the site and its context. To do this, the services of archaeologists and, if need be, history professionals (historians, ethnologists, archivists, etc.) should be retained to ensure that the work approaches are appropriate and the content is thorough. Other qualified professionals, such as museology and design experts, could make a valuable contribution to the enhancement project through their expertise in cultural mediation and scenography.

The enhancement strategies must be determined as early in the project as possible so they can be adapted and incorporated into the MNJB design. For spaces that are more conducive to enhancement, such as the ground floor, street frontages and landscaping, heritage preservation and presentation can become a key factor of the land use concept. The designers and decision makers must bear in mind that the heritage features of the site

⁶ Archéos, 2012, p. 75.

⁷ We will use the term “remains” in the general sense to refer to dilapidated structures, artifacts (objects made directly by humans) and ecofacts (animal, plant or mineral remains resulting from human action on the environment).

and its location are a value-added that set the MNJB apart from other real estate projects and inject it with a unique identity that is in tune with its built environment.

The aim

Modern enhancement projects aim to present a range of perspectives for better understanding and greater appreciation by the public of human behaviours and activities from previous eras. Aside from their scientific value for experts, remains are excellent supports for interpreting and popularizing stories from the past. These stories revolve around subjects or themes to which an insightful selection of (archaeological or documentary) visual aids and compelling staging then contribute. In other words, it is not the intrinsic value of the presented objects or their quantity that counts, but rather the evocative and representational potential. For example, they can serve as tangible evidence to illustrate the forms of occupation of the urban space, ways of life, cultural practices, etc. Also, the public should be informed not only about how things were in the past, but also what connections can be made with the present and their personal experience.

The subjects or themes selected must illustrate the noteworthy aspects of the history of the site at 46 Saint-Jacques Street, its evolution and its past owners. The content must be based on reliable data and scientific knowledge, particularly that which the archaeologists gained through their research on the site. Speculation must clearly be separated from fact. The information must also be placed in the broader historical context of Old Montréal. Lastly, good knowledge of the cultural offering and other heritage enhancement undertakings in Old Montréal are an asset for creating a message that is in keeping with the district's heritage value, while standing out with original content.

The audience

It is essential that at least part of the enhancement project be accessible to the general public. Although Old Montréal is visited heavily by tourists, our use of the term “general public” includes residents and employees of other companies in the sector. Moreover, the efforts that the City of Montréal has made in recent years have increasingly focused on residents and employees to encourage them to embrace their heritage more and become better ambassadors of their neighbourhood. The MNJB (50%) feasibility study states that access to the building's indoor spaces will be restricted to authorized individuals. Unless the possibility of public access to part of the ground floor is reconsidered, this means that at least part of the enhancement project will have to be either outside or visible from the outside. Considering the high urban density, we assume that outdoor spaces will themselves be limited, and we recall the importance of planning an enhancement project in parallel with development decisions to ensure there is good visibility.

Even though the main goal is to reach the general public, the internal audience should not be ignored, that is, MNJB staff and users. The building's users are the ones who will be on the premises most regularly and they alone will have access to the interior spaces, where the potential for developing enhancement projects is higher. People generally enjoy working in a place with a distinctive identity rather than in generic offices; the heritage dimension is one way of contributing to this goal and encouraging of a sense of belonging to the workplace. We therefore recommend including a portion of the enhancement project geared more toward the building's occupants.

Lastly, the consideration to be given to the target audience of the heritage enhancement work also involves taking into account the *Accessible Canada Act*. The location, layout, means of communication and other practical arrangements must foresee and prevent obstacles for individuals with a disability, whether the project is inside or outside the MNJB.

Methods

There are no set or universal recipes for determining how to enhance heritage. Our list of proposals (part 3.3) will show the extent of the options. There is no indication that a unique approach must be adopted; a project

can consist of multiple sub-projects of varying scope to reach the various audiences and adapt to the constraints of separate physical spaces. To fulfill the City of Montréal's request, however, there must be at least one component that is more focused on archaeological resources, ideally located in a space that is accessible to the general public. We also recommend having a considerable share of interpretation and dissemination measures to adequately convey the meaning of the presented elements.

The visual aids available, the state of knowledge, the spatial and technical constraints, and many other factors will influence the enhancement project. If the installation of structures or material proves to be necessary in the MNJB or on its site, these must be visually and physically compatible with the building and the built environment. Enhancement-facilitating programs and equipment should be updatable or revisable as needed and as knowledge advances. Moreover, the use of technology must serve the content and must add true value to the project.

3.2 Proposed enhancement project subjects

In this section, we will propose a variety of enhancement project content. This list is far from exhaustive, but we hope it will inspire reflection. Based on the two current archaeological reports, it is our opinion that the remains of the Gervaise icehouse are the most suitable archaeological resources to showcase through an enhancement project, regardless of the angle of approach selected. However, that does not mean that we should limit ourselves to this subject or an approach based solely on archaeological visual aids. We are therefore adding a number of other subjects or themes that have potential.

It should also be noted that new digs will be carried out with the construction of the MNJB and likely during the excavation phase. It is possible that new discoveries will alter knowledge of the site and enrich other elements of the site's evolution. To increase the presence of archaeological visual aids, relevant facts from other archaeological sites may also be borrowed, provided that they are presented transparently to the public. While archaeological resources are limited by the findings of the digs, documentary resources (written, cartographic or iconographic archives) are much more extensive and offer more subject options. It is essential that the archaeological dimension not be fully removed; it will be up to the work team to decide which subjects are the most relevant to develop and to choose the most appropriate visual aids.

The Gervaise icehouse as a starting point

An icehouse is a small structure with a pit that holds ice where food is stored. The one found on the site was located in the courtyard and garden areas of the property that belonged to Charles Gervaise and Marie Boyer from 1694 to 1753. All that remains is one section of the fieldstone foundation walls and the downward slope to evacuate meltwater. The icehouse lost its initial use after Gervaise passed away in 1753 and the tenants who lived there between 1753 and 1758 did not use it. It was the new owners in 1758, Auguste Viger and Catherine Parent, who presumably threw in objects belonging to the Gervaise family and passed on from one tenant to another. Another owner, Jonas Dessaulles, then used the icehouse for his refuse when he restored the site after the 1768 fire.⁸ The "refuse" that accumulated in the icehouse included 898 ceramic fragments and 374 glass fragments. Based on these fragments, 180 separate objects could be partially pieced back together.⁹ This collection is mainly associated with household food, either for storage and preparation (bowls, pots, etc.) or for serving (plates, dishes, bottles, salt shakers, etc.). The large number of artifacts is an asset for an enhancement project. The fact that objects could be pieced back together, even partially, also increases the evocative and

⁸ This analysis of the owners' role is taken from Mélanie Johnson Gervais, 2016, p. 144.

⁹ Archéos, 2012, pp. 55 to 56.

illustrative potential. This also allows the audience to better visualize the artifacts and make connections with table objects they use every day.

The archaeological report from the 2007 dig explains the importance of the discovery of the icehouse:

[*Translation*]

The identification of this icehouse led to the compilation of a rich collection that has shed light on the way of life of the family of master baker Charles Gervaise. The diversity and age of household items in this collection make it one of the most interesting recent discoveries in Montréal and one of Québec's largest collections. It easily compares to the Québec and Louisbourg collections, not because of the objects' aesthetics, but rather because of the potential to acquire new data on consumption habits in the 18th century.¹⁰

With respect to Montréal's history, the report's authors also mention that they believe this was [*translation*] "the first domestic icehouse from the 18th century identified in Old Montréal."¹¹ This icehouse and its related subjects tied are by far the best documented in the site's history. For example, the 2012 archaeological report includes appended research on icehouses as a typology¹² and on the family of Charles Gervaise and Marie Boyer.¹³ Moreover, a 2016 master's thesis focused specifically on what the ceramic fragments found in the Gervaise icehouse may tell us about consumerism among Montréal's upper class in the mid-18th century.¹⁴

Based on this documentation, below is a series of subjects or angles of approach that can be developed as part of an enhancement project:

- icehouses in New France (construction, use, how they worked, etc.);
- the life of the Gervaise-Boyer family and its members;
- the consumption habits of the Gervaise-Boyer family and, by extension, Montréal's petty bourgeoisie before the British Conquest;
- changes in consumption habits after the British Conquest;
- household food objects of French-Canadians or Montrealers in the second half of the 18th century;
- the production and import of ceramics and glass at the end of the French Regime and beginning of British rule; or
- a combination or variants of the above subjects.

The Crystal Block as a starting point

Other better documented archaeological remains include a shed. Built in 1860, this shed stood against the rear facade of Crystal Block, a group of warehouse stores on Notre-Dame Street. This type of building is characteristic of Montréal's urban space in the late 19th century and, more specifically, Notre-Dame Street. Although there are not many representative artifacts and remains, there is no shortage of iconographic and written documentation for this architectural typology. For example, directories from that period provide considerable information on the occupants of the Crystal Block shops and the types of products they sold. Since

¹⁰ Archéos, 2012, p. 75.

¹¹ Archéos, 2012, p. 49.

¹² Archéos, 2012, Appendix 3.

¹³ François Grondin, *Texte synthèse des recherches menées sur la famille Gervaise/Boyer*, in Archéos, 2012, Appendix 6.

¹⁴ Mélanie Johnson Gervais, 2016.

many of the current buildings on Notre-Dame Street are warehouse stores from that time, it would not be difficult for the public to imagine their appearance and fit them into the landscape.

Subjects related to the Crystal Block therefore include:

- the architectural characteristics of warehouse stores and their appearance in the Montréal landscape;
- Crystal Block occupants and consumer products from the era;
- the boom of Notre-Dame Street as a commercial street in the late 19th century and its changing built landscape;
- Montréal's development into a commercial city in the 19th century;
- the life and work of Joseph Masson, a successful businessman and the owner of Crystal Block, but also the owner of a residence on the portion of the site along Saint-Jacques Street;
- the life and architectural work of John Ostell, who designed Crystal Block (coincidentally, he also drew the plans for Montréal's old courthouse); or
- a combination or variants of the above subjects.

Administration of justice

In the first part of this report, we described the exceptional concentration of buildings dedicated to the administration of justice in Old Montréal. Starting from the mid-19th century, many legal offices or professionals also leased work space on the portion of the site along Saint-Jacques Street. Considering the function that the MNJB will perform, it would be consistent and appropriate to choose administration of justice in Old Montréal as the subject of an enhancement project. This project could even be carried out in cooperation with the other judicial buildings (the old courthouse, the Ernest-Cormier Building and the new Montréal courthouse) and rotate between these various spaces. This would also be an interesting theme to post temporarily on the construction fences by presenting the MNJB project in parallel with comparable examples of previous eras.

The archaeological digs at 46 Saint-Jacques Street did not really uncover archaeological evidence of the presence of legal professionals specifically. It is more the documentary sources that identify the occupants of Saint-Jacques Street and reveal information about the administration of justice on the site.

The following facets could be explored:

- the historical presence of institutions responsible for administering justice in Old Montréal;
- the history and architecture of each of these institutional buildings, including the presentation of the MNJB project;
- how the judicial community operated in the 19th century;
- the presence of many judicial professionals on Saint-Jacques Street and their daily lives; or
- a combination or variants of the above subjects.

Horticultural production

Before the first houses were built, the site at 46 Saint-Jacques Street was dedicated entirely to horticultural production. In 1689, the D'Argenteuil family built a home where the current Aldred Building stands and continued to keep gardens on the equivalent of lots 232, 233, 240, 241 and 242 before splitting and selling them in the 18th century. These sales would gradually increase the built footprint, particularly along Notre-Dame Street. In 1694, a little further east, Charles Gervaise built the first home directly on the site under study (lot 234). The old plans and the 2012 archaeological report indicate that the Gervaise house (1694–1768) and, after the 1768 fire, the Dessaulles house (1769–1856) both had rear courtyards arranged into garden

beds.¹⁵ The findings of the 2007 digs confirm that gardening took place, causing a deep turnover of soils.¹⁶ However, from what we understand, no horticultural tools or equipment were found among the artifacts, which reduces the possibility of archaeological visual aids. Nevertheless, the subject of horticulture in New France or Ville-Marie has interesting potential, whether from the perspective of:

- the variety of plant species and seeds;
- the landscaping of gardens and orchards;
- maintenance and gardening tools;
- the contribution of horticulture to the colonists' food; or
- a combination or variants of the above subjects.

Some themes can easily be cross-referenced with those already established by the contents of the Gervaise icehouse. In addition, in a publication about Old Montréal, UQAM historian and professor Johanne Burgess identified the relationship with nature as one of the themes to be explored in future research on the historic district.¹⁷

Fires

The future MNJB site was the scene of four fires: in 1768, 1841, 1856 and 1963. Each of these fires destroyed at least a few buildings and some reduced a whole area of the city to ashes. These disasters played a determining role in the renewal of the built environment and its modernization, creating pivotal moments in the modification of the urban landscape. For example, after his properties were destroyed in the 1841 and 1856 fires, Joseph Masson seized the opportunity to take part in the new warehouse store trend. The same is true for the adjacent land, where Cathedral Block warehouse stores replaced the ruins of Christ Church, which had burned down in 1856. The role of fires in the transformation of districts and streets is another subject that historian Johanne Burgess identified in a 2010 text as a line of research to explore.¹⁸ Since there was a fire every century between the 18th and 20th centuries, it may be a good idea to use these landmark events as pretexts to paint a picture of the evolution of the built landscape on the block or land. Related archaeological resources include traces of the fires as remains as well as those in soil composition (coal, charred debris, etc.). When the site was being cleared and cleaned up prior to redevelopment, archaeologists also threw out a lot of the objects found.

The Indigenous period

At the moment, there is no archaeological or documentary evidence of Indigenous presence on the MNJB site. Nevertheless, if new archaeological digs find evidence of Indigenous occupation, this would be a choice subject for an enhancement project.

¹⁵ Arkéos, 2012, p. 36.

¹⁶ Arkéos, 2012, p. 38.

¹⁷ Burgess, Johanne, "L'histoire du Vieux-Montréal : bilan et perspectives de recherche," p. 28. In Burgess, Johanne and Paul-André Linteau (ed.). *Le Vieux-Montréal, un « Quartier de l'histoire » ?*. Montréal, éditions MultiMondes, coll. Cahiers de l'Institut du patrimoine de l'UQAM, 2010, 156 p.

¹⁸ Burgess, Johanne, "L'histoire du Vieux-Montréal : bilan et perspectives de recherche," p. 28. In Burgess, Johanne and Paul-André Linteau (ed.). *Le Vieux-Montréal, un « Quartier de l'histoire » ?*. Montréal, éditions MultiMondes, coll. Cahiers de l'Institut du patrimoine de l'UQAM, 2010, 156 p.

3.3 Proposed types of enhancement projects

In this section, we will suggest a number of means of communication or content presentation methods for an enhancement project on the MNJB site. Once again, the goal is not to be exhaustive, but rather to stimulate creativity and provide an idea of the variety of possible conceptual approaches. Of course, some types of content will lend themselves better than others to certain concepts. It is important to consider the compatibility between the words and communication strategies: is this an effective and instructive way of conveying information to the target audience? Other factors, such as financial limitations or spatial constraints, will also play a role in the decision-making process. For practical purposes, we divided the types of projects into three categories: exhibition, integration into design and artistic initiatives. In reality, however, the same project can combine measures from multiple types of projects. Overall, we recommend having at least one part of the project focus on exhibition strategies, that is, an intention to explicitly communicate the significance of the site's heritage and the interpretation of the meaning of the visual aids.

Exhibition

In terms of enhancement, the ideal type of project is an exhibition. Exhibitions are the typical means of communication used by museums and the most effective way of promoting heritage to the public by giving it the keys to understanding it. The term “exhibition” refers to any presentation to the public or spatial installations of artifacts, objects or archives, accompanied by interpretation tools and explanatory information. An exhibition, more than any other types of project, allows the audience to explore subjects and themes, and makes popularized information accessible to the public. The exhibition can take various forms:

- scenographic;
 - These are classic exhibitions, like in history museums, with a path to follow, furniture, display cases, explanatory texts, etc.
 - Examples: The *Now for a Dow!* exhibition was organized by the Pointe-à-Callière museum, but it is located in the hall of the Carrefour d'innovation INGO at Montréal's École de technologie supérieure and interprets the history of this old brewery. Visitor access is limited to the small exhibition area, which takes a few minutes to visit.¹⁹ There is also the *400 Years of Living Like a Lord* exhibition on the ground floor of the Fairmont Le Château Frontenac hotel in Québec, which had many artifacts from the Parks Canada collection on display.²⁰
- a delocalized or travelling exhibition, in collaboration with the museums of Old Montréal, the City of Montréal or the Société québécoise des infrastructures, which manages the Montréal courthouse and the Ernest-Cormier Building;
 - Example: Infrastructure Ontario carried out major archaeological digs on the site of the new Toronto courthouse and wanted to showcase the many artifacts found. It collaborated with the City of Toronto to display them in cases at City Hall.²¹
- interpretation panels or display cases;

¹⁹ For more information: <https://pacmusee.qc.ca/en/exhibitions/detail/now-for-a-dow-the-story-of-a-montreal-brewery/>.

²⁰ For more information: <http://bergerongagnon.com/mu-chateauf.html>.

²¹ For more information: <https://infrastructureontario.ca/Backgrounder-Partnership-to-Showcase-Artifacts/>.

- Examples: At Jean-Pelletier Place and at Place d'Youville, the City of Québec installed modules in the form of public outdoor displays to exhibit the archaeological finds alongside explanatory texts and images.²²
- digital platforms;
 - We suggest not relying solely on a digital project and recommend striking a balance between an in-person enhancement project and the use of new technologies.
 - Example: Many examples of using digital media (mobile apps, interactive kiosks, virtual visits, etc.) are detailed in the guide entitled *Valorisation numérique des patrimoines*, published in 2017 by the Sites et Cités remarquables de France association.²³

Integration into design

Some enhancement strategies rely directly on integrating the heritage enhancement project into the building's architectural design or interior design. This form of enhancement is less instructive for the public in general because it does not interpret or popularize information. In that respect, it does not replace an exhibition project, unless it is combined with interpretation strategies. In all cases, design integration measures facilitate immersion into the historical environment and strengthen the historical character of the site. Some options include:

- choosing architectural features (material, composition, forms, etc.) that are in line with the character of the Old Montréal heritage site and with the surrounding buildings, or even with the site's architectural history;
 - It has already been established that building the MNJB on a site that has sat vacant for decades reinforces the urban fabric and renews the landscape. We recommend against mimicking the old architecture. However, a careful analysis must be conducted to ensure the consistent, sensible integration of modern-day architecture into the historical landscape.
 - Examples: The Pointe-à-Callière museum, located in the very spot where Montréal was founded, uses the shape and materials from Old Montréal in a contemporary building. The spur tower looks like a navigation landmark and evokes the maritime and commercial use of the site. In another vein, the Le Diamant theatre in Québec adorned the blind wall of its auditorium with low-relief outlines of the openings of a building that had been planned in that location during an architectural competition in 1878.²⁴
- designing interior spaces or volumes based on the boundaries of the lots or previous structures;
- naming rooms or spaces to commemorate individuals, businesses or events tied to the site's history, ideally in correlation with their location or use;

²² For more information on Place Jean-Pelletier: <http://archeologie.ville.quebec.qc.ca/sites/place-jean-pelletier/le-module-d-interpretation-de-la-place-jean-pelletier/>; and on Place D'Youville: <http://archeologie.ville.quebec.qc.ca/sites/place-d-youville/les-modules-d-interpretation-de-la-place-d-youville/>.

²³ The guide is available directly here: http://www.an-patrimoine.org/IMG/pdf/guidenum_riqueweb2.pdf; or indirectly here: <https://www.sites-cites.fr/publications/publications/#1532937970412-3f33a96c-ba4c>.

²⁴ For more information, see the section called “La matérialité extérieure : une intervention contemporaine intégrée au patrimoine”: <https://www.lediamant.ca/fr/decouvrez/batiment/>.

- This approach can easily be associated with an exhibition strategy if there are interpretation panels.
- preserving remains, such as masonry structures, and making them visible in indoor or outdoor spaces;
 - Skilled professionals should be consulted to ensure that this does not pose a threat to the preservation of the remains. Protective measures should be put in place if necessary. It is also not recommended that the ruins be relocated because their location contributes to their significance as much as their materiality. This approach can easily be associated with an exhibition strategy if there are interpretation panels.
- using ground markings to situate the location of the remains or the boundaries of the lots or previous structures;
 - This is a common, and sometimes even excessive, practice in the province in outdoor or indoor spaces. It should be used sparingly. The meaning of ground markings is not necessarily obvious to the public, so interpretation panels may be required to explain their presence. An open space that provides an overview of the markings facilitates legibility and makes the spaces represented more tangible.
 - Example: The City of Montréal relies heavily on a ground marking strategy to situate remains from the 17th and 18th centuries in the public space, particularly the location of fortification walls.
- installing displays with artifacts as decorative items;
 - We distinguished this approach from the exhibition approach to point out that there may be displays without interpretation tools (explanatory text, background, etc.). The option presented here enhances aesthetic enjoyment of the artifacts as works of art.
 - Example: L’auberge Saint-Antoine and its bar Artéfact in Québec incorporated displays of this sort in common areas and hallways.²⁵ In this case, the absence of interpretation panels is offset by the offer of archaeological tours.
- drawing inspiration from the layout of French-Canadian gardens or horticultural production plants from the 17th and 18th centuries to make the MNJB greener (decorative plants, living walls, green roofs, community gardens, etc.).
 - The greening of PSPC buildings is outlined in the department’s sustainable development strategy. It is also one of the City of Montréal’s objectives to make Old Montréal greener. Since the federal property is known to have been covered by extensive horticultural gardens in the past, there may be an opportunity to cross objectives. A partnership could be established with Château Ramezay, a nearby interpretation centre that promotes the history of French colonial gardens and has developed expertise in this regard.

Artistic initiatives

This category includes forms of enhancement focused on the outcome of artistic approaches. Most of these suggestions are more appropriate as support projects.

- using lighting or projection on facades or other walls, especially if the public space is small;

²⁵ For more information: https://www.archeoquebec.com/fr/visite_archelologique_auberge_saint_antoine.

- Example: The Cité-Mémoire circuit in Old Montréal projects onto walls, trees or the ground to showcase the city's history.²⁶
- displaying works of art that are based on archaeological discoveries, the site's history or themes related to this history;
 - These can be current works of art that reinterpret historical data and, unlike the use of visual aids in an exhibition, the objective is not necessarily educational. Even though the federal government is not subject to the Politique d'intégration des arts à l'architecture et à l'environnement du Québec (the 1% policy), it is common to incorporate works of art into major construction projects.
 - Examples: *Perte de signal* by Yannick Pouliot²⁷ at Montréal's Saul-Bellow Public Library or *Ici avant, ensuite et maintenant* by Éric Cardinal²⁸ at Place du Village-de-la-Pointe-aux-Trembles are two examples of public art created in recent years that were inspired by heritage.
- using archival images (cartography, iconography) or photographs of artifacts or digs as decorative elements in indoor spaces;
- producing publications (brochures, leaflets, books, exhibition catalogues, etc.) to disseminate knowledge about the site.

²⁶ For more information: <http://www.montrealenhistoires.com/en/cite-memoire/>.

²⁷ For more information: <https://artpublicmontreal.ca/en/oeuvre/perde-de-signal/>.

²⁸ For more information: <https://artpublicmontreal.ca/en/oeuvre/ici-avant-ensuite-et-maintenant/>.

Conclusion

The site at 46 Saint-Jacques Street in Montréal (lot 1,180,954) was selected for the construction of Montréal's New Judiciary Building (MNJB). It lies in the heart of Old Montréal, and its occupation over time speaks to the city's history. Archaeological digs in 2002, 2003 and 2007 confirmed the site's archaeological interest and increased knowledge about the area under study. These archaeological discoveries complement the many documentary sources attesting to the site's evolution and its occupants from the 17th century to present day. This information on the past and context of the site under study is presented in the first part of the report. It is used to understand why the provincial and municipal authorities have given Old Montréal and its built environment heritage status. The second part of the report provides a clearer description of the features and constraints of the heritage designation of Montréal, the block and the MNJB site. We hope that the data presented in these first two sections will inspire the building design process and will foster its integration into the historical urban landscape.

When it acquired the site from the City of Montréal, PSPC made a commitment to enhance the findings of the archaeological digs that took place on the site. We recommend going beyond the city's expectations and expanding the scope of this enhancement project to include all facets of the site's past using both archaeological and documentary resources as a basis. The design of the enhancement project will be entrusted to consultants. To assist them in this undertaking, we outlined some general enhancement principles and proposed more specific project subjects and types in the third part of the report.

The suggestions listed include our recommendation to give priority consideration to a strategy featuring an exhibition accessible to the general public and staff. The exhibition approach is based on effective communication to raise awareness and educate visitors about the many meanings of the items on display. Other types of projects can be added as a supplement or complement. For example, projects that entail integration into the design or are more artistic in nature could be combined with the exhibition approach as interpretation panels to give the audience a better understanding of the purpose and meaning. As for the themes to be covered, the Gervaise icehouse collection and the resulting interpretation subjects would be best suited for an enhancement project. That said, we proposed many other options because there is also material there for combinations or sub-projects with different thematic approaches.

Despite our efforts, the list of enhancement guidelines is not exhaustive, and we encourage the consultants to use it as a basis to stimulate reflection. The historical content of the first two parts of the report and their own research might also influence the creative process and give rise to approaches that we did not consider. The purpose of the enhancement project is essentially to find meaningful elements of the past and the best ways to express that meaning in order to foster clearer understanding and a greater appreciation by the public of the heritage of past generations.

Bibliography

References on the MNJB site

Bisson Fortin. *Étude de faisabilité (50 %)*. December 4, online (<https://gcdocs.gc.ca/tps-gc-pwgsc/lisapi.dll/open/231531364>).

Arkéos. *Étude de potentiel et inventaire archéologiques, terrain 4B BjFj-119, 2002-2003*. January 2006. 307 p.

Arkéos. *Fouille archéologique au site BjFj-119 (terrain vacant 4B), 2007*. March 2012. 265 p.

Arkéos. *Nouveau complexe judiciaire de Montréal. Supervision archéologique de forages géotechniques*. Preliminary version, March 2020. 40 p.

Gervais, Mélanie Johnson. *Les céramiques de la glacière Gervaise : le consumérisme chez la classe aisée montréalaise au milieu du XVIIIe siècle*. Master's thesis, Université de Montréal, October 2016.

References on Old Montréal

Bibeau, Pierre. "Les dessous du Vieux-Montréal. Contribution de l'archéologie à la préhistoire et à l'histoire," in Burgess, Joanne and Paul-André Linteau (ed.). *Le Vieux-Montréal, un « Quartier de l'histoire » ?*. Montréal, éditions MultiMondes, coll. Cahiers de l'Institut du patrimoine de l'UQAM, 2010. 156 p.

Burgess, Joanne. "L'histoire du Vieux-Montréal : bilan et perspectives de recherche."

Centre d'histoire de Montréal. "La présence autochtone à Montréal," *Mémoire des Montréalais*. January 13, 2016, online (<https://ville.montreal.qc.ca/memoiresdesmontrealais/la-presence-autochtone-montreal>).

Centre d'histoire de Montréal. "La ruelle Saint-Éloi," *Mémoire des Montréalais*. January 19, 2016, online, (<https://ville.montreal.qc.ca/memoiresdesmontrealais/la-ruelle-saint-eloi>).

Gouvernement du Québec, MCCQ. "Vieux palais de justice de Montréal," "Édifice Ernest-Cormier," "Site patrimonial de Montréal," *Répertoire du patrimoine culturel du Québec*. Undated, online (www.patrimoine-culturel.gouv.qc.ca).

Ville de Montréal. "Le patrimoine du Vieux-Montréal en détail," *Site officiel du Vieux-Montréal*. Undated, online (www.vieux.montreal.qc.ca/inventaire/hall.htm).

Linteau, Paul-André. *Une histoire de Montréal*. Montréal, Les Éditions du Boréal, 2017.

References on enhancement

Bournival, Marie-Thérèse, Ministère de la Culture et des Communication du Québec. *La mise en valeur des sites archéologiques euroquébécois*. April 2, 2009, 67 p.

ICOMOS. *The Charter for the Interpretation and Presentation of Cultural Heritage Sites*, 16th General Assembly, Quebec, Canada. October 4, 2008, online (https://www.icomos.org/charters/interpretation_e.pdf).

Sites et Cités remarquables de France. *Valorisation numérique des patrimoines*. 2017, online (<https://www.sites-cites.fr/wp-content/uploads/2017/02/GuideNume%CC%81riqueweb2.pdf>).

Ville de Montréal. *Plan de protection et de mise en valeur du Vieux-Montréal*. 2014, 80 p.

.11 List of Standards and Regulations

1.1.1 Codes and standards - General

- Municipal by-laws of the city of Montreal
- Latest Public Works and Government Services Canada (PWGSC) Standards
- Supplement to the CADD standard (computer-aided design and drawing) Quebec region, PWGSC, January 2013 or newer
- PWGSC Documents "Doing Business with PWGSC - Documentation and Deliverables Manual", January 2018 and "Doing Business with PWGSC - Addendum - Quebec Region", June 1, 2018 12
- Real Property and Federal Immovables Act
- Canadian Environmental Protection Act
- Department of Public Works and Government Services Act
- Canada Labour Code
- Labor Code, Part II, Canada Occupational Health and Safety Regulations
- Policy on Communications and Federal Identity (Federal Identity Program Manual)
- National Energy Code for Buildings - Canada
- PSPC Green Building Policy
- Treasury Board Fire Protection Standard
- CAN / CSA Z-234.1: Canadian metric Practice Guide
- Standards and Guidelines for the Conservation of Historic Places in Canada
- S478-95: Guideline on Durability in Buildings
- Commented act and regulations on energy conservation.
- Technical reference for office building design, PSPC, July 2017 version
- Latest version of the national master specifications (DDN)

1.1.2 Codes and standards - Structure

- National Building Code of Canada
- Structural commentaries (User's guide – NBC 2015: part 4 of division B)
- CSA A23.3-14, Concrete structure design
- Concrete materials and methods of concrete construction / Test methods and standard practices for concrete – CSA A23.1-14/A23.2-14
- Design of steel structures – CSA S16-14
- Engineering design in wood – CSA O86-14
- North American specification for the design of cold-formed steel structural members – CSA S136-16
- Design of masonry structures – CSA S304.1-14

1.1.3 Codes and standards - Architecture

- National Building Code of Canada
- National Fire Code of Canada
- Official Languages Act
- Accessible design for the built environment – CAN/CSA B651

- GCworkplace Fit-up Standards for government, Public Services and Procurement Canada.
- PWGSC Accommodation Allocation Standards
- AAMA/CSA 101- A440 - North American Fenestration Standard / Specification for Windows, Doors, and Skylights
- AAMA/WDMA : 1600/I.S.7 : Skylights and Space Enclosures
- ANSI/BOMA Z65.1 : Office Buildings : Standard Methods of Measurement
- ASHRAE 160 : Criteria for Moisture-Control Design Analysis in Buildings
- NFRC 500 : Procedure for Determining Fenestration Product Condensation Resistance Values

1.1.4 Codes and standards - Mechanical

- National Energy Code of Canada for Buildings 2017, for Design
- National Energy Code of Buildings, Canada 2011, for simulations
- National Plumbing Code, Canada 2015
- National Fire Code, Canada 2015
- MD 15000 - 2012, Mechanical Environmental Standard for Federal Office Buildings, SPAC

1.1.5 Codes and standards - Electricity

- Canadian Electrical Code, Part I— CSA C22.1-18
- Quebec Construction Code, Chapter V - Electricity, 2018
- National Energy Code for Buildings (CNEB) — Canada 2017
- Measurement of Lighting Levels in the Work Place – Canada Occupational Health and Safety Regulations, Part VI— 928-1-IPG-039
- Emergency electrical power supply for buildings — CSA C282-15
- ULC CAN-S524 -19 standard for installation of fire alarm systems
- CSA B139 SERIES:19 Installation code for oil-burning equipments
- Z462-18 Workplace electrical safety
- Technical reference for office building design, PSPC V2.1, July 2017 version Section 8: Electrical engineering;
- GCworkplace Fit-up Standards for government, Public Services and Procurement Canada, May 2018.
- Low-Voltage Electrical Service from Distribution Substations – Standard E.21-11

1.1.6 Codes and standards - Civil Engineering

- BNQ 1809-300 – General Technical Clauses – water and Sewer pipes
- CCDG, Specification and general quotes - Construction and repair
- Directive 004 - Sewage systems - MELCC
- Directive 001 - Collection and distribution of water - MELCC
- By-law C-1.1 of the City of Montreal

1.1.7 Codes and standards - TI & Multimedia

- Canadian Electrical Code
- National Building Code of Canada (NBCC)
- National Fire Code of Canada (NFCC)
- National Energy Code for Buildings (NECB) for Electrical Power Systems
- ANSI/BHMA A156.13-2017 Mortise locks & latches, series 1000;
- Treasury Board's TBITS 6.9 Canadian Open Systems Application Criteria (COSAC), Telecommunications wiring system in Government-Owned and leased buildings - Implementation Criteria;
- TIA/EIA-568, Commercial Building Telecommunications Cabling Standard;
- TIA/EIA-569, Commercial Building Standard for Telecommunications Pathways and Spaces;
- TIA/EIA-570, Residential and Light Commercial Telecommunications Infrastructure Standard;
- TIA/EIA-606, Standard for structured cable labelling;
- TIA/EIA-607, Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications;
- TIA/EIA-758, Customer Owned Outside Plant Telecommunications Cabling Standard;
- TIA/EIA-862, Building Automation Systems Cabling Standard for Commercial Buildings;
- TIA/ANSI-1005, Telecommunications infrastructure standard for industrial premises
- BICSI (Building Industry Consulting Service International) Outdoor Plant Design Reference Manual;
- BICSI Telecommunications Distribution Methods Manual;
- Manuel d'installation du système de transport d'informations de BICSI
- BICSI; Information Technology Systems Installation Methods Manual;
- BICSI, Wireless Design Reference Manual;
- BICSI, Network Design Reference Manual;
- Special guidelines on technical standards, access routes and telecommunications spaces (Cable networks) - Planning and implementation. Revision 1.1 SSC (Shared Services Canada) 2018
- Guide des spécifications sismiques pour l'infrastructure de télécommunications et les installations connexes □ Guide to seismic specifications for telecommunications infrastructure and related facilities;
- SSC (Shared Services Canada), Government of Canada Workplace Fit-up – Special Technical Standard Guidelines (Section A4) Telecommunications (Cable Networks) Pathways and Spaces – Planning and Implementation, 2018;
- CAS and ATSSC, Physical security standards (if applicable);
- SSC, Statement of Requirements (SOR);
- SSC, Statement of requirements - Scope of work (SOW);
- RCMP (Royal Canadian Mounted Police), Guide G13-01, Secure Storage Rooms (SSR);
- SSC, TS09 Power and Cooling in Distributor (Telecom).

1.1.8 Codes and standards - Security

1.1.8.1 Generalities

- TIA-606-C - Administration Standard for Telecommunications Infrastructure
- ANSI-TIA-607-C - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
- ANSI-TIA-568.0-D - Generic Telecommunications Cabling for Customer Premises
- ANSI-TIA-568.2-D - Balanced Twisted-Pair Telecommunications Cabling and Components
- ANSI-TIA-568.3-D - Optical Fiber Cabling Components
- TIA-569-D - Telecommunications Pathways and Spaces
- ANSI-TIA-942-A - Data Center Design
- Guidelines and Structured Cabling Standards
- ANSI-TIA-1179-A - Healthcare Facility Telecommunications Infrastructure
- TIA-862-B - Structured Cabling Infrastructure Standard for Intelligent Building Systems
- TIA-5017 - Telecommunications Physical Network Security Standard
- TIA TSB-162-A - Telecommunications Cabling Guidelines for Wireless Access Points
- UL 60601-1 - Medical Electrical Equipment, Part 1: General Requirements for Safety
- Chapter I - Building - Quebec Construction Code
- Chapter V - Electricity - Quebec Construction Code
- CSA Z32 - Electrical safety and essential electrical systems in health care facilities
- CSA Z462 - Workplace Electrical Safety
- CSA C282 - Emergency electrical power supply for buildings
- CSA-C108.6 - Limits and Methods of Measurements of Electromagnetic Disturbance Characteristics of Industrial Scientific and Medical (IDM) Radio Frequency Equipment
- CAB/CSA-B72 - Lightning rod installation code and lightning rod act (Quebec)
- TIA-526-14 - Optical Power Loss Measurement of Installed Multimode Fiber Cable Plant
- TIA-526-7 - Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
- Global framework for managing information assets belonging to organizations in the health and social services network - Security component.
- Circular 2013-026: 04-02-18-02 - Management framework for the certification and homologation of technological products and services.
- Property planning guide: Information and communications technology unit - Acute care hospital centers. Ministry of Health and Social Services
- Uptime Institute – Data Center Site Infrastructure Tier Standard: Topology.
- Planning guide for the Ministry's hospital center (Base Building)
- Functional Program HVS Project, Volume 1, ver. 2019-02-01, rev. 2
- Functional Program HVS Project, Volume 3, ver. 2019-02-01, rev. 1. ANNEX K (Annex K)

1.1.8.2 Access control

- ISO/IEC 14443 - Identification cards -- Contactless integrated circuit cards -- Proximity cards
- ISO/IEC 15693 - Identification cards -- Contactless integrated circuit cards -- Vicinity cards
- CAN/ULC-S319-05 - Electronic Access Control Systems
- ULC-C634-86 - "Guide for the Investigation of Connectors and Switches for Use with Burglar Alarm Systems"
- UL 294 - Standard for Access Control System Units
- UL 294B - Functionality PoE
- UL 437 - Single point locking devices that incorporate key locks
- UL 1076 - Fourniture des fonctions additionnels d'alarme intrusion
- UL 5085 - Low Voltage Transformers
- UL 1310 - Standard for Class 2 Power Units

1.1.8.3 CCTV (closed-circuit television)

- CAN/ULC-S316-14 - Standard for performance of video surveillance systems

1.1.8.4 Intrusion detection

- ULC-S306-03 - Intrusion Detection Units
- ULC-S318-96 - Standard for Power Supplies for Burglar Alarm Systems
- CAN/ULC-S302-14 - Standard for the Installation, Inspection and Testing of Intrusion Alarm Systems

1.1.8.5 Structured cabling

- ANSI-TIA-568.0-D
- ANSI-TIA-568.2-D
- ANSI-TIA-568.3-D
- ANSI-TIA-607-C
- ANSI-TIA-942-A
- TIA TSB-162-A
- TIA-5017
- TIA-526-14
- TIA-526-7
- TIA-569-D
- TIA-606-C
- TIA-862-B
- CSA-C108.6
- UL 60601-1
- EIA RS-310C

1.1.8.6 Operational security

- G13-02 - Physical security guide - lead agency publication
- ASTM A627-03 - "Standard Test Methods for Tool-Resisting Steel Bars, Flats, and Shapes for Detention and Correctional facilities"
- ASTM F1267-07 - "Standard Specification for Metal Expanded Steel American Society for Testing and Materials"
- CAN/CGSB-1.60 - Interior Alkyd Gloss Enamel Paint
- EMMA 557-99 - "Standard for Expanded Metal, Introduction, Product Selection, Considerations, Terminology, Manufacturing Process, Manufacturing Tolerances and Applications. Expanded Metal Manufacturers Association"
- SSMA - Steel Stud Manufacturers Association
- ASTM F2656-2003 - Standard Test Method for Crash Testing of Vehicle Security Barriers
- UL752 Level 3 - PROTECTION STANDARDS FOR BULLET RESISTANT GLASS PRODUCTS
- DIN EN 356 - Glass in building - Security glazing - Testing and classification of resistance against manual attack
- EN 1627 - Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance
- JAI12892 - International Standards for Blast Resistant Glazing
- ASTM F 1642 - Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings
- ASTM F 1233 - Standard Test Method for Security Glazing Materials And Systems

.12 Base Building Security Standard



Title: Base Building Security Standard

1. Effective date: October 31, 2018

2. Authority

This standard is issued under the authority of the Assistant Deputy Minister (ADM), Real Property Services (RPS), Public Services and Procurement Canada (PSPC).

3. Context

This standard is to be read in conjunction with the Treasury Board (TB) *Policy on Government Security*, the PSPC *Departmental Security Program (051)* policy, and the TB *Operational Security Standard on Physical Security*.

Real Property Services is identified as a lead security agency within the Treasury Board *Policy on Government Security*. Specifically, RPS is responsible for providing services related to base building security with respect to the PSPC Real Property Program.

4. Scope

This standard applies to all buildings and assets where PSPC has a custodial or ownership responsibility. This includes Crown-owned and leased assets, multi-tenant buildings, and other PSPC assets such as, but not limited to, bridges, dams, heating plants, and PSPC-controlled underground infrastructure such as underground utilities, transportation, or waste disposal.

5. Purpose

This standard ensures the uniform and efficient implementation of base building security in all PSPC custodial, leased, and engineering assets (specific to bridges and dams), as well as infrastructure assets (including, but not limited to, heating plants and underground plumbing and hydro connections), in accordance with the minimum standards set out in applicable policies, codes and regulations.

The purpose of this standard is to ensure common base building security practices across the national portfolio and ensure the common implementation of base building threat and risk assessments.

This standard will be reviewed every two years to ensure that it remains up to date, and reflects the most current security posture of the Department.

6. Details

Base building security

RPS, PSPC provides its clients with base building security services (protection of the asset infrastructure, including structural, mechanical, electrical, and architectural) and must develop and implement risk-based security in its portfolio.

Base building security is made up of both mandatory and risk-based security controls. Mandatory controls are outlined in Annex A of this standard. As a primary function, base building security must:

- apply approaches to mitigate the impact to the building that arise from criminal and unauthorized activity, in order to maintain the integrity, functioning and value of the building asset, including its structure and its systems;
- apply controls to deter criminal and unauthorized activity on all custodial property in public zones, areas, and property under the responsibility of PSPC and not under a client occupancy instrument;
- apply controls to mitigate the impact of threats and risks to custodial assets arising from environmental conditions, climate change, and geographic location;
- monitor and protect PSPC owned and leased assets to support the continuity of government operations;
- establish an environment of continual operational readiness in support of business continuity plans;
- provide adequate detection and response capacity to respond to known or foreseeable threats to the crown owned and leased asset;
- support Government of Canada security requirements for real property, including appropriate security and emergency plans and arrangements in the event of increased threat or readiness situations;
- support other emergency plans and arrangements as prescribed by Government of Canada policies, directives, standards and lead agency responsibilities in the *TB Policy on Government Security*; and
- support the timely implementation of reasonable and risk-based additional tenant-funded security measures, as indicated in the client threat and risk assessment.

Hours of operation covered by this standard are the hours included in the occupancy instrument, and include only those measures required by the base building threat and risk assessment and other governing legislation. Additional requirements outside the base building threat and risk assessment and the occupancy-instrument-specified hours are not considered to be covered under base building.

Base building threat and risk assessment

Standard base building security controls and tenant-funded enhancements for base building areas are identified primarily by base building threat and risk assessments which must be undertaken for all real property assets. Threat and risk assessment (TRA) processes are

outlined in Annex B. New assets or renovations require a site security brief and/or a security design brief at the inception phase.

Security requirements for tenant space, including transition space and other tenant-funded enhancements, are provided to RPS by the tenant department in a threat and risk assessment and/or a security design brief. These tenant costs are assessed as outlined in Annex C.

As a minimum, base building threat and risk assessments will identify and recommend physical security controls, as well as guard services, and/or other monitoring activities and procedures for the general protection of a custodial asset. Controls must facilitate appropriate detection and response on a 24/7 basis unless otherwise specified by a threat and risk assessment.

Base building threat and risk assessments, site security briefs, and design briefs must follow a prescribed format developed and updated by RPS's Property and Facility Management service line to provide a common approach, and to support risk-based security management of all PSPC owned and leased assets.

Base building threat and risk assessments must be conducted on a five-year cycle or when:

- There is a possible change in the threat environment identified locally, by RPS, the departmental security officer (DSO), or the tenant;
- There are changes in tenant departments or their operations, and the existing threat and risk assessment is no longer applicable due to an increased threat profile;
- There are plans to integrate new technology or systems within the facility that may impact the physical security risks in the environment; or
- There is a change in status of the building or a significant renovation planned.

At the initial phases of selection, design, and procurement of custodial assets, a current threat and risk assessment, or a base building threat and risk assessment, must be available and, if required, a site survey (site brief) must be conducted. It should be noted that an assessment of risk is required prior to the implementation of security controls.

Building assets must be categorized by their attributes and the security risks associated with the building operations. The Property and Facility Management service line maintains a profile of all custodian facilities, and acts as the central repository for such information. Annex D gives further information on the categorization of buildings.

The Property and Facility Management service line must be engaged directly in all circumstances where infrastructure has a high asset value, is located in heightened security environments, has a high symbolic value, or houses critical services.

The Property and Facility Management service line obtains, reviews and assesses threats and other data from the Government of Canada and other closed sources. Consequently, all base building threat and risk assessments and surveys completed at the local level must be submitted to the Property and Facility Management service line for review. The Property and

Facility Management service line will return, as appropriate, recommendations for the inclusion of additional controls to mitigate risks impacting PSPC custodial facilities as a result of the tenant's operations or sensitive assets to be located at the site.

Transition areas such as loading docks and reception zones must be adequately established and be appropriate to operations. Where possible, a building's physical attributes are to be considered in security planning.

Security enhancements to support access control into tenant space, either in a reception zone, mail room, loading area or other access point, is a tenant-funded enhancement. In a multi-tenant building, the Property and Facility Management service line works with the responsible building authority on building-wide security issues. The responsible building authority is accountable for ensuring action is taken to ensure the overall security of the building, adhering to the base building minimums, and resolving tenant level issues.

Monitoring and compliance

Compliance with this standard is mandatory. Compliance will be monitored and reported on through the base building security program, which performs a national oversight and quality monitoring role, and includes:

- continuous auditing throughout the life cycle of base building security for buildings, with appropriate reporting, by using base-building-security-tailored audit tools;
- preparation of an annual report on base building security;
- annual reporting on the status of implementation of threat and risk assessment recommendations;
- completion of base building threat and risk assessments as part of the Building Management Plan (BMP) National Call Letter.

7. Definitions

Base building (*immeuble de base*)

All elements related to the construction of, and systems required for, the services and functions of a building. This includes structural elements, building exterior (roof, windows, cladding, exterior doors, etc.), electrical, heating, ventilation and air conditioning (HVAC), conveying systems, interior finishes in common areas, fire and life safety systems, and building controls. Excluded from the definition of base building are internal elements related to tenant mandate or improvements/fit-up such as finishes and construction within a tenant space.

Base building security as defined in Treasury Board's *Operational Security Standard on Physical Security* (*sécurité de l'immeuble de base selon la Norme opérationnelle sur la sécurité matérielle du Conseil du Trésor*)

Security safeguards provided by the custodian department to protect a facility but not the assets contained in the building. Basic building security provides a base or starting point for other security requirements (i.e. minimum and enhanced safeguards) to be added to protect the specific assets held by the institution.

Base building security controls (*contrôles de sécurité de l'immeuble de base*)

Security safeguards, either physical or procedural, designed to protect the custodial asset and to render an environment suitable to house general Government of Canada operations. They consider the value and symbolism of the asset, but are limited to providing security that assures general protection of the asset, deters crime and unauthorized activity, and provides a reasonable expectation of security to persons and property on or in base building areas of responsibility. They do not include security controls required by virtue of the tenant operations or associated safeguards.

Base building security risk matrix (*matrice des risques en matière de sécurité de l'immeuble de base*)

A security risk management methodology applied to the information received during a base building threat and risk assessment. It is designed to categorize assets, and identify factors potentially related to heightened risk to the custodial assets as a result of tenant operations, or other factors causing risk.

In the selection of tenants for a building, the matrix assists in aligning tenant security requirements with a building's attributes to maximize the ability to implement appropriate security controls, and minimize costly security upgrades.

Base building threat and risk assessment (*évaluation de la menace et des risques pour l'immeuble de base*)

A standard document that prescribes how to conduct threat and risk assessments specifically designed for base building, that support the protection of custodial assets and the implementation of this standard. It includes physical security checklists, and a list of documents and standardized questions to be submitted to the Property and Facility Management service line as part of evidence-based security risk management.

Climate change adaptation (*adaptation aux changements climatiques*)

Security adjustments made by the Department in order to deal with the effect of potential climate change, given the increased risk of occurrence of natural disasters, rising global temperature, and increased precipitation. Current risks related to building security include increased risk of floods, weather events that exceed current building design standards to mitigate, extended periods of heat overcoming current HVAC or causing foundation instability, and interruptions to municipal services such as water and power.

Collateral threats (*menace collatérale*)

Threats to the persons, assets, or facilities that are the result of a facility's proximity to infrastructure or areas that are under higher threat, and where the impact of attacks against that infrastructure may adversely impact it.

Consequential threats (*menace indirecte*)

Threats to the persons, assets, or facilities that are the result of any involvement by another organization present in the building with other groups or issues.

Custodial facilities (*installations dont le Ministère a la garde*)

All real property assets (buildings, infrastructure, and land) where the Minister of Public Services and Procurement Canada, under the *Federal Real Property and Federal Immovables Act* has the administration of real property, including those that are leased or Crown-owned.

Facility (*installation*)

Any space primarily used for the delivery of Government of Canada services. A facility includes the main structure, surrounding property, and outbuildings associated with the delivery of services, or that hold Government of Canada infrastructure used to deliver those services.

Mandatory requirements (*exigences obligatoires*)

All direction derived from authoritative sources, including but not limited to legislation, regulations, and Government of Canada policies with respect to minimum baselines. They are to be applied consistently throughout the facility, and remain in force at all times.

Security design brief (*énoncé de la conception de la sécurité*)

A document that describes the physical protection philosophy and concepts, as well as physical safeguards, for a facility that are to be integrated into design and construction. It is a requirement at the inception phase for new assets or renovations.

Security infrastructure protection for non-building assets (*protection de l'infrastructure de sécurité pour les biens autres que des immeubles*)

The Department's custodial responsibilities for designated heating plants, dams, bridges, and warehouses, which require a range of integrated security controls for base building security infrastructure protection.

Security posture (*posture de sécurité*)

The overall plan and approach taken by the Department to deter security breaches or unlawful activity. This includes all phases from planning to implementation, and is comprised of control measures, both physical and psychological, which protect the department from security threats.

Security site brief (*énoncé de sécurité du site*)

A document that describes the physical security attributes sought in a site during acquisition. It is a requirement at the inception phase for new assets or renovations.

Specific service agreement (SSA) (*convention particulière de services [CPS]*)

An internal PSPC contract between one service branch and another government department. It describes the work to be done and associated costs.

Tenant-funded base building security controls (*contrôles de sécurité de l'immeuble de base financés par le locataire*)

Additional security controls identified to mitigate risks to custodial assets, or government operations housed therein, that are present as a result of the tenant's presence, operations, or other activities.

8. References

Legislation:

- [Access to Information Act](#)
- [Canada Labour Code](#)
- [Canada Occupational Health and Safety Regulations](#)
- [Canadian Charter of Rights and Freedoms](#)
- [Canadian Human Rights Act](#)
- [Emergency Management Act](#)
- [Federal Real Property and Federal Immovables Act](#)
- [Financial Administration Act](#)
- [Library and Archives of Canada Act](#)
- [Privacy Act](#)
- [Public Service Employment Act](#)
- [Security of Information Act](#)

Treasury Board:

- [Access to Information, Policy on](#)
- [Departmental Security Management, Directive on](#)
- [Contracting Policy](#)
- [Government Security, Policy on](#)
- [Identity Management, Directive on](#)
- [Management of Information Technology, Policy on](#)
- [Management of Materiel, Policy on](#)
- [Management of Real Property, Policy on](#)
- [Management of Risk, Framework for the](#)
- [Occupational Safety and Health](#)
- [Operational Security Standard - Business Continuity Planning \(BCP\) Program](#)
- [Operational Security Standard: Management of Information Technology Security \(MITS\)](#)
- [Operational Security Standard on Physical Security](#)
- [Security Organization and Administration Standard](#)
- [Security and Contracting Management Standard](#)
- [Security Screening, Standard on](#)
- [Values and Ethics Code for the Public Sector](#)

Other documents:

- [Departmental Security Program \(051\)](#)
- [RCMP G1-005 – Preparation of Physical Security Briefs](#)
- [Departmental Operations Center \(DOC\) Integrated Communications Protocol](#)
- [Crime Prevention Through Environmental Design \(CPTED\)](#)
- [Technical Reference for Office Building Design](#)



9. Attachments

Annex A – Elements of Base Building Security and Mandatory Controls
Annex B – Application of Threat and Risk Assessment for Base Building Security
Annex C – Delineation of Funding Responsibilities
Annex D – Building Categorization

10. Enquiries

Enquiries about this standard can be directed to [SI SSGII SIB / RPS PFMSL BBS \(TPSGC/PWGSC\)](#) generic inbox.

Any proposed modifications should be done in consultation with the Property and Facility Management service line. Also, any interpretation questions related to security portions of this document should be referred to the Property and Facility Management service line.

Elements of Base Building Security and Mandatory Controls

Base building security elements

The following are generic base building security elements:

- substructure
- shell
- facility perimeter
- grounds
- reception area for visitors
- roof
- loading dock
- electrical and mechanical rooms and systems
- building automation control systems
- elevators and other conveyances
- public areas – lobbies, washrooms, food courts
- any systems contained or encapsulated within the ceiling plenum or within walls
- heating, ventilation and air conditioning (HVAC) systems
- parking lot or underground garage
- ground floor doors and windows
- alarm systems that secure any base building space or system, excluding tenant-owned systems
- closed-circuit television (CCTV) equipment
- fire and life safety systems
- lighting (exterior and common space interior)
- steam/hot water pipe tunnels
- air supply and exhaust tunnels
- ducts and shafts
- sanitary/storm sewer and water services
- electrical
- information technology (IT) service infrastructure

Base building security mandatory security safeguards:

The following are generic base building mandatory security safeguards; other items may be added. Base building security controls are grounded in application of risk management so as to achieve the goals of physical security. Determining the mandatory security safeguards for buildings is the result of continuous review and evaluation.

- The facility is to have a clearly defined perimeter that indicates primary ownership and that control of the space is under the Government of Canada. Specific signage and perimeter controls will be determined as part of the recommendation of a threat and risk assessment, and take into account collateral and consequential threats. This applies to both whole buildings, and sections of buildings where PSPC is the custodian or leaseholder.
- Landscape design should support protection of the building, detection of intruders, and response to security incidents. It should employ the principles of Crime Prevention Through Environmental Design (CPTED) which can be found in the References section of the Base Building Security Standard.
- Lighting must provide sufficient illumination in and around the building to allow detection and observation of people approaching the building, and to deter criminal activity. Lighting plans and controls must be done in conjunction with any monitoring or surveillance equipment such as closed-circuit television equipment. With respect to CCTV equipment, the *Canada Labour Code*, *Canada Occupational Health and Safety Regulations*, and the lease, all indicate minimum lux levels, and should be referenced where applicable.
- Appropriate access controls that prevent unauthorized entry must be in place in all areas of the building to ensure that critical support systems are not tampered or interfered with. Examples of such controls are integrated electronic devices such as alarms and closed-circuit television equipment, and physical devices such as barriers, locks, doors, and specifically-designed integrated security controls for access points such as roof tops, loading docks, electrical and mechanical rooms, parking lots or underground garages, and ground floor doors and windows.
- A trained guard force, provided with current post orders for the specific facility or equivalent measures to provide detection and response capability for the facility as prescribed by a threat and risk assessment, is in place.
- Security monitoring of the building is done by means of alarm systems and closed-circuit television equipment which are monitored 24/7 by a security control centre, or equivalent measure as prescribed by a threat and risk assessment, to prevent unauthorized access to the building, especially during non-business hours.
- Security incidents which result in public property loss or damage, compromise the security of the asset, and/or involve criminal activity, workplace violence, or other criteria prescribed by the Property and Facility Management service line are reported through the appropriate channel.


Application of Threat and Risk Assessment for Base Building Security

The following are the key considerations for threat and risk assessments:¹

- **Purpose:** A threat and risk assessment is a process for evaluating specific threats to a building and infrastructure, determining the level of risk of the threats, and making recommendations to mitigate these threats.
- **Policy authority for threat and risk assessments:** The TB *Policy on Government Security* states that government wide threats and risks must be managed proactively. PSPC uses security practitioners to achieve this by completing up-to-date threat and risk assessments, as mentioned in the TB *Directive on Departmental Security Management*. The threat and risk assessment process is also an integral part of demonstrating due diligence under several laws and regulations pertaining to performance-based regulation, and is further supported in TB policy as being the foundation for any security controls or baselines.
- **Role:** The Property and Facility Management service line has the responsibility for developing the methodology and templates for threat and risk assessments, whether conducted by a third party or by Property and Facility Management service line staff. The Property and Facility Management service line monitors the program and ensures threat and risk assessments are conducted for all assets, which are updated as required, and by qualified persons, either through Property and Facility Management service line personnel or qualified third parties.
- **Application:** The Property and Facility Management service line provides approved threat and risk assessment methodology and templates under the supervision, review and approval of Property and Facility Management service line staff who are responsible for the final recommendations.
- If recommendations are altered or declined, the senior manager may request the intervention of the asset manager.
- If the risk is deemed unacceptable by the Property and Facility Management service line, or if the risk impacts a third party, a departmental security officer risk mitigation may be requested, or the risk acceptance may be forwarded for discussion between the DSO and the Director General, Service Lead, Property and Facility Management, RPS, or equivalent executive who is accountable for the custodial asset.

Note: Some threat and risk assessment recommendations or observations may, by TB policy or other legislation, fall under the lead tenant or other building occupant. In these cases, an extract from the threat and risk assessment containing the recommendations and references will be forwarded to the senior officer of the department in the building, and a

¹ While a threat and risk assessment is a major tool for base building security, it should not be viewed as the only tool available. Constant review and challenge of the in-place security with ongoing discussion through the National Quality Monitoring, Maintenance Management and Security (NQMMS) team will help resolve specific building-level issues outside the base building threat and risk assessment process.



copy sent to the security organization of the department after consultation with the PFM of the asset. The PFM will be consulted on wording and relevance and also included on the communication to the client department.

Delineation of Funding Responsibilities

Funding disputes are to be resolved in a manner that ensures that public funds are used effectively and efficiently, understanding that the operations of one federal entity are not to be managed in a manner that puts other federal entities or the Government of Canada as a whole at increased risk.


The following aspects of base building security fall clearly within the scope of PSPC or its sub-organizations:

- The facility perimeter and grounds, with security controls as described earlier in this document. These security controls are limited to the protection of persons, assets and operations as required by law, and the protection of the facility itself as appropriate to general Government of Canada operations and at the Government-wide threat level.
- Outbuildings or infrastructure points outside of the building envelope that are not specifically allocated for the delivery of a tenant's services. For example, a storage building used to contain equipment for the maintenance of grounds would fall under PSPC, whereas a shed that was used to house assets specific to a service delivered by the tenant would be the responsibility of the tenant.
- The building envelope as designed for general Government of Canada operations and taking into account the baseline threat environment in addition to threats to personnel and structures known to be prevalent in the area. This is intended to pertain particularly to natural threats such as flooding, fires, etc.
- Security controls put in place in response to risks that are a result of collateral damage due to the location of the facility in proximity to higher threat infrastructure.
- Public zones, reception areas, and transition points as described in Section 6, Details, of the *Base Building Security Standard*, and as per the Government of Canada baseline threat environment and routine operations.

The following aspects of security fall clearly within the scope of the tenant:

- Security controls that are intended not to protect the structure, but to protect tenant's personnel, assets or operations;
- Security required is either specific to the tenant, or the tenant is identified as operating at a higher threat level. These may include military, law enforcement, regulatory enforcement, or federal entities that participate in operations or activities involving conflict higher than the Government of Canada general operations.
- Security controls which extend into base building security systems either physically, electronically or procedurally², where such controls act as an additional layer of defense with respect to the protection of tenant assets.
- Security controls associated with the controlled access of stairwells or vertical transportation infrastructure (elevators and escalators) for purposes of limiting access to tenant-controlled spaces, or measures associated with restricting access to tenant-

² *Procedurally could include additional guard force personnel.*



controlled spaces. Continuity of access for the maintenance of base building infrastructure that occupies space within those controlled spaces must be maintained at the tenants' cost.

Building Categorization

The concept of categorization of buildings will assist in the threat and risk assessment (TRA) process, and other activities involved in base building security operations. It is one of the tools promoting standardization of the Base Building Security Program as it contributes to reducing and delineating costs associated with security measures in real property assets and infrastructure. The levels defined below do not denote activities that are funded by PSPC, but are used to help define the risk of certain occupancies.

The following describe how buildings are categorized:

Level One - High Security Posture: National security and law enforcement facilities where the tenant departments and agencies assume responsibilities for base building security. The Property and Facility Management (PFM) service line provides advice and guidance on site selection and design. It should be a single-occupancy building.

Parliamentary Precinct offices and their support facilities are considered Level One - High Security Posture, because of their symbolic value to the nation, and the Property and Facility Management service line provides base building security for them as they are part of Public Services and Procurement Canada. The exceptions within the Parliamentary Precinct are the Centre, West and East Blocks where Parliamentary Protection Service (PPS) provides all of the security, including base building security.

Level Two - Medium Security Posture: National headquarters facility for departments and agencies with defined exterior perimeter and reception area covered by integrated security controls.

Level Three - Basic Security Posture: General offices with basic base building security to ensure a level of protection from criminal activity outside the building and in the public areas, as well as to ensure no unlawful access the building.

Level Four - Federally-Controlled Critical Infrastructure: Other buildings requiring a range of specific security controls, such as those for heating plants, dams, bridges and warehouses which are departmental assets under its custodial care. This also includes data storage centres managed by Shared Services Canada.

Note: Security provisions are required during any construction, renovation or refit to ensure that the security posture is maintained.

Table 1: Categorization of buildings and security regimes and building attributes

The concept of categorization of buildings is one of the tools promoting standardization of the Base Building Security Program, as it will contribute to reducing and delineating costs associated with security measures in real property.

CATEGORIZATION OF BUILDINGS AND SECURITY REGIMES AND BUILDING ATTRIBUTES		
Levels	Examples of key building attributes	Tenants' requirements
Level One - High Security Posture	<p>Types of organizations*:</p> <ul style="list-style-type: none"> • National security and law enforcement facilities • Parliamentary affairs (Parliamentary Precinct) • National security and/or intelligence organizations, or those organizations with significant information holdings impacting the national interest • Tenants whose operations may impact the security of other departments or organizations • Departments housing certain critical services or assets (such as server farms, etc.) <p>*As determined by a threat and risk assessment</p>	<p>Threat and risk assessments and security design briefs will provide recommendations that may include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Special care in site selection so that these organizations are not co-located next to or near to tenants who themselves have a high security risk profile (e.g. banks, Royal Canadian Mounted Police (RCMP)). • A physically-defined perimeter large enough to provide appropriate standoff space, controlled entrances and parking areas. May also require standoff space from neighbouring buildings in order to protect from electronic penetration. • Regional offices open to the public may require the same security provisions as the main office. • Smaller regional offices with limited visitor access in multi-tenant buildings may require specialized security provisions, in particular protection against electronic penetration.

		<ul style="list-style-type: none"> • Increased security screening for employees at various levels at various hours. • Security controls to provide safety for staff offices, by means of controlled access for visitors and others on official business, as well as at loading docks and rooftop access points. • The application of ballistic- and bombproof structural capability, as well as reinforced entrance doors. • High-level access controls and high-level security controls built into support-facility design. • Ability for security posture to be heightened in periods of increased threat. • Enhanced security screening for all privately-owned amenity spaces within the facility. • The PFM service line provides advice and guidance on planning, site selection, and design for national security and law enforcement facilities. • Tenant may require ongoing integrated operational support from the PFM service line, or may provide its own security. • Tenant may require PSPC staff and contractors to have enhanced security screening after commissioning.
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Level Two - Medium Security Posture	Types of organizations: <ul style="list-style-type: none"> • A departmental headquarters housing ministers / deputy ministers • An organization whose mandate and activates may impact the application of Base Building Security • An organization whose national threat assessment will impact the application of Base Building Security 	<p>Threat and risk assessments and security design briefs will provide recommendations that may include but are not limited to the following:</p> <ul style="list-style-type: none"> • May be located in a multi-tenant building which is largely government that may have some integration of private business Access controls by means of integrating electronic devices, such as alarms and CCTV, with locks and doors. • Continuous security monitoring 24/7 of access controls, and adequate response time to security incidents. • Support from a guard force controlled by base building, with post orders (written documents that outline duties, responsibilities and expectations of guards) delineating base building and tenant responsibilities. • May require clearly defined lead tenant roles and responsibilities. • Appropriate plans and arrangements to increase security of the whole facility under the control of the lead tenant and PSPC or third party provider. • May require screening of private businesses, and restriction of access during times of heightened security.
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		<ul style="list-style-type: none"> • After-hours access may be limited to authorized personnel. • Parking may be controlled by the lead facility tenant. • Clearly-defined reception zones. • Ability for security posture to be heightened in periods of increased threat. • Parking elevators should open into a reception zone in the ground floor elevator lobby. • May require security screening at a level corresponding to the security level of information and assets in the building. • All employees that work in privately-owned amenity spaces within the secure perimeter may be required to have security status of reliability at a minimum. <p>Example: Terrasses de la Chaudière and Place du Portage</p>
Level Three – Basic Security Posture	Types of organizations: <ul style="list-style-type: none"> • General offices space in Crown owned or leased space. 	<p>Threat and risk assessments and security design briefs will provide recommendations that may include but are not limited to the following:</p> <p>General office space:</p> <ul style="list-style-type: none"> • Defined zones, with base building security centre of expertise providing advice and guidance for the public and reception areas, in co-

		<p>operation with the tenant's security requirements.</p> <ul style="list-style-type: none"> • Ensure that access controls for the tenants' space are supported by a guard force so that there is 24/7 continuous monitoring, and there is an adequate response time to security incidents. • Security screening at the appropriate level corresponding to the security level of information and assets in the building. • Escorted maintenance personnel. • Ability for security posture to be heightened in periods of increased threat. • May require a Building Security Committee, and security incidents should be reported to National Base Building Security Centre of Expertise. • Parking elevators should open into a reception zone in the ground floor elevator lobby. • The base building security objective is to ensure protection from criminal activity outside the building and in the public areas, as well as to ensure there is no unauthorized access to the building. • Planning, design and site selection must include
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		<p>base building security requirements.</p> <ul style="list-style-type: none"> • Leases and occupancy agreements must include all necessary security provisions. • If the tenant's mandate and activities require additional security controls, these are implemented in the planning and design phase, or when there are changes in the security requirements. <p>Example: Constitution Square</p>
Level Four - Federally-Controlled Critical Infrastructure	<p>Types of facilities:</p> <ul style="list-style-type: none"> • Heating plants, dams, bridges and warehouses (assets under PSPC custodial care). • Data storage centres managed by Shared Services Canada. 	<p>When produced for federally-controlled critical infrastructure facilities, threat and risk assessments must be written using an all-hazard approach, and with the understanding that each type of facility requires specific security controls. They may include but are not limited to the following:</p> <ul style="list-style-type: none"> • Ability for security posture to be heightened in periods of increased threat. <p>These are critical infrastructure facilities where function, locality and the national threat assessment will impact on the department's security posture for each type of facility.</p>

.13 Energy Efficiency Report – EXP Services Inc.



Public Services and Procurement Canada (PSPC)

New Judicial Complex of Montreal

Type of document

Energy efficiency report (simulation) – 90% Revision 1

Your reference

R.090448

Project number

MTR-00255784-A0

Date

2020-07-10

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Public Services and Procurement Canada (PSPC)

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1. Project description

This study consists in offering tools to guide the decision making during the design phase. The energy performance and life-cycle cost analysis of various mechanical systems and energy efficiency measures are assessed, and recommendations are given.

2. Methodology

An energy model is developed using the software IES VE 2019. The architecture and the zoning are based on the sketches and the feasibility study report at 50%.

Energy efficiency measures will be applied individually on the base model and they will then be bundled to reach four objectives:

- Option 1: NECB 2011 -28%
The proposed building will have to be 28% more energy efficient than the NECB 2011. The main source of energy for heating will be natural gas.
- Option 2: NECB 2011 -28% and positive NPV after 40 years
The proposed building will have to be 28% more efficient than the NECB 2011 and reach a positive net present value (NPV) after 40 years in comparison to option 1. The main source of energy for heating will be natural gas.
- Option 3: Carbon-neutral
The proposed measures will have to prove the neutrality of greenhouse gas emissions. The main source of energy for heating will be electricity.
- Option 4: Recommended measures
This option bundles the measures that are recommended for the design phase of the project.

2.1 GHG emissions and energy density

This study will take two energy sources into account: hydroelectricity and natural gas.

- The utility supplier Hydro-Québec emits the majority of its greenhouse gases in isolated communities like Nord-du-Québec and Îles-de-la-Madeleine. These systems are powered by diesel-fueled generators. As the site of the project will be located in an area connected to the hydroelectric system, it was agreed that the electric source does not emit greenhouse gas.
- The combustion of natural gas emits GHG. The energy and emission data are based on the emission factors from *Transition Énergétique Québec* (2019), i.e. an energy density of 37.89 MJ/m³, a CO₂eq emission of 1,889.320 g/m³ or 49.863kg CO₂eq/GJ.

2.2 Financial data

The financial data used to assess the NPV are an inflation rate of 2% and a discount rate of 3%.

2.3 Zero carbon certification v2

The general concepts of the Zero carbon certification v2 from CaGBC are presented. Carbon balance, or net emissions, takes embodied carbon, operational carbon and avoided emissions into account, as shown on Figure 1.

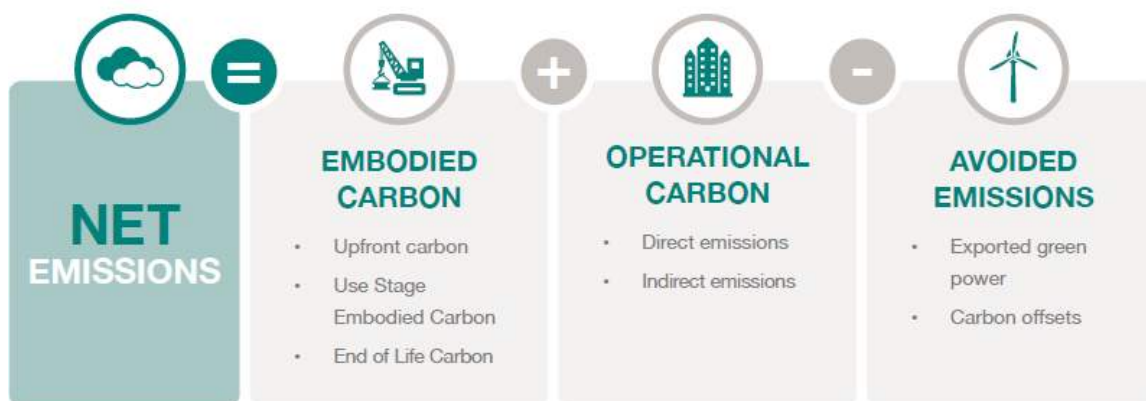


Figure 1: Zero carbon v2

Embodied carbon accounts for the emitted carbon from the production to the destruction of construction materials. This assessment can have a negative value if the carbon sequestration in the materials is taken into account.

Operational carbon consists of direct emissions from fuel and refrigerant released into the atmosphere as well as indirect emissions coming from energy suppliers or district heating networks. The energy produced by on-site or off-site renewable sources reduces the emission of operational carbon. The purchase of green energy products, such as renewable natural gas, can help reduce the emissions of the same kind of energy sources, i.e. electricity or fuel.

Avoided emissions can be assessed through green energy exportation and compensation thanks to carbon credits. These carbon credits can be bought internationally and must be certified by a recognized organization.

Energy efficiency is an important part of this certification. For the metropolitan area of Montreal (zone 6), the Thermal Energy Demand Intensity (TEDI) must be of 34 kWh/m²/year for the buildings that use a flexible approach and renewable energy (which aims a zero carbon accounting) and of 24 kWh/m²/year for a passive approach.

Two impact and innovation plans must also be incorporated into the project. These plans include:

- The production of renewable energy on site, 5% of the total energy requirements;
- The electric heat pumps that supplies 50% of heating energy;
- Thermal and energy storage;
- Use refrigerants with a low global warming potential.

3. Base model

3.1 Location

The project will be located in Old Montreal, on a parking lot between 43, Saint-Jacques street and 46, Notre-Dame West street.

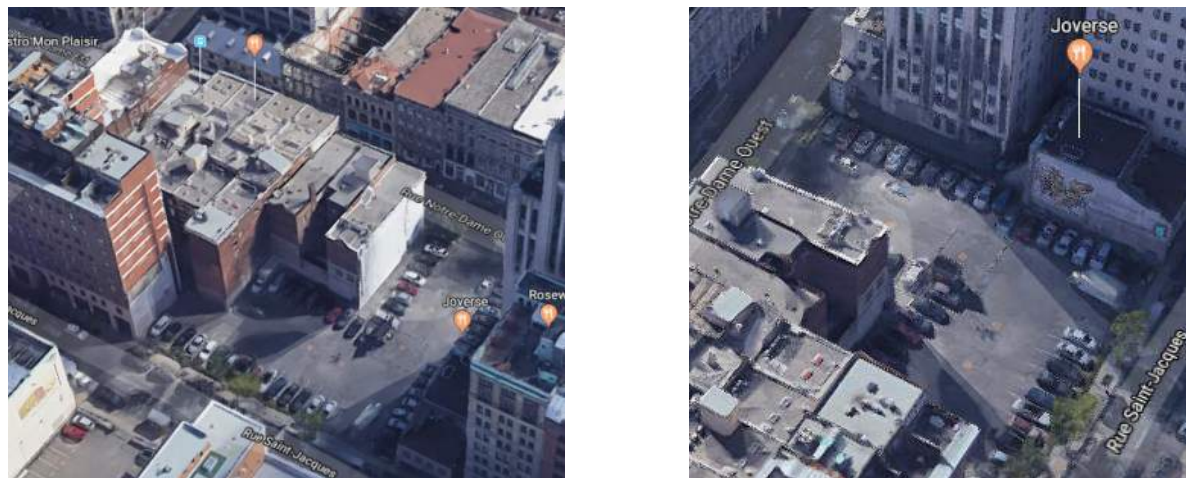


Figure 2: Site location

The building will be surrounded by existing buildings. A space is planned between this building and the neighbouring buildings.

3.2 Architecture

One of the general directions of this study is to refer to NECB 2015 for design criteria and NECB 2011 as a reference building. The model is oriented at 300° from the geographic North. The envelope complies with NECB 2011. The modelled floor area is 11,524 m².

The architectural model is shown in Figure 3.

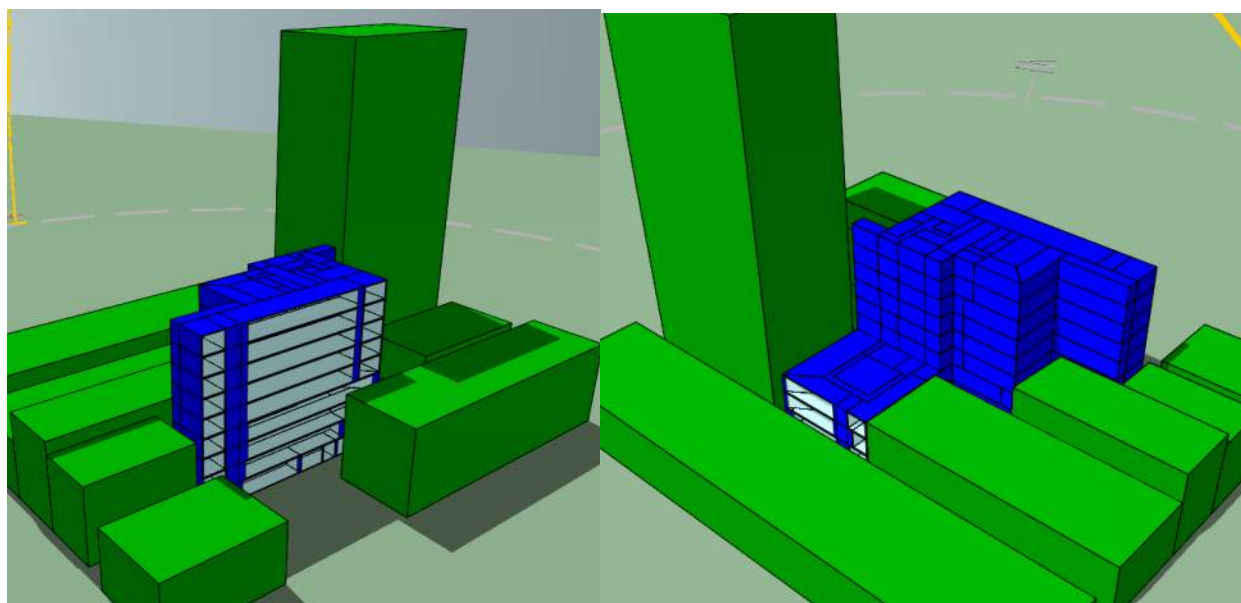


Figure 3: Representation of the base model

As of today, no information on the fenestration for the project is available. This fenestration was selected depending on the space allocation shown in the conceptual sketches at 50%. The percentage of fenestration per orientation of the model is presented in Table 3-1.

Table 3-1: Percentage of fenestration per orientation

Model	North	South	East (Notre-Dame)	West (Saint-Jacques)
Base	0%	0%	9%	65%
Reference	0%	0%	14%	100%

In the sketches, the spaces above the 3rd floor overlooking rue Notre-Dame do not lend themselves to fenestration. They are mainly courtrooms, storage rooms and bathrooms. At the client's request, and for security purposes, the courtrooms must not have windows. No fenestration is planned for the Eastern walls of these floors nor for sides overlooking other buildings northwards and southwards. 65% of the rest of the outer walls consist of windows.

According to NECB 2011, the reference model prescribes a window-to-wall ratio of 38.7% for 4,200 heating degrees-days. The base model has a window-to-wall ratio of 23.3% and the reference model of 35.8%. The NECB threshold is not reached because the surface area is limited to 100% of the surface area of the outer walls, according to the orientation.

The underground and the indoor parking with 12 parking spaces are excluded from this study.

3.3 Spaces

The types of space floor area are divided as follows:

Table 3-2: Percentage for the types of space

Type of space	Floor area
Closed office	5.9%
Open office	23.6%
Canteen	0.7%
Judge's Chambers	15.1%
Conference	9.9%
Corridor	13.0%
Courtyard	15.0%
Warehouse	1.7%
Mechanical/Electrical	11.4%
Bathroom	3.3%
Vestibule	0.4%

3.4 Mechanical systems

The mechanical system of the base model is a dedicated outdoor air system with 4-pipe fan-coil units supplied by a hot-water loop and a chilled-water loop. The fans and pumps are equipped with variable-speed drives. There is a heat-recovery ventilator on the exhaust air with an efficiency of 50% of sensible heat only. The radiant floors are modelled as hot water baseboards.

The hot-water loop is supplied by two condensing boilers for a total capacity of 530 kW of an efficiency of 89%. The chilled-water loop is supplied by a centrifugal chiller with a capacity of 545 kW and a coefficient of performance (COP) of 5.8, as well as an adiabatic fluid cooler of 645 kW.

Table 3-3 is a summary of the mechanical systems found in the proposed building and the reference building.

Table 3-3: Summary of the mechanical systems in the proposed building and the reference building

Mechanical systems	
Proposed building	Reference building
Dedicated outdoor air system 4-pipe fan-coil units Variable-speed fans Variable-speed pumps Condensing boilers, 89% eff. Centrifugal chiller, COP 5.8 Adiabatic fluid cooler Hot-water baseboards	Multi-zone built-up system Variable-speed fans Constant-speed pumps Condensing boilers, 83% eff. Centrifugal chiller, COP 5.71 Cooling tower Hot-water baseboards Economizer cycle

CO₂ sensors have become a standard in the industry; however, there is a high risk of overestimating or underestimating the measure since the occupancy is unknown at the time of the writing of this report. According to the client, it will be an atypical occupancy that will vary from day to day. This measure will not be modelled but it is recommended all the same. CO₂ sensors will allow the outside air supply to adjust to this atypical and variable occupancy schedule.

The domestic hot water is defined by a peak of 1.5L/h/person that varies depending on the occupancy schedule. This figure was taken from ASHRAE 90.1-2010 User's manual for an office building.

The reference mechanical system is a type-6 installation according to NECB, consisting of a multi-zone built-up system with electric baseboard.

Fan-coil units were said to be noisy by the client, and their maintenance is more complicated than other type of systems. It is possible to review other options during the design phase of the project.

3.5 Occupancy, equipment and lighting density

The occupancy density was reduced to 30% of the density prescribed in the NECB 2011 to reach a peak occupancy of 89 people according to the client's estimations.

The plug loads were also reduced to 30%.

The lighting density was reduced to 60% of the density prescribed in the NECB 2011 to take LED-type lighting into account.

3.6 Occupancy schedule

The building's occupancy schedule is not defined at this stage of the study. Type A (Judge's Chambers) and Type C (Courtrooms) occupancy schedules, as defined by the NECB standard, are used for office and courtyard areas on business days.

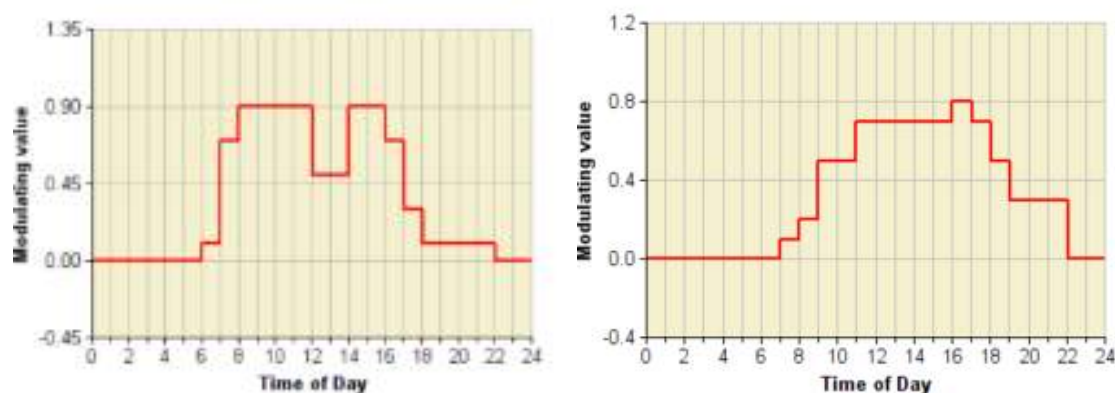


Figure 4: Type A (left) and Type C (right) occupancy schedule

There is a reduced occupancy on weekends and holidays.

3.7 Base modelling results

The energy consumed per post in the reference building and the base building is presented in Table 3-4.

Table 3-4: Energy consumed in the reference model and the base model

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Reference	Option 1		
Gas	Heating (natural gas)	4,239.3	2,590.5	1,648.8	38.9
	Domestic hot water	105.7	105.7	-	-
	Total gas	4,345.0	2,696.2	1,648.8	37.9
Electricity	Lighting	1,909.9	1,145.9	763.9	40.0
	Equipment	205.7	205.7	-	-
	Humidification	713.5	413.5	299.9	42.0
	Pumps	86.7	21.0	65.6	75.7
	Cooling	298.4	125.3	173.2	58.0
	Heat rejection	89.1	8.3	80.8	90.7
	Fans	562.7	357.0	205.7	36.6
	Total electricity	3,865.9	2,276.7	1,589.2	41.1
Total		8,210.9	4,972.8	3,238.1	39.4

The heating savings in the base model are mainly due to fenestration, which is less important than in the reference building. Using only one condensing boiler instead of two in the reference building means that it operates with a lower partial load, and these conditions make the condensing boiler more efficient. The additional humidification load in the reference building is due to the use of an economizer cycle to cool down the areas. The pump energy in the reference building is caused by the numerous hydronic baseboards in the building as well as constant-speed pumps. The cooling is more efficient in the base model because of the solar gain that is less important due to fenestration, and the lighting is more efficient. Heat rejection is thus less important, and the pumping energy of variable-speed pumps also contributes to savings.

Energy savings are 39.4% compared to the NECB 2011 reference model.

The power demand of the components is presented in Table 3-5.

Table 3-5: Power demand of the reference model and the base model

		Power demand (kW)		Savings (kW)	Savings (%)
		Reference	Base		
Gas	Heating (natural gas)	811.1	496.1	315.0	38.8
	Domestic hot water	0.8	0.8	-	0.0
Electricity	Lighting	129.1	77.4	51.6	40.0
	Equipment	13.8	13.8	-	0.0
	Humidification	105.4	105.4	-	0.0
	Pumps	14.4	5.5	8.9	62.1
	Cooling	174.2	95.9	78.3	45.0
	Heat rejection	24.5	6.0	18.5	75.4
	Fans	132.3	27.5	104.8	79.2

The main sources responsible for the electricity demand in the reference building are cooling, fans, lighting and humidification. The main sources responsible for the electricity demand in the base model are, in order: humidification, cooling and lighting.

The energy density is presented in Table 3-6.

Table 3-6: Energy density (GJ/m²)

	Gas	Electricity	Total
Reference	0.378	0.335	0.713
Base	0.235	0.198	0.432

The low occupancy and the fenestration have a major impact on the building's energy density.

The natural gas and electricity invoices are shown in Table 3-7.

Table 3-7: Energy invoices of the reference model and the base model

	Reference	Base	Savings
Natural gas	\$61,897	\$37,963	38.7%
Electricity	\$120,997	\$69,075	42.9%
Total	\$182,894	\$107,038	41.5%

Savings on energy bills are of 41.5% compared to the reference model. The maximum LEED v4 credit overview for optimizing the energy performance of new buildings is 18 credits with 50% savings on the invoice.

GHG emissions are shown in Table 3-8.

Table 3-8: GHG emissions of the reference model and the base model

		GHG produced (tons CO2 eq)		Savings (tons CO2 eq)	Savings (%)
		Reference	Base		
Gas	Heating (natural gas)	210.12	128.40	81.72	38.9%
	Domestic hot water	5.24	5.24	-	0.0%
	Total gas	215.36	133.63	81.72	37.9%
Electricity	Lighting	1.06	0.64	0.42	40.0%
	Equipment	0.11	0.11	-	0.0%
	Humidification	0.40	0.23	0.17	42.0%
	Pumps	0.05	0.01	0.04	75.7%
	Cooling	0.17	0.07	0.10	58.0%
	Heat rejection	0.05	0.00	0.04	90.7%
	Fans	0.31	0.20	0.11	36.6%
	Total electricity	2.15	1.26	0.88	41.1%
Total		217.51	134.90	82.61	38.0%

4. Individual measures

Individual measures are applied to the base building with natural gas for the most part. A few exceptions include electrical peak load management and short-term thermal storage, where the hot water loop of the base model is supplied by electric boilers that are 100% efficient. Energy savings and the NPV are assessed for each measure.

4.1 Improved envelope - NECB 2017

4.1.1 Description

The building envelope consists of the walls and the floors exposed to the exterior and to the ground, the roof and the windows. The opaque envelope and the fenestration are passive components that have a great impact on the energy consumption of a building. As a rule of thumb, the opaque envelope is usually 10 times more efficient than the fenestration, which means that the more windows there are in a building, the more heat transfer there is with the surroundings.

Improving the thermal resistance of the envelope can thus enable the diminution of heat loss during winter. However, if a building is over-isolated, cooling it down in the summer will be much harder as there will be a lower transfer of solar gains and internal gains outside. Part of the efforts made to decrease heating consumption would thus be compensated by an increase of the cooling consumption.

Table 4-1 shows the resistance units and thermal conductance of the components.

Table 4-1: Insulating values of the envelope according to the NECB standard (Zone 6)

NECB 2011		NECB 2015		NECB 2017	
Walls	RSI-4.04 (R23)	Walls	RSI-4.04 (R23)	Walls	RSI-4.05 (R23)
Roof	RSI-5.46 (R31)	Roof	RSI-5.46 (R31)	Roof	RSI-6.41 (R36.4)
Windows	U-2.2	Windows	U-2.2	Windows	U-1.9

The thermal resistance of the envelope of the base model are the values from the NECB 2011, which are the same as the ones in the NECB 2015 standard. A double glazing was considered for the financial analysis.

4.1.2 NPV and energy savings

Table 4-2 and Table 4-3 display the information used to calculate the NPV as well as the energy and financial results of the measure.

Table 4-2: Information used to calculate the NPV for the improved envelope – NECB 2017

Cost of the measure	Annual cost of maintenance	Life expectancy	Savings on the energy bill
\$150,113	\$0	40 years	\$2,402

Table 4-3: Summary of the results for the improved envelope measure – NECB 2017

NPV over 40 years	Energy savings	GHG savings
-\$72,502	182 GJ 3.7%	9.5 tons CO ₂ eq/year 7%

The NPV was calculated by considering a life expectancy of 40 years for the envelope. The NPV is negative with an amount of -\$72,502 and few GHG emissions are saved. This is why this measure is not recommended.

4.2 Improved envelope - Walls RSI-5.28

4.2.1 Description

The opaque envelope and the fenestration are passive components that have a great impact on the energy consumption of a building. Table 4-4 shows the resistance units and thermal conductance of the components for the base model and the proposed model for this measure. Furthermore, with an external improved envelope, a loss of 50m² of surface area is expected due to the increase of the thickness of the walls. There will also be an increase of the quantity of embodied carbon in the building.

Table 4-4: Insulating values of the base model in comparison to the proposed model

Base model		Proposed model	
Walls	RSI-4.04 (R23)	Walls	RSI-5.28 (R30)
Roof	RSI-5.46 (R31)	Roof	RSI-5.46 (R31)
Windows	U-2.2	Windows	U-2.2

4.2.2 NPV and energy savings

Table 4-5 and Table 4-6 display the information used to calculate the NPV as well as the energy and financial results of the measure.

Table 4-5: Information used to calculate the NPV for the improved envelope with walls RSI-5.28

Cost of the measure	Annual cost of maintenance	Life expectancy	Savings on the energy bill
\$173,787	\$0	100 years	\$2,374

Table 4-6 : Summary of the results for the improved envelope measure with walls RSI-5.28

NPV over 40 years	Energy savings	GHG savings
-\$26,500	157 GJ 3.2%	7.2 tons CO ₂ eq/year 5.4%

The NPV was calculated by considering a life expectancy of 100 years for the wall R30. A linear residual value was considered at the end of the 40 years of the NPV. With this hypothesis, the NPV is still negative with an amount of -\$26,500 and few GHG are saved. This is why this measure is not recommended.

4.3 Heat recovery on released air

4.3.1 Description

The buildings from the beginning and middle of the 20th century were built so as to let a lot of air passes through the walls and the openings. A modern building is so hermetic that it must be supplied with fresh air from mechanical systems. The same quantity of air supplied in a building will be extracted from it. It is possible to preheat the instrument air with the exhausted air via a heat exchanger. Various models exist, and some of them allow the recovery of part of the humidity (latent energy) in addition to the heat (sensible energy). Three kinds of exchangers are modelled in this study: a fixed plate heat exchanger, which only enables the recuperation of sensible heat; an

enthalpy wheel, which enables the recuperation of sensible and latent energy through desiccants; and a cassette-type heat exchanger, also named reversible cycle, which allows a better recovery efficiency than the other two.

The base model is equipped with a sensible heat exchanger that is 50% efficient. This measure suggests the installation of an enthalpy wheel that is 76% efficient and sensible, and 50% latent, and a cassette-type heat exchanger that is 90% efficient and sensible, and 70% latent.

4.3.2 NPV and energy savings

Table 4-7 and Table 4-8 display the information used to calculate the NPV as well as the energy and financial results of the measure.

Table 4-7: Information used to calculate the NPV for heat recovery on the released air

	Cost of the measure	Annual cost of maintenance	Life expectancy	Savings on the energy bill
Heat wheel	\$10,500	\$1,155	25 years	\$6,148
Cassette with a reverse flow system	\$42,000	\$1,785	25 years	\$7,398

Table 4-8: Summary of the results for heat recovery on released air

Measure	NPV over 40 years	Energy savings	GHG savings
Heat wheel	\$144,698	213 GJ 4.3%	5.2 tons CO ₂ eq/year 3.9%
Cassette with a reverse flow system	\$116,670	271 GJ 5.4%	6.2 tons CO ₂ eq/ an 4.6%

The cassette with a reverse flow system has the lowest NPV (\$116,670) in comparison with a NPV of \$144,698 for the heat wheel. However, the cassette with a reverse flow allows greater energy and GHG savings, which is why although they have a lower NPV, we recommend the installation of cassette-type heat exchangers with a reverse flow system for options 2 and 3.

4.4 Distributed heat pumps

4.4.1 Description

In nature, the heat transfers direction is from hot to cold. It is however possible to switch this direction with a heat engine called a heat pump. A refrigerant absorbs the heat in a cold environment by evaporating. The vapour is compressed and releases its heat in a heat exchanger by condensing. The energy of the compressor is added to the energy absorbed by the evaporator to the condenser, which means that the electrical energy required for the operation of the compressor is recovered in heating mode. The diagram showing the operation of a heat pump is shown in Figure 5.

4.4.2 NPV and energy savings

Table 4-9 and Table 4-10 presents the information used to calculate the NPV as well as the energy and financial results of the measure.

Table 4-9 : Information used to calculate the NPV for distributed heat pumps

Cost of the measure	Annual cost of maintenance	Life expectancy	Savings on the energy bill
\$124,800	\$10,391	25 years	-\$9,541

Table 4-10: Summary of the results for distributed heat pumps

NPV over 40 years	Energy savings	GHG savings
-\$839,537	35.4 GJ 0.7%	35.4 tons CO ₂ eq/year 26.5%

The lack of complementarity in the loads, combined to the consumption of the heat pump compressors, allows gas consumption reduction, which is compensated by an increase in electricity consumption for the heat pump compressors in heating and cooling modes. Since electricity is more expensive than gas for the same amount of energy, the energy bill increases by \$9,541. However, this measure allows to save 35.4 tons of CO₂ eq per year. Despite these significant GHG savings, this measure is not recommended because of the NPV of -\$839,537 over 40 years.

4.5 Heat recovery on the chiller

4.5.1 Description

A chiller is a heat pump that absorbs the heat from the interior air of a building in order to cool it down. The heat absorbed by the chiller is usually released in a cooling tower, which releases the heat in the outdoor air. It is possible to recover this heat to warm up the building, the domestic hot water and process heat. The hot water loop must operate in a low temperature in order for the chiller to be able to condense the refrigerant. The decrease of the temperature generates a decrease in the efficiency of the equipment.

The heat recovery on the chiller is an interesting measure when the heating and cooling demands are simultaneous, as for distributed heat pumps. In this model, there are very few or no simultaneous loads of heating and cooling, which limits the advantages of this measure.

4.5.2 NPV and energy savings

Table 4-11 and Table 4-12 display the information used to calculate the NPV as well as the energy and financial results of the measure.

Table 4-11: Information used to calculate the NPV for heat recovery on the chiller

Cost of the measure	Annual cost of maintenance	Life expectancy	Savings on the energy bill
\$35,000	\$1,050	40 years	-\$3,427

Table 4-12 : Summary of the results for heat recovery on the chiller

NPV over 40 years	Energy savings	GHG savings
-\$180,335	-105.8 GJ -2.1%	2.6 tons CO ₂ eq/year 1.9%

A system of heat recovery chiller increases the energy consumption in comparison to the base model. Indeed, the heating demand does not coincide with the cooling load. The set temperature at the condenser of the chiller is increased in order to recover the heat to heat up the building. This leads to a decrease in the COP of the chiller and thus an increase in the electricity consumption of the chiller. The monetary savings for gas are lower than the increase of the energy bill caused by the decrease in the COP of the chiller. The NPV of this measure is of -\$180,335. It is therefore not recommended to recover heat on the chiller.

4.6 Air-to-air heat pumps

4.6.1 Description

Air-to-air heat pumps, or aérothermia, are used to absorb the heat of the outdoor air and transfer it in buildings. A refrigerant evaporates at low outdoor temperatures by absorbing heat. These heat pumps operate at temperatures as low as -30°C with a COP slightly above 1. When outdoor temperatures get close to the freezing point, frost can form and limit the operation of the evaporator. Energy is thus needed to melt this frost, either through the reversible cycle of the heat pump or a resistive cycle.

The low COP at low temperature and the defrosting cycle undermine the performances of an aéraulic heat pump. Another factor that contributes to lessening the appeal of this measure is that the NECB 2011 demands that the reference building be equipped with heat pumps if the proposed building is. The COP of devices of the NECB standard is also very interesting, which means that this measure allows few or no energy savings in comparison to the standard. However, it could have an economic advantage, as one of its objectives is to keep a positive NPV over 40 years.

Table 4-13 shows the possible monetary savings depending on the total capacity of the installed air-to-air heat pumps. A capacity of 90kW was chosen to assess the energy and GHG savings as well as the NPV for this measure.

Table 4-13: Monetary savings per total capacity of air-to-air heat pumps

	Installed capacity		
	45kW	90kW	135kW
Savings	\$8,028	\$10,291	\$11,271

4.6.2 NPV and energy savings

Table 4-14 and Table 4-15 display the information used to calculate the NPV as well as the energy and financial results of the measure.

Table 4-14: Information used to calculate the NPV for air-to-air heat pumps

Cost of the measure	Annual cost of maintenance	Life expectancy	Savings on the energy bill
\$90,000	\$3,000	20 years	\$10,291

Table 4-15: Summary of the results for air-to-air heat pumps

NPV over 40 years	Energy savings	GHG savings
\$69,595	1 090 GJ 21.9%	75.9 tons CO ₂ eq/year 56.8%

Air-to-air heat pumps shows attractive energy savings in comparison with the base model. With a positive NPV, this measure is recommended for Option 2 in order to reduce GHG emissions and Option 4 in order to improve the energy efficiency.

4.7 Variable Refrigerant Flow (VRF)

Variable refrigerant flow systems consist in using refrigerant pipes to supply terminal heat pumps. It replaces a classic system of hot and chilled-water loops (or mixed) with a heat-transfer fluid and heat exchangers. The terminal heat pumps can be used in heating and cooling mode.

This type of system is recognized for its significant capital investment but also for its impressive efficiency. Their energy savings are greater than for standards HVAC systems but the maintenance costs are also higher.

The PSPC requirements for halocarbon are the regular inspections of cooling components and refrigeration piping. They render VRF systems little practical and costly in operation and maintenance. It is for this reason that this type of system is excluded from this study.

4.8 Peak electricity load management

4.8.1 Description

Peak electricity load management enables savings on the energy bill by moving the peak demand to periods of lower demand. It usually cannot allow energy savings and sometimes leads to an increase in energy consumption.

Hydro-Québec's Rate M is an incentive rate for the building's consumption profile. This rate is detailed in the table below.

Table 4-16: Hydro-Québec's Rate M

Rate M 2019		
Minimum monthly fees (\$)		36.99
Consumption		
Block 1	\$/kWh	0.0503
	kWh max	210,000
Block 2	\$/kWh	0.0373
Power:		
fees \$/kW		14.58
Minimum billing demand: Highest power demand or 65% of highest power demand in winter		

With the Rate M, a cost of consumption and power is billed every month. The billed power is the highest power demand of the month with a minimum billing demand that is equivalent to 65% of the highest power demand during winter. This minimum demand causes a significant additional premium to the electricity bill.

Figure 7 shows the monthly highest power demand compared to the minimum billing demand when the building is heated with electricity. It can be noted that from May to September, the minimum demand is billed because it is greater than the billing demand. Optimizing the power demand in winter would not only reduce the costs of power in winter but also the minimum demand that is billed from May to September.

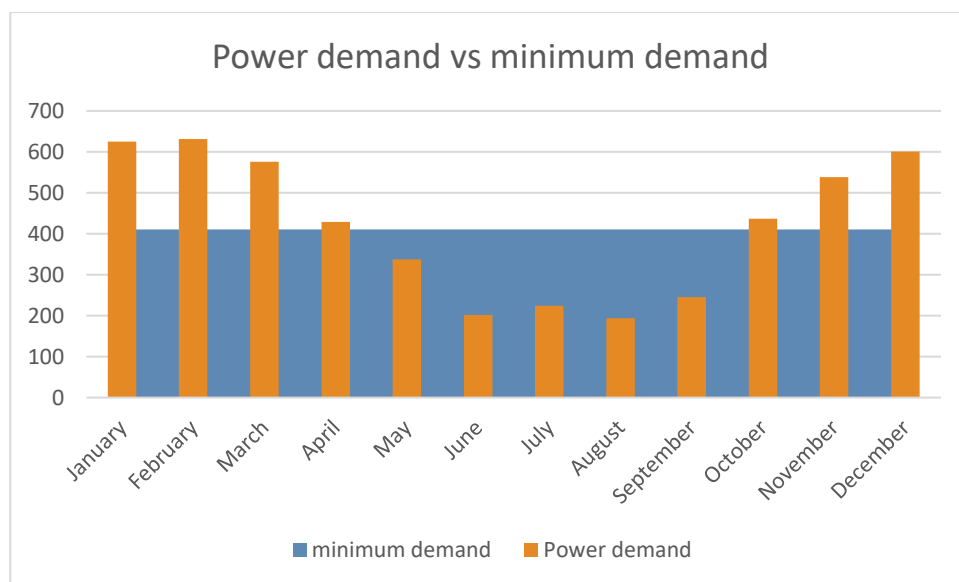


Figure 7: Power demand vs minimum demand

The efficient management of on-peak electricity has a major impact on the building's power demand when it is heated with electricity. A simple strategy is to start up the HVAC systems to gradually reach the set point before occupancy increases in the early part of the morning.

This measure allows the decrease of power demand but it also increases the energy consumption. A power demand profile study is thus needed before the implementation of this measure.

4.8.2 Energy savings

The 0h scenario is the one where the hot water loop goes from natural gas to electricity. The 2h scenario is the one where a management strategy of the 2-hour peak is applied. Figure 8 shows the boiler demand profile with peak management.

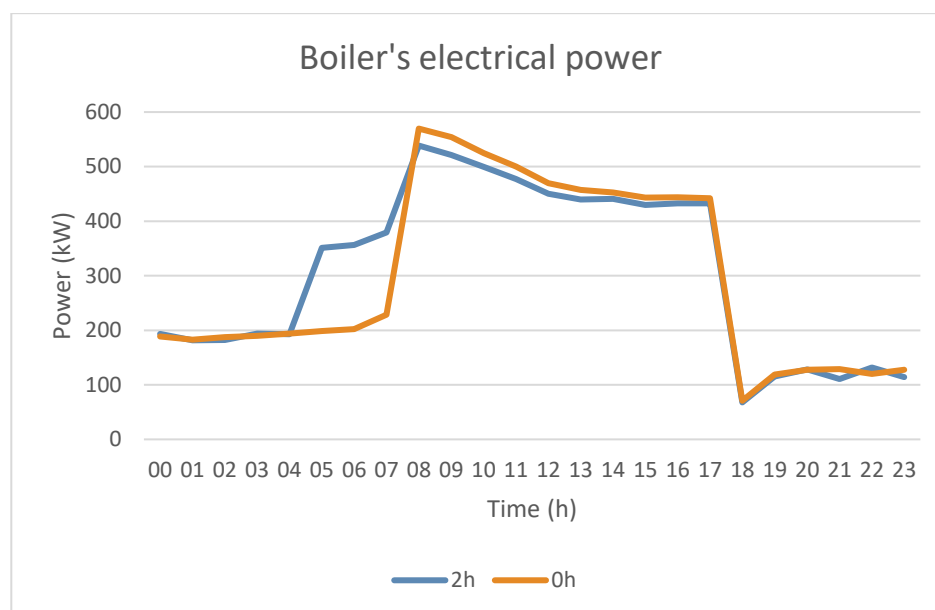


Figure 8: Boiler demand profile with peak management

The energy consumption of the boiler increases between 5am and 7am whereas it slightly decreases for the rest of the occupancy period.

The effect on the energy consumption is minimal with an increase of approximately 14,121 kWh or 1.7% of the heating consumption. It is compensated by a decrease in the power demand of 24,6 kW or 4.0%.

The savings on the power demand will have an impact on the energy bill.

4.8.3 NPV and energy savings

Peak management allows a decrease of the energy bill, as shown in Table 4-17.

Table 4-17: Annual savings with peak load management

	0h	2h	Savings
Electricity	\$142,421	\$136,520	4.1%

Savings of \$5,901 per year are possible by using this strategy of peak load management.

Table 4-18 and Table 4-19 display the information used to calculate the NPV as well as the energy and financial results of the measure.

Table 4-18: Information used to calculate the NPV for peak load management

Cost of the measure	Annual cost of maintenance	Life expectancy	Savings on the energy bill
\$0	\$0	-	\$5,901

Table 4-19 : Summary of the results for peak load management

NPV over 40 years	Energy savings	GHG savings
\$190,667	-0.9 GJ -0.3%	0 tons CO ₂ eq/year 0%

The measure of peak load management allows a decrease in the peak power, even if the energy consumption of the building has a 0.3% increase. It allows savings of \$5,901 on the bill and an NPV of \$190,667. This measure has no implementation or maintenance cost. We recommend this measure for all the options.

4.9 Short-term thermal storage

4.9.1 Description

Thermal storage moves the peak power demand to off-peak periods. A solid or liquid material is used to store heat and cold. Energy is stored in sensitive form by increasing the temperature of the material or in latent form by taking advantage of the phase change of the material. Sensitive storage generally requires much more volume and mass of materials than latent storage, but the latter is more complex to design and operate. Materials that change phase at temperatures of interest for HVAC systems have drawbacks. Some are organic with a limited number of charge and discharge cycles, others are inorganic and generally change phase at very high temperatures. Water is an interesting phase change material for cooling because its phase change temperature is 0°C from liquid to solid. This temperature can be reached by standard cooling systems.

Thermal storage makes it possible to avoid paying penalties on the energy bill because Hydro-Québec's Rate M charges the peak demand at a minimum of 65% of the demand in the winter of that year but it does not enable energy savings.

Some of the equipment is readily available on the market. For example, Thermelect warms up bricks using electrical resistances at a temperature of 760°C. Air circulates through the brick to heat a hydronic loop. Figure 9 shows the performance curves of the 80-kW model.

MODEL 9180 (80kW Storage Module)

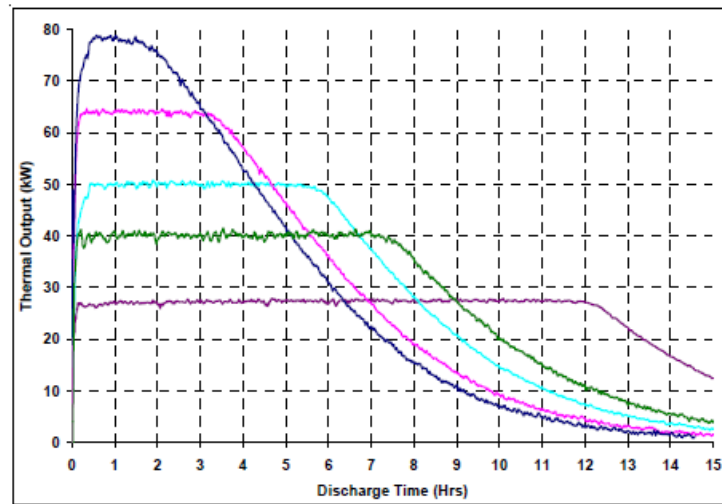


Figure 9: Thermelect performance curves

One of the drawbacks of this device is that it does not provide heat at full capacity on a long period of time. The 80 kW capacity is only available for 2 hours. Other techniques can overcome this problem, such as stratified water tanks.

A common example of stratified hot water tank is the residential one. Cold water enters from the bottom of the tank and pushes the hot water upwards. The temperature at the outlet of the tank is constant, which allows a better control of the temperature in the hot water loop.

An example of a tank of 22,7m³ with a maximum storage of 1,265 kW of heat, a recharge power of 100 kW and a discharge of 115 kW. Vertical stratified tanks could require a significant ceiling height. The height/diameter ratio is an important factor for good stratification.

The thermal storage would allow the building to have a better resilience, and it could be used in heating or air conditioning mode. It would also be useful in anticipation of an electrical rate change that would take the "time of use" consumption into account. There will be much floor area available in the underground.

4.9.2 Energy savings

The day that is modelled is the one where the power demand is the most important for a 100% electrical system.

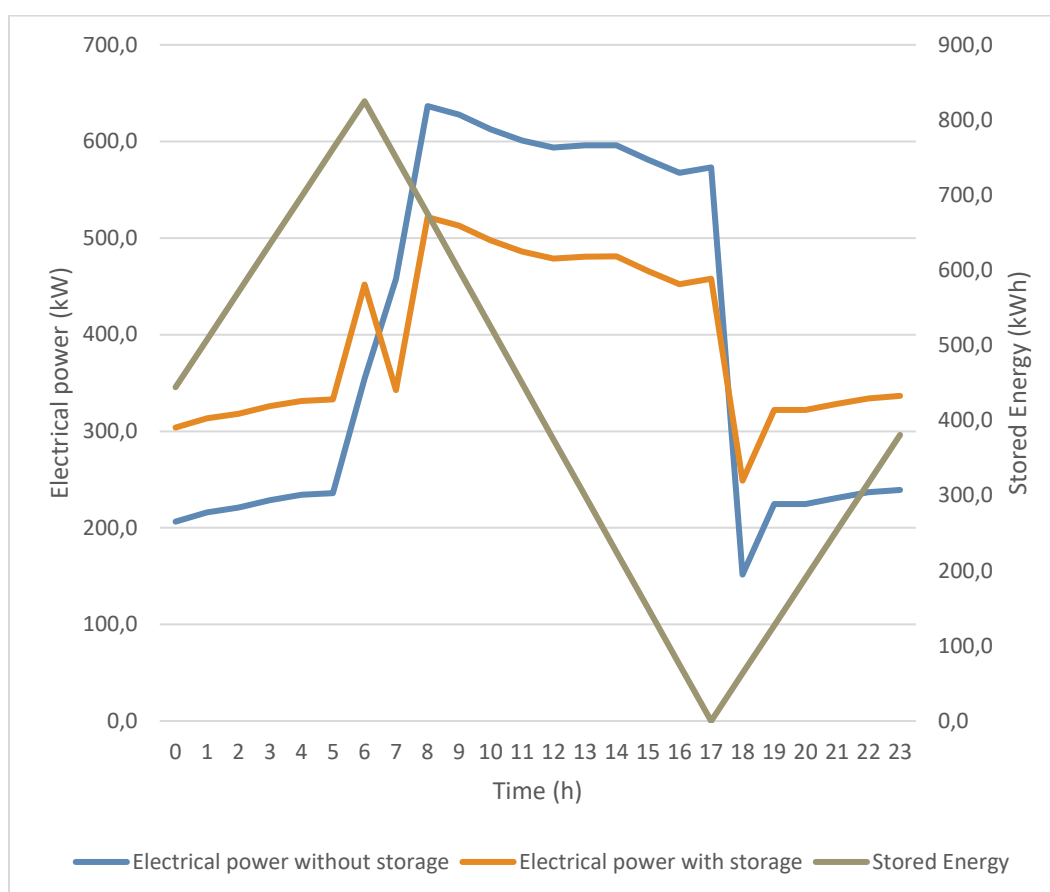


Figure 10: Example of thermal storage

The storage device is at its full capacity at 3am. A decrease in power demand occurs until the building's set point changes at 8am. The tank is sized so as not to be able to provide heat at the end of the day at 5pm.

There are no energy savings but the decrease in power demand allows for savings on the energy bill. The M Rate penalties are reduced from \$12,164 to \$9,130. When adding the decrease in power demand to \$14.58/kW, the total of annual savings is \$12,626.

4.9.3 NPV and energy savings

As this type of installation is unusual, it is possible to request grants to participate in a demonstration project with Hydro-Québec. The grant would cover part of the capital investment, the measurement costs, and the study and engineering costs.

The current modelling needs a storage volume of 27.2m³ for a capital investment of \$255,000.

Table 4-20: Information used to calculate the NPV for short-term thermal storage

Cost of the measure	Annual cost of maintenance	Life expectancy	Savings on the energy bill
\$255,000	\$3,825	40 years	\$12,626

Table 4-21: Summary of the results for short-term thermal storage

NPV after 40 years	Energy savings	GHG savings
\$26,898	0 GJ 0%	0 tons CO ₂ eq/year 0%

This measure does not allow for energy savings but it moves the power demand, which has a great impact on the bill. The cost of the measure is high but grants for a demonstration project with Hydro-Québec could make it even more attractive. The NPV is positive from the 36th year. With a grant of \$100,000, the NPV becomes positive in the 21st year. This measure is recommended for Option 3.

4.10 Solar thermal collectors for domestic hot water

Solar thermal collectors can preheat a hot water loop using solar energy. The buildings' roof is usually used to install the collectors. Figure 11 shows the shade projected from the Aldred building on the model's roof at the winter solstice, at the equinoxes and at the summer solstice.

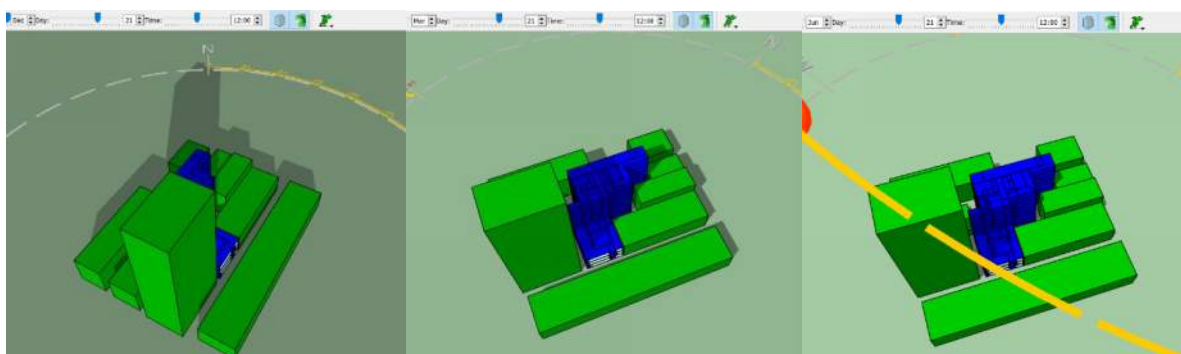


Figure 11: Shade at the winter solstice (left), equinoxes (middle) and summer solstice (right) at noon

There will be very few solar energy that can be captured throughout the year. Thus, this measure, just like a solar wall, is not recommended for this location.

4.11 Geothermal pile foundations

There is little or no land available for drilling in this project. For this reason, the drilling of geothermal boreholes is not a feasible solution for this project. A 30-metre-thick burden can be found beneath the proposed building, and piles will be needed to stabilize the building's foundations. One solution would be to use the space beneath the building, and the piles could be used as heat exchangers. The advantage of this measure is the saving of geothermal boring costs.

Here is a description of geothermal pile foundations:

The structural piles are transformed into heat exchangers by adding one or more plastic pipe loops over their full length. During the construction of geothermal pile foundations, the diameter and the length of the piles must be conceived in a way that makes them resist the structural loads that are applied and not increased to comply with the geothermal requirements. During the construction of the piles, the ground is initially dug above the ground, and a stiff and welded reinforcement cage is inserted. Multiple closed loops of absorber pipes made of high density polyethylene plastic (usually

with a diameter of 25mm and a wall thickness of 2-3mm) are then uniformly fixed around the inside of the reinforcement cage over the full depth.

The loops are made off-site and filled with a heat-transfer fluid (water with antifreeze or saline solution) and equipped with a lock-up valve and a pressure gauge on top of the pile cage. Before covering with concrete, the absorber pipes are pressurized for an integrity test and to avoid collapse due to the liquid concrete. This pressure is maintained until the concrete solidifies and reapplies before the absorber pipes are finally closed.

While covering with concrete, the tops of the pipes are retained to avoid damaging them, and a tremie pipe is placed at the base of the pile. Concrete is poured through the tremie and is lifted when the concrete fills the pile. Once the pile is complete, the absorber pipes are connected to a heat exchanger, which is then connected to a secondary pipe system in the floors and the walls of the building (Pile Design and Construction Practice, Tomlinson et Woodward, 2008).

Although multiple academic references look into the situation, only residential projects were identified during researches. A value with a depth from 40 to 60 W/m was given for the study of a new university building in Scotland (James Weir Building)².



Figure 12: Geothermal pile foundations (Gordeyev et al.)

When using this value, a thermal power between 120 W and 180 W could be provided by the piles. With a distance of 4m between the piles used as heat exchangers, hundreds of piles could provide power between 12 kW and 18 kW, which represents roughly 2.5% of the heating and cooling demand.

A discussion with the drillers and structural engineers should be planned to assess the feasibility of such a measure.

4.12 Geothermal boreholes

Geothermal boreholes can exchange heat between a heat-transfer fluid loop and the ground. Geothermal system performances are attractive when these boreholes are coupled with heat pumps. However, the drilling depth generates significant capital investments.

² http://www.esru.strath.ac.uk/EnvEng/Web_sites/11-12/GROUP2/MyWebSpace/index.html

Following a discussion with the client, there are 30 to 40 m of burden before reaching the rock, and a geothermal drilling usually has a depth of 150 m in Quebec. The burden's thermal characteristics are less interesting than the rock's, which diminishes the energy and financial advantages of this measure. A thermal response test will be needed to assess the viability of this measure.

The base building already reaches the energy performance target in comparison with NECB 2011. For these reasons, and until the soil properties are known, this measure is not recommended.

4.13 Énergir CCU

Énergir urban heating and cooling (ÉCCU) will offer a heating and cooling network with different temperature options in the area of the project in the upcoming months, or even years. These options include steam, hot water at 71°C, hot water at a low temperature of 37°C coupled with heat pumps provided by ÉCCU as well as chilled water from 10°C to 6.7°C depending on their location and height. Different sources of energy are or will be available to power the ÉCCU network. The district heating network is currently supplied by natural gas boilers, and electric boilers are expected in the near future. Énergir also offers so-called renewable natural gas produced from biomethanization of food waste. However, it was agreed that since this energy is not produced on site, it would not be considered as renewable. ÉCCU's ordinary GHG emissions should therefore be considered as natural gas emissions.

Steam will be available in the area, which would decrease the power demand for humidification.

A first estimation was requested from ÉCCU to roughly estimate the possible costs and savings of this heat source. The offer considers that the network is deployed in the area and that ÉCCU will support the infrastructure costs of the network. The hot water supply or steam and cold water supply could be between \$0.10/kWh and \$0.16/kWh. The equivalent for natural gas heating would be a rate between \$1.00/m³ and \$1.70/m³.

Table 4-22: Energy bill savings for ÉCCU

	\$0.10/kWh	\$0.13/kWh	\$0.16/kWh
Energy bill savings	-\$35,720	-\$69,962	-\$104,204

Table 4-23: Information used to calculate the NPV for ÉCCU

Cost of the measure	Annual cost of maintenance	Life expectancy
-\$515,450	-\$10,309	40 years

Table 4-24: Summary of the results for ÉCCU

NPV after 40 years \$0.10/kWh	NPV after 40 years \$0.13/kWh	NPV after 40 years \$0.16/kWh	Energy savings	GHG savings
-\$298,935	-\$1,405,338	-\$2,511,736	0 GJ 0%	133,6 tons CO ₂ eq/year 100%

The main advantage of this measure is to avoid investing in a boiler room. As the cost of capital investment is supported by Énergir, the cost of heating is bound to double or triple in comparison with an ordinary customer who uses natural gas heating. The NPV is negative at 40 years with an average energy cost of \$0.13/kWh. It crosses the negative threshold in its 10th year. Therefore, this measure is not recommended.

4.14 Summary of individual measures

Table 4-25: Summary of individual measures

Measure	Energy bill savings (\$)	Energy savings (GJ)	Energy savings (%)	NPV after 40 years (\$)	GHG savings (tons CO ₂ eq/year)
Improved envelope - CNEB 2017	2,402	182	3.7	-72,502	9.5
Improved envelope -Walls R30	2,374	157	3.2	-26,500	7.2
Heat wheel	6,148	213	4.3	144,698	5.2
Cassette with a reverse flow system	7,398	271	5.4	116,670	6.2
Distributed heat pumps	-9,541	35	0.7	-839,537	35.4
Heat recovery on the chiller	-3,427	-105.8	-2.1	-180,335	2.6
Air-to-air heat pumps	10,291	1,090	21.9	69,595	75.9
Peak electricity load management	5,901	-0.9	-0.3	190,667	0
Short-term thermal storage	12,626	0	0	26,898	0
Solar collectors for domestic hot water	This measure is not recommended due to the shade created on the roof and the walls of the proposed building by the neighbouring buildings.				
Geothermal pile foundations	This measure is only for a qualitative study.				
Geothermal boreholes	This measure is only for a qualitative study.				
Énergir CCU	[-35,720; -104,204]	0	0	[-298,935; -2,511,736]	133.6

5. Option 1: NECB - 28%

5.1 Description

The mechanical system in option 1 is a dedicated fresh air system with 4-pipe fan coil units powered by a hot-water loop and a chilled-water loop. The fans and pumps are equipped with variable-speed drives.

There is heat recovery on the exhaust air with a 50% sensible efficiency only.

The hot-water loop is supplied by two condensing boilers for a total capacity of 530 kW with 89% efficiency.

The chilled-water loop is powered by a centrifugal chiller of 545 kW with a COP of 5.8 and an adiabatic fluid cooler of 645 kW.

The heat resistance of the characteristics of the building's envelope complies with the recommendations of the NECB 2011 and 2015 standards.

A program of peak power management is applied to reduce the power demand of the building.

5.2 Energy efficiency in comparison with the reference building in the NECB 2011

Table 5-1: Results of option 1's energy efficiency in comparison with the reference building in the NECB 2011

Energy savings	GHG savings	Utility bill savings
3,238 GJ	81,7 tons CO ₂ eq/years	\$72,957
39.4%	37.9%	40.3%

Option 1's TEDI is 62.4 kWh/m². This option would not get the building the Zero carbon certification.

Option 1 will be used as a reference scenario to calculate the NPV of the two other options.

6. Option 2: NECB 2011 - 28% and positive NPV after 40 years

6.1 Description

It is the same mechanical concept as option 1 but with additional energy efficiency measures:

- Heat recovery on exhaust air:
 - An efficient cassette-type exchanger that is 90% sensible and 70% latent is installed as a replacement for the efficient cube that is 50% sensible;
- More efficient boiler:
 - Two condensing boilers for a total capacity of 380 kW efficient at 94.5% are installed as a replacement for a condensing boiler that is 89% efficient;
- Air-to-air heat pumps:
 - Air-to-air heat pumps of a total capacity of 90 kW are installed.

The chiller has a capacity of 480 kW and the adiabatic cooler has a capacity of 565 kW.

6.2 Energy efficiency in comparison with the reference building in the NECB 2011

The reference building in the NECB 2011 is equipped with air-to-air heat pumps when the proposed building is equipped with heat pumps. This is why the option 2 reference building's HVAC system was modified to include air-to-air heat pumps, in compliance with section 8.4.4.14 of the NECB 2011. The table below shows the option 2 energy efficiency results compared with the reference building.

Table 6-1: Option 2 energy efficiency results in comparison with the reference building in the NECB 2011

Energy savings	GHG savings	Utility bill savings
2,685 GJ 40.7%	18,8 tons CO ₂ eq/year 24.6%	\$75,624 45.1%

Option 2's TEDI is 53.3 kWh/m². This option would not get the building the Zero carbon certification.

6.3 Energy efficiency in comparison with option 1

The table below shows option 2's energy efficiency results compared with option 1.

Table 6-2: Option 2 energy efficiency results compared with option 1

Energy savings	GHG savings	Utility bill savings
1,059 GJ 21.3%	76 tons CO ₂ eq/year 75.9%	\$16,025

6.4 NPV

Table 6-3: Information used to calculate the NPV for option 2

Cost of the measure	Annual cost of maintenance	Equipment life expectancy	Savings on the energy bill	NPV after 40 years
\$172,000 \$	\$4,785	40 years for storage	\$16,025	\$92,500

The applied measures, notably the addition of 90 kW of aeraulic heat pumps, can reduce the energy bill. This option reaches a positive NPV after 40 years.

7. Option 3: Carbon-neutral

7.1 Description

It is the same mechanical concept as option 1 but three measures were added:

- Heat recovery on exhaust air:
 - An efficient cassette-type exchanger that is 90% sensible and 70% latent is installed as a replacement of the efficient cube that is 50% sensible.
- Electric heating:
 - On the hot-water loop, an electric boiler of 425 kW that is 100% efficient is installed as a replacement of a condensing boiler fueled with gas that is 89% efficient. As for the heating of domestic hot water, an electric water heater that is 100% efficient replaces the gas heater that is 80% efficient.
- Short-term thermal storage.

The chiller has a capacity of 425 kW and the adiabatic fluid cooler has a capacity of 565 kW.

7.2 Energy efficiency

With this option, a new reference building had to be modelled to take into account the energy source of electric heating as a replacement of natural gas. The table below shows the option 3 energy efficiency results compared with the reference building.

Table 7-1: Option 3 energy efficiency results in comparison with the reference building in the NECB 2011

Energy savings	GHG savings	Utility bill savings
3,243 GJ 42.7%	0 tons CO ₂ eq/year 0%	\$104,887 45.5%

Option 3's TEDI is 51.5 kWh/m². This option would not get the building the Zero carbon certification.

7.3 Energy efficiency in comparison with option 1

The table below shows the option 3 energy efficiency results compared with option 1.

Table 7-2: Option 3 energy efficiency results in comparison with option 1

Energy savings	GHG savings	Utility bill savings
622.3 GJ 12.5%	134 tons CO ₂ eq/year 100%	-\$17,351

7.4 NPV

Table 7-3: Information used to calculate the NPV for option 3

Cost of the measure	Annual cost of maintenance	Equipment life expectancy	Savings on the energy bill	NPV after 40 years
\$297,000	\$5,610	40 years for storage	-\$17,351	-\$1,064,065

Carbon neutrality has a cost. Passing from a natural gas heating system to electricity increases the cost of the energy bill, and all the proposed measures do not reach a positive NPV after 40 years.

8. Option 4: Carbon-neutral with air-to-air heat pumps

8.1 Description

It is the same mechanical concept as option 1 with four measures were added:

- Heat recovery on exhaust air:
 - An efficient cassette-type exchanger that is 90% sensible and 70% latent is installed as a replacement of the efficient cube that is 50% sensible.
- Electric heating:
 - On the hot-water loop, an electric boiler of 425 kW that is 100% efficient is installed as a replacement of a condensing boiler fueled with gas that is 89% efficient. As for the heating of domestic hot water, an electric water heater that is 100% efficient replaces the gas heater that is 80% efficient.
- Short-term thermal storage.
- Air-to-air heat pumps:
 - The air-to-air heat pumps capacity of 90 kW was determined using data from Table 8-1.

Table 8-1: Option 4 NPV depending on the installed air-to-air heat pumps capacity

	Capacity (kW)						
	0	45	90	135	180	225	270
Saving vs Option 3	\$0	\$3,179	\$8,103	\$11,718	\$14,223	\$15,857	\$17,054
Saving vs Option 1	-\$17,351	-\$14,172	-\$9,248	-\$5,633	-\$3,128	-\$1,494	-\$297
NPV vs Option 1	-\$1,064,065	-\$1,119,936	-\$1,092,280	-\$1,106,941	-\$1,157,472	-\$1,236,131	-\$1,328,899

The chiller has a capacity of 425 kW and the adiabatic fluid cooler has a capacity of 565 kW.

8.2 Energy efficiency

With this option, a new reference building had to be modelled to take into account the energy source of electric heating as a replacement of natural gas and to be equipped with heat pumps because the proposed has air-to-air heat pumps installed. The table below shows the option 4 energy efficiency results compared with the reference building.

Table 8-2: Option 4 energy efficiency results in comparison with the reference building in the NECB 2011

Energy savings	GHG savings	Utility bill savings
3 732 GJ	0 tons CO ₂ eq/year	\$71,160
40.9%	0%	37.9%

Option 4's TEDI is 51.5 kWh/m². This option would not get the building the Zero carbon certification.

8.3 Energy efficiency in comparison with option 1

The table below shows the option 4 energy efficiency results compared with option 1.

Table 8-3: Option 7 energy efficiency results in comparison with option 1

Energy savings	GHG savings	Utility bill savings
1,240 GJ 24.9%	134 tons CO ₂ eq/year 100%	-\$9,248

8.4 NPV

Table 8-4: Information used to calculate the NPV for option 4

Cost of the measure	Annual cost of maintenance	Equipment life expectancy	Savings on the energy bill	NPV after 40 years
\$414,128	\$8,610	40 year for storing 20 years for air-to-air heat pumps	-\$9,248	-\$1,092,280

Option 4 offers better savings than Option 3 on the energy bill. However, when taking the costs of capital investment and maintenance of air-to-air heat pumps into account, the NPV is slightly lower. This option is the best compromise to reach carbon neutrality and a good energy efficiency. It offers resilience to climate changes and the possible rate changes that could occur in the upcoming years.

9. Recommendations

The objective of this study is to propose scenarios to allow minimum savings of 28% in comparison with the NECB 2011. Option 1 achieved this objective with simple and inexpensive energy efficiency measures. The main reasons are the low occupancy of the building and a lower fenestration than the reference building in the NECB 2011. Option 2 must exceed the energy savings of Option 1 and obtain a positive NPV after 40 years compared to a base scenario. Air-to-air heat pumps has greatly contributed to reducing energy consumption and GHG emissions. Option 3 aims at better efficiency than Option 2 and requires carbon neutrality. This goal is achieved by using electricity as the sole source of energy, but it significantly increases the energy bill due to the power demand in winter. A highly efficient heat exchanger and short-term thermal storage have reduced the bill and improved the energy efficiency of the building. Option 4 is the option recommended by this study.

The recommended measures are:

Option 2

- Heat wheel
- More efficient condensing boilers
- Air-to-air heat pumps (90 kW)

Option 3

- Cassette-type heat exchanger
- Electric boilers
- Short-term thermal storage

Option 4

- Cassette-type heat exchanger
- Electric boilers
- Short-term thermal storage
- Air-to-air heat pumps (90 kW)

Here is a summary table of the options:

Table 9-1: Summary of the options

	Option 1	Option 2	Option 3	Option 4
Description	Gas boilers Recovery 50% eff.	Air-to-air heat pumps (90 kW) Gas boiler Recovery 90/70% eff.	Electric boiler Thermal storage	Air-to-air heat pumps (90 kW) Electric boiler Thermal storage
Cost of capital investment in the systems	\$665,000	\$837,000	\$962,000	\$1,079,128
Energy bill	\$108,211	\$92,186	\$125,563	\$116,602
Cost after 40 years	\$4,993,440	\$4,524,440	\$5,984,520	\$5,743,208
NPV after 40 years vs Option 1	-	\$92,500	-\$1,064,065	-\$1,092,280
GHG emitted (tCO₂eq)	133.6	57.7	0	0
\$/tonne of saved GHG	-	-\$30	\$199	\$204
Advantages	+ Low capital investment	+ Compromise between Options 1 and 3	+ Carbon-neutral	+ Carbon-neutral + Most efficient option
Drawbacks	– High GHG emissions – Least efficient option	– GHG emissions	– Power demand management – High energy bill	– Power demand management – High energy bill – Lower NPV than option 3

The NPV of option 4 is lower than option 3's despite a lower cost over 40 years because the cost of maintenance and replacement of air-to-air heat pumps is included in the NPV but not in the cost over 40 years.

None of the options would reach the TEDI target of 34 kWh/m² to achieve the Zero carbon certification. The heat gains due to the low occupancy density, outlet loads and lighting must be compensated by the heating system, which increases the TEDI.

Appendix 1

Detailed energy results of the individual measures

Improved envelope – NECB 2017

The energy savings of this measure are shown in the table below.

Table 1-1: Energy savings for the envelope

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Base	Envelope		
Gas	Heating (natural gas)	2,590.5	2,399.4	191.1	7.4
	Domestic hot water	115.7	105.7	10.0	8.6
	Total gas	2,706.1	2,505.1	201.0	7.4
Electricity	Lighting	1,145.9	1,145.9	-	-
	Equipment	205.7	205.7	-	-
	Humidification	413.5	413.4	0.1	-
	Pumps	21.0	21.1	(0.1)	-0.5
	Cooling	125.3	133.4	(8.1)	-6.5
	Heat rejection	8.3	8.8	(0.6)	-6.7
	Fans	357.0	357.2	(0.2)	-0.1
	Total electricity	2,276.7	2,285.5	(8.8)	-0.4
Total		Total	4,790.6	19.2	3.9

The envelope in the NECB 2017 standard shows energy savings of 3.9% in comparison with the base model.

Improved envelope – Wall R30

The energy savings of this measure are shown in the table below.

Table 2-1: Energy savings for the envelope

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Base	Proposed		
Gas	Heating (natural gas)	2,590.5	2,445.6	144.9	5.6
	Domestic hot water	105.7	105.7	-	-
	Total gas	2,696.2	2,551.3	144.9	5.4
Electricity	Lighting	1,145.9	1,145.9	-	-
	Equipment	205.7	205.7	-	-
	Humidification	413.5	413.5	0.1	-
	Pumps	21.0	20.6	0.4	1.9
	Cooling	125.3	125.1	0.2	0.1
	Heat rejection	8.3	8.2	-	0.4
	Fans	357.0	345.8	11.2	3.1
	Total electricity	2,276.7	2,264.9	11.8	0.5
Total		4,972.8	4,816.2	156.7	3.2

Changing the level of insulation of the walls from R23 to R30 helps make energy savings of 3.2% in comparison with the base model.

Heat recovery on exhaust air

- *Energy savings*

The table below shows the energy savings per source of energy consumption thanks to the implementation of a heat wheel and a cassette with a reverse flow system.

Table 3-1: Energy savings for heat recovery on exhaust air

		Total consumption (GJ)			Savings (GJ)		Savings (%)	
		Base	Proposed heat wheel	Proposed cassette with a reverse flow system	Proposed heat wheel	Proposed cassette with a reverse flow system	Proposed heat wheel	Proposed cassette with a reverse flow system
Gas	Heating (natural gas)	2,590.5	2,485.3	2,466.5	105.2	124.0	4.1	4.8
	Domestic hot water	105.7	105.7	105.7	-	-	-	-
	Total gas	2,696.2	2,591.0	2,572.2	105.2	124.0	3.9	4.6
Electricity	Lighting	1,145.9	1,145.9	1,145.9	-	-	-	-
	Equipment	205.7	205.7	205.7	-	-	-	-
	Humidification	413.5	282.0	235.0	131.5	178.6	31.8	43.2
	Pumps	21.0	23.6	24.7	-2.5	-3.7	-12.1	-17.6
	Cooling	125.3	145.2	153.3	-19.9	-28.1	-15.9	-22.4
	Heat rejection	8.3	9.7	6.7	-1.4	1.6	-17.5	19.4
	Fans	357.0	356.9	358.7	0.1	-1.7	-	-0.5
	Total electricity	2,276.7	2,169.0	2,130.0	107.7	146.7	4.7	6.4
Total		4,972.8	4,759.9	4,702.1	212.9	270.7	4.3	5.4

Distributed heat pumps

The table below shows the energy savings per source of energy consumption thanks to the implementation of heat recovery on the chiller.

Table 4-1: Energy savings for distributed heat pumps

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Base	Proposed		
Gas	Heating (natural gas)	2,590.5	1,876.1	714.4	27.6
	Domestic hot water	105.7	105.7	-	-
	Total gas	2,696.2	1,981.8	714.4	26.4
Electricity	Lighting	1,145.9	1,145.9	-	-
	Equipment	205.7	205.7	-	-
	Electric heating	-	414.4	(414.4)	-
	Humidification	413.5	579.0	(165.5)	-40.0
	Pumps	21.0	2.3	18.7	89.0
	Cooling	125.3	227.5	(102.2)	-81.6
	Heat rejection	8.3	31.5	(23.2)	-280.8
	Fans	357.0	349.4	7.6	2.1
	Total electricity	2,276.7	2,955.7	(679.0)	-29.8
	Total	4,972.8	4,937.4	35.4	0.7

Air-to-air heat pumps

The table below shows the energy savings per source of energy consumption in comparison with the base model thanks to the implementation of air-to-air heat pumps.

**Table 5-1: Energy savings for the installation of aeraulic heat pumps
of a total capacity of 90 kW**

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Base	Proposed		
Gas	Heating (natural gas)	2,590.5	1,060.0	1,530.5	59.1
	Domestic hot water	105.7	105.7	-	-
	Total gas	2,696.2	1,165.7	1,530.5	56.8
Electricity	Lighting	1,145.9	1,145.9	-	-
	Equipment	205.7	205.7	-	-
	Heating	-	535.0	(535.0)	-
	Humidification	413.5	235.0	178.6	43.2
	Domestic hot water	-	84.5	(84.5)	-
	Pumps	21.0	21.0	-	-
	Cooling	125.3	125.3	-	-
	Heat rejection	8.3	8.3	-	-
	Fans	357.0	357.0	-	-
	Total électricité	2,276.7	2,717.6	(440.9)	-19.4
Total		4,972.8	3,883.3	1,089.5	21.9

Heat recovery on the chiller

The table below shows the energy savings per source of energy consumption thanks to the implementation of heat recovery on the chiller.

Table 6-1: Energy savings for heat recovery on the chiller

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Base	Proposed		
Gas	Heating (natural gas)	2,590.5	2,538.0	52.4	2.0
	Domestic hot water	105.7	105.7	-	-
	Total gas	2,696.1	2,643.7	52.4	1.9
Electricity	Lighting	1,145.9	1,145.9	-	-
	Equipment	205.7	205.7	-	-
	Humidification	413.5	413.5	-	-
	Pumps	21.0	20.3	0.7	3.3
	Cooling	125.3	284.2	(158.9)	-126.9
	Heat rejection	8.3	8.4	(0.1)	-1.6
	Fans	357.0	356.9	0.1	-
	Total electricity	2,276.7	2,434.9	(158.3)	-7.0
Total		4,972.8	5,078.6	(105.8)	-2.1

Appendix 2

Detailed energy results of options 1, 2, 3 and 4

Option 1

- *Energy savings in comparison with the reference building in the NECB 2011*

The table below shows the energy savings per source of energy consumption for option 1 in comparison with the reference building in the NECB 2011.

Table 9-2: Energy savings for option 1 in comparison with the reference building in the NECB 2011

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Reference	Option 1		
Gas	Heating (natural gas)	4,239.3	2,590.5	1,648.8	38.9
	Domestic hot water	105.7	105.7	-	-
	Total gas	4,345.0	2,696.2	1,648.8	37.9
Electricity	Lighting	1,909.9	1,145.9	763.9	40.0
	Equipment	205.7	205.7	-	-
	Humidification	713.5	413.5	299.9	42.0
	Pumps	86.7	21.0	65.6	75.7
	Cooling	298.4	125.3	173.2	58.0
	Heat rejection	89.1	8.3	80.8	90.7
	Fans	562.7	357.0	205.7	36.6
	Total electricity	3,865.9	2,276.7	1,589.2	41.1
Total		8,210.9	4,972.8	3,238.1	39.4

Option 1 exceeds the energy savings target by 28% in comparison with the NECB 2011.

- *GHG savings in comparison with the reference building in the NECB 2011*

The table below shows the energy savings per source of energy consumption for option 1 in comparison with the reference building in the NECB 2011.

Table 9-3: GHG savings for option 1 in comparison with the reference building in the NECB 2011

		GHG emitted (tons CO ₂ eq)		Savings (tons CO ₂ eq)	Savings (%)
		Reference	Option 1		
Gas	Heating (natural gas)	210.12	128.40	81.72	38.9
	Domestic hot water	5.24	5.24	-	-
	Total gas	215.36	133.63	81.72	37.9
Electricity	Lighting	-	-	-	-
	Equipment	-	-	-	-
	Heating	-	-	-	-
	Domestic hot water	-	-	-	-
	Cooling	-	-	-	-
	Heat rejection	-	-	-	-
	Fans	-	-	-	-
	Total electricity	-	-	-	-
Total		215.36	133.63	81.72	37.9

Option 2

- *Energy savings in comparison with option 1*

The table below shows the energy savings per source of energy consumption for option 2 in comparison with option 1.

Table 9-4: Energy savings for option 2 in comparison with option 1

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Option 1	Option 2		
Gas	Heating (natural gas)	2,590.5	1,059.4	1,531.1	59.1
	Domestic hot water	105.7	105.7	-	-
	Total gas	2,696.2	1,165.1	1,531.1	56.8
Electricity	Lighting	1,145.9	1,145.9	-	-
	Equipment	205.7	205.7	-	-
	Heating	-	534.2	(534.2)	-
	Humidification	413.5	235.0	178.6	43.2
	Domestic hot water	-	84.5	(84.5)	-
	Pumps	21.0	24.8	(3.7)	-17.7
	Cooling	125.3	153.4	(28.1)	-22.4
	Heat rejection	8.3	6.7	1.6	19.3
	Fans	357.0	358.6	(1.6)	-0.5
	Total electricity	2,276.7	2,748.7	(472.0)	-20.7
Total		4,972.8	3,913.8	1,059.0	21.3

- *Energy savings in comparison with the reference building in the NECB 2011*

The table below shows the energy savings per source of energy consumption for option 2 in comparison with the reference building in the NECB 2011.

Table 9-5: Energy savings for option 2 in comparison with the reference building in the NECB 2011

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Reference	Option 2		
Gas	Heating (natural gas)	1,438.6	1,059.4	379.2	26.4
	Domestic hot water	105.7	105.7	-	-
	Total gas	1,544.3	116.1	379.2	24.6
Electricity	Lighting	1,909.9	1,145.9	763.9	40.0
	Equipment	205.7	205.7	-	-
	Heating	303.9	534.2	(230.4)	-75.8
	Humidification	883.8	235.0	648.8	73.4
	Domestic hot water	-	84.5	(84.5)	-
	Pumps	65.9	24.8	41.2	62.5
	Cooling	218.3	153.4	65.0	29.8
	Heat rejection	13.9	6.7	7.3	52.1
	Fans	1,453.2	358.6	1,094.6	75.3
	Total electricity	5,054.6	2,748.7	2,305.9	45.6
Total		6,599.0	3,913.8	2,685.1	40.7

- *GHG savings in comparison with option 1*

The table below shows the energy savings per source of energy consumption for option 2 in comparison with option 1.

Table 9-6: GHG savings for option 2 in comparison with option 1

		GHG emitted (tons CO ₂ eq)		Savings (tons CO ₂ eq)	Savings (%)
		Option 1	Option 2		
Gas	Heating (natural gas)	128.4	52.5	75.9	5.1
	Domestic hot water	5.2	5.2	-	-
	Total gas	133.6	57.7	75.9	56.8
Electricity	Lighting	-	-	-	-
	Equipment	-	-	-	-
	Heating	-	-	-	-
	Humidification	-	-	-	-
	Domestic hot water	-	-	-	-
	Pumps	-	-	-	-
	Cooling	-	-	-	-
	Heat rejection	-	-	-	-
	Fans	-	-	-	-
Total electricity		-	-	-	-
Total		133.6	57.7	75.9	56.8

- *GHG savings in comparison with the reference building in the NECB 2011*

The table below shows the energy savings per source of energy consumption for option 2 in comparison with the reference building in the NECB 2011.

Table 9-7: GHG savings for option 2 in comparison with the reference building in the NECB 2011

		GHG produced (tons CO2 eq)		Savings (tons CO2 eq)	Savings (%)
		Reference	Option 2		
Gas	Heating (natural gas)	71.3	52.5	18.8	26.4
	Domestic hot water	5.2	5.2	-	-
	Total gas	76.5	57.7	18.8	24.6
Electricity	Lighting	-	-	-	-
	Equipment	-	-	-	-
	Heating	-	-	-	-
	Humidification	-	-	-	-
	Domestic hot water	-	-	-	-
	Pumps	-	-	-	-
	Cooling	-	-	-	-
	Heat rejection	-	-	-	-
	Fans	-	-	-	-
	Total electricity	-	-	-	-
Total		76.5	57.7	18.8	24.6

Option 3

- *Energy savings in comparison with option 1*

The table below shows the energy savings per source of energy consumption for option 3 in comparison with option 1.

Table 9-8: Energy savings for option 3 in comparison with option 1

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Option 1	Option 3		
Gas	Heating (natural gas)	2,590.5	-	2,590.5	100.0
	Domestic hot water	105.7	-	105.7	100.0
	Total gas	2,696.2	-	2,696.2	100.0
Electricity	Lighting	1,145.9	1,145.9	-	0.0
	Equipment	205.7	205.7	-	0.0
	Heating	-	2,136.9	(2,136.9)	-
	Humidification	413.5	234.0	179.5	43.4
	Domestic hot water	-	84.5	(84.5)	-
	Pumps	21.0	24.7	(3.7)	-17.7
	Cooling	125.3	153.4	(28.1)	-22.5
	Heat rejection	8.3	6.7	1.6	19.3
	Fans	357.0	358.7	(1.7)	-0.5
	Total electricity	2,276.7	4,350.5	(2,073.8)	-91.1
Total		4,972.8	4,350.5	622.3	12.5

- *Energy savings in comparison with the reference building in the NECB 2011*

The table below shows the energy savings per source of energy consumption for option 3 in comparison with the reference building in the NECB 2011.

Table 9-9: Energy savings for option 3 in comparison with the reference building in the NECB 2011

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Reference	Option 3		
Gas	Heating (natural gas)	-	-	-	-
	Domestic hot water	-	-	-	-
	Total gas	-	-	-	-
Electricity	Lighting	1,909.9	1,145.9	763.9	40.0
	Equipment	205.7	205.7	-	0.0
	Heating	3,697.6	2,136.9	1,560.7	42.2
	Humidification	714.2	234.0	480.2	67.2
	Domestic hot water	84.5	84.5	-	-
	Pumps	48.1	24.7	23.3	48.5
	Cooling	291.9	153.4	138.5	47.4
	Heat rejection	86.3	6.7	79.6	92.3
	Fans	555.3	358.7	196.6	35.4
	Total electricity	7,593.4	4,350.5	3,242.9	42.7
Total		7,593.4	4,350.5	3,242.9	42.7

- *GHG savings in comparison with option 1*

The table below shows the energy savings per source of energy consumption for option 3 in comparison with option 1.

Table 9-10: GHG savings for option 3 in comparison with option 1

		GHG emitted (tons CO ₂ eq)		Savings (tons CO ₂ eq)	Savings (%)
		Option 1	Option 3		
Gas	Heating (natural gas)	128.4	-	128.4	100.0
	Domestic hot water	5.2	-	5.2	100.0
	Total gas	133.6	-	133.6	100.0
Electricity	Lighting	-	-	-	-
	Equipment	-	-	-	-
	Heating	-	-	-	-
	Humidification	-	-	-	-
	Domestic hot water	-	-	-	-
	Pumps	-	-	-	-
	Cooling	-	-	-	-
	Heat rejection	-	-	-	-
	Fans	-	-	-	-
Total electricity		-	-	-	-
Total		133.6	-	133.6	100.0

- *GHG savings in comparison with the reference building in the NECB 2011*

The table below shows the energy savings per source of energy consumption for option 3 in comparison with the reference building in the NECB 2011.

Table 9-11: GHG savings for option 3 in comparison with the reference building in the NECB 2011

		GHG produced (tons CO2 eq)		Savings (tons CO2 eq)	Savings (%)
		Reference	Option 3		
Gas	Heating (natural gas)	-	-	-	-
	Domestic hot water	-	-	-	-
	Total gas	-	-	-	-
Electricity	Lighting	-	-	-	-
	Equipment	-	-	-	-
	Heating	-	-	-	-
	Humidification	-	-	-	-
	Domestic hot water	-	-	-	-
	Pumps	-	-	-	-
	Cooling	-	-	-	-
	Heat rejection	-	-	-	-
	Fans	-	-	-	-
	Total electricity	-	-	-	-
Total		-	-	-	-

Option 4

- *Energy savings in comparison with option 1*

The table below shows the energy savings per source of energy consumption for option 4 in comparison with option 1.

Table 9-12: Energy savings for option 4 in comparison with option 1

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Option 1	Option 4		
Gas	Heating (natural gas)	2,590.5	-	2,590.5	100.0
	Domestic hot water	105.7	-	105.7	100.0
	Total gas	2,696.2	-	2,696.2	100.0
Electricity	Lighting	1,145.9	1,145.9	-	0.0
	Equipment	205.7	205.7	-	0.0
	Heating	-	1,517.9	(1,517.9)	-
	Humidification	413.5	235.0	178.6	43.2
	Domestic hot water	-	84.5	(84.5)	-
	Pumps	21.0	24.7	(3.7)	-17.7
	Cooling	125.3	153.4	(28.1)	-22.5
	Heat rejection	8.3	6.7	1.6	19.3
	Fans	357.0	358.7	(1.7)	-0.5
	Total electricity	2,276.7	3,732.4	(1,455.8)	-63.9
Total		4,972.8	3,732.4	1,240.4	24.9

- *Energy savings in comparison with the reference building in the NECB 2011*

The table below shows the energy savings per source of energy consumption for option 4 in comparison with the reference building in the NECB 2011.

Table 9-13: Energy savings for option 4 in comparison with the reference building in the NECB 2011

		Total consumption (GJ)		Savings (GJ)	Savings (%)
		Reference	Option 4		
Gas	Heating (natural gas)	-	-	-	-
	Domestic hot water	-	-	-	-
	Total gas	-	-	-	-
Electricity	Lighting	1,909.9	1,145.9	763.9	40.0
	Equipment	205.7	205.7	-	0.0
	Heating	1,548.2	1,517.9	30.3	2.0
	Humidification	883.8	235.0	648.8	73.4
	Domestic hot water	84.5	84.5	-	0.0
	Pumps	-	24.7	(24.7)	-
	Cooling	218.3	153.4	65.0	29.7
	Heat rejection	13.9	6.7	7.3	52.1
	Fans	1,453.2	358.7	1,094.6	75.3
	Total electricity	6,317.5	3,732.4	2,585.1	40.9
Total		6,317.5	3,732.4	2,585.1	40.9

- *GHG savings in comparison with option 1*

The table below shows the energy savings per source of energy consumption for option 4 in comparison with option 1.

Table 9-14: GHG savings for option 4 in comparison with option 1

		GHG emitted (tons CO2 eq)		Savings (tons CO2 eq)	Savings (%)
		Option 1	Option 4		
Gas	Heating (natural gas)	128.4	-	128.4	100.0
	Domestic hot water	5.2	-	5.2	100.0
	Total gas	133.6	-	133.6	100.0
Electricity	Lighting	-	-	-	-
	Equipment	-	-	-	-
	Heating	-	-	-	-
	Humidification	-	-	-	-
	Domestic hot water	-	-	-	-
	Pumps	-	-	-	-
	Cooling	-	-	-	-
	Heat rejection	-	-	-	-
	Fans	-	-	-	-
	Total electricity	-	-	-	-
Total		133.6	-	133.6	100.0

- *GHG savings in comparison with the reference building in the NECB 2011*

The table below shows the energy savings per source of energy consumption for option 4 in comparison with the reference building in the NECB 2011.

Table 9-15: GHG savings for option 4 in comparison with the reference building in the NECB 2011

		GHG produced (tons CO2 eq)		Savings (tons CO2 eq)	Savings (%)
		Reference	Option 4		
Gas	Heating (natural gas)	-	-	-	-
	Domestic hot water	-	-	-	-
	Total gas	-	-	-	-
Electricity	Lighting	-	-	-	-
	Equipment	-	-	-	-
	Heating	-	-	-	-
	Humidification	-	-	-	-
	Domestic hot water	-	-	-	-
	Pumps	-	-	-	-
	Cooling	-	-	-	-
	Heat rejection	-	-	-	-
	Fans	-	-	-	-
	Total electricity	-	-	-	-
Total		-	-	-	-





LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Note: All credits have not yet been revalidated to engineers.

Project Name: New Montreal Judicial Complex

Date: 2020-06-10

Y ? N

1			Credit	Integrative Process	1
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15	1	16	Location and Transportation		16
		16	Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
2			Credit	High Priority Site	2
4	1		Credit	Surrounding Density and Diverse Uses	5
5			Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

9	0	1	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
2			Credit	Site Development - Protect or Restore Habitat	2
		1	Credit	Open Space	1
3			Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

11	0	0	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
2			Credit	Outdoor Water Use Reduction	2
6			Credit	Indoor Water Use Reduction	6
1			Credit	Cooling Tower Water Use	2
2			Credit	Water Metering	1

27	1	5	Energy and Atmosphere	33
Y			Prereq Fundamental Commissioning and Verification	Required
Y			Prereq Minimum Energy Performance	Required
Y			Prereq Building-Level Energy Metering	Required
Y			Prereq Fundamental Refrigerant Management	Required
6			Credit Enhanced Commissioning	6
16		2	Credit Optimize Energy Performance	18
1			Credit Advanced Energy Metering	1
1	1		Credit Demand Response	2
		3	Credit Renewable Energy Production	3
1			Credit Enhanced Refrigerant Management	1
2			Credit Green Power and Carbon Offsets	2

8	3	2	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
	3	2	Credit	Building Life-Cycle Impact Reduction	5
2			Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
2			Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
2			Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

14	0	2	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
2			Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
2			Credit	Interior Lighting	2
1		2	Credit	Daylight	3
1			Credit	Quality Views	1
1			Credit	Acoustic Performance	1

6	0	0	Innovation		6
5			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

3	0	1	Regional Priority		4
1			Credit	Regional Priority: Specific Credit	1
1			Credit	Regional Priority: Specific Credit	1
1			Credit	Regional Priority: Specific Credit	1
		1	Credit	Regional Priority: Specific Credit	1

94	5	27	TOTALS	Possible Points: 110
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110				

.15 WELL Tables

Légende

	Possible avec les recommandations déjà envisagées présentement ou synergie avec des crédits LEED déjà recommandés
	Possible avec de petites modifications soit moyennant un coût supplémentaire et/ou, une modification aux critères de conception, etc.
	Modifications importantes ou coûteuses, ou manque d’information. Critères peuvent néanmoins considérés au besoin
	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	P	A01. Fundamental Air Quality					A01.1 Meet Thresholds for Particulate Matter	Critère obligatoire. Des tests de qualité d'air sont requis. Aucune entrave à la rencontre des objectifs de la qualité d'air requise n'est envisagée.	Client / Coordonnateur WELL	For All Spaces except Commercial Kitchen Spaces The following thresholds are met: a) PM2.5 less than 15 µg/m ³ . b) PM10 less than 50 µg/m ³ . For All Spaces except Commercial Kitchen Spaces The following thresholds are met for a project located where the annual average ambient PM2.5 level is 35 µg/m³ or higher. a) PM2.5 less than 25 µg/m ³ . b) PM10 less than 50 µg/m ³ . -----OR----- The following thresholds are met for a project located where the annual average ambient PM2.5 level is 35 µg/m³ or higher. a) PM2.5 equal to 30% of the 24- or 48-hour average of outdoor levels on the day(s) of performance testing. b) PM10 equal to 30% of the 24- or 48-hour average of outdoor levels on the day(s) of performance testing. For All Spaces except Commercial Kitchen Spaces The following thresholds are met: a) Formaldehyde less than 27 ppb. b) Individual component VOCs less than or equal to the limits listed in the table below: Compound Name CAS No. Allowable Concentration (µg/m ³) Benzene 71-43-2 30 Carbon disulfide 75-15-0 400 Carbon tetrachloride 56-23-5 20 Chlorobenzene 108-90-7 500 Chloroform 67-66-3 150 Dichlorobenzene (1,4-) 106-46-7 400 Dichloroethylene (1,1) 75-35-4 35 Ethylbenzene 100-41-4 1000 Hexane (n-) 110-54-3 3500 Isopropyl alcohol 67-63-0 3500 Methyl chloroform 71-55-6 500 Methylene chloride 75-09-2 200 Methyl tert-butyl ether 1634-04-4 4000 Styrene 100-42-5 450 Tetrachloroethene 127-18-4 17.5 Toluene 108-88-3 150 Trichloroethylene 79-01-6 300 Vinyl acetate 108-05-4 100 Xylene (m, o, p combined) 108-38-3 + 95-47-6 + 106-42-3, 179601-23-1 + 95-47-6, or 1330-20-7 350	On-Site Assessment: => Performance Test	Required
							A01.2 Meet Thresholds for Organic Gases	Critère obligatoire. Des tests de qualité d'air sont requis. Aucune entrave à la rencontre des objectifs de la qualité d'air requise n'est envisagée.	Client / Coordonnateur WELL		On-Site Assessment: => Performance Test	Required
							A01.3 Meet Thresholds for Inorganic Gases	Critère obligatoire. Des tests de qualité d'air sont requis. Aucune entrave à la rencontre des objectifs de la qualité d'air requise n'est envisagée.	Client/ Coordonnateur WELL		On-Site Assessment: => Performance Test	Required
							A01.4 Meet Radon Threshold	Critère obligatoire. Des tests de qualité d'air sont requis. Aucune entrave à la rencontre des objectifs de la qualité d'air requise n'est envisagée.	Client/ Coordonnateur WELL	If project has a regularly occupied space at or below grade, one of the following requirements is met: a) The radon level is less than 0.15 Bq/L [4 pCi/L], as tested by a professional demonstrated not to have a conflict of interest. One test is conducted per 2,300 m ² [25,000 ft ²] of the lowest regularly occupied space at or below grade with natural ventilation. b) All regularly occupied spaces at or below grade meet the "Mechanically ventilated spaces" option of Part 1: Ensure Adequate Ventilation in Feature A03: Ventilation Effectiveness.	Letter Of Assurances: => MEP => Owner	Required
							A01.5 Monitor Fundamental Air Parameters	Critère obligatoire. Des tests de qualité d'air sont requis. Aucune entrave à la rencontre des objectifs de la qualité d'air requise n'est envisagée.	Client/ Coordonnateur WELL	For All Spaces The following requirements are met: a) The pollutants listed in this feature, except radon, are monitored at intervals no longer than once per year, and results are annually submitted through WELL Online. b) The number and location of sampling points for on-going monitoring complies with the requirements outlined in the Performance Verification Guidebook.	Annotated Documents: => Operations Schedule => On-going Data Report	Required

	Possible avec les recommandations déjà envisagées présentement ou synergie avec des crédits LEED déjà recommandés
	Possible avec de petites modifications soit moyennant un coût supplémentaire et/ou, une modification aux critères de conception, etc.
	Modifications importantes ou coûteuses, ou manque d’information. Critères peuvent néanmoins considérés au besoin
	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	P	A02. Smoke-Free Environment					A02.1 Prohibit Indoor Smoking	<i>Critère obligatoire.</i> Le tabagisme est interdit par la Loi concernant la lutte contre le tabagisme. De plus, ce préalable est compatible avec celui de la certification LEED QEI Contrôle de la fumée de tabac ambiante.	Client/ Architecte	<i>For All Spaces</i> The following requirement is met: a) Smoking and the use of e-cigarettes is prohibited in interior spaces within the project boundary.	Annotated Documents: => Policy Document	Required
							A02.2 Prohibit Outdoor Smoking			<i>For All Spaces</i> The following requirements are met: a) Smoking is prohibited within 7.5 m [25 ft] (or the maximum extent allowable by local codes) of all entrances, operable windows and building air intakes. Signage is present to clearly communicate the ban. b) Smoking is prohibited on all decks, patios, balconies, rooftops and outdoor galleries. Signage is present to clearly communicate the ban. c) In outdoor areas within the project boundary that allow smoking (if any), signs are placed along walkways (not more than 30m [100 ft] between signs) that describe the hazards of smoking.	Photographic evidence	Required
										<i>For All Spaces except Dwelling Units</i> Mechanically ventilated spaces Projects utilizing mechanical ventilation comply with ventilation supply and exhaust rates set in one of the following: a) ASHRAE 62.1-2010 or any more recent versions (Ventilation Rate Procedure or IAQ Procedure). b) CEN Standards EN 15251:2007 and EN 16798-3:2017 or any more recent versions. The requirements of CEN Standard EN 15251:2007 must be met as well as the performance requirements of CEN Standard EN 16798-3:2017 related to ventilation and room conditioning systems (excluding sections 7.3, 7.6, A.16 and A.17). Note that projects must meet Category I or II as described in the standards. c) AS 1668.2-2012 or any more recent version. Note that projects that wish to comply with AS 1668.2 must assume a minimum density of 16 m² [170 ft²] per person. d) CIBSE Guide A: Environmental Design, version 2007 or any more recent version. -----OR----- Naturally ventilated spaces Projects using natural ventilation only (no mechanical ventilation) meet the following requirements: a) Outdoor PM2.5, PM10, carbon monoxide and ozone levels within 4 km [2.5 mi] of the building are compliant with the levels specified in Feature A01: Air Quality Standards for at least 95% of all hours in the previous year. b) One of the following design criteria: <ul style="list-style-type: none">Natural Ventilation Procedure in ASHRAE 62.1-2010 or any more recent version (as appropriate for number of floors above grade).CIBSE AM10: Natural Ventilation in Non-Domestic Buildings (2005 or any more recent version) section 2.4 – Natural ventilation strategies and chapter 4 – Design Calculations.	Letter Of Assurances: => MEP	Required
	P	A03. Ventilation Effectiveness					A03.1 Ensure Adequate Ventilation	<i>Critère obligatoire.</i> Le standard ASHRAE 62.1-2017 (ou le plus restrictif entre la version 2010 et 2017) pourra être appliqué au système de ventilation mécanique. Le préalable est également couvert par le crédit LEED QEI <i>Performance minimale en matière de qualité de l'air intérieur.</i>	Ing. Mécanique	<i>For All Spaces except Dwelling Units</i> Naturally ventilated spaces Projects using natural ventilation only (no mechanical ventilation) meet the following requirements: a) Outdoor air meets the following thresholds as an average for the previous year: <ul style="list-style-type: none">PM2.5 less than 25 µg/m³.PM10 less than 50 µg/m³. b) One of the following design criteria: <ul style="list-style-type: none">Natural Ventilation Procedure in ASHRAE 62.1-2010 or any more recent version (as appropriate for number of floors above grade).CIBSE AM10: Natural Ventilation in Non-Domestic Buildings (2005 or any more recent version) section 2.4 – Natural ventilation strategies and chapter 4 – Design Calculations. -----OR----- Naturally ventilated spaces <i>For All Spaces</i> Mechanically ventilated spaces To verify compliance with the ventilation rate requirements specified in Part 1: Ensure Adequate Ventilation, the following requirements are met or are scheduled to be met (as applicable): a) Newly installed mechanical ventilation system or ventilation system that undergoes significant alterations is tested and balanced in accordance with ASHRAE 111. b) Existing mechanical ventilation system is tested and balanced every five years to verify that the minimum ventilation rates (as determined in Part 1: Ensure Adequate Ventilation) are within ± 10% of the minimum design values. c) Projects using the elevated air speed method for thermal comfort verify that air speed complies with design specifications.	Letter Of Assurances: => MEP & Contractor	Required
							A03.2 Conduct System Balancing					

Légende

	Possible avec les recommandations déjà envisagées présentement ou synergie avec des crédits LEED déjà recommandés
	Possible avec de petites modifications soit moyennant un coût supplémentaire et/ou, une modification aux critères de conception, etc.
	Modifications importantes ou coûteuses, ou manque d’information. Critères peuvent néanmoins considérés au besoin
	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing		
	P	A04. Construction Pollution Management					A04.1 Mitigate Construction Pollution	Critère obligatoire. Possible. Le préalable est couvert par les crédits LEED <i>QEI Plan de gestion de la qualité de l'air intérieur pendant la construction</i> et <i>QEI Évaluation de la qualité de l'air intérieur</i> .	Entrepreneur et Coordonnateur WELL/LEED	For All Spaces For construction occurring after project registration, at least three of the following requirements are met: a) Projects meet one of the below: <ul style="list-style-type: none">Ducts are sealed and protected from possible contamination during construction.Ducts are cleaned prior to installing registers, grills and diffusers. b) If permanently installed ventilation system is operating during construction, projects meet the below: <ul style="list-style-type: none">Media filters with a minimum efficiency reporting value (MERV) of 8 are used to filter return air.All filters are replaced prior to occupancy. c) The below moisture and dust management procedures are followed: <ul style="list-style-type: none">Carpets, acoustical ceiling panels, fabric wall coverings, insulation, upholstery and furnishings and other absorptive materials are stored in a separate designated area protected from moisture damage.All active areas of work are isolated from other spaces by sealed doorways or windows or through the use of temporary barriers.Walk-off mats are used at entryways to reduce the transfer of dirt and pollutants.Saws and other tools use dust guards or collectors to capture generated dust. d) To reduce particulate matter emissions from both on-road and non-road diesel fueled vehicles (excluding delivery vehicles) and construction equipment, the below are met: <ul style="list-style-type: none">All non-road diesel engine vehicles comply with the U.S. EPA Tier 4 PM emissions standards or local equivalent when applicable. Engines may be retrofitted with verified technology (required to be U.S. EPA or California Air Resources Board approved) at the time the equipment is first placed on the job site.^[37106]All on-road diesel engine vehicles meet the requirements set forth in the U.S. EPA model year 2007 on-road standards for PM or local equivalent when applicable. Engines may be retrofitted with verified technology (required to be U.S. EPA or California Air Resources Board approved) at the time the equipment is first placed on the job site.^[37106]All equipment, vehicles and loading/unloading zones are located at least 7.5 m [25 ft] away from air intakes and operable openings of adjacent buildings when possible. e) Upon completion of construction (including installation of woodwork, doors, acoustic tiles, paints, carpets, movable furnishings and other interior finishes), a building air flush is performed while maintaining an indoor temperature of at least 15 °C [59 °F] and relative humidity below 60%, at one of the below volumes: <ul style="list-style-type: none">A total air volume of 4,300 m³ of outdoor air per m² of floor area [14,000 ft³ per ft² of floor area] prior to occupancy.^[37022]A total air volume of 1,100 m³ of outdoor air per m² of floor area [3,500 ft³ per ft² of floor area] prior to occupancy, followed by a second flush of 3,200 m³ of outdoor air per m² of floor area [10,500 ft³ per ft² of floor area] post-occupancy. While the post-occupancy flush is taking	Letter Of Assurances: => Contractor	Required		
							A05.1 / 2 Points Meet Enhanced Thresholds for Particulate Matter	Selon les données de la ville de Montréal, la moyenne des PM2,5 était de 7,4 ug/m3 en 2018. Il n'y a cependant pas de données disponibles pour les PM10. Il serait probablement possible d'atteindre 1 point. À valider avec des tests de qualité d'air ou données plus exhaustives.	Coordonnateur WELL	For All Spaces The following requirement is met: a) Projects comply with the thresholds specified in the table below: <table><tr><th>Particulate Matter Thresholds</th><th>Points</th></tr><tr><td>PM2.5 &lt; 12 µg/m³.</td><td>PM10 &lt; 30 µg/m³.</td><td>1</td></tr><tr><td>PM2.5 &lt; 10 µg/m³.</td><td>PM10 &lt; 20 µg/m³.</td><td>2</td></tr></table>	Particulate Matter Thresholds	Points	PM2.5 < 12 µg/m³.	PM10 < 30 µg/m³.
	Particulate Matter Thresholds	Points												
	PM2.5 < 12 µg/m³.	PM10 < 30 µg/m³.	1											
PM2.5 < 10 µg/m³.	PM10 < 20 µg/m³.	2												
O	A05. Enhanced Air Quality	4				1	A05.2 / 1 Points Meet Enhanced Thresholds for Organic Gases	Aucune donnée disponible pour l'instant concernant ces contaminants.	Coordonnateur WELL	For All Spaces The following thresholds are met: a) Formaldehyde less than 13.4 ppb. b) Benzene less than 3 µg/m³.	On-Site Assessment: => Performance Test			
							A05.3 / 1 Points Meet Enhanced Thresholds for Inorganic Gases	Selon les données de la ville de Montréal, la moyenne de l'ozone (O3) était de 58 ppb en 2015-2017, dépassant largement le seuil. À valider avec des tests de qualité d'air ou données plus exhaustives s'il y a un manque de point.	Coordonnateur WELL	For All Spaces The following thresholds are met: a) Carbon monoxide less than 6 ppm. b) Ozone less than 25 ppb. c) Nitrogen dioxide less than 21 ppb.	On-Site Assessment: => Performance Test			

Légende

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	Modifications importantes ou coûteuses, ou manque d’information. Critères peuvent néanmoins considérés au besoin
	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing														
A I R	O	A06. Enhanced Ventilation	3		1		A06.1 / 3 Points Increase Outdoor Air Supply	Ce n'est pas recommandé pour conserver la performance énergétique du bâtiment.	Ing. Mécanique	For All Spaces Mechanically ventilated spaces The following requirement is met: a) Projects exceed outdoor air supply rates described in ASHRAE 62.1-2010 by the percentages shown in the table below: <table><tr><td>Thresholds</td><td>Points</td></tr><tr><td>30%</td><td>1</td></tr><tr><td>60%</td><td>2</td></tr></table> -----OR----- Naturally ventilated spaces The following requirements are met: a) Projects meet Part 1: Provide Operable Windows in Feature A07: Operable Windows. b) Projects demonstrate that natural ventilation is sufficient to keep CO2 levels less than the thresholds specified in the table below (measured at 1.2-1.8 m [4-6 ft] above the floor) at maximum intended occupancies in all regularly occupied spaces: <table><tr><td>Thresholds</td><td>Points</td></tr><tr><td>900 ppm</td><td>1</td></tr><tr><td>750 ppm</td><td>2</td></tr><tr><td>600 ppm</td><td>3</td></tr></table>	Thresholds	Points	30%	1	60%	2	Thresholds	Points	900 ppm	1	750 ppm	2	600 ppm	3	Letter Of Assurances: => MEP	
							Thresholds	Points																		
							30%	1																		
							60%	2																		
							Thresholds	Points																		
900 ppm	1																									
750 ppm	2																									
600 ppm	3																									
A06.2 / 3 Points Implement Demand-Controlled Ventilation	L'atteinte du seuil de 900ppm est réalisable pour 1 point. Des capteurs sont déjà prévus. Recommander alors le nombre requis et les emplacements pour respecter le critère.	Ing. Mécanique	For All Spaces All regularly occupied spaces meet the following requirements: a) A demand-controlled ventilation system regulates the outdoor ventilation rate to keep CO2 levels at maximum intended occupancy less than the thresholds specified in the table below: <table><tr><td>Thresholds</td><td>Points</td></tr><tr><td>900 ppm</td><td>1</td></tr><tr><td>750 ppm</td><td>2</td></tr><tr><td>600 ppm</td><td>3</td></tr></table> b) Carbon dioxide is measured at the air exhaust diffusers or in occupied space at 1.1-1.7 m [3.6-5.6 ft] above the floor (away from doors, windows, air supply and zones where occupants may exhale directly into the sensor). At least one sensor is used for each major occupancy zone (or per air handling unit if a single zone is served by multiple air handling units). If occupancy density/pattern/usage is different in two adjacent areas, each area must be considered a separate zone.	Thresholds	Points	900 ppm	1	750 ppm	2	600 ppm	3	Letter Of Assurances: => MEP														
Thresholds	Points																									
900 ppm	1																									
750 ppm	2																									
600 ppm	3																									
A06.3 / 1 Points Implement Displacement Ventilation	Ce type de système n'est pas prévu ni recommandé pour l'instant.	Ing. Mécanique	For All Spaces Projects implement a displacement ventilation system for heating and/or cooling, with one of the following as a basis for design: a) ASHRAE Guidelines RP-949. b) REHVA Guidebook No. 01 (Displacement Ventilation in non-industrial premises). c) ASHRAE's UFAD Guide: Design, Construction and Operations of Underfloor Air Distribution Systems. Air supply temperature is slightly cooler or warmer than the desired space temperature. Air distribution system is installed at a raised floor height whereby the underfloor area can be cleaned on an annual basis.	Letter Of Assurances: => MEP																						
A06.4 / 3 Points Implement Advanced Air Distribution	Ce critère n'est pas recommandé, car il serait trop coûteux de surélever les planchers pour respecter les exigences.	Ing. Mécanique	For All Spaces except Commercial Kitchen Spaces Dwelling Units At all workstations, the following requirements are met: a) Conditioned air is supplied via an individual diffuser that is positioned no further than 0.8 m [2.6 ft] from an occupant's head. b) Occupants are given control over the direction of the supplied airflow and supply air speed (within 0.0-1.2 m/s [0.0-3.9 ft/s] in the head region). c) Supplied air uses one of the strategies specified in the table below: <table><tr><td>Requirement</td><td>Points</td></tr><tr><td>Background mechanical system is used for ventilation</td><td>2</td></tr><tr><td>Dedicated outdoor air system is used for ventilation</td><td>3</td></tr></table>	Requirement	Points	Background mechanical system is used for ventilation	2	Dedicated outdoor air system is used for ventilation	3	Letter Of Assurances: => MEP																
Requirement	Points																									
Background mechanical system is used for ventilation	2																									
Dedicated outdoor air system is used for ventilation	3																									
A07.1 / 1 Points Provide Operable Windows	Il n'est pas recommandé d'avoir des fenêtres pouvant s'ouvrir compte tenu des enjeux de sureté et pour conserver la performance énergétique du bâtiment.	Architecte	For All Spaces The following requirements are met: a) Project meets one of the below: <ul style="list-style-type: none">At least 75% of regularly occupied spaces have operable windows that provide access to outdoor air.The openable window area is equivalent to at least 4% of the net occupiable floor area of that space or floor plate. b) Project does not use radiant cooling systems if situated in climates with an annual relative humidity above 70%.	Letter Of Assurances: => Architect => MEP Photographic evidence																						

Légende

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	A07. Operable Windows	2							For All Spaces Outdoor air measurement The following requirements are met: a) Outdoor levels of ozone, PM2.5 or PM10 and temperature are monitored at intervals of at least once per hour based on a data-gathering station located within 4 km [2.5mi] of the building. b) Data collected are made available to building occupants. For All Spaces Window operation Indicator lights at windows and/or online notifications signal to regular building occupants when outdoor air allows for open windows based on when the following thresholds are met: a) PM2.5 less than 15 µg/m³. b) PM10 less than 50 µg/m³. c) Dry-bulb temperature within 8° C [15° F] of indoor air temperature setpoint. d) Ozone less than 51 ppb.	Letter Of Assurances: => MEP	
										For All Spaces All operable windows in regularly occupied spaces comply with the following requirements: a) Provide enough space to permit occupants to approach and operate them (from both a standing and seated position). b) Are operable with one hand and with a closed fist and do not require tight grasping, pinching or twisting of the wrist. c) Require less than 22 N [5 lb] of force to open.	Letter Of Assurances: => Architect	
										For All Spaces The following requirements are met: a) Monitors measure at least three of the following within a regularly occupied or common space in the building: <ul style="list-style-type: none">PM2.5 or PM10 (accuracy 5 µg/m³ + 15% of reading at values between 0 and 150 µg/m³).Carbon dioxide (accuracy 50 ppm + 3% of reading at values between 400 and 2000 ppm).Carbon monoxide (accuracy 1 ppm at values between 0 and 10 ppm).Ozone (accuracy 10 ppb at values between 0 and 100 ppb).Nitrogen dioxide (accuracy 20 ppb at values between 0 and 100 ppb).Total VOCs (accuracy 20 µg/m³ + 20% of reading at values between 150 and 2000 µg/m³).Formaldehyde (accuracy 20 ppb at values between 0 and 100 ppb). b) Monitor density is minimum one per floor or one every 325 m² [3500 ft²], whichever is more stringent. Monitors are sited at locations compliant with the following requirements: <ul style="list-style-type: none">1.1-1.7 m [3.6-5.6 ft] above the finished floor at locations where occupants would typically be seated or standing.Sampling points must be at least 1 m [3.3 ft] away from doors, windows and air supply/exhaust outlets. c) Measurements are taken at intervals of no longer than 10 minutes for particulate matter and carbon dioxide and no longer than one hour for other pollutants. d) Data are analyzed for regularly occupied hours (e.g., median, mean, 75 th , 95 th percentile) and submitted annually through WELL Online. e) Monitors are recalibrated or replaced annually with documentation attesting to their calibration or replacement submitted annually through WELL Online.	Annotated Documents: => Operations Schedule => On-going Data Report Letter Of Assurances: => MEP Photographic evidence	
	O	A08. Air Quality Monitoring and	2			1			Ing. Mécanique/Architecte			

Légende

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
		Awareness								For All Spaces Environmental measures display Real-time display of air pollutants measured in Part 1: Implement Indoor Air Monitors is made available to occupants through one of the following: a) At least one display is prominently positioned at a height of 1.1–1.7 m [3.6–5.6 ft] per 930 m² [10000 ft²] of regularly occupied space. b) Required data are hosted on a website or phone application accessible to occupants. At least one visible sign is positioned per 930 m² [10000 ft²] of regularly occupied space indicating where the data may be accessed. For All Spaces Air quality education At least two of the following requirements are met: a) A digital or physical library is provided to occupants that includes at least two resources outlining the impact of indoor air quality on human health as part of the resource library required through Feature C01: Health and Wellness Awareness. b) A labeling system (e.g., colors or symbols) is clearly displayed next to each monitor screen used for air quality monitoring or at the relevant website. Information about health effects is shown in relation to a range of concentrations of air pollutants monitored in Part 1: Implement Indoor Air Monitors. An explanation of the labeling system is provided. c) Paper or digital communication that highlights the importance of indoor air quality for human health, including practical tips for how to improve indoor air quality, is issued at least every quarter. d) Educational training led by an air quality expert is held at least once a year and covers aspects of health and wellness covered in the WELL Air concept, including interpretation of data collected and practical tips for how to improve indoor air quality.	Annotated Documents: => Policy Document => Educational Materials Photographic evidence	
	O	A09. Pollution Infiltration Management	1	1			A08.2 / 1 Points Promote Air Quality Awareness	Si le critère A08.1 est respecté, il est alors facile de réaliser ce critère.	Ing. Mécanique/Architecte	For All Spaces Building envelope and entry At least two of the following requirements are met: a) The below is performed after substantial completion of construction and prior to occupancy: • Envelope commissioning in accordance with ASHRAE Guideline 0-2013 and the National Institute of Building Sciences (NIBS) Guideline 3-2012 (for new construction or structural renovation). • The commissioning process is performed by an independent professional who is not a member or subcontractor of the building envelope design and construction team. b) All regularly used entrances to the building that have pedestrian traffic to the exterior use an entryway system composed of grilles, grates, slots or rollout mats that are at least the width of the entrance and 3 m [10 ft] long in the primary direction of travel (sum of indoor and outdoor length). These are cleaned as per below: • Walk-off mats, indoor and outdoor, are wet-cleaned at least once every two days and fully dry before use. • Underside of entry mats are cleaned at least once a day. • Entry mats are vacuumed using a vacuum with a beater bar in both directions at least once a day. c) One of the below is in place to slow the movement of air from outdoors to indoors: • Building entry vestibule with two typically closed doorways. • Revolving entrance doors. For All Spaces Outdoor sport areas The following requirement is met: a) All facilities adjacent to an outdoor sports field have a staging area that separates the playing field from other internal areas to capture moisture and debris.	Annotated Documents: => Commissioning Report Letter Of Assurances: => Owner Photographic evidence	
	O	A10. Combustion Minimization	1		1		A10.1 / 1 Points Manage Combustion	Réalisable. Le seul équipement à combustion recommandé pour l'instant est la génératrice d'urgence. Aussi, à valider avec le client pour la signalisation demandant aux automobiles devant l'immeuble d'arrêter leur véhicule s'il doivent attendre plus de 30 secondes.	Ing. Mécanique/ propriétaire	For All Spaces except Commercial Kitchen Spaces Appliance and heater combustion ban The following requirement is met: a) Combustion-based fireplaces, stoves, space heaters, ranges and ovens are not used in regularly occupied spaces. For All Spaces except Commercial Kitchen Spaces Low-emission combustion sources The following equipment used by the project for heating, cooling, water heating, process heating or power generation (including back-up if used for more than 200 hours per year) meet California's South Coast Air Quality Management District rules, or approved equivalent, for pollution: a) Internal combustion engines. b) Furnaces. c) Boilers, steam generators and process heaters. d) Water heaters. For All Spaces except Commercial Kitchen Spaces Engine exhaust reduction The following requirement is met: a) Vehicle engine idling for more than 30 seconds is prohibited in all pick-up, drop-off and parking areas. "No idling" signage is present at these locations indicating this rule.	Letter Of Assurances: => Owner & MEP Photographic evidence	

Légende

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing														
	O	A11. Source Separation	1		1		A11.1 / 1 Points Manage Pollution and Exhaust	Réalisable. L'option b) est recommandée. À inclure dans les critères de conception	Ing. Mécanique	For All Spaces All bathrooms, kitchens, rooms for cleaning and chemical storage, rooms with high-volume printers and copiers, and high-humidity areas meet one of the following requirements: a) Are separated from all adjacent regularly occupied spaces with self-closing doors and/or vestibules. b) Utilize exhaust fans so that return air is expelled outdoors rather than recirculated.	Annotated Documents: => Architectural Drawing => Mechanical Drawing Letter Of Assurances: => MEP															
	O	A12. Air Filtration	1	1			A12.1 / 1 Points Implement Particle Filtration	Le niveau de filtration minimum recommandé par les concepteurs est MERV 13. Selon les données de la Ville de Montréal, la moyenne de PM2,5 est de 7,4 ug/m³, donc, couvert par MERV 13. Critère compatible avec crédit LEED QEI Stratégies d'amélioration de la qualité de l'air intérieur Option 1c.	Ing. Mécanique	For All Spaces Mechanically and Mixed-mode ventilated spaces The following requirement is met: a) Media filters are used in the ventilation system to filter outdoor air supplied to occupiable spaces in accordance with thresholds specified in the table below: <table><tr><td>Annual Average Outdoor PM2.5 Threshold</td><td>Minimum Air Filtration Level</td></tr><tr><td>16 µg/m³ or less</td><td>MERV 8 or G4</td></tr><tr><td>17–18 µg/m³</td><td>MERV 10 or M5</td></tr><tr><td>19–23 µg/m³</td><td>MERV 12 or M6</td></tr><tr><td>24–39 µg/m³</td><td>MERV 14 or F8</td></tr><tr><td>40–59 µg/m³</td><td>MERV 16 or E10</td></tr><tr><td>60 µg/m³ or greater</td><td>MERV 16 preceded by MERV 8, or E10 preceded by G4</td></tr></table> b) Filter is equipped with on-board pressure sensors or filter change indicator that signal when filter requires replacement. Evidence that the filter has been replaced according to manufacturer's recommendation is submitted annually through WELL Online.	Annual Average Outdoor PM2.5 Threshold	Minimum Air Filtration Level	16 µg/m³ or less	MERV 8 or G4	17–18 µg/m³	MERV 10 or M5	19–23 µg/m³	MERV 12 or M6	24–39 µg/m³	MERV 14 or F8	40–59 µg/m³	MERV 16 or E10	60 µg/m³ or greater	MERV 16 preceded by MERV 8, or E10 preceded by G4	Annotated Documents: => On-going Maintenance Report Letter Of Assurances: => MEP Photographic evidence	
	Annual Average Outdoor PM2.5 Threshold	Minimum Air Filtration Level																								
	16 µg/m³ or less	MERV 8 or G4																								
	17–18 µg/m³	MERV 10 or M5																								
19–23 µg/m³	MERV 12 or M6																									
24–39 µg/m³	MERV 14 or F8																									
40–59 µg/m³	MERV 16 or E10																									
60 µg/m³ or greater	MERV 16 preceded by MERV 8, or E10 preceded by G4																									
O	A13. Active VOC Control	1				A13.1 / 1 Points Implement Carbon Filtration	Les filtres au charbon activé ne sont pas recommandés, car ils ne sont pas nécessaires à la bonne qualité d'air du bâtiment, compte tenu de la qualité d'air intérieure.	Ing. Mécanique	For All Spaces The following requirements are met: a) Projects utilize one of the below to remove VOCs from indoor air: <ul style="list-style-type: none">Activated carbon filters or a combination of particulate/carbon filters in the main air ducts to filter recirculated air.A standalone air-cleaning device that utilizes a carbon filter to treat the air (one device per area coverage as specified by the manufacturer). b) Evidence that the filter or device has been replaced or maintained according to manufacturer's recommendation is submitted annually through WELL Online.	Annotated Documents: => On-going Maintenance Report Letter Of Assurances: => MEP Photographic evidence																
					1	A14.1 / 1 Points Implement Ultraviolet Air Treatment	Possible, requiert plus d'entretien. Peut être prévu si un système central de ventilation est prévu, mais non recommandé si il y a plusieurs petits systèmes. À valider durant la conception.	Ing. Mécanique	For All Spaces The following requirements are met: a) Project utilizes one of the below: <ul style="list-style-type: none">Projects with a forced-air cooling system use ultraviolet lamps to irradiate the surfaces of the cooling coils and drain pans of the mechanical system supplies.Projects without a forced-air cooling system use standalone ultraviolet germicidal irradiation air sanitizers in all spaces with more than 10 regular occupants. b) Evidence that the device has been replaced or maintained according to manufacturer's recommendation is submitted annually through WELL Online.	Annotated Documents: => Professional Narrative => On-going Maintenance Report Letter Of Assurances: => MEP Photographic evidence																
O	A14. Microbe and Mold Control	2				A14.2 / 1 Points Manage Condensation and Mold	Possible. Doit être appliqué par l'ingénieur mécanique et l'équipe d'opération.	Ing. Mécanique/ Client/Opération	For All Spaces Condensation management Condensation management is addressed within the project and considers the following: a) High interior relative humidity levels, particularly in susceptible areas like laundry rooms, below-grade spaces and other high-humidity areas. b) Air leakage that could wet either exposed interior materials or interstitially hidden materials. c) Cold surfaces such as basements, slab-on-grade floors or the inside of exterior walls. d) Oversized air conditioning units. For All Spaces Mold inspections The following requirements are met: a) Annual inspections for signs of water damage or pooling, discoloration and mold on ceilings, walls and floors is performed by a professional demonstrated not to have a conflict of interest. The report is submitted annually through WELL Online. b) One of the below is met: <ul style="list-style-type: none">Project achieves cooling coil mold reduction as per Part 1: Implement Ultraviolet Air Treatment.All cooling coils (where applicable) are inspected on a quarterly basis for mold growth and cleaned if necessary. Dated photos demonstrating adherence are submitted annually through WELL Online. c) For projects with tenants, there is a system in place for notifying building management about mold or water damage and addressing concerns.	Annotated Documents: => Professional Narrative => On-going Maintenance Report Photographic evidence																
Concept Total: 0																										

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	Possible avec de petites modifications soit moyennant un coût supplémentaire et/ou, une modification aux critères de conception, etc.
	Modifications importantes ou coûteuses, ou manque d’information. Critères peuvent néanmoins considérés au besoin
	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	P	W01. Fundamental Water Quality					W01.1 Meet Sediment Thresholds	Critère obligatoire . Des tests de qualité d'eau sont requis. Comme les seuils sont les mêmes ou similaires au RQEP, ce critère est réalisable.	Ing. Mécanique/ Coordonnateur WELL	For All Spaces Water delivered to the project for human consumption, handwashing and showers/baths meets the following threshold: a) Turbidity less than or equal to 1.0 NTU.	On-Site Assessment: => Performance Test	Required
							W01.2 Meet Microorganisms Thresholds	Critère obligatoire. Des tests de qualité d'eau sont requis. Comme les seuils sont les mêmes ou similaires au RQEP, ce critère est réalisable.	Ing. Mécanique / Coordonnateur WELL	For All Spaces Water delivered to the project for human consumption, handwashing and showers/baths meets the following requirement: a) Contains 0 CFU / 100 mL total coliforms (including E. coli).	On-Site Assessment: => Performance Test	Required
							W01.3 Monitor Fundamental Water Parameters	Critère obligatoire. Possible, à coordonner avec les opérations	Opérations/ Coordonnateur WELL	For All Spaces One of the following requirements is met: a) The water contaminants listed in this feature are monitored at intervals of no less than once per year and results are submitted annually through WELL Online. The number and location of sampling points for on-going monitoring complies with the requirements outlined in the Performance Verification Guidebook. b) The threshold levels of the water contaminants listed in this feature, as reported in a local municipal water quality report, are submitted annually through WELL Online. c) Project achieves at least one point in Feature W05: Water Quality Consistency.	Annotated Documents: => Operations Schedule => On-going Data Report	Required
	P	W02. Water Contaminants					W02.1 Meet Dissolved Metal Thresholds	Critère obligatoire. Des tests de qualité d'eau sont requis. Comme les seuils sont les mêmes ou similaires au RQEP, ce critère est réalisable.	Coordonnateur WELL	For All Spaces Water delivered to the project for human consumption meets the following thresholds: a) Lead less than 0.01 mg/L. b) Arsenic less than 0.01 mg/L. c) Antimony less than 0.006 mg/L. d) Mercury less than 0.002 mg/L. e) Nickel less than 0.07 mg/L. f) Copper less than 1.0 mg/L. g) Cadmium less than 0.005 mg/L. h) Chromium (total) less than 0.1 mg/L.	On-Site Assessment: => Performance Test	Required
							W02.2 Meet Organic Pollutant Thresholds	Critère obligatoire. Des tests de qualité d'eau sont requis. Comme les seuils sont les mêmes ou similaires au RQEP, ce critère est réalisable.	Coordonnateur WELL	For All Spaces Water delivered to the project for human consumption meets the following thresholds: a) Styrene less than 0.02 mg/L. b) Benzene less than 0.005 mg/L. c) Ethylbenzene less than 0.3 mg/L. d) Vinyl chloride less than 0.002 mg/L. e) Toluene less than 0.7 mg/L. f) Xylenes (total: m, p and o) less than 0.5 mg/L. g) Tetrachloroethylene less than 0.005 mg/L.	On-Site Assessment: => Performance Test	Required
							W02.3 Meet Disinfectant Byproducts Thresholds	Critère obligatoire. Des tests de qualité d'eau sont requis. Comme les seuils sont les mêmes que le RQEP, ce critère est réalisable.	Coordonnateur WELL	For All Spaces Water delivered to the project for human consumption meets the following thresholds: a) Total trihalomethanes (sum of dibromochloromethane, bromodichloromethane, chloroform and bromoform) less than 0.08 mg/L. b) Total haloacetic acids (sum of chloroacetic, dichloroacetic, trichloroacetic, bromoacetic and dibromoacetic acids) less than 0.06 mg/L.	On-Site Assessment: => Performance Test	Required
							W02.4 Meet Herbicide and Pesticide Thresholds	Critère obligatoire. Des tests de qualité d'eau sont requis. Comme les seuils sont les mêmes ou similaires au RQEP, ce critère est réalisable.	Coordonnateur WELL	For All Spaces Water delivered to the project for human consumption meets the following thresholds: a) Atrazine less than 0.003 mg/L. b) Simazine less than 0.002 mg/L. c) 2,4-Dichlorophenoxyacetic acid less than 0.07 mg/L.	On-Site Assessment: => Performance Test	Required
							W02.5 Meet Fertilizer Thresholds	Critère obligatoire. Des tests de qualité d'eau sont requis. Comme le seuil est similaire au RQEP, ce critère est réalisable.	Coordonnateur WELL	For All Spaces Water delivered to the project for human consumption meets the following threshold: a) Nitrate less than 50 mg/L (11 mg/L as nitrogen).	On-Site Assessment: => Performance Test	Required
							W02.6 Meet Public Water Additive Thresholds	Critère obligatoire. Des tests de qualité d'eau sont requis. Comme les seuils sont les mêmes ou similaires au RQEP, ce critère est réalisable.	Coordonnateur WELL	For All Spaces Water delivered to the project for human consumption meets the following thresholds: a) Fluoride less than 4 mg/L. b) Total chlorine less than 4 mg/L. c) Chloramine less than 4 mg/L.	On-Site Assessment: => Performance Test	Required

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W A T E R	P	W03. Legionella Control					W01.3 Monitor Fundamental Water Parameters	<i>Critère obligatoire.</i> Possible, à coordonner avec les opérations	Opérations/ Coordonnateur WELL	For All Spaces On-site testing One of the following requirements is met: a) The water contaminants listed in this feature are monitored at intervals of no less than once a year and results are submitted annually through WELL Online. The number and location of sampling points complies with the requirements outlined in the Performance Verification Guidebook. b) The levels of the water contaminants listed in this feature, as reported in a local municipal water quality report, are submitted annually through WELL Online. c) Project achieves at least one point in Feature W05: Water Quality Consistency.	Annotated Documents: => Operations Schedule => On-going Data Report	Required
							W03.1 Implement Legionella Management Plan	<i>Critère obligatoire.</i> Possible. Un narratif ainsi qu'un plan sont requis.	Client/ Coordonnateur WELL/Mec ing	For All Spaces A Legionella management plan is implemented and contains the following: a) Formation of a team for Legionella management in the building. b) Water system inventory and production of process flow diagrams. c) Hazard analysis of water assets. d) Identification of control points and measures. e) Monitoring actions to ensure control measures are within performance limits and determine corrective actions. f) Verification and validation procedures. g) Documentation of the plan and its implementation.	Annotated Documents: => Professional Narrative	Required
	O	W04. Enhanced Water Quality	1			1	W04.1 / 1 Points Meet Drinking Water Taste Properties	À part les fluorures, qui sont mentionnés dans le RQEP avec un seuil de 1,5 m/l (donc respectant la concentration maximale ici), les autres paramètres ne sont pas présents dans le RQEP. Le critère est peut-être possible, mais il manque d'information pour le recommander. Une analyse d'eau est requise.	Client/ Coordonnateur WELL	For All Spaces Water delivered to the project for human consumption meets the following thresholds: a) Aluminum less than or equal to 0.2 mg/L. b) Chloride less than 250 mg/L. c) Fluoride less than 2 mg/L. d) Manganese less than 0.05 mg/L. e) Sodium less than 270 mg/L. f) Sulfate less than 250 mg/L. g) Iron less than 0.3 mg/L. h) Zinc less than 5 mg/L. i) Total Dissolved Solids less than 500 mg/L.	On-Site Assessment: => Performance Test	
	O	W05. Water Quality Consistency	2				W05.1 / 1 Points Test and Display Water Quality	Possible, à faire tester par un laboratoire. Mettre l'information disponible aux occupants. Pertinent puisque le plomb est un enjeu à Montréal.	Client/ opérations	For All Spaces The following requirements are met: a) All water delivered to the project for human consumption is tested quarterly (with results submitted annually through WELL Online) for the below: <ul style="list-style-type: none">• Lead.• Copper.• Turbidity.• Coliforms. b) Most recent water quality results are made available to occupants through one of the below: <ul style="list-style-type: none">• Visual displays prominently located near sources of drinking water.• Hosting the required data on a website accessible to occupants. Visible signs should be positioned near sources of drinking water indicating the website where the data may be accessed.	Annotated Documents: => Operations Schedule => On-going Data Report Photographic evidence	
						1	W05.2 / 1 Points Filter Drinking Water	Demande des modifications importantes. Peut-être pertinent s'il y a du plomb dans l'eau. Équivalence à valider si l'entrée en plomb est retirée (réduction à la source).	Client/ opérations	For All Spaces Treatment Devices All water from drinking water dispensers is treated within the building with the following: a) A filter designed to remove suspended solids with pore size 1.5 µm or less. b) A UV disinfection system rated by NSF/ANSI Standard 55 (Class A or B) or a device rated by NSF/ANSI Standard Standard 53 or 58 for cyst removal or reduction. c) A device rated by NSF/ANSI Standard 53 or 58 for copper or lead reduction. For All Spaces Device Maintenance The following requirement is met: a) Projects submit annually through WELL Online evidence that water treatment devices have been properly maintained as per the manufacturer's recommendation.	Annotated Documents: => On-going Maintenance Report Letter Of Assurances: => MEP Photographic evidence	

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	W06. Drinking Water Promotion	1	1			W06.1 / 1 Points Ensure Drinking Water Access	Planifié. Entretien à coordonner avec les opérations	Architecte/ opérations	For All Spaces except Dwelling Units The following requirements are met: a) At least one drinking water dispenser (minimum one per floor) is located within 30 m [100 ft] walk distance of all regularly occupied floor area and in all dining areas. b) All newly installed drinking water fountains are designed for water bottle-refilling. c) The mouthpieces/outlets, protective guards and basins of drinking water fountains and dispensers are cleaned on a daily basis.	Annotated Documents: => Architectural Drawing => Operations Schedule	
				1			W07.1 / 1 Points Manage Exterior Liquid Water	Possible, à mentionner au concepteur	Architecte/ mécanique	For All Spaces The following requirements are met: a) A continuous drainage plane (e.g., a weather-resistant barrier integrated with flashing systems at penetrations) is constructed interior to the exterior cladding. b) To prevent the wicking of porous building materials, one of the below capillary break methods is used: <ul style="list-style-type: none">Free-draining spaces (e.g., between exterior cladding, weather-resistant barriers in wall assemblies).Non-porous materials (e.g., closed-cell foams, waterproofing membranes, metal) between porous materials.	Letter Of Assurances: => Architect	
	O	W07. Moisture Management	3	1			W07.2 / 1 Points Isolate Moisture-sensitive Materials	Possible, à mentionner au concepteur	Architecte/ mécanique	For All Spaces Moisture-resistant materials have been selected and/or moisture-sensitive materials are being protected, considering the following: a) Exposed entryways and glazing. b) Porous cladding materials. c) Finished floors and interior sheathing in basements, bathrooms, kitchens and high-humidity spaces.	Annotated Documents: => Professional Narrative	
				1			W07.3 / 1 Points Manage Interior Liquid Water	Possible, à mentionner au concepteur	Architecte/ mécanique	For All Spaces To prevent leaks and water damage, one of the following is installed: a) Readily accessible, single-throw manual shut-off (governed or activated per use) or automatic shut-off at point-of-connection for all hard-piped fixtures (such as toilets, dishwashers, icemakers and clothes washers). b) Building-wide plumbing leak detection system.	Letter Of Assurances: => MEP	
	O	W08. Handwashing	2	1			W08.1 / 1 Points Provide Adequate Sink	Possible, à mentionner au concepteur	Architecte/ mécanique	Bathroom and kitchen sinks meet the following requirements: a) The sink column of water is at least 25 cm [10 in] in length (measured along flow of water, even if at an angle). b) The sink column of water is at least 8 cm [3 in] away from any edge of the sink. c) The sink basin is at least 23 cm [9 in] in width and length.	Letter Of Assurances: => Architect	
				1			W08.2 / 1 Points Provide Handwashing Support	Possible, à mentionner au concepteur	Architecte/ mécanique	For All Spaces At all sink locations, the following are provided: a) Fragrance-free hand soap placed in dispensers with disposable and sealed soap cartridges. b) Paper towels for hand drying.	Photographic evidence	

Légende

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Concept Total: 0	O	W09. 8 - Onsite Non-Potable Water Reuse	1			1	W09.1 / 1 Points Implement Safety Plan for Non-Potable Water Capture and Reuse	Si l'eau de pluie est réutilisée dans les toilettes, ce critère peut-être intéressant. Cependant, comme la documentation semble exhaustive, à valider que le critère est nécessaire.	Coordonnateur WELL/ Ing. Mécanique	For All Spaces The following requirements are met: a) The project implements a safety plan that contains the following: <ul style="list-style-type: none">A list of key team roles for design, operations, maintenance and third-party inspection of the non-potable water system capture, treatment and use.A list of all applicable codes and regulations in the jurisdiction where the non-potable water reuse system is being installed and that govern the design, commissioning, and approval of operation of the system.A process flow diagram that displays the non-potable water sources, conveyances, storage units, treatment devices and points of use, emphasizing the points where makeup potable water (i.e., water needed to supplement non-potable needs) may be added.A description of the system that includes the sources and estimated contaminant loads of the non-potable water, the intended uses for the non-potable water, the water treatment devices (if any) and their certifications, and the water quality parameters expected at the points of use.An analysis of how human exposure to pathogens through ingestion and inhalation of non-potable water is minimized, including (if applicable) a description of how the potable water network is protected from the introduction of non-potable water, emphasizing strategies that address cross-connection control and backflow prevention.A description of the signage and identifiable pipe color-coding to distinguish the non-potable water network.A list of strategies for the control of odors, nuisances and vectors due to stagnation of non-potable water.A narrative that details provisions for emergency operations caused by overflow of storage tanks, leaks and outages.A list of operational parameters (such as flow, turbidity, coliforms or other treatment-dependent indicators) to monitor the intended functioning of the water system, their monitoring frequency and control actions if such parameters are beyond target ranges.A list of control points where the operational parameters are being measured.A list of routine maintenance protocols and schedules.A description of the procedures for system startup, determination of protocols for verification of the safety plan, including Legionella testing if a risk of inhalation exists, and schedule for third-party inspections. b) Projects submit annually through WELL Online documentation of the startup procedure, maintenance logs, results from verification tests (when applicable) and of third-party inspections. c) Projects provide visual evidence of conspicuous signage to occupants to help them to clearly distinguish potable from non-potable water (where applicable) as well as informative displays to highlight the safety features and conservation goals of the non-potable water system.	Annotated Documents: => Professional Narrative => On-going Maintenance Report Photographic evidence	
	P	N01. Fruits and Vegetables		N/A	N/A	N/A	N01.1 Ensure Fruit and Vegetable Availability	<i>Critère obligatoire.</i> Comme aucune nourriture n'est présentement supposé être offerte sur le site , la plupart des critères du prochain volet ne s'appliquent pas. Cependant, si ça change (dépanneur organisé par les occupants, machines distributrices, etc.), les préalables devront au minimum être respectés.		For All Spaces Fruit and vegetable variety If foods are sold or provided on a daily basis within the project boundary, the following requirements are met: a) In spaces where food is not prepared on-site (e.g., kitchenettes, vending, micro-kitchens), the selection includes at least two varieties of fruits and at least two varieties of vegetables. b) In spaces where food is prepared on-site (e.g., cafeterias, cafes), the selection includes at least four varieties of fruits and at least four varieties of vegetables. -----OR----- Fruit and vegetable options If foods are sold or provided on a daily basis within the project boundary, the selection meets the following requirement: a) At least 50% of available options, including beverages, are fruits and/or vegetables.	Annotated Documents: => Policy Document	Required
				N/A	N/A	N/A	N01.2 Promote Fruit and Vegetable Visibility			For All Spaces If foods are sold or provided on a daily basis within the project boundary, fruits and vegetables meet one of the following requirements: a) Placed at eye level or just below eye level. b) Placed next to cash registers. c) Placed at the end of aisles. d) Placed at the beginning of food service lines. e) Visible from the main building entrance. f) Displayed on countertop, table or other visible surface.	Photographic evidence	Required
				N/A	N/A	N/A	N02.1 Provide Nutritional Information			For All Spaces The following nutritional information is clearly displayed (per meal or item) at point-of-decision on packaging, menus or signage for all packaged foods and beverages sold or provided on a daily basis within the project boundary: a) Total calories. b) Macronutrient content (total protein, total fat and total carbohydrate) in weight and/or as a percent of the estimated daily requirements (daily values). c) Total sugar content.	Photographic evidence	Required

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	P	N02. Nutritional Transparency		N/A	N/A	N/A	N02.2 Implement Ingredient Labeling			For All Spaces The following requirements are met for all non-packaged foods and beverages sold or provided on a daily basis within the project boundary and foods prepared on-site (see Appendix N2 for exemptions): a) A list of primary ingredients is clearly displayed (per meal or item) at point-of-decision on packaging, menus or signage. If information is displayed on a digital resource, signage is present at point-of-decision to direct individuals to the digital resource. b) Common food allergens are clearly labeled at point-of-decision on packaging, menus or signage.	Photographic evidence	Required
				N/A	N/A	N/A	N02.3 Implement Refined Ingredient Labeling			All foods and beverages sold or provided on a daily basis within the project boundary that meet the following conditions are prominently labeled at point-of-decision to indicate high sugar content or partially hydrogenated oils: a) Beverages that contain more than 25 g of sugar per container. b) Non-beverage food items (except whole fruits) that contain more than 25 g of sugar per serving. c) Foods and beverages that contain partially hydrogenated oils.	Photographic evidence	Required
				N/A	N/A	N/A	N03.1 / 1 Points Limit Total Sugars			For All Spaces All foods and beverages sold or provided on a daily basis within the project boundary meet the following requirements: a) Beverages do not contain more than 25 g of sugar per container. Bulk containers of 1 L [1 qt] or larger do not contain more than 25 g of sugar per serving. b) At least 25% of beverages contain no sugar per container or serving, or drinking water is available at no cost. c) No non-beverage food item (except whole fruit) contains more than 25 g of sugar per serving.	Annotated Documents: => Policy Document	
	O	N03. Refined Ingredients	3	N/A	N/A	N/A	N03.2 / 1 Points Promote Whole Grains			For All Spaces All foods and beverages sold or provided on a daily basis within the project boundary meet the following requirements: a) In at least 50% of grain-based foods, a whole grain is the first ingredient. b) If both whole grain and refined grain options are available, whole grain options do not cost more than their refined grain counterparts (i.e., brown rice does not cost more than white rice).	Annotated Documents: => Policy Document	
				N/A	N/A	N/A	N03.3 / 1 Points Manage Oils			For All Spaces The following requirements are met: a) All foods and beverages sold or provided on a daily basis within the project boundary do not contain partially hydrogenated oils. b) Frying oils used on-site are discarded before the level of total polar materials (TPM) becomes greater than 24% during operation.	Annotated Documents: => Policy Document	
							N04.1 / 1 Points Promote Healthy Nutritional Messaging	Possible dans les aires communes (nutritional messaging)	Client/ Coordonateur WELL	For All Spaces Healthy food advertising Advertisements for foods and beverages within the project boundary meet the following requirements: a) Sugar-sweetened beverages are not marketed or promoted. b) Deep-fried food options are not marketed or promoted.	Annotated Documents: => Policy Document Photographic evidence	
	O	N04. Food Advertising	2							For All Spaces Nutritional messaging Designated eating areas or common areas contain at least three different instances of messaging per project that communicate at least one of the following: a) Encouragement of the consumption of whole, natural foods. b) Encouragement of the consumption of drinking water.		
				N/A	N/A	N/A	N04.2 / 1 Points Implement Healthy Menu Design			For All Spaces The following requirements are met if foods are sold or provided on a daily basis within the project boundary: a) A description of the nutritional criteria used to identify healthy menu items is submitted through WELL Online. Nutritional criteria should be based on dietary, scientific or medical evidence or guidelines. b) On menus and menu boards, healthy menu items are presented according to at least three of the following promotion strategies: <ul style="list-style-type: none">Included as the default options throughout the menu (e.g., a salad is the default side instead of fries or chips).Listed using appealing descriptions.Visually highlighted through icons, different colors or bolding.Listed first in each menu section.Listed in prominent areas of the menu (e.g., the top, bottom, corners).	Annotated Documents: => Professional Narrative Photographic evidence	

Légende

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N O U R I S H M E N T	O	N05. Artificial Ingredients	1	N/A	N/A	N/A	N05.1 / 1 Points Restrict Artificial Ingredients			For All Spaces One of the following requirements is met: a) Projects phase out (over a maximum of three years) the use, sale and provision of foods and beverages containing artificial ingredients listed in the table below. Additionally, all foods and beverages sold or provided within the project boundary are clearly labeled on packaging, nearby menus or signage to indicate whether they contain artificial ingredients listed in the table below. b) All foods and beverages sold or provided on a daily basis within the project boundary do not contain artificial ingredients listed in the table below: Colorings Blue 1 (E133), Blue 2 (E132), Green 3, Orange B, Citrus Red 2, Red 3 (E127), Red 40 (E129), Yellow 5 (E102), Yellow 6 (E110), carmine, cochineal extract, caramel coloring Sweeteners acesulfame-potassium (acesulfame-k), aspartame, saccharin, sucralose, cyclamate Preservatives sodium nitrate, sodium nitrite, potassium bromate, potassium iodate, propyl gallate, BHA (butylated hydroxyanisole), BHT (butylated hydroxytoluene), BVO (brominated vegetable oil) For All Spaces Employee dining areas Where food is sold or provided on a daily basis within the project boundary, the following requirements are met (as applicable): a) Where food is sold or provided for employees or visitors, at least one of the following is available for at least half of all offerings: <ul style="list-style-type: none">Individual items offered in reduced-size or half-size portions (e.g., half-sandwich) and at a lower cost compared to the larger, regular version.A version of the main course offered in a reduced-size or half-size portion and at a lower cost compared to the larger, regular version. b) Where food sold or provided for employees or visitors is self-serve and requires the use of a serving plate, bowl or cup, each of the following is met (as applicable): <ul style="list-style-type: none">Circular plates: the diameter of a plate is no larger than 25 cm [10 in].Non-circular plates: the total surface area of a plate does not exceed 507 cm² [79 in²].Bowls (except at salad stations) are no larger than 473 mL [16 oz].Cups (except for water) are no larger than 473 mL [16 oz]. For All Spaces Student dining areas Where food sold or provided for primary or secondary school students is self-serve and requires the use of a serving plate, bowl or cup, each of the following is met (as applicable): a) Circular plates: the diameter of a plate is no larger than 20 cm [8 in] for primary and 25 cm [10 in] for secondary school students. b) Non-circular plates: the total surface area of a plate does not exceed 314 cm² [49 in²] for primary and 507 cm² [79 in²] for secondary school students. c) Bowls (except at salad stations) are no larger than 240 mL [8 oz] for primary and 355 mL [12 oz] for secondary school students. d) Cups (except for water) are no larger than 240 mL [8 oz] for primary and 355 mL [12 oz] for secondary school students.	Annotated Documents: => Policy Document Photographic evidence	
	O	N06. Portion Sizes	1	N/A	N/A	N/A	N06.1 / 1 Points Promote Healthy Portions				Annotated Documents: => Policy Document	
	O	N07. Nutrition Education	1			1	N07.1 / 1 Points Provide Nutrition Education	Possible.	Client/ Coordonateur WELL	For All Spaces At least one of the following is offered at no cost: a) Cooking demonstrations on a quarterly basis, at minimum. b) Nutrition or dietary education workshops on a quarterly basis, at minimum. c) Individual nutrition consultations by registered dietitians or certified nutrition professionals on a quarterly basis, at minimum. d) Educational materials including cookbooks, magazines or other literature that promotes healthy eating and nutrition, with at least three different resources available for every 100 regular building occupants or students.	Annotated Documents: => Educational Materials => Policy Document	
	O	N08. Mindful Eating	2	1			N08.1 / 1 Points Include Designated Eating Space	Possible puisque des cafétérias ont été ajoutée au projet et comprends les aspects demandés.	Client	For All Spaces The project has a designated eating space for regular building occupants that meets the following requirements: a) Contains tables and chairs to accommodate at least 25% of regular building occupants at peak occupancy. If multiple designated eating spaces are present, the combined seating space must accommodate at least 25% of regular building occupants at peak occupancy. b) Provides protection from environmental elements (e.g., direct sunlight, rain, wind) or is in a climate-controlled space.	Annotated Documents: => Architectural Drawing	
						1	N08.2 / 1 Points Provide Daily Meal Breaks	Possible selon la politique de l'employeur.	Client	For All Spaces The following requirement is met: a) Eligible employees and students (as applicable) have a daily meal or lunch period of at least 30 minutes and the opportunity to eat away from their workstation.	Annotated Documents: => Policy Document	

Légende

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	Possible avec de petites modifications soit moyennant un coût supplémentaire et/ou, une modification aux critères de conception, etc.
	Modifications importantes ou coûteuses, ou manque d’information. Critères peuvent néanmoins considérés au besoin
	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	N09. Special Diets	2	N/A	N/A	N/A	N09.1 / 1 Points Manage Allergies and Alternatives			For All Spaces except Commercial Kitchen Spaces Meals, including catered meals, include at least one main course option for each of the following criteria upon request: a) Peanut-free. b) Gluten-free. c) Lactose-free. d) Egg-free. e) Containing no animal, seafood or dairy products. f) Containing no animal or seafood products, except for eggs and dairy. For All Spaces All foods and beverages provided by catering within the project boundary meet the following requirements: a) A list of primary ingredients is clearly displayed (per meal or item) at point-of-decision on packaging, menus or signage. b) Common food allergens are clearly labeled at point-of-decision on packaging, menus or signage.	Annotated Documents: => Policy Document	
	O	N10. Food Preparation	1	1			N10.1 / 1 Points Provide Meal Support	Possible puisque des cafétérias ont été ajoutée au projet et comprends les aspects demandés.	Client	For All Spaces except Dwelling Units Employee dining areas At least one dining space contains the following supportive amenities that meet employee demand: a) Cold storage. b) Countertop surface. c) Sink and amenities for dish and hand washing. d) Device for reheating food (e.g., microwave, toaster oven). e) Dedicated cabinets or storage units available for employee use. f) Reusable eating utensils, including spoons, forks, knives and microwave-safe plates and cups. For All Spaces except Dwelling Units Student dining areas At least one dining space for primary and secondary school students meets the following requirements: a) Provides students with access to cabinets or storage units for food storage. b) Provides students with access to a device for reheating food (e.g., microwave, toaster oven). c) Provides reusable eating utensils, including spoons, forks and microwave-safe plates and cups.	Letter Of Assurances: => Owner Photographic evidence	
	O	N11. Responsible Food Sourcing	1	N/A	N/A	N/A	N11.1 / 1 Points Implement Responsible Sourcing			For All Spaces Sustainable sourcing For foods and beverages sold or provided on a daily basis within the project boundary, the total product line meets the following criteria: a) At least 50% of the total produce line (fruits and vegetables) is certified organic. b) At least 25% of the total animal product line (meat, seafood, egg and dairy products) is certified organic, Certified Humane [®] , or certified by a GSSI-recognized Seafood Certification Scheme. For All Spaces Sustainable labeling Sustainable and humane agriculture is promoted through the following (as applicable): a) Certified organic and Certified Humane [®] products are labeled at point-of-decision. b) Local farms or sources are advertised at point-of-decision for locally sourced foods.	Annotated Documents: => Policy Document Photographic evidence	
	O	N12. Food Production	2				N12.1 / 1 Points Provide Gardening Space	Bien qu’une toiture verte est envisagée, la production de fruits et légumes n’est pas considérée pour limiter l’accès au toit (enjeu de sureté) et limiter l’irrigation de l’aménagement (crédit LEED AÉS106 Gestion des eaux pluviales).	Client/Opérations	For All Spaces except Dwelling Units The project provides a permanent and accessible space for food production within 800 m [0.5 mi] of the project boundary that meets the following requirements: a) The space includes at least one of the following: <ul style="list-style-type: none">Garden or greenhouse with food-bearing plants.Edible landscaping (e.g., fruit trees, herbs).Hydroponic or aeroponic farming system. b) The space is open to regular building occupants during regular building hours and foods grown are made available to regular building occupants. c) The space is at least 0.09 m ² [1 ft ²] per eligible employee or 0.05 m ² [0.5 ft ²] per student, whichever area is greater (up to a maximum of 70 m ² [750 ft ²]). The area calculated is the actual growing area (vertical or horizontal) used for the production of food-bearing plants.	Letter Of Assurances: => Owner Photographic evidence	

Légende

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	Possible avec de petites modifications soit moyennant un coût supplémentaire et/ou, une modification aux critères de conception, etc.
	Modifications importantes ou coûteuses, ou manque d’information. Critères peuvent néanmoins considérés au besoin
	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	N13. Local Food Environment	1	1			N12.2 / 1 Points Provide Planting Support	Comme l'accès au toit n'est pas considéré pour la majorité des occupants, ce critère n'est pas adapté pour le projet.	Client	For All Spaces The following requirements are met: a) Gardening space(s) are managed and maintained for a minimum of three years. b) Training, programming or educational opportunities are made available to regular building occupants (e.g., gardening workshops, plant harvesting guidelines) and offered quarterly, at minimum. c) Projects provide planting supplies, including planting medium, irrigation, lighting (interior spaces only), plants and gardening tools.	Letter Of Assurances: => Owner Photographic evidence	
							N13.1 / 1 Points Ensure Food Access	Réalisé. Le IGA Louise Ménard au Complexe Desjardins est situé à 600m du NCJM.	Coordonnateur WELL	For All Spaces At least one of the following requirements is met: a) The project is located within 800 m [0.5 mi] walk distance of a supermarket or store with a fruits and vegetables section. b) The project is located within 800 m [0.5 mi] walk distance of a farmers' market that is open at least once a week and operates for at least four months of the year. c) The project serves as a distribution point for community-based agriculture programs and has the resource capacity to deliver fruits and vegetables to regular building occupants at least twice a month for at least four months of the year. d) The project hosts on-site, weekly sale of fruits and vegetables within the project boundary (e.g., through food carts or mobile markets).	Annotated Documents: => Annotated Map Letter Of Assurances: => Owner	
Concept Total: 0												
	P	L01. Light Exposure and Education					L01.1 Ensure Indoor Light Exposure	Critère obligatoire. Possible, à inclure dans les critères de conception	Ing. Électrique	For All Spaces except Dwelling Units Daylight in all spaces Projects meet at least one of the following requirements: a) Spatial Daylight Autonomy of sDA200,40% is achieved for at least 30% of regularly occupied space. b) 30% of all workstations are within 6 m [20 ft] of transparent envelope glazing. Visible light transmittance (VLT) of transparent glazing is greater than 40%. c) Transparent envelope glazing area is no less than 7% of the floor area for each floor level. VLT of envelope glazing is greater than 40%. -----OR----- Daylight in common spaces Regular building occupants have unrestricted access to indoor common spaces with unassigned seating that accommodates at least 15% of regular building occupants at any given time. The spaces are located within the project boundary and each meet at least one of the following requirements: a) Spatial Daylight Autonomy of sDA300,50% is achieved for at least 70% of the space. b) 70% of all seating in the space is within 5 m [16 ft] of transparent envelope glazing with views to the exterior. Visible light Transmittance (VLT) of envelope glazing is greater than 40%. c) Transparent envelope glazing area is no less than 10% of gross internal floor area of the space. Visible Light Transmittance (VLT) of envelope glazing is greater than 40%. -----OR----- Electric light in regularly occupied spaces The following requirement is met: a) Achieve at least 1 point in Feature L03: Circadian Lighting Design.	Annotated Documents: => Architectural Drawing => Modeling Report	Required
							L01.2 Promote Lighting Education	Critère obligatoire. Possible	Client/ Coordonnateur WELL	For All Spaces Projects provide educational resources on circadian rhythm, sleep hygiene, age-related increases in light requirements and/or importance of daylight exposure on circadian and mental health that meet at least two of the following requirements: a) Educational signage is placed at high traffic points around the space. b) Newsletters or newsletter entries are issued to all occupants at least every quarter. c) At least two of the resources provided for Part 2: Health and Wellness Education of Feature C01: Health and Wellness Awareness cover information on circadian rhythm, sleep hygiene, age-related increase in light requirements and/or importance of daylight exposure to circadian and mental health.	Annotated Documents: => Educational Materials	Required

	Possible avec les recommandations déjà envisagées présentement ou synergie avec des crédits LEED déjà recommandés
	Possible avec de petites modifications soit moyennant un coût supplémentaire et/ou, une modification aux critères de conception, etc.
	Modifications importantes ou coûteuses, ou manque d’information. Critères peuvent néanmoins considérés au besoin
	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing														
LIGHT	P	L02. Visual Lighting Design					L02.1 Light Levels for Visual Acuity	<i>Critère obligatoire.</i> Le guide recommandé pour la conception est le IES Lighting Handbook 10th Edition.	Ing. Électrique	For All Spaces The following requirements are met: a) All indoor and outdoor spaces (including transition areas) comply with illuminance recommendations specified in one of the following lighting reference guidelines: <ul style="list-style-type: none">• IES Lighting Handbook 10th Edition or IES Lighting Library.• EN 12464-1: 2011.• ISO 8995-1:2002(E) (CIE S 008/E:2001).• GB50034-2013. b) A lighting plan details the below: <ul style="list-style-type: none">• Tasks or activities considered for visual lighting design in the project. All tasks and activities regularly undertaken by occupants are considered.• Height of work plane or other target of illumination.• Age ranges for the majority of occupants.	On-Site Assessment: => Performance Test Annotated Documents: => Design Specifications	Required														
	O	L03. Circadian Lighting Design	3		1		L03.1 / 3 Points Lighting for the Circadian System	Possible, option 1. Il est pertinent de rencontrer ce critère, car les enjeux de sureté pourraient nécessiter qu'il n'y ait pas de fenêtre à certains endroits, ou que leur quantité soit réduite	Ing. Électrique/ Architecte	For All Spaces Electric lighting is used to achieve light levels shown in the table below as measured on the vertical plane at eye level of the occupant. The light levels are achieved at least between the hours of 9 a.m. and 1 p.m. and may be lowered after 8 p.m. at night: a) The project meets the following requirements in regularly occupied spaces: Option 1 Option 2 Points At least 150 EML [136 melanopic equivalent daylight D65] OR The project achieves at least 120 EML [109 melanopic equivalent daylight D65] with electric light and at least 2 points in Feature L05: Enhanced Daylight Access. 1 At least 240 EML [218 melanopic equivalent daylight D65] OR The project achieves at least 180 EML [163 melanopic equivalent daylight D65] with electric light and at least 2 points in Feature L05: Enhanced Daylight Access. 3	On-Site Assessment: => Performance Test															
						1	L04.1 / 2 Points Control Solar Glare	Possible, à inclure dans les critères de conception.	Ing. Électrique/ Architecte	For All Spaces Window shading The following requirements are met in regularly occupied spaces: a) All exterior envelope glazing has shading. Atria or lobbies may be excluded. b) The shading is controllable by the occupants or set to automatically prevent glare. If shading is controlled by occupants, all shades are raised or retracted either manually or automatically at least twice per week. -----OR----- Glare calculation The following requirement is met: a) Annual sunlight exposure of ASE1000,250 is achieved for no more than 10% of regularly occupied space.	Annotated Documents: => Policy Document => Modeling Report Photographic evidence															
	O	L04. Glare Control	3				L04.2 / 2 Points Manage Glare from Electric Lighting	Possible, à inclure dans les critères de conception.	Ing. Électrique/ Architecte	For All Spaces Each luminaire meets one of the following requirements for regularly occupied spaces. Wall wash fixtures and task lamps positioned as specified by manufacturer's data, as well as decorative fixtures, may be excluded from meeting these requirements: a) 100% of light is emitted above the horizontal plane. b) Unified Glare Rating (UGR) values are met as per the below conditions: <ul style="list-style-type: none">• Luminaires installed at a height of 5 m [16 ft] or lower meet UGR of 19 or lower.• Luminaires installed at a height greater than 5 m [16 ft] meet UGR of 22 or lower. c) Shielding angles are as described in the below table: <table><tr><td>Luminance</td><td>Shielding angle, α</td><td>(α = 90 - cutoff angle)</td></tr><tr><td>< 20,000 cd/m² (including reflected sources)</td><td>No shielding required</td><td>15°</td></tr><tr><td>20,000 cd/m² to 50,000 cd/m²</td><td></td><td></td></tr><tr><td>50,000 cd/m² to 500,000 cd/m²</td><td>20°</td><td></td></tr><tr><td>> 500,000 cd/m²</td><td>30°</td><td></td></tr></table> d) Fixtures have a luminance of less than 10,000 cd/m² between 45 and 90 degrees from nadir, and/or an intensity of less than 1,000 candela between 45 and 90 degrees from nadir.	Luminance	Shielding angle, α	(α = 90 - cutoff angle)	< 20,000 cd/m² (including reflected sources)	No shielding required	15°	20,000 cd/m² to 50,000 cd/m²			50,000 cd/m² to 500,000 cd/m²	20°		> 500,000 cd/m²	30°		Letter Of Assurances: => Architect
Luminance	Shielding angle, α	(α = 90 - cutoff angle)																								
< 20,000 cd/m² (including reflected sources)	No shielding required	15°																								
20,000 cd/m² to 50,000 cd/m²																										
50,000 cd/m² to 500,000 cd/m²	20°																									
> 500,000 cd/m²	30°																									
						L05.1 / 1 Points Implement Enhanced Daylight Plan	Non recommandé compte tenu des questions de sureté et de performance énergétique. Une fenestration moins importante que le critère est donc prévue. Cependant, ce critère pourra être validé lorsque l'EMR et Site Design Brief seront complétés et que la modélisation sera effectuée.	Architecte	For All Spaces except Dwelling Units Projects meet at least one of the following requirements on each floor: a) 70% of all workstations are within 7.5 m [25 ft] of transparent envelope glazing or atria. Visible light transmittance (VLT) of transparent glazing is greater than 40%. b) Window area is no less than 10% of the floor area. Visible light transmittance (VLT) of transparent glazing is greater than 40%.	Annotated Documents: => Architectural Drawing																

Légende

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	O	L05. Enhanced Daylight Access	3		1		L05.2 / 2 Points Implement Enhanced Daylight Simulation	Possible pour un point. Une simulation doit être complétée.	Ing. Électrique	For All Spaces except Dwelling Units The following requirement is met: a) Projects demonstrate through computer simulations that sDA 300,50% is achieved for the area on each floor as shown in the table below: sDA 300,50% Points Achieved for > 55% of regularly occupied floor area 1 Achieved for > 75% of regularly occupied floor area 2	Annotated Documents: => Modeling Report	
							L05.3 / 1 Points Ensure Views	Non recommandé compte tenu des questions de sureté et de performance énergétique. Une fenestration moins importante que le critère est donc prévue. Cependant, ce critère pourra être validé lorsque l'EMR et Site Design Brief seront complétés et que la modélisation sera effectuée.	Architecte	For All Spaces Transparent envelope glazing provides access to views for at least 50% of regular building occupants. Views meet at least two of the following requirements: a) If at ground floor, distance from fenestration to roadway is at least 7.5 m [25 ft] from the exterior of the glazing. b) View factor of 3 or greater. c) Views with a vertical view angle of at least 30 degrees from occupant facing forward or sideways provide a direct line of sight to the ground or sky.	Annotated Documents: => Architectural Drawing	
	O	L06. Visual Balance	1		1		L06.1 / 1 Points Manage Brightness	Possible. À inclure dans les critères de conception. les 6 critères sont envisageables		For All Spaces At least four of the following requirements are met in all regularly occupied spaces: a) Main rooms do not exhibit 10 times greater or lesser luminance than an ancillary space. This is to avoid substantial changes in light levels as occupants move from one space to another. b) Surfaces do not exhibit 3 times greater or lesser luminance than an adjacent surface. This is to avoid substantial changes in light levels as occupants look around their immediate area. c) Surfaces do not exhibit 10 times greater or lesser luminance than another remote surface in the same room. This is to avoid substantial changes in light levels as occupants look around the room. d) Changes in light levels to 1.5 times higher or lower than initial light levels are carried out over the span of at least 30 minutes in steps or with a smooth transition. Timing considerations in the rate of change of light levels or spectrum diminish abrupt or disruptive lighting transitions. e) Uniformity of at least 0.4 is achieved on work planes. Exclude supplemental lighting from calculations. f) One section of the ceiling does not exhibit 10 times greater or lesser luminance than another section of the ceiling in the same room. Distribution of light across ceilings in a given room that maintains lighting variety but avoids both dark spots and bright spots.	Letter Of Assurances: => Architect	
	O	L07. Electric Light Quality	2			1	L07.1 / 1 Points Ensure Color Rendering Quality	Possible. À inclure dans les critères de conception.		For All Spaces except Circulation Areas Electric lighting meets at least one of the following color rendering requirements in occupiable spaces. Decorative fixtures, emergency lights and other special-purpose lighting may be excluded from these requirements. a) Electric lighting meets one of the following requirements: Metric Threshold CRI CRI > 90 CRI, R9 CRI > 80 with R9 > 50 IES TM-30-18 IES Rf ≥ 78, IES Rg ≥ 100, -1% ≤ IES Rcs,h1 ≤ 15%	Letter Of Assurances: => Architect	
						1	L07.2 / 1 Points Manage Flicker	Possible. À inclure dans les critères de conception. option b)	Ing. Électrique	For All Spaces All electric lights (except decorative lights, emergency lights and other special-purpose lighting) used in regularly occupied spaces meet at least one of the following requirements for flicker: a) A minimum frequency of 90 Hz at all 10% light output intervals from 10% to 100% light output. b) LED products with a "low risk" level of flicker (light modulation) of less than 5%, especially below 90 Hz operation as defined by IEEE standard 1789-2015 LED.	Letter Of Assurances: => Architect	
					1		L08.1 / 1 Points Enhance Occupant Controllability	À valider si le client souhaite que les occupants aient le contrôle.	Ing. Électrique	For All Spaces Ambient lighting systems in regularly occupied spaces meet the following requirements: a) Light systems are tunable and automated to meet the circadian and visual requirements of the occupants. b) Occupants have control of light levels, color temperature and color of electric light in their immediate environment and can override automated settings for at least 30% of operating hours.	Annotated Documents: => Professional Narrative	
	O	L08. Occupant Control of Lighting Environments	2			1	L08.2 / 1 Points Provide Supplemental Lighting	À valider avec le client. Lampes portatives ou prévoir pour les luminaires dans les locaux concernés s'ils peuvent être ciblés préalablement.	Ing. Électrique/ Opérations	For All Spaces except Dwelling Units The following requirements are met: a) Supplemental light fixtures meet the following requirements: • Can increase the light level on the task surface to at least twice the recommended light levels based on the reference used to meet Part 1: Light Levels for Visual Acuity in Feature L02: Visual Lighting Design. • Are provided at no cost upon request. b) Requests for supplemental light fixtures are met within eight weeks of request.	Annotated Documents: => Policy Document Photographic evidence	
Concept Total: 0												

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	P	V01. Active Buildings and Communities					V01.1 Design Active Buildings and Communities	Critère obligatoire . Possible. V04 est planifié.	Architecte	For All Spaces Achieve at least one point in one of the following features: a) Feature V03: Movement Network and Circulation. b) Feature V04: Active Commuter and Occupant Support. c) Feature V05: Site Planning and Selection. d) Feature V08: Physical Activity Spaces and Equipment. e) Feature V09: Exterior Active Design.		Required
							V02.1 Support Visual Ergonomics	Critère obligatoire. Possible. La mesure est planifiée.	Architecte	For All Spaces Desktop computer-based workstations All desktop computer monitors can be adjusted by height and horizontal distance from the user through one or more of the following: a) Monitors with built-in height adjustment. b) Height-adjustable stands. c) Mounted, adjustable arms that hold primary or additional screens. For All Spaces Laptop computer-based workstations All laptop screens can be adjusted by height and horizontal distance from the user through some combination of the following: a) Height-adjustable stands used to raise the laptop screen paired with an external keyboard and mouse that are placed on the work surface. b) Additional monitors provided with one of the following adjustability features: <ul style="list-style-type: none">Built-in height adjustment.Height-adjustable stands.Mounted, adjustable arms that hold primary or additional screens.	Letter Of Assurances: => Owner Photographic evidence	Required
	P	V02. Visual and Physical Ergonomics					V02.2 Ensure Desk Height Flexibility	Critère obligatoire. Possible. La mesure est planifiée.	Architecte	For All Spaces For at least 25% of seated-height workstations, employees have the ability to alternate between sitting or standing through one of the following: a) Adjustable height sit-to-stand desks. b) Desktop height-adjustment stands.	Letter Of Assurances: => Owner Photographic evidence	Required
							V02.3 Ensure Seat Flexibility	Critère obligatoire. Possible. La mesure est planifiée.	Architecte	For All Spaces All seating at workstations for employees meets the following adjustability requirements in compliance with the HFES 100-2007 standard or BIFMA G1-2013 guidelines: a) Chair height. b) Seat depth. c) One additional adjustability requirement: <ul style="list-style-type: none">Seat angle.Backrest angle.Arm rests.	Letter Of Assurances: => Owner Photographic evidence	Required
							V02.4 Provide Standing Support	Critère obligatoire. Possible, si requis.	Client	For All Spaces All workstations in which employees are regularly required to stand for 50% or more of their working hours include at least 10 cm [4 in] of recessed toe space and one of the following: a) A footrest or footrail to allow employees to alternate resting feet or a seat or leaning chair that allows occupants to alternate between standing and sitting or leaning. b) Anti-fatigue mats or cushions that are also anti-slip and anti-trip.	Letter Of Assurances: => Owner Photographic evidence	Required
						V02.5 Provide Ergonomics Education	Critère obligatoire. Possible.	Client	For All Spaces Projects provide education that is appropriate for employees, workstations and type of work being conducted in the space. At a minimum, topics include: a) Information on how to recognize risk factors for musculoskeletal disorders and ergonomic issues in the work environment relevant to the project. b) Information on how to recognize signs and symptoms of musculoskeletal disorders relevant to the type of work conducted in the project space. c) Information on the reporting processes for risk factors and musculoskeletal disorders. d) Information on how to adjust ergonomic furnishings (e.g., seating) and workstations (e.g., height adjustment stands) provided by the project team. e) Information on the process for employees to request ergonomic furnishings (as applicable). f) Information on proper posture and/or form (e.g., proper posture while seated, standing, lifting, bending).	Annotated Documents: => Educational Materials	Required	

Légende

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	Modifications importantes ou coûteuses, ou manque d’information. Critères peuvent néanmoins considérés au besoin
	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	V03. Movement Network and Circulation	3				V03.1 / 1 Points Design Aesthetic Circulation Networks	Pas recommandé pour des enjeux de sureté. Il n'y aura probablement pas un escalier auquel le public aura accès en temps normal. À valider.	Architecte	For All Spaces Hallways Hallways within the project boundary are aesthetically designed through the inclusion of at least two of the following per floor: a) Music. b) Artwork. c) Light levels of at least 215 lux [20 fc] when in use. d) Views of an interior atrium, courtyard or daylight via windows or skylights. e) Natural design elements (e.g., plants, water features, images of nature). f) Gamification. For All Spaces Staircases At least one staircase or other active path between floors (e.g., ramps) is open to regular building occupants, services all floors of the project and is and aesthetically designed through the inclusion of at least two of the following per floor: a) Music. b) Artwork. c) Light levels of at least 215 lux [20 fc] when in use. d) Views of an interior atrium, courtyard or daylight via windows or skylights. e) Natural design elements (e.g., plants, water features, images of nature). f) Gamification.	Letter Of Assurances: => Owner Photographic evidence	
							V03.2 / 1 Points Integrate Point-of-Decision Signage	Pas recommandé pour des enjeux de sureté. Il n'y aura probablement pas un escalier auquel le public aura accès en temps normal.À valider.	Architecte	For All Spaces Projects implement point-of-decision signage that encourages stair use at each of the following locations within the project boundary (minimum of one sign per location): a) Elevator banks or other modes of motorized vertical circulation (e.g., escalators). b) Base of stairs/stairwells and re-entry points at each floor. c) Junctions in corridors that lead to either a stairwell open to regular building occupants or an elevator bank (or other modes of motorized vertical circulation).	Letter Of Assurances: => Owner Photographic evidence	
							V03.3 / 1 Points Promote Visible Stairs	Pas recommandé pour des enjeux de sureté. Il n'y aura probablement pas un escalier auquel le public aura accès en temps normal. À valider.	Architecte	For All Spaces At least one staircase or other path between floors (e.g., ramps) meets the following requirements: a) Open to regular building occupants. b) Services all floors of the project. c) Located physically and/or visibly before any motorized vertical circulation (e.g., elevator or escalator), as measured from the main point of entry to the project or building.	Annotated Documents: => Architectural Drawing	
	O	V04. Active Commuter and Occupant Support	3	2			V04.1 / 2 Points Provide Bicycle Storage	La mesure est planifiée. Compatible avec le crédit LEED ET 106 <i>Installations pour bicyclettes</i>	Architecte	For All Spaces except Dwelling UnitsRetail Spaces Bike parking infrastructure The following requirements are met: a) Short-term bicycle parking is located within 30 m [100 ft] walk distance of the main building entrance and can accommodate at least 2.5% of peak visitors (minimum of four spaces per building). b) Long-term bicycle parking is located within 30 m [100 ft] walk distance of the main building entrance and can accommodate at least 5% of regular building occupants (minimum of four spaces per building). c) Basic bicycle maintenance tools, including tire pumps, patch kits and hex keys, are provided on-site. -----OR----- Bike parking policy The following requirements are met: a) Bicycles are allowed in tenant spaces. In multi-floor buildings, building occupants and visitors are able to utilize elevators or freight elevators to transport bicycles between floors. b) Basic bicycle maintenance tools, including tire pumps, patch kits and hex keys, are provided on-site.	Annotated Documents: => Policy Document Letter Of Assurances: => Architect Photographic evidence	
							V04.2 / 2 Points Provide Facilities for Active Occupants	La mesure est planifiée. Des casiers sont requis en plus du crédit LEED ET106 <i>Installations pour bicyclettes</i> . Les casiers sont également planifiés. (1 point car le maximum des points est atteint).	Architecte	For All Spaces except Dwelling Units Projects provide the following: a) One on-site shower and changing room for the first 100 regular building occupants (excluding all early childhood education and primary school students) and an additional shower and changing facility for every 150 additional regular building occupants (excluding all early childhood education and primary school students). b) One on-site locker for every five regular building occupants or evidence that the lockers provided exceed demand by at least 20%.	Letter Of Assurances: => Architect Photographic evidence	

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	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing						
M O V E M E N T	O	V05. Site Planning and Selection	3	2			V05.1 / 2 Points Select Sites with Diverse Uses	Réalisé. Les "use types" suivants sont présents à moins de 400m: (Convenience store, Pharmacy, Other retail, Bank, Gym, Hair care, Dry cleaner, Restaurant, Child care, Cultural arts facility, Medical clinic, Place of worship, Fire station, Post office, Public park.	Coordonnateur WELL	For All Spaces The following requirement is met: a) The project is located within 400 m [0.25 mi] walk distance of at least eight existing use types. Uses and restrictions are defined in Appendix V2.	Annotated Documents: => Annotated Map							
				1			V05.2 / 2 Points Select Sites with Access to Mass Transit	Réalisé. NCJM est situé à 300m de la station de métro Place-d'Armes. Cependant, 1 point car le maximum des points est atteint.	Coordonnateur WELL	For All Spaces One of the following requirements is met: a) The project is located in an area (zip or postal code) with a minimum Transit Score® of 70. b) The project is located in a community where mass transportation is present and offers a minimum of 72 trips per weekday and 40 trips per weekend day with service stations within: <ul style="list-style-type: none">400 m [0.25 mi] walk distance of the project boundary for bus or streetcar.800 m [0.5 mi] walk distance of the project boundary for bus rapid transit stops, light or heavy rail stations, commuter rail stations or ferry services.	Annotated Documents: => Annotated Map							
							V05.3 / 2 Points Select Sites with Pedestrian Friendly Streets	Réalisé. Le Walk Score est de 95. Cependant, 0 point car le maximum des points est atteint.	Coordonnateur WELL	For All Spaces One of the following requirements is met: a) The project is located in an area (zip or postal code) with a minimum Walk Score® of 70. b) 90% of total street length within an 800 m [0.5 mi] radius of the project boundary has continuous sidewalks or all-weather pathways present on both sides.	Annotated Documents: => Annotated Map							
							V05.4 / 2 Points Select Sites with Bike Friendly Streets	Réalisé. Le Walk Score est de 92. Cependant, 0 point car le maximum des points est atteint.	Coordonnateur WELL	For All Spaces One of the following requirements is met: a) The project is located in an area (zip or postal code) with a minimum Bike Score® of 70. b) The project is located within 200 m [656 ft] walk distance of an existing bicycle network that connects riders to at least 10 use types that are within a 4.8 km [3 mi] cycling distance. Uses and restrictions are defined in Appendix V2.	Annotated Documents: => Annotated Map							
	O	V06. Physical Activity Opportunities	3		2		V06.1 / 2 Points Implement Activity Programs for Employees	Peut-être offert. À valider avec le client.	Client	For All Spaces The following requirements are met: a) Age and ability appropriate physical activity/exercise opportunities, led by a qualified professional, are offered to eligible employees at no cost at one of the frequencies shown in the table below: <table><tr><td>Frequency</td><td>Points</td></tr><tr><td>At least one event per month</td><td>1</td></tr><tr><td>At least one event per week</td><td>2</td></tr></table>	Frequency	Points	At least one event per month	1	At least one event per week	2	Annotated Documents: => Policy Document	
	Frequency	Points																
At least one event per month	1																	
At least one event per week	2																	
			N/A	N/A	N/A	V06.2 / 2 Points Implement Activity Programs for Students	N/A		For All Spaces The following requirements are met for early childhood education and primary school students: a) Meet one of the frequency requirements in the table below for physical activity opportunities (e.g., recess, physical education curriculum, before or after school programming): <table><tr><td>Frequency</td><td>Points</td></tr><tr><td>> 180 minutes per week</td><td>1</td></tr><tr><td>> 60 minutes per day</td><td>2</td></tr></table> b) Have policies in place that stipulate physical activity opportunities are not to be withheld as a form of punishment.	Frequency	Points	> 180 minutes per week	1	> 60 minutes per day	2	Annotated Documents: => Policy Document		
Frequency	Points																	
> 180 minutes per week	1																	
> 60 minutes per day	2																	
O	V07. Active Furnishings	2			2	V07.1 / 2 Points Provide Active Workstations	Peut-être offert. À valider avec le client. Le 75% est possible pour 2 points.	Client	For All Spaces Sit-stand workstations Sit-stand workstations are available to all employees and present in quantities described in the table below and may include the following types: a) Manual or electric adjustable height workstation. b) Seated-height workstations with a manual or electric height-adjustable desktop stand. <table><tr><td>Sit-Stand Desks</td><td>Points</td></tr><tr><td>At least 50% of workstations</td><td>1</td></tr><tr><td>At least 75% of workstations</td><td>2</td></tr></table> For All Spaces Dynamic workstations Dynamic workstations are available to all employees and present in sufficient quantities such that at least 3% of employees could reserve or use them at any time and may include the following types: a) Treadmill desk. b) Bicycle desk. c) Portable furnishings (e.g., stepper machine, balance board).	Sit-Stand Desks	Points	At least 50% of workstations	1	At least 75% of workstations	2	Letter Of Assurances: => Owner Photographic evidence		
Sit-Stand Desks	Points																	
At least 50% of workstations	1																	
At least 75% of workstations	2																	

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	Non recommandé
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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	V08. Physical Activity Spaces and Equipment	2			1	V08.1 / 1 Points Provide Dedicated Activity Spaces	Non prévue pour le moment, mais peut être planifié dans les étapes subséquentes. Peut accueillir les activités de V06.1. Garder en tête le maximum de point possible pour ce critère.	Client	For All Spaces except Dwelling UnitsClassroom The following is made available to employees at no cost: a) A dedicated physical activity space that is at least 370 m ² [4,000 ft ²] or 18.6 m ² [200 ft²] plus 0.1 m ² [1 ft²] per employee.	Annotated Documents: => Architectural Drawing	
							V08.2 / 1 Points Provide Physical Activity Equipment	Non prévue pour le moment, mais peut être planifié dans les étapes subséquentes. Garder en tête le maximum de point possible pour ce critère.	Client	For All Spaces The following requirements are met: a) At least one type of age and ability appropriate equipment from each of the following categories, accompanied by instructions for safe use, is made available to employees, students or residents (as applicable) at no cost: <ul style="list-style-type: none">Cardiorespiratory equipment.Muscle-strengthening equipment. b) Total units for each category should allow for use by at least 1% of employees, students or residents (as applicable) at any given time.	Letter Of Assurances: => Owner Photographic evidence	
							V08.3 / 1 Points Provide Off-Site Activity Spaces	Parc et piste cyclable à proximité. Activités hivernales possibles, à confirmer. Garder en tête le maximum de point possible pour ce critère.	Coordonnateur WELL	For All Spaces At least one of the following is available at no cost to employees or residents (as applicable) within 800 m [0.5 mi] walk distance of the project boundary and is available for use at least 75% of the year: a) A green space. b) Recreational field or court. c) A gym, fitness center or similar facility. d) A walking, hiking or biking trail. e) Outdoor fitness zone that includes all-weather fitness equipment. f) A play space geared toward children (e.g., a playground) that meets design requirements outlined by the U.S. Consumer Product Safety Commission (Appendix V4).	Annotated Documents: => Annotated Map	
	O	V09. Exterior Active Design	1				V09.1 / 1 Points Integrate Active Façades	Pas envisagée pour le moment compte tenu de la vocation du projet.	Architecte	For All Spaces The following requirements are met: a) The building's street-facing façades include no more than 15 m [50 ft] or 40% (linear distance) of blank space along the street level, achieved by incorporating at least one of the following design elements: 1. Street-level windows, which allow visibility into the space. 2. Window display cases. 3. Murals or other artistic installations. 4. Biophilic and other landscape elements. 5. Mixed building textures, colors and/or other design elements.	Annotated Documents: => Architectural Drawing	
							V09.2 / 1 Points Provide On-Site Pedestrian Destinations	Impossible compte tenu de la vocation du projet.	Architecte	For All Spaces Projects provide at least two of the following within the WELL project boundary: a) An outdoor plaza or similar open-air space that can be used year-round and contains seating and biophilic elements, provides access to daylight and is supported with wayfinding signage. b) A fountain or water feature. c) A walking path or trail supported with wayfinding signage. d) A drinking fountain or water refilling station. e) Trees, planters and/or other landscaped elements. f) Artistic installations.	Annotated Documents: => Architectural Drawing	
	O	V10. Enhanced Ergonomics	1		1		V10.1 / 1 Points Utilize Ergonomic Consultation	Peut être offert selon l'intérêt et les politiques du client.	Client	For All Spaces At least twice per year, a certified ergonomist or an individual with a professional degree in human factors/ergonomics (or equivalent) offers the following services to all employees: a) An audit of existing ergonomic conditions in the space, including workstations, furnishings, work areas and existing policies. b) On-site adjustments to existing furnishings at occupant request and/or on-site training for staff on how to adjust workstation furnishings.	Annotated Documents: => Policy Document	

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	V11. Physical Activity Promotion	1		1		V11.1 / 1 Points Promote Physical Activity	Peut être offert selon l'intérêt et les politiques du client. À valider si déjà offert.	Client	For All Spaces Employee programs Projects provide at least two of the following physical activity incentives for all eligible employees: a) Financial rewards including direct payments or subsidies, gift cards or prizes. b) Tax-exempt payroll deductions related to active transportation, mass transportation or other types of physical activity opportunities (e.g., gym membership). c) Bike share memberships, gym memberships, fitness classes or other types of opportunities (e.g., races, sports teams or training) that are offered at no cost or subsidized by at least 50%. d) Healthcare bonuses (e.g., additional coverage for health programs or lower co-pays and/or premiums). e) Paid time off (at least one eight-hour day per quarter). f) Flexible scheduling to accommodate physical activity that is not deducted from paid time off. g) Other non-monetary awards or programs (e.g., employee recognition, wellness challenges or similar activities). For All Spaces Student programs Early childhood education, primary and secondary schools develop and implement the following programs: a) A program that aims to reduce daily time spent in at least one of the following sedentary behaviors: <ul style="list-style-type: none">• TV viewing.• Recreational computer or smartphone use.• Video gaming.• Other recreational, screen-based sedentary behaviors. b) A program that aims to promote daily physical activity through at least one of the following: <ul style="list-style-type: none">• Teaching strategies that incorporate movement and activity into the lesson.• Physical education.• Recess or similar physical activity breaks.• Combined school-based physical education and community-based interventions such as those that engage families or foster community partnerships.	Annotated Documents: => Policy Document	
					1		V11.2 / 1 Points Promote Participation Awareness	Peut être offert selon l'intérêt du client.	Client	For All Spaces The following requirement is met: a) Projects maintain awareness of engagement in physical activity promotion programs and report anonymized monthly averages submitted annually through WELL Online.	Annotated Documents: => On-going Data Report	
		O	V12. Self-Monitoring		1		V12.1 / 1 Points Provide Self-Monitoring Tools	Mesure coûteuse et moins pertinente pour le client.	Client	For All Spaces Wearables are made available to all eligible employees and meet the following requirements: a) Are provided for personal use at no cost or are subsidized by at least 50%. b) Aggregate data via the device's central platform, allowing individuals to monitor their own metrics over time. c) Measure at least two of the following physical activity metrics: <ul style="list-style-type: none">• Steps.• Active minutes and/or intensity.• Distance.• Activity types.• Floors climbed.	Annotated Documents: => Policy Document	
	Concept Total: 0											
	P	T01. Thermal Performance					T01.1 Support Thermal Environment	Critère obligatoire. Possible, respecter ASHRAE 55-2013 et inclure les autres mesures dans les critères de conception.	Ing. Mécanique	For All Spaces except Commercial Kitchen Spaces Dwelling Units Mechanically ventilated spaces The following requirements are met: a) During 98% of the standard occupied hours of the year, 95% of regularly occupied spaces achieve thermal conditions representing Predicted Mean Vote (PMV) levels within +/- 0.5; PPD ≤ 10% (as per ASHRAE 55-2013, ISO 7730: 2005 or EN 15251:2007). Project describes outdoor weather conditions under which PMV and PPD levels would not be achieved, including historical weather data demonstrating that they are not expected to occur more than 2% of standard occupied hours per year. b) During all standard occupied hours of the year, all regularly occupied spaces achieve thermal conditions representing Predicted Mean Vote (PMV) levels within +/- 0.7; PPD ≤ 15%. c) Projects submit assumptions of clothing insulation and metabolic rate (and for projects using the elevated air speed method, air speed at a height between 0.6 and 1.7 m [2 to 5.6 ft]) used in design calculations. -----OR----- Naturally ventilated spaces One of the following requirements is met: a) 80% acceptability limit (as per ASHRAE 55-2013) in regularly occupied spaces. b) Class I or II acceptability limit (as per EN 15251:2007) in regularly occupied spaces.	On-Site Assessment: => Performance Test Annotated Documents: => Professional Narrative Letter Of Assurances: => MEP	Required

Légende

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THERMAL COMFORT	O	T02. Enhanced Thermal Performance	3				T01.2 Monitor Thermal Parameters	Critère obligatoire. Possible, à coordonner avec Opérations.	Opérations	For All Spaces Conduct ongoing monitoring according to the following requirements: a) The dry-bulb temperature, relative humidity, air speed (only for projects that use elevated air speed method) and mean radiant temperature are monitored in regularly occupied spaces within the building at intervals no less than twice a year (once in winter and once in summer season), and results are annually submitted through WELL Online. b) The number and location of sampling points comply with the requirements outlined in the Performance Verification Guidebook.	Annotated Documents: => On-going Data Report Letter Of Assurances: => Owner	Required
							T02.1 / 1 Points Enhance Thermal Environment	Non recommandé pour garder une marge de manœuvre, comme le critère est relativement contraignant.	Ing. Mécanique	For All Spaces except Commercial Kitchen Spaces Mechanically ventilated spaces The following requirements are met: a) During all standard occupied hours of the year, all regularly occupied spaces achieve thermal conditions representing Predicted Mean Vote (PMV) levels within +/- 0.5; PPD ≤ 10% (as per ASHRAE 55-2013, ISO 7730:2005 or EN 15251:2007). -----OR----- Naturally ventilated spaces During all standard occupied hours of the year, all regularly occupied spaces achieve one of the following thermal conditions: a) 90% acceptability limit (as per ASHRAE 55-2013). b) Class I acceptability limit (as per EN 15251:2007).	On-Site Assessment: => Performance Test Annotated Documents: => Professional Narrative Letter Of Assurances: => MEP	
							T02.2 / 3 Points Achieve Thermal Comfort	À valider la volonté du client pour cette mesure. Difficile à atteindre compte tenu du niveau de satisfaction demandé.	Client	For All Spaces except Commercial Kitchen Spaces A post-occupancy survey is administered at least twice a year, including once in June, July or August and once in December, January or February, at least six months after occupancy, which satisfies the following conditions: a) All regular building occupants are invited to participate in the anonymous survey. b) Responses are collected from the following number of respondents: <ul style="list-style-type: none">At least 35% the total occupants if more than 45 occupants are solicited.At least 15 occupants if solicited occupants number is between 20 and 45.At least 80% of the total occupants if fewer than 20 occupants are solicited. c) The survey includes an assessment of overall satisfaction with thermal performance and identification of thermal comfort-related issues in accordance with either: <ul style="list-style-type: none">The sample survey in Appendix T1.Any pre-approved survey listed in Part 1: Administer Project Survey in Feature C03: Occupant Survey. d) The results of the survey responses comply with one of the target satisfaction thresholds as specified in the table below: Thermal Comfort Satisfaction Thresholds Points 80% of regular occupants 2 90% of regular occupants 3	Annotated Documents: => Survey Materials => Professional Narrative	
	O	T03. Thermal Zoning	2				T03.1 / 2 Points Ensure Thermostat Control	Non recommandé, puisque cette mesure est contre-productive avec la bonne performance énergétique du bâtiment.	Ing. Mécanique	For All Spaces except Commercial Kitchen Spaces The following requirements are met for all regularly occupied spaces equipped with a heating and/or cooling system: a) All regularly occupied spaces contain thermal zones, as shown in the table below (note: individual rooms less than 30 m ² [320 ft ²] or 5 occupants are still considered separate zones): Zone Density Points Minimum 1 thermal zone per 60 m ² [650 ft ²] or per 10 occupants (whichever results in fewer thermal zones) 1 Minimum 1 thermal zone per 30 m ² [320 ft ²] or per 5 occupants (whichever results in fewer thermal zones) 2 b) Temperature sensors are positioned at least 1 m [3.3 ft] away from direct sunlight, air supply diffusers, mechanical fans and heaters and away from exterior walls, windows and doors or any other significant source of heat or cold. c) All regular building occupants have control over temperature through either: <ul style="list-style-type: none">Thermostats Present within the thermal zone.Digital interface available on a computer or phone.	Letter Of Assurances: => MEP	
	O	T04. Individual Thermal Control	3		3		T04.1 / 3 Points Ensure Personal Thermal Comfort	À valider la volonté du client pour cette mesure.	Ing. Mécanique/ Client	For All Spaces except Commercial Kitchen Spaces Points are awarded based on the proportion of regular building occupants that are covered by at least one of the following requirements: Availability Points 50-99% 2 100% 3 a) In all regularly occupied and shared spaces within the same heating or cooling zone, regular building occupants have access upon request to personal thermal comfort devices (e.g., personalized fans, heated/cooled chairs, and others, except combustion-based space heaters) that provide individual user control of air speed, air temperature and/or mean radiant temperature. b) All rooms with a heating and/or cooling system that are regularly occupied by a single occupant meet one of the below conditions: <ul style="list-style-type: none">Occupant has the ability to adjust the temperature.Occupant has access to personal thermal comfort devices.Implement localized air delivery as described in Part 4: Implement Advanced Air Distribution of Feature A06: Enhanced Ventilation.	Letter Of Assurances: => Owner	

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THERMAL COMFORT	O	T05. Radiant Thermal Comfort	2				T04.2 / 1 Points Facilitate Thermal Adaptation	À valider la volonté du client pour cette mesure. Le maximum de point est atteint si le précédent critère est de 3 point.	Client	For All Spaces except Commercial Kitchen SpacesDwelling Units Projects meet the following requirements: a) All occupants have access upon request to blankets. Used shared blankets are washed at minimum on a weekly basis. b) A flexible dress code policy allows for individual thermal preferences.	Annotated Documents: => Policy Document	
					1		T05.1 / 1 Points Implement Radiant Systems	Possible. Au choix du concepteur.	Ing. Mécanique	For All Spaces except Commercial Kitchen Spaces At least 50% of the floor area of regularly occupied spaces within the project boundary is serviced by one of the following systems: a) Hydronic radiant heating and/or cooling systems. b) Electric radiant systems.	Letter Of Assurances: => MEP	
	O	T06. Thermal Comfort Monitoring	1		1		T05.2 / 1 Points Implement Dedicated Outdoor Air Systems	Possible. À valider lors de la conception.	Ing. Mécanique	For All Spaces Mechanically ventilated spaces In spaces where an independent system is used for heating and/or cooling, dedicated outdoor air systems meet one of the following requirements: a) The system complies with ASHRAE Design Guide For Dedicated Outdoor Air Systems (2017). b) A detailed design review of the proposed system is conducted by an independent, qualified and registered professional mechanical engineer demonstrated not to have a conflict of interest. The review addresses thermal comfort (dry-bulb temperature, humidity and air velocity, at a minimum) and ventilation rates, as well as overall serviceability and system reliability. Reports must demonstrate satisfactory compliance with ventilation standards of Part 1: Ensure Adequate Ventilation in Feature A03: Ventilation Effectiveness .	Letter Of Assurances: => MEP	
	O	T07. Humidity Control	1		1		T06.1 / 1 Points Monitor Thermal Environment	Possible. Mesures en continu et affichage de l'information. Comme le critère est exigeant, d'autres mesures peuvent être envisagées pour atteindre la certification avant celui-ci.	Ing. Mécanique / Client	For All Spaces Thermal comfort monitors Projects monitor dry-bulb temperature, relative humidity, air speed and mean radiant temperature in regularly occupied areas within the building, satisfying the following requirements: a) Measurements are taken in occupied zones at least 1 m [3.3 ft] away from exterior walls, doors, direct sunlight, air supply/exhausts, mechanical fans, heaters or any other significant source of heat or cold. b) The sensor placement density is minimum one per floor or one every 325 m ² [3,500 ft ²], whichever is more stringent. c) Measurements are taken at intervals and heights specified in the table below: Parameter Sampling Interval Sampling Height Above the Floor Dry-bulb temperature 10 minutes or less 1.1–1.7 m [3.6–5.6 ft] Relative humidity 10 minutes or less 1.1–1.7 m [3.6–5.6 ft] Air speed (only if elevated air speed is used) 3 months or less 1.1–1.7 m [3.6–5.6 ft] Mean radiant temperature 3 months or less 1.1–1.7 m [3.6–5.6 ft] d) Data are analyzed for regularly occupied hours (e.g., median, mean, 75 th and 95 th percentile) and annually submitted through WELL Online. e) Dry-bulb temperature and relative humidity sensors are recalibrated or replaced annually and certificates attesting their calibration or replacement are annually submitted through WELL Online. Air speed and mean radiant temperature sensors used for quarterly measurements are calibrated as per manufacturer's specification. For All Spaces Environmental measures display Real-time display of dry-bulb temperature and relative humidity is made available to occupants through one of the following: a) At least one monitor screen prominently positioned at the height of 1.1–1.7 m [3.6–5.6 ft] per 930 m ² [10,000 ft ²] of regularly occupied space. b) A website or phone application. At least one visible sign is positioned per 930 m ² [10,000 ft ²] of regularly occupied space indicating the website or phone application where the data may be accessed.	Annotated Documents: => On-going Data Report => Policy Document Letter Of Assurances: => MEP Photographic evidence	
	O						T07.1 / 1 Points Manage Relative Humidity	Possible. Bon pour le confort. À inclure dans les critères de conception.	Ing. Mécanique	For All Spaces All parts of the project except high-humidity areas meet one of the following requirements: a) The mechanical system has the capability of maintaining relative humidity between 30% and 60% at all times by adding or removing moisture from the air. b) The modeled relative humidity levels in the space are between 30% and 60% for at least 98% of all business hours of the year.	On-Site Assessment: => Performance Test Letter Of Assurances: => MEP	
Concept Total: 0												

Légende

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	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
S	P	S01. Sound Mapping					S01.1 Manage Background Noise Level	Critère obligatoire. Possible, à détailler et prendre en considération pendant la conception.	Architecte	For All Spaces Projects meet at least one of the following requirements to address background noise levels: a) An architectural drawing is provided that indicates the projected background noise level (dBA or NC) attributable to HVAC equipment noise, external noise intrusion or a similar source (e.g., a floor plan is color-coded to indicate dBA levels between regularly occupied spaces or across façade elements). b) A professional narrative is provided that indicates the measured background noise level (dBA or NC) attributable to HVAC equipment noise, external noise intrusion or a similar source in each space as denoted in Feature S02: Maximum Noise Levels.	Annotated Documents: => Architectural Drawing => Professional Narrative	Required
							S01.2 Manage Acoustical Privacy	Critère obligatoire. Possible, à détailler et prendre en considération pendant la conception.	Architecte	For All Spaces Projects meet at least one of the following requirements to address acoustical privacy: a) An architectural drawing is provided that indicates the projected acoustical performance of typical walls that separate regularly occupied spaces throughout the project (e.g., STC/Rw, NIC/Dw or equivalent sound transmission metrics denoted on a partition schedule from an architectural drawing set). b) A professional narrative is provided that indicates the measured level of acoustical privacy between regularly occupied spaces or within open workspace environments (e.g., NIC/Dw (or equivalent) or SPP data across partitions).	Annotated Documents: => Architectural Drawing => Professional Narrative	Required
							S01.3 Label Acoustic Zones	Critère obligatoire. Possible, à détailler et prendre en considération pendant la conception.	Architecte	For All Spaces The following zones are identified and labeled on the project floor plan: a) Loud zones: includes areas intended for appliances, mechanical equipment or amenities (e.g., kitchens, fitness rooms, social spaces, recreational rooms). b) Quiet zones: includes areas intended for focused work, wellness, rest, study and/or privacy. c) Mixed zones: includes areas intended for learning, collaboration and/or presentation.	Annotated Documents: => Architectural Drawing	Required
	O	S02. Maximum Noise Levels	3			2	S02.1 / 3 Points Limit Background Noise Levels	Puisque la vocation du bâtiment se prête à un niveau sonore faible, ces objectifs semblent possibles et pertinents. À encadrer dans la conception. Arbitrairement, deux points sont visés. À peaufiner durant la conception.	Architecte	For All Spaces The following is achieved: a) Background noise levels do not exceed the thresholds below: Sound Pressure Level (SPL) Sleeping Areas (Daytime) Average SPL (Leq) dBA dBC 70 Max SPL (LMax) dBA dBC 80 Average SPL (Leq) dBA dBC 75 Max SPL (LMax) dBA dBC 85 Average SPL (Leq) dBA dBC 80 Open Workspaces, Dining Areas Conference Rooms,Classrooms, Residential Sleeping Areas (Nighttime) 45 40 35 3 65 60 55 45 40 2 70 75 60 50 50 75 80 75 55 50 45 1 75 70	On-Site Assessment: => Performance Test	
	O	S03. Sound Barriers	3			1	S03.2 / 1 Points Ensure Proper Door Specifications	Les coupe-son aux portes et portes insonorisées sont possibles. À inclure dans les critères de conception.	Architecte	For All Spaces Doors which connect private offices, conference rooms, classrooms and dwelling units to other spaces are constructed with two of the following requirements: a) Minimum STC-30 acoustical performance. b) Gaskets at the head and jams. c) Automatic drop seal or sweep at base. d) A non-hollow core door.	Annotated Documents: => Design Specifications	

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	Non recommandé
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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
O U N D	O	S04. Sound Absorption	3			1	S04.1 / 1 Points Meet Thresholds for Reverberation Time	Critère possible. Pour ce critère et tous les autres concernant l'acoustique, la présence d'un acousticien dans l'équipe de conception est recommandée.	Architecte / Accousticien	For All Spaces except Dwelling Units The following is achieved: a) Spaces meet the maximum RT(60) thresholds in the table below: Room Type Size RT(60) (seconds) Conference rooms N/A < 0.6 Classrooms < 280 m³ [10,000 ft³] < 0.6 Between 280 m³ [10,000 ft³] and 570m³ [20,000 ft³] 0.5 to 0.8 > 570 m³ [20,000 ft³] 0.6 to 1.0 Lecture halls < 280 m³ [10,000 ft³] < 0.7 Between 280 m³ [10,000 ft³] and 570m³ [20,000 ft³] 0.6 to 0.9 > 570 m³ [20,000 ft³] 0.7 to 1.3 Music rehearsal spaces < 280 m³ [10,000 ft³] < 1.1 Between 280 m³ [10,000 ft³] and 570m³ [20,000 ft³] 1.0 to 1.4 Fitness facilities < 280 m³ [10,000 ft³] 0.7 to 0.8 Between 280 m³ [10,000 ft³] and 570m³ [20,000 ft³] 0.8 to 1.1 > 570 m³ [20,000 ft³] 1.0 to 1.8	On-Site Assessment: => Performance Test	
							S04.2 / 1 Points Implement Sound Reducing Ceilings	Possible, à inclure dans les critères de conception.	Architecte / Accousticien	For All Spaces except Dwelling Units Spaces have ceiling finishes that meet the following specifications: a) Ceiling treatment meets the minimum NRC/ aw values described below: Space Type NRC/ aw Open Workspaces Enclosed Offices Dining Spaces 0.7 for at least 75% of available ceiling area Conference Rooms Classrooms 0.7 for at least 50% of available ceiling area	Annotated Documents: => Design Specifications	
							S04.3 / 1 Points Implement Sound Reducing Vertical Surfaces	Possible, à inclure dans les critères de conception.	Architecte / Accousticien	For All Spaces except Dwelling Units Spaces have wall finishes that meet following requirement: a) Wall treatments meet the minimum NRC/aw values described below: Space Type NRC/ aw Enclosed offices Dining spaces 0.7 for at least 25% of at least one wall Conference rooms Classrooms 0.7 for at least 25% of at least two walls	Annotated Documents: => Design Specifications	
	O	S05. Sound Masking	2		2		S05.1 / 2 Points Implement Sound Masking	Possible. À valider avec l'intention du client.	Architecte	For All Spaces except Dwelling Units Sound masking is provided in all of the following spaces and sound levels meet the following requirements when measured from the nearest workstation: a) Open offices, libraries, cafeterias, corridors/hallways: 45 - 48 dBA. b) Enclosed offices and quiet zones identified through S01: Sound Mapping, Part 3: Label Acoustic Zones: 40 - 42 dBA.	On-Site Assessment: => Performance Test	
							S06.1 / 1 Points Specify Impact Noise Reducing Flooring	Possible. À valider avec l'intention du client.	Architecte	For All Spaces The following requirement is met within the project boundary: a) For the following space types, the floor-ceiling construction meets the following minimum Impact Insulation Class (IIC) ratings with materials tested in accordance with ASTM E492-09, ISO 717.2 or equivalent: Space Type Location of Applicable Floor-Ceiling Assembly Minimum Impact Insulation Class (IIC) Dwelling Units Above 55 Fitness, Gym, Pool (if the space below is within the project boundary) Below 50 Enclosed Office, Conference, Teleconference Above 50 Open Workspace Above 45 Retail, Restaurant (if the space below is within the project boundary) Below 45	Annotated Documents: => Design Specifications	
							S06.2 / 2 Points Meet Thresholds for Impact Noise Rating	Possible. À valider avec l'intention du client.	Architecte	For All Spaces The following requirement is met within the project boundary: a) For the following space types, the floor-ceiling construction achieves the following Normalized Impact Sound Ratings (NISR), as measured on-site, in accordance with ASTM E1007-19, ISO 140-7 or equivalent, by a professional demonstrated not to have a conflict of interest: Space Type Location of Applicable Floor-Ceiling Assembly Minimum NISR - 1 Point Minimum NISR - 2 Points Dwelling Units Above 52 57 Fitness, Gym, Pool (if the space below is within the project boundary) Below 47 52 Enclosed Office, Conference, Teleconference Above 47 52 Open Workspace Above 42 47 Retail, Restaurant (if the space below is within the project boundary) Below 42 47	Annotated Documents: => Professional Narrative	
	O	S06. B - Impact Noise Management	2									
	Concept Total: 0											

Légende

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	P	X01. Fundamental Material Precautions					X01.1 Restrict Asbestos	<i>Critère obligatoire.</i> Habituellement respecté. À inclure dans les critères de conception.	Architecte/ ingénieurs	For All Spaces The following newly installed building materials contain asbestos less than 1% by weight: a) Thermal system insulation (applied to pipes, fittings, boilers, breeching, tanks, ducts or other like components to prevent heat loss or gain). b) Surfacing material (that is sprayed, troweled or otherwise applied to surfaces, for example acoustical plaster or fireproofing materials). c) Wallboard/millboard, resilient floor covering, roofing and siding shingles (including metal cladding) and construction mastics.	Letter Of Assurances: => Architect	Required
							X01.2 Limit Mercury	<i>Critère obligatoire.</i> Habituellement respecté. À inclure dans les critères de conception.	Ing. Électrique/ Architecte	For All Spaces All newly installed products meet the following: a) Illuminated exit signs, thermostats, switches and electrical relays are mercury-free. b) Low-mercury or mercury-free lamp technology meets the following specifications: Fluorescent Lamp Maximum Mercury Content Compact, integral ballast 3.5 mg Compact, non-integral ballast 3.5 mg T-5, circular 9 mg T-5, linear 2.5 mg T-8, eight-foot 10 mg T-8, four-foot 3.5 mg T-8, two- and three-foot 3.5 mg T-8, U-bent 6 mg High-Pressure Sodium Lamp Maximum Mercury Content 400 W or less 10 mg Over 400 W 32 mg	Letter Of Assurances: => Architect => MEP	Required
							X01.3 Restrict Lead	<i>Critère obligatoire.</i> Habituellement respecté. À inclure dans les critères de conception.	Architecte/ ingénieurs	For All Spaces All newly installed building materials meet the following materials composition requirements: a) Drinking water systems and plumbing products are lead-free as defined by the Safe Drinking Water Act (SDWA) and certified by an ANSI Accredited third-party certification body. b) Indoor paints and surface coatings contain less than 90 ppm total lead.	Letter Of Assurances: => Architect => MEP	Required
	P	X02. Hazardous Material Abatement					X02.1 Manage Asbestos Hazards	<i>Critère obligatoire.</i> Possible. À inclure dans les critères de conception.	Architecte/ Coordonnateur WELL	For All Spaces Asbestos For renovation of buildings constructed prior to any applicable laws banning or restricting asbestos, asbestos evaluation and abatement is conducted in accordance with the following: a) An on-site investigation of the space conducted by a certified risk assessor or inspector technician to determine the presence of any asbestos-based hazards is conducted, including Category I and Category II non-friable ACM, per 40 CFR Part 61; Subpart M; §61.145, Standard for demolition and renovation. b) All spaces found to have asbestos hazards adhere to applicable protocol per 40 CFR Part 61; Subpart M; §61.145, Standard for demolition and renovation and 40 CFR Part 61; Subpart M; §61.150, Standard for waste disposal for manufacturing, fabricating, demolition, renovation and spraying operations.	Annotated Documents: => Remediation Report => Professional Narrative	Required
							X02.2 Manage Lead Hazards	<i>Critère obligatoire.</i> Possible. À inclure dans les critères de conception.	Architecte/ Coordonnateur WELL	For All Spaces For renovation or painting of buildings constructed prior to any applicable laws banning or restricting lead paint, lead paint evaluation and abatement is conducted in accordance with the following: a) An on-site investigation of the space conducted by a certified risk assessor or inspector technician to determine the presence of any lead-based hazards in paint, dust and soil using the definitions in 40 CFR Part 745; Subpart D; §745.65, Lead-based paint hazards for residential dwellings or child-occupied facilities. b) All spaces found to have lead-based hazards must adhere to 40 CFR Part 745; Subpart L; §745.227, Work practice standards for conducting lead-based paint activities: target housing and child-occupied facilities, as outlined for multi-family dwellings and 40 CFR Part 745; Subpart E; Section §745.85, Work practice standards.	Annotated Documents: => Remediation Report => Professional Narrative	Required
							X02.3 Manage Polychlorinated Biphenyl (PCB) Hazards	<i>Critère obligatoire.</i> Possible. À inclure dans les critères de conception.	Architecte/ Coordonnateur WELL	For All Spaces For renovation work that disturbs PCB-containing building materials (e.g. common window replacements) in buildings constructed before the institution of any applicable laws banning or restricting PCBs, prepare an abatement strategy for PCB containing materials in accordance with the U.S. Environmental Protection Agency Steps to Safe PCB Abatement Activities that includes the following: a) Characterization and sampling. b) Protective measures for workers. c) Safe storage and disposal. d) Record keeping.	Annotated Documents: => Remediation Report => Professional Narrative	Required

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	P	X03. Exterior Materials and Structures					X03.1 Ensure Acceptable Structures	Critère obligatoire. Possible et habituellement respecté. À inclure dans les critères de conception.	Architecte	For All Spaces Projects fulfill the following (as applicable): a) Wood structures manufactured before the institution of any applicable laws banning or restricting CCA are tested. Wood structures containing CCA are replaced or remediated in accordance with the U.S. Environmental Protection Agency's (EPA) Chromated Copper Arsenate (CCA): Consumer Advice Related to CCA-Treated Wood, using penetrating (non-film-forming), oil-based, semi-transparent stains. b) Artificial turf is assessed and remediated per the following: <ul style="list-style-type: none">Conduct a sample test if lead concentration of synthetic turf fibers is unknown.If the lead concentration of synthetic turf fibers is greater than 300 mg/kg, perform dust-wipe testing per EPA protocol for dust-wipe testing to determine the surface dust-lead loading.^[37864]If the wipe-testing results show lead loadings greater than 40 µg/ft² replace with turf containing lead concentrations less than 300 mg/kg. c) All newly installed plastic lumber materials meet the following: <ul style="list-style-type: none">Are made from high-, medium- or low-density polyethylene (HDPE, MDPE or LDPE).Do not contain: wood-plastic composites, multiple commingled recycled consumer plastics, fiberglass (for nonstructural applications), polystyrene or polyvinyl chloride (PVC).	Annotated Documents: => Remediation Report => Professional Narrative Letter Of Assurances: => Architect	Required
							X03.2 Manage Exterior Paint and Soil	Critère obligatoire. Possible. À inclure dans les critères de conception.	Architecte/ Coordonnateur WELL	For All Spaces Projects fulfill the following (as applicable): a) Lead hazard assessment (and remediation, if needed) is performed to the top 1.5 cm [0.6 in] of existing bare soil (not covered by grass, vegetation or other landscaping including mulch covered soil) outside the building envelope and within the project boundary, following the guidance provided by US Federal Code 40 CFR Part 745; Subpart L; §745.227, "Work practice standards for conducting lead-based paint activities: target housing and child-occupied facilities." Relevant sections are listed below: <ul style="list-style-type: none">Risk assessment (d)(8-11).Abatement (e)(7).Determinations (h)(4). b) Industrial surface paints and coatings contain less than 0.1% by weight lead in the form of lead or lead compounds.	Annotated Documents: => Remediation Report => Professional Narrative Letter Of Assurances: => Architect	Required
	O	X04. Waste Management	1			1	X04.1 / 1 Points Manage Hazardous Waste	Possible. À inclure dans les critères de conception.	Architecte/ Coordonnateur WELL	For All Spaces Project addresses hazardous waste through the following: a) A waste stream plan addresses the management of the following hazardous wastes per U.S. Environmental Protection Agency 40 CFR Part 273 Standards for Universal Waste Management, Subpart B or C (as applicable): <ul style="list-style-type: none">Batteries.Pesticides.Equipment and lamps that may contain mercury. b) A waste stream plan includes the following: <ul style="list-style-type: none">Waste receptacle access.Waste or source reduction (including prevention, minimization and reuse).Recycling and materials recovery (including batteries, pesticides, lamps and mercury-containing equipment).Disposal of waste.	Annotated Documents: => Professional Narrative Letter Of Assurances: => Owner Photographic evidence	

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	O	X05. In-Place Management	2		2		X05.1 / 2 Points Manage Hazardous Materials	Possible. À inclure dans les critères de conception.	Architecte/ Coordonnateur WELL	<p>For All Spaces</p> <p>Asbestos</p> <p>For buildings constructed prior to any applicable laws banning or restricting asbestos, the following interim strategies for managing existing hazards are conducted and repeated every three years:</p> <p>a) Development, maintenance and update of an asbestos management plan in accordance with the Asbestos Hazard Emergency Response Act (AHERA), including all necessary actions to minimize asbestos hazards: repair, encapsulation, enclosure, maintenance and removal, following protocol detailed in the Asbestos-Containing Materials in Schools Rule, 40 CFR Part 763; Subpart E; §763.84-§763.95 or local equivalent.</p> <p>b) Asbestos inspection through an accredited professional per the Asbestos Model Accreditation Plan (MAP), National Standards for Hazardous Air Pollutants (NESHAP) or local equivalent.</p> <p>c) Post-abatement clearance for all projects is conducted in accordance with AHERA Asbestos-Containing Materials in Schools, 40 CFR Part 763; Subpart E; Appendix A, Mandatory transmission electron microscopy method.</p> <p>For All Spaces</p> <p>Lead</p> <p>For buildings constructed prior to any applicable laws banning or restricting lead paint, the following interim strategies for managing existing hazards are conducted and repeated every three years:</p> <p>a) Interim controls are applied per 24 CFR Part 35; Subpart R; §35.1330, Interim controls, from Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, for paint stabilization of deteriorated paint and treatments for friction and impact surfaces where levels of lead dust are above levels specified in §35.1320, or applicable local law or regulation.</p> <p>b) Post-abatement clearance is conducted per 24 CFR Part 35; Subpart R; §35.1340, Clearance.</p> <p>c) A reevaluation is conducted and a report produced per 24 CFR Part 35; Subpart R; §35.1355(b), Ongoing lead-based paint maintenance and reevaluation activities.</p> <p>d) As provided by 24 CFR Part 35; Subpart B; §35.155, Minimum requirements, interim controls may be performed in combination with, or be replaced by, abatement methods provided by 35.1355, Ongoing lead-based paint maintenance and reevaluation activities.</p> <p>For All Spaces</p> <p>Student or childcare areas</p> <p>Facilities constructed prior to any applicable laws banning or restricting lead paint and serving children under age 6 apply the following:</p> <p>a) 24 CFR Part 35; Subpart R; 35.1355(d), Chewable surfaces.</p> <p>Annotated Documents: => Remediation Report Letter Of Assurances: => Owner</p>		
	O	X06. Site Remediation	2			1	X06.1 / 2 Points Implement Site Assessment and Cleanup	Phase I et II complétées. À valider avec Exp et le client, si remédiation est prévue. Possible si oui.	Client/ Ingénieur environnement	<p>For All Spaces</p> <p>Project sites used for past or present industrial activities [e.g. hazardous waste storage, fuel station, manufacturing plant, dry cleaners (on-site plant), automotive repair] undertake site assessment and remediation, prior to construction, per the following:</p> <p>a) Phase I Environmental Site Assessment as described in ASTM E1527-05.</p> <p>b) Phase II Environmental Site Assessment as described in ASTM E1903-97.</p> <p>c) ISO/PRF 18504, Soil Quality Guidance on Sustainable Remediation, ASTM E2893-16, Standard Guide for Greener Cleanups or an equivalent program. Sustainable remediation programs considered equivalent must include the following base criteria:</p> <ul style="list-style-type: none">• Provide risk-based approach to sustainable remediation (risk assessment/risk-benefit analysis).• Consider the three pillars of sustainability: social, environmental and economic.• Apply a tiered approach to assessment and provide an appraisal of remediation options.• Consider safe working practices for workers during remediation.• Require record keeping of decision-making and assessment processes.• Provide protocol for engaging stakeholders, including management of impacts on community.• Adopt a long-term vision that ensures lasting results. <p>Annotated Documents: => Remediation Report => Professional Narrative</p>		

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
MATERIALS	O	X07. Pesticide Use	1		1		X07.1 / 1 Points Manage Pesticides	Possible. Concerne la toiture végétale. S'assurer qu'aucun pesticide n'est requis. À inclure dans les critères de conception.	Client/ Ing. Civil/ Opérations	For All Spaces Pesticide minimization One of the following requirements is met: a) Outdoor pesticide use is eliminated. b) Hazards associated with outdoor pesticide use are minimized through the following: <ul style="list-style-type: none">The creation of an Integrated Pest Management plan that incorporates elements detailed in Appendix X1.Use of outdoor pesticides with a Hazard Tier ranking of 3 (least hazardous) based on the Pesticide Research Institute's PestSmart tool or "Least Restricted" based on the Pesticide Product Evaluator tool, except in cases of emergency. For All Spaces Pesticide application Projects provide the following for planned and emergency application of pesticides: a) Planned use: <ul style="list-style-type: none">Provide paper or digital notification to all building occupants on the protocol for pesticide use notification.Notify all building occupants via paper or digital means at least 24 hours prior to pesticide application.Post a notification sign at the site of application 24 hours prior to application and leave in place for at least 24 hours.Notification signs include the pesticide name, registration number, treatment location and date of application. b) Emergency use: <ul style="list-style-type: none">Provide paper or digital notification to all building occupants on the protocol for pesticide use notification.Notify all building occupants via paper or digital means within 24 hours of pesticide application.Post a notification sign at the site of application within 24 hours and leave in place for at least 24 hours.Notification signs include the pesticide name, registration number, treatment location and date of application.Provide information on the type of emergency or reason for unplanned use.	Annotated Documents: => Operations Schedule	
	O	X08. Hazardous Material Reduction	1		1		X08.1 / 1 Points Limit Hazardous Materials	Possible. À inclure dans les critères de conception.	Architecte/ ingénieurs	For All Spaces Projects meet one of the following requirements and develop a purchasing plan for continued procurement: a) For all newly installed building materials, at minimum 20% by cost of the following building products and material types contain less than 100 ppm added lead: <ul style="list-style-type: none">Doors and door hardware.Ductwork.Conduits.Metal studs.Mirrors/glass.Roofing or flashing.Brass cooler drains, pumps, motors and valves.Vinyl blinds or wallcovering. b) For all newly installed furnishings and furniture (including textiles, finishes and dyes), all components that constitute at least 5%, by weight, furniture or furnishing assembly meet the following thresholds for material content: <ul style="list-style-type: none">Mercury less than 100 ppm.Cadmium less than 100 ppm.Antimony less than 100 ppm.Hexavalent chromium in plated finishes less than 1000 ppm. c) All newly installed electrical components: fire alarms, meters, sensors, thermostats and load break switches, meet the following maximum concentration value per listed substance: <ul style="list-style-type: none">Lead (Pb): less than 1000 ppm.Mercury (Hg): less than 1000 ppm.Cadmium (Cd): less than 100 ppm.Hexavalent Chromium: (Cr VI) less than 1000 ppm.	Letter Of Assurances: => Architect	

Légende

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	X09. Cleaning Products and Protocol	2		1		X09.1 / 1 Points Ensure Acceptable Cleaning Ingredients	Possible. À coordonner avec le client et les opérations.	Client/ Opérations	<p>For All Spaces Low hazard cleaning products Cleaning products, soaps, shampoos, disinfection and sanitization products are not manufactured with ingredients classified under the Globally Harmonized System (GHS) for the following endpoints:</p> <p>a) Carcinogenic, mutagenic or reprotoxic substances:</p> <ul style="list-style-type: none">• H340 (may cause genetic defects).• H350 (may cause cancer).• H360 (may damage fertility of the unborn child). <p>b) Systemic toxicity/organ effects:</p> <ul style="list-style-type: none">• H372 (causes damage to organs through prolonged or repeated exposure). <p>c) Skin and respiratory irritation:</p> <ul style="list-style-type: none">• H317 (may cause an allergic skin reaction).• H334 (may cause allergy or asthma symptoms or breathing difficulties if inhaled). <p>-----OR-----</p> <p>Cleaning product advocacy The following requirements are met:</p> <p>a) Projects submit documentation demonstrating an attempt for procurement has been made for products free of ingredients classified under GHS hazard statements in Option 1. This includes a petition or formal request filed with at minimum three manufacturers/labels (per product category) who were unable to meet their needs.</p> <p>b) Projects are permitted to use cleaning products compliant with Type 1 environmental labels as defined by ISO 14024:1999 and developed by a member of the Global Ecolabelling Network in place of products free of ingredients classified under GHS hazard statements in Option 1.</p>	Annotated Documents: => Operations Schedule	
					1		X09.2 / 1 Points Implement Acceptable Cleaning Practices	Possible. À coordonner avec le client et les opérations.	Client/ Opérations	<p>For All Spaces Program training Projects have an annual training program in place for facilities staff or providers that addresses the following requirements:</p> <p>a) Sequence of cleaning steps and use of personal protective equipment.</p> <p>b) Use of cleaning products and materials and related equipment (e.g., cleaning chemical dispensing equipment).</p> <p>c) Selection of low hazard cleaning materials.</p> <p>For All Spaces Cleaning protocol Projects implement a cleaning schedule that addresses the following:</p> <p>a) Extent and frequency of cleaning, including dated cleaning logs.</p> <p>b) Protocol for disinfection, including:</p> <ul style="list-style-type: none">• Identification and maintenance of a list of high-touch surfaces.• Limitation of disinfection to high-touch surfaces.	Annotated Documents: => Operations Schedule	
		X10. Volatile			1		X10.1 / 2 Points Manage Volatile Organic Compounds	Possible. À inclure dans les critères de conception.	Architecte/ Ingénieurs	<p>For All Spaces The following requirements are met:</p> <p>a) At minimum, 20% by cost of the following newly installed components contain halogenated flame retardants at less than 100 ppm or the extent allowable by local code:</p> <ul style="list-style-type: none">• Furniture.• Window and waterproofing membranes, door and window frames and siding.• Flooring, ceiling tiles and wall coverings.• Piping and electrical cables, conduits and junction boxes.• Sound and thermal insulation.• Duct and pipe insulation. <p>b) At minimum, 20% by cost of the following newly installed components contain urea-formaldehyde at less than 100 ppm or the extent allowable by local code:</p> <ul style="list-style-type: none">• Composite wood products.• Laminating adhesives and resins.• Thermal insulation.	Letter Of Assurances: => Architect	

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	X10. Volatile Compound Reduction	3		1		X10.2 / 1 Points Manage Semi-Volatile Organic Compounds (SVOCs)	Possible. À inclure dans les critères de conception.	Architecte/ ingénieurs	For All Spaces The following requirements are met: a) At minimum, 20% by cost of the following newly installed components contain total phthalates at less than 100 ppm or the extent allowable by local code: <ul style="list-style-type: none">Flooring, including resilient and hard surface flooring and carpet.Wall coverings, window blinds and shades, shower curtains, furniture and upholstery.Plumbing pipes and moisture barriers. b) All newly installed electrical components contain total phthalates at less than 1000 ppm or the extent allowable by local code in the following: <ul style="list-style-type: none">Fire alarms, meters, sensors, thermostats and load break switches.	Letter Of Assurances: => Architect	
							X10.3 / 1 Points Purchase Compliant Products	Possible. À valider selon l'intérêt et les politiques du client.	Client	For All Spaces Projects have a program in place that specifies the following: a) Future purchasing for repair, renovation or replacement of building materials and products that complies with requirements for 100% of components listed in Part 1: Manage Volatile Organic Compounds and Part 2: Manage Semi-Volatile Organic Compounds (SVOCs).	Annotated Documents: => Policy Document	
							X11.1 / 2 Points Manage Furniture and Furnishings Emissions	Possible. À inclure dans les critères de conception. 1 point budgété arbitrairement pour l'instant.	Architecte	For All Spaces Newly installed furniture and furnishings meet VOC emission thresholds set by one of the following programs, earning points based on the table below: Percent Compliance by Cost Points 50% 1 90% 2 a) ANSI/BIFMA e3-2011 Furniture Sustainability Standard sections 7.6.1 or 7.6.2, tested in accordance with ANSI/BIFMA Standard Method M7.1-2011 or any more recent version. b) California Department of Public Health (CDPH) Standard Method v.1.1-2010 or any more recent version.	Letter Of Assurances: => Architect	
	O	X11. Long-Term Emission Control	3		1		X11.2 / 1 Points Manage Flooring and Insulation Emissions	Possible. À inclure dans les critères de conception.	Architecte	For All Spaces All newly installed flooring and thermal and acoustic insulation (excluding duct and pipe insulation) inside the building meet the following VOC emission thresholds: a) California Department of Public Health (CDPH) Standard Method v.1.1-2010 or any more recent version.	Letter Of Assurances: => Architect	
							X12.1 / 3 Points Manage Product Emissions: Adhesives, Sealants, Paints and Coatings	Possible. À inclure dans les critères de conception. 1 point budgété arbitrairement pour l'instant.	Architecte	For All Spaces Newly applied adhesives, sealants, paints and coatings applied inside the building meet all VOC emission thresholds set by the following program, earning points based on the table below: Percent Compliance by Volume Points 50% 1 70% 2 90% 3 a) California Department of Public Health (CDPH) Standard Method v.1.1-2010 or any more recent version for VOC emissions.	Letter Of Assurances: => Architect	
							X12.2 / 2 Points Manage Product Content: Adhesives, Sealants, Paints and Coatings	Possible. À inclure dans les critères de conception. 1 point budgété arbitrairement pour l'instant.	Architecte	For All Spaces Newly applied adhesives, sealants, paints and coatings applied inside the building meet VOC content thresholds of one of the following (as applicable) earning points based on the table below: Percent Compliance by Cost Points 75% 1 90% 2 a) California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings. b) Conduct testing of VOC content in accordance with ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2, and meet thresholds of CARB 2007 or SCAQMD Rule 1113 June 3, 2011 or Rule 1168 amended October 6, 2017.	Letter Of Assurances: => Architect	
	O	X12. Short-Term Emission Control	3		1							
	O	X13. Enhanced Material Precaution	2	2			X13.1 / 2 Points Select Optimized Materials	La mesure est déjà planifiée, car le critère est déjà couvert par le crédit LEED V4 Divulgateion et optimisation des produits de construction - Ingrédients des matériaux Option 2.	Architecte/ Coordonnateur WELL	For All Spaces Newly installed furnishings, built-in furniture, interior finishes and finish materials comply with some combination of the following programs, earning points based on the table below: Percent Compliance by Cost Points 15% 1 25% 2 a) Declare: Living Building Challenge Red List Free, Declare: Living Building Challenge Compliant or Living Product Challenge label. b) No GreenScreen® Benchmark 1, List Translator 1 or List Translator Possible 1 substances over 1,000 ppm, as verified by a qualified Ph.D. toxicologist or Certified Industrial Hygienist. c) Cradle to Cradle Certified™ products with a Bronze, Silver, Gold or Platinum level in the Material Health category or products with a Bronze, Silver, Gold or Platinum level Material Health Certificate from the Cradle to Cradle Products Innovation Institute.	Letter Of Assurances: => Architect	

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Concept Total: 0	O	X14. Material Transparency	2	1			X14.1 / 2 Points Promote Ingredient Disclosure	La mesure est déjà planifiée, car le crédit est déjà couvert par le crédit LEED V4 Divulgateion et optimisation des produits de construction - Ingrédients des matériaux Option 1. 1 point attribué selon le critère LEED.	Architecte/ Coordonnateur WELL	For All Spaces Material information Newly installed interior finishes and finish materials, furnishings (including workstations) and built-in furniture have some combination of the following material descriptions, with ingredients identified and disclosed to 1,000 ppm and earning points based on the table below: Minimum Percent by Cost Points 25% (by cost) 1 50% (by cost) 2 a) Declare Label. b) Health Product Declaration. c) Any screening and hazard disclosure method accepted in USGBC's LEED v4 MR credit: Building Product Disclosure and Optimization - Material Ingredients, Option 1: material ingredient reporting. For All Spaces Material library The following is met: a) A digital or physical library is provided to occupants on compliant products as part of the resource library required through Feature C01: Health and Wellness Awareness. The library is prominently displayed and easily accessible to occupants.	Letter Of Assurances: => Architect Photographic evidence	
	P	M01. Mental Health Promotion					M01.1 Commit to Mental Health Promotion	Critère obligatoire. Possible. À valider selon l'intérêt du client.	Client	For All Spaces The project or organization is committed to supporting occupant mental health and well-being through the following: a) At least three current or future mental health promotion programs or initiatives (e.g., education or awareness efforts, offering mental health screenings, stress management programs, trainings offered by a qualified in-house or contracted professional). b) Promotion of the efforts above to occupants (e.g., organization-wide email reminders, posters). c) Tailoring the efforts above to the culture and needs of the target population (e.g., why a focus on stress management, sleep or nature incorporation) as established by at least one of the following sources: <ul style="list-style-type: none">Local or national mental health data, research or trends.Occupant survey responses.Occupant interviews or focus groups.	Annotated Documents: => Policy Document	Required
							M01.2 Promote Mental Health Literacy	Critère obligatoire. Possible. À valider selon l'intérêt du client.	Client	For All Spaces All employees are offered education and resources that address mental health literacy, including the following: a) Information about mental health and common mental health conditions, including, at minimum: causes, signs and symptoms of stress, depression, anxiety and substance abuse and addiction. b) Strategies for supporting personal mental health and well-being, covering, at minimum: regular self-care practices, positive coping skills, and behaviors that influence mental health and well-being (e.g., sleep, nutrition, physical activity). c) Local mental health organizations, self-help groups and help and crisis lines (call, text and chat).	Annotated Documents: => Educational Materials	Required
	P	M02. Access to Nature					M02.1 / 1 Points Provide Access to Nature	Critère obligatoire. Comme le site et la vocation du projet ne favorisent pas le contact avec la nature, l'aménagement intérieur devra respecter les critères de ce préalable pour obtenir la certification.	Client/ Architecte	For All Spaces Projects integrate and encourage occupant access to nature within the building and project site (external to the building) through the following: a) Direct connection to nature through at least two of the below: <ul style="list-style-type: none">Plants.Water.Light.Nature views. b) Indirect connection to nature through use of natural materials, patterns, colors or images. c) Space layout, addressing placement of natural elements along common circulation routes, shared seating areas and rooms (e.g., conference rooms, common spaces) and workstations (as applicable) to enhance occupant exposure.	Annotated Documents: => Professional Narrative	Required
					1		M03.1 / 1 Points Provide Mental Health Screening	Possible. À valider selon l'intérêt et les politiques du client. Est peut-être déjà offert.	Client	For All Spaces At least one of the following mental health screening options is provided to all eligible employees at no cost: a) Online or paper self-assessment or screening tool for common mental health conditions addressing, at minimum, stress, depression, anxiety and substance use. Assessment or tool used must be evaluated and approved by a mental health professional, include guidance on interpretation of results and outline next steps for occupants who screen positive or at-risk. b) Clinical screening for common mental health conditions, addressing, at minimum, depression, anxiety, stress and substance use), followed by directed feedback and clinical referral when appropriate. Screening may be provided either directly through projects or indirectly through health insurance offerings.	Annotated Documents: => Policy Document	

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	O	M03. Mental Health Support	3		1		M03.2 / 1 Points Provide Mental Health Coverage	Possible. À valider selon l'intérêt et les politiques du client. Est peut-être déjà offert.	Client	For All Spaces The following requirements are met: a) Mental health services are available to all eligible employees at no cost or subsidized by at least 50%, including coverage for the services below, at minimum: <ul style="list-style-type: none">Referrals to qualified mental health professionals and support resources.Inpatient coverage (e.g., hospitalization).Outpatient treatment (e.g., therapy, medical management).Prescription medication coverage that allows for proper use of prescribed medications. b) Clear information on benefits coverage and how to access care services or community resources is easily and confidentially available (e.g., via a health portal or employee website). c) Confidential benefits consultation is available for all occupants with a benefits counselor, human resources representative or other benefits support staff. d) Commitment to mental health parity. For All Spaces The following are in place for eligible employees: a) Use of sick or paid time and adjustment of work schedule for treatment, appointments or other mental health needs. b) Individualized adjustment of the physical environment to support mental health needs (e.g., moving a workstation to a busier or a quieter area, providing a quiet space for breaks, providing earplugs or headphones, increasing personal space, providing the ability to work from home). c) Use of short- or long-term leave or disability for mental health needs, with option of: <ul style="list-style-type: none">Phased return to work after returning from leave.Increased interpersonal support (e.g., manager support with prioritizing and managing workloads, increased frequency of one-on-one check-ins). For All Spaces All employees are offered trainings available quarterly, at minimum, addressing at least two of the following: a) Managing personal mental health and well-being, covering topics such as developing mentally healthy habits, fostering relationships, self-care and managing mental health at work. b) Education on common mental health conditions or concerns, covering, at minimum, depression, anxiety, stress and substance use. c) Signs and symptoms of mental health distress, including how to identify emotional distress and appropriately respond (e.g., Mental Health First Aid).	Annotated Documents: => Policy Document	
					1		M03.3 / 1 Points Provide Workplace Support	À valider selon les politiques du client.	Client		Annotated Documents: => Policy Document	
	O	M04. Mental Health Education	2			1	M04.1 / 1 Points Offer Mental Health Education	Possible. À valider selon l'intérêt et les politiques du client. Demande un effort plus soutenu. Peut être pertinent compte tenu de la nature du travail au NCJM.	Client		Annotated Documents: => Policy Document	
						1	M04.2 / 1 Points Offer Mental Health Education for Managers	Possible. À valider selon l'intérêt et les politiques du client. Demande un effort plus soutenu. Peut être pertinent compte tenu de la nature du travail au NCJM	Client	For All Spaces All managers undergo formal mental health training annually. Trainings must be offered quarterly, at minimum, and address at least three of the following: a) Identifying and reducing workplace stress–related issues (e.g., training on conducting performance reviews, effective communication skills, personnel management, assertiveness, time management, conflict resolution). b) Recognizing common mental health conditions or concerns, covering, at minimum, stress and burnout, depression, anxiety and substance use. c) Supporting employees through strategies to prevent burnout, low motivation, fatigue, poor work-life balance and other work-related stress issues. d) Recognizing employee mental health concerns or crises, including increasing awareness of workplace and community resources available to employees.	Annotated Documents: => Policy Document	

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	O	M05. Stress Support	2		1		M05.1 / 1 Points Develop Stress Management Plan	Possible. À valider selon l'intérêt et les politiques du client.	Client	For All Spaces Projects complete the following: a) Evaluate at least four of the organization- or project-wide metrics below: <ul style="list-style-type: none">Frequency of absenteeism.Use of paid time off, sick days and personal days.Frequency of leave due to disability or illness.Frequency of performance issues.Employee retention and turnover rates.Employee survey responses. b) Provide a stress management plan based on the evaluation of organization- or project-wide metrics, outlining opportunities to address employee stress through organizational policies and operations, covering the topics below: <ul style="list-style-type: none">Opportunities for organizational change to address employee stress (e.g., work processes and environment, business travel policies, management of work demands, work-life balance).Opportunities for employee participation in organizational decisions regarding workplace issues that may affect job stress (e.g., work processes, environment, schedules).Plan for implementation, describing support from key management or leadership, who is leading the initiative, what is to be completed, where in the organization it will be occur, who will be impacted, and when and how it will be implemented.	Annotated Documents: => Professional Narrative	
					1		M05.2 / 1 Points Support Stress Management Programs	Possible. À valider selon l'intérêt et les politiques du client.	Client	For All Spaces Projects support employee stress management through the following: a) Stress management training or education, covering issues such as stress management at work and work-life balance. Training or education must be tailored to employee need, reviewed by a qualified professional and offered quarterly, at minimum. b) At least three additional health and wellness offerings associated with stress reduction or management (e.g., fitness opportunities, childcare support, mindfulness training). Offerings may include other features pursued by projects and in concepts outside of the WELL Mind concept.	Annotated Documents: => Policy Document	
	O	M06. Restorative Opportunities	1			1	M06.1 / 1 Points Provide Micro- and Macro-Breaks	Possible. À valider selon l'intérêt et les politiques du client. Pourrait aussi être impossible tout dépendant des politiques.	Client	For All Spaces The project encourages micro-breaks and macro-breaks among all eligible employees through: a) Policy on overtime or working beyond the typical workdays and workday length/assigned daily hours. b) Opportunities for micro-breaks during the workday, which include: <ul style="list-style-type: none">Designated time to break for a meal built into the workday.Encouragement of breaks away from the workstation throughout the workday.Description of areas available to take micro-breaks within the project boundary or within 300 m [1,000 ft] walk distance from the project boundary. c) Paid time off policy for all eligible employees, with a minimum of 20 days per calendar year (not including designated sick days or standard paid holidays), which considers the following: <ul style="list-style-type: none">How workplace culture encourages employee use of paid time off, including modeling from managers and leadership.How occupants are discouraged from engaging in work-related email, phone calls or other work during paid-time off (including weekends).Clearly defined policies on sick, vacation, floating holiday, personal and rollover days (addressing accrual policy, cap on rollover days allowed and date by when rollover days must be used).	Annotated Documents: => Policy Document	
							M07.1 / 1 Points Provide Restorative Indoor clientes	La mesure est déjà planifiée.	Architecte	For All Spaces Designated indoor space is available to all regular building occupants to support restorative practices. This may be a single space or several spaces that meets the following requirements: a) Designated exclusively for contemplation, relaxation and restoration (not to be used for work). b) Is a minimum of 7 m² [75 ft²] plus 0.1 m² [1 ft²] per regular building occupant, up to a maximum of 74 m² [800 ft²]. Room may be broken up into multiple smaller rooms that total the required amount. c) Encourages contemplation, relaxation and restoration, in consideration of the design criteria below: <ul style="list-style-type: none">Accessible design.Lighting (e.g., dimmable light levels).Intrusive noise and sound masking (e.g., water feature, natural sounds).Thermal comfort.Seating arrangements that accommodate a range of user preferences and activities (e.g., movable lightweight chairs, cushions, mats).Nature incorporation.Calming colors, textures and forms.Visual privacy. d) Is maintained on a weekly basis, at minimum. e) Education materials or resources are available to occupants explaining the purpose of the space and how to make use of it.	Annotated Documents: => Architectural Drawing => Professional Narrative	

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MIND										For All Spaces Designated outdoor space within projects is available to all regular building occupants. This may be a single space or several spaces that meets the following requirements: a) Is designated exclusively for contemplation, relaxation and restoration (not to be used for work). b) Is a minimum of 7 m² [75 ft²] plus 0.1 m² [1 ft²] per regular building occupant, up to a maximum of 74 m² [800 ft²]. Space may be broken up into multiple smaller spaces that total the required amount. c) Encourages contemplation, relaxation and restoration, in consideration of the design criteria below: <ul style="list-style-type: none">• Accessible design.• Intrusive noise and sound masking (e.g., water feature, wind chimes).• Thermal comfort (e.g., availability of both sun-exposed and shaded areas).• Seating arrangements that accommodate a range of user preferences and activities (e.g., movable lightweight chairs, outdoor or weatherproof cushions, mats).• Nature incorporation.• Visual privacy.• Calming colors, textures and forms. d) Is maintained on a weekly basis, at minimum. e) Education materials or resources are available to occupants explaining the purpose of the space(s) and how to make use of it.	Annotated Documents: => Architectural Drawing => Professional Narrative	
	O	M08. Restorative Programming	1			1	M07.2 / 1 Points Provide Restorative Outdoor clientes	N'est pas possible pour des raisons de sureté.	Architecte			Annotated Documents: => Policy Document
	O	M09. Enhanced Access to Nature	1			1	M08.1 / 1 Points Provide Restorative Programming	Possible. À valider selon l'intérêt et les politiques du client. Pourrait aussi être impossible tout dépendant des politiques.	Client	For All Spaces At least two of the following programs focused on relaxation and restoration, such as mindfulness meditation or mindful movement (e.g., yoga, tai chi), are offered to all eligible employees at no cost or subsidized by at least 50%: a) Training courses (e.g., eight-week mindfulness-based stress reduction course) offered in-person, on-site, in a quiet and calm space and scheduled during a convenient time based on the average employee schedule (e.g., after work, during lunch). The training course must be offered at least twice a year. b) On-going programming (e.g., guided mediation, yoga) offered in-person, on-site, in a quiet and calm space and scheduled during a convenient time based on average employee schedule (e.g., after work, during lunch). Programming must be offered at least once a week. c) On-going digital offerings (e.g., guided meditation application). Employees must have unlimited access to at least one digital offering as well as ongoing access to a quiet, calm space within the project to practice.		Annotated Documents: => Architectural Drawing => Professional Narrative

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	M10. Focus Support	1		1		M10.1 / 1 Points Assess Work Environment	Possible. À valider selon l'intérêt et les politiques du client. (M10, un ou l'autre pour 1 point).	Client	For All Spaces The following requirements are met: a) The organization's work processes and space utilization support focus and productivity among employees, and projects assess the work environment through at least one of the sources below: <ul style="list-style-type: none">• Occupant survey responses.• Occupant interviews and/or focus groups.• Observational research. b) To support opportunities for focus at least two of the below are in place for all eligible employees: <ul style="list-style-type: none">• Process for requesting alternate workspace arrangements if assigned workstation does not meet occupant stimuli needs (e.g., too busy, loud or quiet). If physical or organizational constraints do not permit moving station, occupants are offered flexible working arrangements or work from home options.• Designated quiet hours, zones or rooms during the workday.• Stipend for or provision of noise-cancelling or noise-reducing headphones and/or earplugs.• Day(s) of the week on which formal meetings are discouraged.• Visual communication system to indicate do-not-disturb time (e.g., flag system).	Annotated Documents: => Policy Document => Professional Narrative	
							M10.2 / 1 Points Integrate cliente Management	Possible. À valider selon l'intérêt et les politiques du client, entre autres pour le système de réservation. À inclure dans les critères de conception. (M10, un ou l'autre pour 1 point).	Client	For All Spaces Seating and spatial layouts Projects incorporate the following into the organization of seating and spatial layout to provide differing degrees of sensory engagement: a) Work zones that support a variety of work functions (e.g., quiet work, collaborative work). b) Designated quiet zones provided as enclosable (e.g., small conference rooms, single-occupancy phone booths) or semi-enclosable (e.g., carrels) rooms with no more than three seats per room. c) Designated collaboration zones provided as enclosable or semi-enclosable rooms with no less than three seats and, at minimum, one visual vertical surface area for communicating ideas or work. d) A system for booking or reserving enclosable quiet and collaboration zones.	Annotated Documents: => Architectural Drawing => Professional Narrative	
							M11.1 / 1 Points Provide Workplace Sleep Support	Moins courant dans les mœurs canadiens. À valider selon l'intérêt et les politiques du client.	Client	For All Spaces The following requirements are met: a) Eligible employees are allowed to engage in a minimum of one 20 - 30 minute nap during the day. b) Educational materials are available on daytime napping (e.g., optimal time of day, strategies for minimization of nighttime sleep distribution). c) At least one of the furniture options below is provided per 100 eligible employees and placed in a calm, quiet and low-light environment: <ul style="list-style-type: none">• Bed or daybed.• Couch.• Cushioned roll-out mat.• Sleep pod.• Fully reclining chair.• Hammock. d) Projects address healthy sleep habits among employees who engage in shift work, including: <ul style="list-style-type: none">• Protocol to avoid unplanned changes to shift schedule, including providing minimum advance notice of schedule changes.• Educational materials on strategies to minimize fatigue, maintain good sleep hygiene and manage sleep problems associated with shift work.	Annotated Documents: => Policy Document => Educational Materials Photographic evidence	

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Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
	O	M11. Sleep Support	2				M11.2 / 1 Points Provide Non-Workplace Sleep Support	Mesure moins courante. À valider selon l'intérêt et les politiques du client.	Client	For All Spaces Employee sleep support The following requirements are met: a) Projects implement the following policies to support employees in achieving a minimum seven hours of sleep: <ul style="list-style-type: none">For non-shift work, an organizational cap is in place that sets expectations that work and communications be limited to the project or organization's business hours in the local time zone.For shift work, work and communications are expected only for the duration of the employee's shift. b) All eligible employees have access to software, applications or other tools that monitor sleep influencing behavior, covering, at minimum, sleep schedule, physical activity and eating patterns (including caffeine and alcohol consumption). Projects provide one of the following: <ul style="list-style-type: none">Paid monitoring tools at no cost or subsidized by at least 50%.Easily accessible list of free monitoring tools. c) Provide occupants with education materials on environmental and behavioral determinants of sleep quality and duration, covering, at minimum, sleep schedule, sleep environment, physical activity, nutrition (including caffeine and alcohol), light exposure, and use of technology. For All Spaces Student start times The following requirement is met: a) For students in secondary schools, the school day starts no earlier than 8:30 a.m.	Annotated Documents: => Policy Document => Educational Materials	
	O	M12. Business Travel	1				M12.1 / 1 Points Provide Business Travel Support	Il n'est pas possible de respecter les critères pour des enjeux de sûreté.	Client	For All Spaces Projects address at least two of the following requirements: a) Employers promote the following for all eligible employees: <ul style="list-style-type: none">When flying less than seven hours, employees are provided the option of a non-red eye flight.When flying more than seven hours, employees are provided at least one of the following options: non-red eye flight, fully reclining airplane seat, or the option to arrive a day early (when flying out) and take a recovery day (when flying back) to support time zone adjustment.Employees are not required to take business trips for which the total, round-trip travel time (including lay-overs, wait times and travel to and from terminals) exceeds 25% of the total trip duration (trips with a duration of less than five hours are exempt).Employees are provided with education on how to establish healthy sleep habits and manage time zone changes during and after travel. b) Employers support employee workload while away. Policy may be adjusted as needed for different teams or departments within an organization based on business needs and must cover at least three of the options below: <ul style="list-style-type: none">Establishing preferred communications channels for contacting the employee while away, including consideration of time zone differences.Reallocation of work among other non-traveling employees while traveler is away.Routine scheduling of time to catch up on work upon return.Flexible return arrangements (e.g., work from home option on day after return). c) Employers implement the options below: <ul style="list-style-type: none">Employees are booked at hotels with free fitness centers or reimbursed for fitness classes or gym access fees incurred during travel.Employees are provided with meal stipends that allow for the purchase of healthy food options.Employees are provided with education on maintaining healthy habits while traveling, covering, at minimum, physical activity and nutrition (including alcohol consumption). d) Employers implement at least two of the options below: <ul style="list-style-type: none">During business trips longer than three weeks, employees are given the time off and a budget to fly home or to fly a friend or family member to meet them for at least 48 hours (total round-trip travel time for visitor, including layovers, wait times and travel to and from terminals, may not exceed 25% of the total trip duration).During business trips longer than two weeks, financial support is provided for employees with dependents at home (including pets) to subsidize costs of caretaking while employee is traveling for business.Employees are provided with education covering how to cope with time away from family while traveling.	Annotated Documents: => Policy Document => Educational Materials	
					1		M13.1 / 1 Points Promote Tobacco Prevention	Possible et facilement réalisable.	Client/ Coordonnateur WELL	For All Spaces The following requirements are met: a) The sale of tobacco products and e-cigarettes on project property is banned (e.g., through on-site vendors). b) Education on the health consequences of tobacco is provided to all regular building occupants.	Annotated Documents: => Policy Document => Educational Materials	

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	O	M13. Tobacco Prevention and Cessation	3				M13.2 / 2 Points Support Tobacco Cessation	À valider selon l'intérêt et les politiques du client. Valider également la pertinence selon la dépendance au tabac des occupants.	Client	For All Spaces Information is available for all eligible employees about available programming, counseling and coverage related to tobacco cessation, including clear information about how to access these resources, in addition to at least four of the following requirements: a) Resources referring tobacco users to tobacco cessation telephone quit lines or online quitting resources. b) Tobacco cessation counseling covered at no cost or subsidized by at least 50%. Programs may be provided on- or off-site; in group or individual settings; and through vendors, on-site staff, health insurance plans or programs, community groups or other qualified practitioners. c) Prescription tobacco cessation medications and nicotine replacement products (e.g., inhalers, nasal sprays, bupropion, varenicline) covered at no cost or subsidized by at least 50%. d) Nationally-approved, over-the-counter nicotine replacement products (e.g., gum, patches, lozenges) covered at no cost or subsidized by at least 50%. e) Incentive program for current tobacco users actively trying to quit. For All Spaces Project policy The following requirement is met: a) A policy is in place regarding the use of alcohol and drugs on-site and is clearly communicated to all employees. For All Spaces Substance use and addiction education All employees receive education addressing substance use and addiction, focused on increasing awareness of the following: a) Management of personal substance use, covering, at minimum: <ul style="list-style-type: none">• Healthy substance use habits.• Risks and signs of dependency or addiction.• Short- and long-term health and productivity hazards of excessive substance use. b) Prescription opioid education, covering, at minimum: <ul style="list-style-type: none">• Questions to ask at point of prescribing.• Safe use (e.g., storage, disposal, driving while using).• Signs of dependency or addiction. c) How to appropriately respond to a peer struggling with substance use, covering, at minimum: <ul style="list-style-type: none">• How to support a peer's recovery efforts.• What to do in the case of a substance use emergency (e.g., withdrawal, overdose). For All Spaces Substance use and addiction support services are made available to all eligible employees at no cost or subsidized by at least 50%, including the following: a) Ability to use sick time or take leave for substance use and addiction treatment or needs. b) Materials or information for accessing substance use and addiction services and community resources, including clear information provided to employees about their benefits coverage and how to access care services. Resources must be made available to all employees in a confidential manner that can be independently accessed (e.g., via a health portal or employee website) so as to ease accessibility and minimize stress or fear of stigma in seeking information. c) Insurance or employee assistance plans offering coverage for at least five of the services below: <ul style="list-style-type: none">• Confidential substance abuse screening and resource referral.• Brief interventions (e.g., brief therapies).• Outpatient and inpatient treatment.• Medication-assisted treatment (e.g., methadone treatment).• Peer support groups.• Counseling services (e.g., behavioral therapies).• Follow-up services during treatment and recovery. d) Commitment to mental health parity, including substance use and addiction services.	Annotated Documents: => Policy Document	
	O	M14. Substance Use Education and Services	3				M14.1 / 1 Points Promote Substance Abuse Prevention and Education	À valider selon la pertinence, l'intérêt et les politiques du client.	Client		Annotated Documents: => Policy Document => Educational Materials	
							M14.2 / 2 Points Provide Access to Substance Use Services	À valider selon la pertinence, l'intérêt et les politiques du client.	Client		Annotated Documents: => Policy Document	

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Concept Total: 0	O	M15. Opioid Emergency Response Plan	3				M15.1 / 3 Points Provide Opioid Emergency Response Kits and Training	À valider selon la pertinence, l'intérêt et les politiques du client.	Client	For All Spaces Opioid response kits The following requirements are met: a) All emergency preparedness or first aid kits include: <ul style="list-style-type: none">Naloxone rescue kits. Projects may choose a single dose nasal spray, a multi-step nasal spray, a single step injection or a multi-step injection.Instructions for how to prepare and administer naloxone, as well as immediate next steps after administration.A list of who on-site has received opioid response training. b) Protocol is in place for follow-up after an opioid emergency event, including plan for: <ul style="list-style-type: none">Debriefing for those affected.Immediate replacement of naloxone kit following use. c) A schedule is in place for checking expiration dates of the kit.	Annotated Documents: => Policy Document	
										For All Spaces Opioid response training The following requirements are met: a) Employees receive opioid emergency training (in-person by a qualified provider or through video) covering: <ul style="list-style-type: none">General information about opioid use and naloxone.Recognizing the signs of an overdose and immediate steps to take.How to safely administer naloxone and what steps to take following administration.		
	P	C01. Health and Wellness Awareness					C01.1 Provide WELL Feature Guide	Critère obligatoire. Possible. À valider selon l'intérêt du client. Obligatoire pour l'obtention de la certification.	Client/ Coordonnateur WELL	For All Spaces Materials and communications are provided to allow occupants to familiarize themselves with and benefit from features that are achieved by the project, including: a) A guide (prominently displayed and/or made widely available to all occupants) describing the WELL features pursued by the project. b) Information that explains the impact of the built environment and other environmental factors on occupant health, well-being and comfort. c) Annual communications (e.g., emails, modules, trainings) to occupants about available health education, resources and policies available to them through WELL features pursued by the project.	Annotated Documents: => Professional Narrative Photographic evidence	Required
							C01.2 Promote Health and Wellness Education	Critère obligatoire. Possible. À valider selon l'intérêt du client. Obligatoire pour l'obtention de la certification.	Client/ Coordonnateur WELL	For All Spaces All occupants are offered a digital and/or physical library of health and wellness educational materials that meets the following requirements: a) Covers ten unique evidence-based health topics. b) Topics are tailored to the health concerns of building occupants (based on available regional, local and building-level demographic and health-related data) and should focus on primary prevention. Topics can include any aspect of health and wellness covered in WELL in addition to any other health topic relevant to the occupant population. c) If physical, library is open during regular business hours.		
							C02.1 Facilitate Stakeholder Charrette	Critère obligatoire. Également appelé Processus de Conception intégrée. Possible. Est bénéfique pour arrimer toutes les parties prenantes lors d'un projet.	Coordonnateur WELL	For All Spaces Projects engage stakeholders upon point of registration in project planning and conduct the following activities: a) Identify project stakeholder groups, including (as applicable) the owner, manager, facilities management team, architects, engineers, occupants, residents and human resources and workplace wellness staff. b) Perform a values assessment and alignment exercise with the team to inform any project goals or strategies to meet stakeholder expectations. c) Engage new stakeholders who join the process after the initial meeting, such as contractors, sub-contractors, vendors, building management staff, current or anticipated users of the space or new hires to the project's leadership team (as applicable). d) Set future meetings to stay focused on the project goals, develop a plan of response to stakeholder feedback and maintain a record of response.	Annotated Documents: => Professional Narrative	Required
							C02.2 Integrate Beauty and Design	Critère obligatoire. Possible. La stratégie et les idées doivent être définies lors de la conception. Pour le point b), pertinent de mettre de l'avant le résultat des fouilles archéologiques faites sur le site.	Architecte/ Client	For All Spaces Projects incorporate the following elements into one or more regularly occupied or common spaces: a) Celebration of culture (e.g., culture of occupants, workplace, surrounding community). b) Celebration of place (e.g., local architecture, materials, flora, artists). c) Integration of art. d) Human delight.		

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	P	C02. Integrative Design					C02.3 Promote Health-Oriented Mission	Critère obligatoire. Possible. À valider selon l'intérêt du client. Obligatoire pour l'obtention de la certification.	Client/ Coordonnateur WELL	For All Spaces A written document detailing the project's health-oriented mission is produced in consultation with all stakeholders, meeting the following requirements: a) Outlines objectives for health promotion. b) Connects supporting and improving occupant health to the organizational objectives or mission statement. c) Accounts for building site selection and/or conditions, including site factors that impact occupant health and wellness. d) Incorporates the ten WELL concepts: Air, Water, Nourishment, Light, Movement, Thermal Comfort, Sound, Materials, Mind and Community. e) Integrates operations and maintenance plans for facility managers and personnel managing policy requirements related to health and well-being. f) Document is included in the WELL Feature Guide established in Part 1: Provide WELL Feature Guide in Feature C01: Health and Wellness Awareness. For All Spaces All stakeholders, including at minimum (as applicable) the owner, manager, facilities management team, architects, engineers, occupants, residents and human resources and workplace wellness staff: a) Tour the building as a group and make tours available to all interested occupants. b) Discuss how building operations, maintenance, programs and policy will support adherence to WELL. c) Communicate with stakeholders (including building occupants) the planned or existing operations, maintenance and policies that support adherence to WELL. For All Spaces Third-party survey The following requirement is met for projects with ten or more eligible employees: a) A survey is selected from a survey provider approved by IWBI and listed on IWBI's website (https://v2.wellcertified.com/resources/preapproved-programs). -----OR----- Custom survey For projects with ten or more eligible employees, a survey is selected that covers at least the following topics: a) General building and occupancy information including job type or time spent in the building. b) Indoor environmental quality of air, water, light, sound and thermal comfort (thermal comfort questions cover conditions from at least twice a year, once during the cooling season and once during the heating season). c) Ergonomics, layout and aesthetics. d) Maintenance and cleanliness. e) Amenities: access to nature, views and nourishment options. f) Workplace wellness initiatives or offerings. g) Healthy behavior and amenities to support changes in behavior, physical activity and healthy eating. h) Productivity and engagement through measures of hours worked, motivation or absenteeism. i) Self-rated health and well-being. j) Standard sociodemographic information (age and gender at minimum).	Annotated Documents: => Professional Narrative	Required
							C02.4 Facilitate Stakeholder Orientation	Critère obligatoire. Possible. À valider selon l'intérêt du client. Obligatoire pour l'obtention de la certification.	Client/ Coordonnateur WELL		Annotated Documents: => Professional Narrative	Required
							C03.1 Select Project Survey	Critère obligatoire. Possible. À valider selon l'intérêt du client. Obligatoire pour l'obtention de la certification.	Client/ Coordonnateur WELL		Annotated Documents: => Survey Materials	Required
							C03.2 Administer Survey and Report Results	Critère obligatoire. Possible. À valider selon l'intérêt du client. Obligatoire pour l'obtention de la certification.	Client/ Coordonnateur WELL	For All Spaces The following requirements are met: a) Surveys are administered annually at minimum. b) All eligible employees are invited to participate in the survey. Regular reminders are sent to eligible employees to complete the survey. c) Survey protects all participant-identifying data through appropriate protective measures such as anonymous reporting; any communication of results should be on an aggregated basis such that no participant can be identified. d) Analysis of responses is conducted by qualified personnel or a qualified third party. e) Aggregate results from the survey are reported annually and submitted through WELL Online.	Annotated Documents: => On-going Data Report => Professional Narrative	Required
	P	C03. Occupant Survey										

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	O	C04. Enhanced Occupant Survey	3			1	C04.2 / 1 Points Administer Pre-Occupancy Survey and Report Results	Possible. À valider selon l'intérêt et les politiques du client. Demande un effort plus soutenu.	Client	For All Spaces For all spaces with ten or more eligible employees, projects administer a pre-occupancy survey that meets the following requirements: a) The survey is the same pre-approved survey used by the project for compliance with Part 1: Select Project Survey in Feature C03: Occupancy Survey or with Part 1: Select Enhanced Survey in Feature C04: Enhanced Occupant Survey. b) All eligible employees are invited to participate in the survey. c) Survey protects all participant-identifying data through appropriate measures such as anonymous reporting; any communication of results should be on an aggregated basis such that no participant can be identified. d) Regular reminders are dispatched to all eligible employees to complete the survey. e) Analysis of responses is conducted by a qualified third party. f) Aggregate results from the survey are reported through WELL Online and made available to employees upon request at a minimum. g) Results are compared against results of the post-occupancy survey, and the results of comparison are included in an annual report submitted through WELL Online and made available to employees upon request at a minimum. For All Spaces For all spaces with ten or more eligible employees, projects create a plan that addresses the following: a) Target satisfaction thresholds for survey responses. b) Strategies for improving unmet satisfaction thresholds. -----OR----- For spaces with ten or more eligible employees, projects work with a qualified third party survey provider to pursue additional analysis of survey results from Part 1: Select Project Survey in Feature C03: Occupant Survey: a) Targeted thematic secondary analysis (e.g., crosstabs, emergent themes, etc.). For All Spaces Annually conduct stakeholder interviews, focus groups and/or observation to discuss building features and wellness initiatives and their impacts on occupant health and well-being, in keeping with the following requirements: a) Interviews, focus groups and/or observation are conducted by qualified personnel or a qualified third party. b) Interviews, focus groups and/or observation protect participant identities around sensitive information. c) Results from the interviews, focus groups and/or observation are compared to the data from the survey used from C03: Occupant Survey or C04: Enhanced Occupant Survey. d) Analysis is conducted by qualified personnel or a qualified third party with aggregate results submitted annually through WELL Online and made available to participants upon request.	Annotated Documents: => On-going Data Report => Survey Materials	
						1	C04.3 / 1 Points Monitor and Analyze Survey Responses	Possible. À valider selon l'intérêt et les politiques du client. Demande un effort plus soutenu.	Client		Annotated Documents: => Professional Narrative	
						1	C04.4 / 1 Points Facilitate Interviews, Focus Groups and/or Observation	Possible. À valider selon l'intérêt et les politiques du client. Demande un effort plus soutenu.	Client		Annotated Documents: => On-going Data Report => Professional Narrative	
	O	C05. Health Services and Benefits	3		2		C05.1 / 2 Points Promote Health Benefits	Possiblement réalisé. À valider selon et la politique du client.	Client	For All Spaces The following requirements are met: a) Health benefits are available to all eligible employees and their dependents, at no cost or subsidized by at least 50%, that include coverage for the following: <ul style="list-style-type: none">• Medical, dental, vision care, mental health, substance use and sexual and reproductive health services.• Preventive screening and biometric assessments.• Access to medication/prescription.• Disease management for existing conditions (e.g., diabetes).• Essential immunizations based on region.• Tobacco cessation programs. b) Benefits consultation is available for all employees with a benefits counselor, human resources representative or other benefits support staff.	Annotated Documents: => Policy Document	
						1	C05.2 / 1 Points Offer On-Demand Health Services	Possible si déjà réalisé. À valider selon la politique du client. Service en ligne tel que Dialogue. Sinon, demande un effort plus soutenu.	Client	For All Spaces Health services that meet the following requirements are provided for all eligible employees at no cost or subsidized by at least 50%, on-site, within 800 m [0.5 mi] of the project or through a digital provider or platform: a) Experienced and qualified healthcare providers (e.g., physician, nurse practitioner, physician assistant) are available to provide confidential medical treatment for episodic, recurrent, urgent or other illnesses before, during and/or after typical business hours. b) A scheduling system allows for drop-ins and/or appointment booking. If services are only available during regular business hours, then eligible employees are allowed to use services during the workday.	Annotated Documents: => Policy Document	

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	O	C06. Health Promotion	3				C06.1 / 2 Points Promote Culture of Health	À valider selon la pertinence, l'intérêt et les politiques du client.	Client	For All Spaces Health promotion strategies Occupant health is promoted through at least two of the following: a) Posters, signage or digital communication that reinforce the project's culture of health and market health promotion programs to employees. b) A program that highlights occupants who exemplify the building's health culture. c) Incentive programs to increase participation in health promotion initiatives and programs (e.g., health risk assessments). Incentives could include gift certificates, cash, paid time off, product or service discounts, reduced health insurance premiums, employee recognition or other prizes. d) Competition programs combined with incentives to support engagement in health behaviors (e.g., walking, bringing healthy lunch to work). For All Spaces Health promotion leaders At least two of the following requirements are met: a) Health promotion committee or group meets at least quarterly, is actively involved in planning and implementing health promotion programs and seeks to cultivate a culture of health in the project. b) Paid health promotion or workplace wellness coordinator plans and implements health promotion programs. Individual may work full- or part-time depending on project necessity. Coordinator's entire job does not have to involve workplace wellness but it must be included in the job description/requirements and/or job performance expectations. c) Organizational leadership is engaged in health promotion programs or initiatives (e.g., documented participation in fitness activities, support groups, health screenings, health risk assessments, immunization programs).	Annotated Documents: => Policy Document	
							C06.2 / 1 Points Offer Health Risk Assessments	À valider selon la pertinence, l'intérêt et les politiques du client.	Client	For All Spaces Individualized health risk assessments (HRAs) are made available on-site to all employees, at no cost or subsidized by at least 50%. HRAs can come through written reports, letters or one-on-one counseling. All HRAs must cover at least the following: a) Preventive screening and biometric assessments. b) Education to inform employees on interpretation and understanding of results (e.g., what is a healthy blood pressure) and required next steps to improve health. c) Support in accessing follow-up services, resources or programs (e.g., lifestyle management for diabetes, smoking cessation tools and support groups).	Annotated Documents: => Policy Document	
							C07.1 / 1 Points Promote Seasonal Flu Prevention	À valider selon l'intérêt et les politiques du client. Dans le contexte actuel de la COVID-19, ce critère est pertinent.	Client	For All Spaces The following requirements are met: a) Projects provide one of the following vaccine programs: <ul style="list-style-type: none">Annual on-site seasonal influenza (flu) vaccine at no cost or subsidized by at least 50% to eligible employees and students (as applicable) starting at least one month prior to peak flu season in the project region.Health insurance coverage or voucher for flu vaccination at no cost or subsidized by at least 50%, including paid time during the workday to receive immunization for seasonal influenza. b) Vaccine program is accompanied by a seasonal flu prevention campaign that covers the following: <ul style="list-style-type: none">Alerts eligible employees and students (as applicable) regarding the availability of on-site flu vaccine clinic, coverage or vouchers and encourages or incentivizes individuals to receive the vaccine.Provides education for eligible employees and students (as applicable) on the health reasons to receive the vaccine, good hand hygiene and cough etiquette.Encourages eligible employees and students (as applicable) with flu-like symptoms to stay home through communications from leadership and managers, and provides teleworking options and/or designated sick leave time.	Annotated Documents: => Policy Document	
	O	C07. Community Immunity	2			1	C07.2 / 1 Points Implement Immunization Schedule	À valider selon l'intérêt et les politiques du client. Demande un effort plus soutenu. Dans le contexte actuel de la COVID-19, ce critère est pertinent.	Client	For All Spaces The following requirements are met: a) One of the following immunization schedules is fulfilled by all eligible employees and students (as applicable): <ul style="list-style-type: none">The U.S. Centers for Disease Control and Prevention Recommended Immunization Schedule per age group as appropriate.The World Health Organization's Recommendations for Routine Immunization. b) If full immunization schedule has not been fulfilled, eligible employees and students or guardians are provided education on the specific immunization(s) of need and direction on where to go to receive the immunization(s).	Annotated Documents: => Policy Document	

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	Non recommandé
	Selon l’intérêt ou les politiques du client/ responsable du projet

Concept	Type	Feature	Max Feature Points	Point NJCM Possible	Point NJCM Peut-être	Probablement pas	Part	Notes NJCM	Responsables NJCM	Requirements	Verification Method	Pursuing
COMMUNITY	O	C08. New Parent Support	3	3			C08.1 / 3 Points Offer New Parent Leave	Réalisé, selon le programme du Régime québécois d'assurance parentale.		For All Spaces Parental leave is available for all eligible employees and meets the following requirements: a) At least 40 weeks of parental leave are offered during any 12-month period to use during pregnancy, for the adoption or fostering of a child, or within the first three years of a child's life. b) At least some portion of the parental leave is paid per the table below. Paid parental leave is offered to all primary caregivers during any 12-month period during pregnancy, within the first three years of a child's life, or for the adoption or fostering of a child, as shown in the table below. Paid leave must be separate from other types of leave (e.g., sick leave, annual leave, vacation time), paid at employee's full salary or wages, and cover benefits: Weeks of Paid Leave Points 18-29 weeks 2 30-52 weeks 3	Annotated Documents: => Policy Document	
							C08.2 / 1 Points Promote Workplace Support	À valider selon l'intérêt et les politiques du client. Le maximum de point est déjà atteint pour ce critère.	Client	For All Spaces Projects offer the following services to support employees returning from leave: a) Programs covering at least one of the following: <ul style="list-style-type: none">Part-time options (e.g., ramp-back programs).Work from home flexibility. b) Coaching program or resources to help employees transition when returning from leave. c) Training or resources for managers on how to work with employees to create a plan for leave and optimally support employees returning from leave. d) Program or plan for supporting staffing while employee is on leave, such as temporary staffing services or training for current employees to cover job functions of employee on leave. ---		
							C09.1 / 1 Points Offer Workplace Breastfeeding Support	À valider selon l'intérêt et les politiques du client. Puisque le congé de maternité est de 1 an, il est peut-être moins pertinent d'avoir ce genre de mesure.	Client	For All Spaces In addition to designated wellness or lactation rooms, which must be separate from bathrooms, the following are available: a) Paid break times for pumping, at least 15-20 minutes every 2-3 hours (or 2-3 pumping sessions per eight-hour workday), with adjustments as necessary to meet the needs of individuals. b) One-time coverage or subsidy of at least 50% for purchase of portable breast pump and/or availability of hospital-grade electric pump for multiple users. c) Access to sink, faucet, paper towel dispenser and soap (not required to be located in wellness or lactation room but may not be located in a bathroom). d) Access to a refrigerator with dedicated and sufficient space for milk storage based on assessment of occupant storage need (not required to be located in wellness or lactation room).		
	O	C09. New Mother Support	3		2		C09.2 / 2 Points Design Lactation Room	À valider selon l'intérêt et les politiques du client. Pertinent, nous recommandons d'avoir une salle d'allaitement pour un bâtiment visité par des gens du public.	Client	For All Spaces Projects provide at least one designated lactation room that meets the following requirements: a) Is at least 2.1 m × 2.1 m [7 ft x 7 ft]. b) Separate from the bathroom. Space may be combined with an indoor restorative space (e.g., a room designed for contemplation, relaxation and restoration). If the room is multi-purpose, it includes clear signage demonstrating its designation as a lactation room. c) Includes at minimum the following: <ul style="list-style-type: none">Work surface and comfortable chair.At least two electrical outlets.User-operated lock with occupancy indicator or user-operated lock with signage available to indicate occupancy.System in place for room booking (designed in consideration of occupant privacy, such as a number system instead of occupant name).Access to sink, faucet, paper towel dispenser and soap (not required to be located in lactation room but may not be located in a bathroom).Access to a refrigerator with dedicated and sufficient space for milk storage based on assessment of occupant storage need (not required to be located in lactation room). Refrigerator is only required for regular building occupants.Dedicated storage space for pumping supplies. d) Provides a calming and comfortable environment, addressing at minimum the following: <ul style="list-style-type: none">Sound minimization.Lighting.Thermal comfort.Interior design and decorative elements (e.g., art, wall color, furniture selection, communications board). e) Present in a quantity that meets current and anticipated employee demand.	Annotated Documents: => Professional Narrative => Architectural Drawing	

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							C09.3 / 1 Points Promote Breastfeeding Education and Support	À valider selon l'intérêt et les politiques du client. Puisque le congé de maternité est de 1 an, il est peut-être moins pertinent d'avoir ce genre de mesure.	Client	For All Spaces At least three of the following are offered to eligible employees at no cost or are subsidized by at least 50% to support and promote breastfeeding: a) Breastfeeding education and behavioral counseling for primary caregiver(s). b) Lactation support through at least one of the following: <ul style="list-style-type: none">Postpartum lactation counseling to support breastfeeding initiation and continuation (no cap on sessions).Breastfeeding support groups or educational classes. Courses may be provided in-person or online; on-site or off-site; in group or individual settings; or through vendors, on-site staff, health insurance plans/programs, community groups or other practitioners.Banked breastmilk for occupants with specific medical conditions or situations (e.g., extreme prematurity, physical limitations, complications of the mother). c) Back-to-work lactation counseling to support eligible employees transitioning from leave to work. Counseling may cover a range of topics as relevant to the employee, including setting up a milk expression schedule at home and work, identifying places at work to express milk, effective techniques for milk expression, storing and handling human milk, maintaining and building milk supply, talking with supervisors about needs and adjusting to the physical and emotional demands of returning to work. d) Direct breastfeeding access through one of the following programs: <ul style="list-style-type: none">On-site childcare with a policy supporting breaks for breastfeeding throughout the workday based on individual occupant needs.Allowing breastfeeding mothers to bring their child to work at least one day per week until at minimum six months of age. e) Travel accommodations are made for breastfeeding women traveling for business, including the following: <ul style="list-style-type: none">For all trips, breastfeeding employees are provided an insulated cooler at no cost or reimbursement to cover the cost of insulated cooler.For all overnight trips lasting longer than 24 hours, breastfeeding employees are booked in hotels (or other overnight accommodations) with in-room refrigerator access.For trips lasting longer than 48 hours, employer provides coverage for breast milk shipping service (i.e., expressed milk shipped home).Education and resources are provided with strategies for how to manage pumping and breastfeeding needs while on business travel.	Annotated Documents: => Policy Document => Educational Materials	
							C10.1 / 1 Points Offer Childcare Support	Non réalisable pour l'instant. Une garderie n'est pas planifiée sur le site.	lient	For All Spaces Projects provide at least three of the following: a) On-site childcare centers compliant with local childcare licensure, operated by either the employer or a separate organization, or subsidies of at least 50% for off-site child care. b) Back-up childcare assistance. c) Seasonal childcare programs or policies for occupants with school-age children. d) Paid sick time, paid time off or personal days for the care of a child. e) One or more of the following to support all eligible employees with children: part-time options, work from home flexibility or flexible schedules.	Annotated Documents: => Policy Document	
							C10.2 / 1 Points Offer Eldercare Support	À valider selon l'intérêt et les politiques du client. (C10, 2 mesures pour un maximum de 2 points)	Client	For All Spaces Projects support employees who are caregivers of elderly family members through at minimum the following: a) Referral program to support services (e.g., eldercare assessment, case management). b) Resource list of local support services, including: <ul style="list-style-type: none">Organizations or businesses that can help with information or products.Seminars and support groups for individuals caring for elderly family members. c) Paid sick time, paid time off or personal days for the care of an elderly family member. d) One or more of the following to support all eligible employees caring for an elderly family member: part-time options, work from home flexibility or flexible schedules.	Annotated Documents: => Policy Document	
	O	C10. Family Support	2		1		C10.3 / 1 Points Offer Family Leave	À valider selon l'intérêt et les politiques du client. (C10, 2 mesures pour un maximum de 2 points)	Client	For All Spaces Employers provide the following for all eligible employees at minimum: a) At least 12 weeks of paid leave during any 12-month period for the care of a spouse, domestic partner, child, dependent, parent, parent-in-law, grandparent, grandchild or sibling for the following events: <ul style="list-style-type: none">Care of a family member with a serious health condition, including an illness, injury, impairment or physical or mental health condition that involves inpatient care in a hospital, hospice or residential healthcare facility or continuing treatment and/or continuing supervision by a healthcare provider.A family member has received notification to report for active military duty or is currently on active military duty, provided that the employee can demonstrate dependency on said family member for caregiver responsibilities. b) The option to use paid sick time for the care of a spouse, domestic partner, child, dependent, parent, parent-in-law, grandparent, grandchild or sibling.	Annotated Documents: => Policy Document	

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	O	C11. Civic Engagement	1		1		C10.4 / 1 Points Offer Bereavement Support	À valider selon l'intérêt et les politiques du client. (C10, 2 mesures pour un maximum de 2 points)	Client	<p>For All Spaces Employers provide bereavement support for all eligible employees, including, at minimum, the following:</p> <p>a) Protocol for notifying employers of the loss.</p> <p>b) At least 20 days of bereavement leave offered as follows:</p> <ul style="list-style-type: none">At least five days of paid leave during any 12-month period for the loss of a child, spouse, parent or dependent.At least three days of paid leave during any 12-month period for the loss of a family member, colleague or friend.Additional unpaid weeks of leave during any 12-month period, granting employees a minimum total of 20 days of leave to use at any point in the bereavement process. The days of paid leave may be counted toward the 20 days. <p>c) Bereavement support resources, including:</p> <ul style="list-style-type: none">Specialized education materials on coping with grief, including resources for returning to work after a loss.Information on accessing local bereavement support services. <p>d) Coverage for bereavement counseling services at no cost or subsidized by at least 50%.</p> <p>For All Spaces except Dwelling Units Charitable activities At least two of the following requirements are met:</p> <p>a) All eligible employees are given the option to take paid time off to participate in volunteer activities for at least 16 hours of paid time annually (separate from vacation, sick or other paid time off), with at least eight hours organized by the employer for a registered charity or non-profit.</p> <p>b) Projects provide a list of volunteer opportunities in the project area and community, with at least one opportunity per month that would be suitable for employees.</p> <p>c) Projects contribute annually to a registered charity of employee's choice to match employee donations, up to a maximum amount defined by the employer.</p> <p>For All Spaces except Dwelling Units Voting opportunity All employees receive the following:</p> <p>a) Timely reminders to register to vote for local and national elections, including instructions on how to register.</p> <p>b) Timely reminders to submit absentee ballots for local and national elections.</p> <p>c) Timely reminders to vote in local and national elections, including instructions on how to determine voting station.</p> <p>d) Leave to vote in national and local elections.</p> <p>For All Spaces The organization participates in one of the following programs and results are made publicly available on-site and on the organization's website:</p> <p>a) The JUST disclosure framework operated by the International Living Future Institute.</p> <p>b) B Corporation certification operated by B Lab.</p> <p>c) GoodWell certification operated by GoodWell.</p> <p>d) Business Working Responsibly Mark operated by Business in the Community Ireland.</p> <p>e) GRI Standards operated by the Global Reporting Initiative, including Universal Standards and at least one additional topic-specific Standard.</p> <p>f) Dow Jones Sustainability Index (DJSI).</p> <p>Annotated Documents: => Policy Document</p>		
							C11.1 / 1 Points Promote Civic Engagement	À valider selon l'intérêt et les politiques du client.	Client	Annotated Documents: => Policy Document		
							C12.1 / 2 Points Promote Equity Program Participation	À valider selon l'intérêt et les politiques du client, tout dépendant de la démarche corporative de développement durable du client.	Client	Annotated Documents: => Policy Document Letter Of Assurances: => Owner		
		O	C12. Organizational Transparency	2		2						
				1			C13.1 / 1 Points Ensure Essential Accessibility	La mesure est planifiée.	Architecte	<p>For All Spaces The following requirement is met:</p> <p>a) Projects meet local accessibility laws and/or codes without exclusions or exemptions.</p> <p>Letter Of Assurances: => Architect</p>		

Légende

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	O	C13. Accessibility and Universal Design	3		2		C13.2 / 2 Points Integrate Universal Design	À valider selon l'intérêt et les politiques du client. Doit consulter un professionnel du design universel.	Client	For All Spaces Projects use universal design principles as guidance to accommodate a diverse range of occupant abilities. All projects must consult with a professional trained in universal design to ensure spaces are optimized to meet occupant needs. Projects address the following based on anticipated occupant need: a) Physical access: accommodating entry and exit points to enable entrance to the space, flexible use of space and usability beyond the requirements of local laws or code. b) Developmental and intellectual health: strategies that use color, texture, images and other perceptible information to support individuals with varying cognitive abilities (e.g., learning disabilities). c) Wayfinding: strategies to help individuals intuitively navigate through spaces (e.g., signage, maps, symbols, mobile and digital technologies, information systems). d) Inclusion: developing and implementing operational programs and processes (e.g., braille, auditory cues) that are inclusive of individuals with disabilities. e) Technology: offering technology (e.g., audio and visual equipment, web access) that incorporates the needs of individuals with disabilities, made available to all occupants at no cost. f) Safety: removing barriers to safety to reduce anxiety, and to support easy access to all built features and spaces.	Annotated Documents: => Professional Narrative	
				1			C14.1 / 1 Points Provide Essential Accommodations	La mesure est planifiée.	Architecte	For All Spaces except Dwelling Units The following requirements are met: a) Bathrooms meet local accessibility code without exclusions or exemptions. b) The quantity and location of bathrooms are determined based on actual or anticipated occupant demand. c) All bathrooms provide the following: <ul style="list-style-type: none">• Toilet paper.• Trash receptacles in stalls (in women’s and single-user bathrooms). If toilet paper cannot be flushed down toilets, trash receptacles must be in all bathroom stalls.• Sanitary pads and/or tampons at no cost or subsidized by at least 50% (in women’s and single-user bathrooms). d) All occupants have access to at least one bathroom per floor that provides the following: <ul style="list-style-type: none">• Syringe drop box.• Infant changing tables.	Letter Of Assurances: => Owner Photographic evidence	
	O	C14. Bathroom Accommodations	2		1		C14.2 / 1 Points Provide Single-User Bathrooms	Possible. À inclure dans les critères de conception.	Architecte	For All Spaces except Dwelling Units Single-user bathrooms meet the following requirements: a) Includes sign or label with text and/or symbols to indicate that the room is a bathroom and that it is inclusive of all genders. b) Provide the following: <ul style="list-style-type: none">• Toilet paper.• Trash receptacle.• Sanitary pads and/or tampons at no cost or subsidized by at least 50%. c) Meet local accessibility code without exclusions or exemptions. d) Meet occupant demand in quantity and location based on size of project (to ensure bathrooms are conveniently located for all occupants).	Letter Of Assurances: => Owner Photographic evidence	
							C14.3 / 1 Points Provide Family Bathrooms	À valider selon l'intérêt et les politiques du client. Moins pertinent pour la vocation du bâtiment. Le maximum de point est déjà atteint.	Architecte/ Client	For All Spaces except Dwelling Units All family bathrooms meet the following requirements: a) Meet local accessibility code without exclusions or exemptions. b) Accommodate expected demand and number of individuals in need of accompaniment or assistance in the bathroom (e.g., children, persons with Alzheimer’s, individuals with other mental or physical disabilities). c) Contain the following accommodations: <ul style="list-style-type: none">• Infant changing table and holding chair.• Children’s toilet facilities or accommodations for child use of adult size toilet.• Children’s sinks or accommodations for child use of adult size sink (e.g., availability of stepstool).• Motion sensor lights.• Skid resistant floors.• Safety grab bars.	Letter Of Assurances: => Owner Photographic evidence	

Légende

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	O	C15. Emergency Preparedness	3		1		C15.1 / 1 Points Develop Emergency Preparedness Plan	Possible. Relève de la santé/sécurité et pourrait être déjà planifié à cause des enjeux de sureté. Recommandé.	Client	For All Spaces The following requirements are met: a) An emergency management plan is in place outlining response in the case of emergency situations within the building or surrounding community, including at least the following hazards: <ul style="list-style-type: none">Natural (e.g., tornado, flood, wildfire, earthquake, heatwave).Fire.Health (e.g., acute medical emergency, infectious disease outbreak).Technological (e.g., power loss, chemical spill, explosion).Human caused (e.g., civil unrest, terrorism). b) The following are incorporated into the emergency management plan: <ul style="list-style-type: none">Roles and responsibilities of the emergency response team.Potential hazards and emergency situations.The needs of vulnerable occupants or groups (e.g., older adults, people with disabilities, pregnant women, children).Building response capabilities, including assessment of supplies, specialized personnel and physical structure.Plans for policy implementation and communication to building occupants, including occupant training on the emergency management plan and practice drills.	Annotated Documents: => Policy Document	
					1		C15.2 / 2 Points Promote Emergency Resources	À valider selon l'intérêt et les politiques du client.	Client	For All Spaces Projects support occupant response to emergencies through at least five of the following strategies: a) Database of building emergency equipment, supplies and procedures available to all occupants, including information cards indicating emergency procedures available to all guests upon entrance to the building. b) Emergency notification system in the building with auditory and visual indicators of emergency (e.g., speaker system, flashing lights). c) At least one first aid kit per floor meeting requirements of American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) Class A or Class B based on project need. d) AEDs within reach of any given occupant within 3-4 minutes and adoption of routine maintenance and testing schedule. The locations of building AEDs are identified through posters, signs or other forms of communication other than on the AED itself. e) Annual availability of a certified training course on cardiopulmonary resuscitation (CPR) and AED usage. f) Emergency response team for medical emergencies, including at least one certified medical professional or first responder present within the building. g) Rides subsidized by at least 50% to destination of need for emergency situations (e.g., urgent medical needs, personal or family emergency, public transit shutdown). h) Educational resources to promote individual and family emergency preparedness that address at least the following topics: <ul style="list-style-type: none">Creating evacuation or sheltering plans.Building emergency kits, supplies and go-bags.Planning communications with family or primary contacts in case of emergency.	Annotated Documents: => Policy Document => Educational Materials Photographic evidence	
	O	C16. Community Access and Engagement	1				C16.1 / 1 Points Provide Community Space	Le critère n'est pas possible pour des enjeux de sureté.		For All Spaces Community space Designated space is made available to the public at no cost that meets the following requirements: a) Is at least 186 m ² [2,000 ft ²]. b) Open at all times, unless closed for security purposes (e.g., during nighttime hours) or for special events. c) Entry points provide access from a minimum of one public use street. d) Signage at entrance clearly indicates hours the space is open and the space's designation for public use. e) Provides quality seating areas and sufficient lighting and is easily navigable for individuals of all abilities. f) Adheres to a regular maintenance and cleaning schedule. For All Spaces Community engagement The following requirements are met: a) Access to one or more designated spaces is provided, at no cost or subsidized by at least 50%, to local community groups, student clubs or non-profit organizations for meetings and events. b) At least one community engagement program is provided, at no cost or subsidized by at least 50%, to the public on a quarterly basis.	Annotated Documents: => Policy Document => Architectural Drawing Photographic evidence	
Concept Total: 0												

Légende

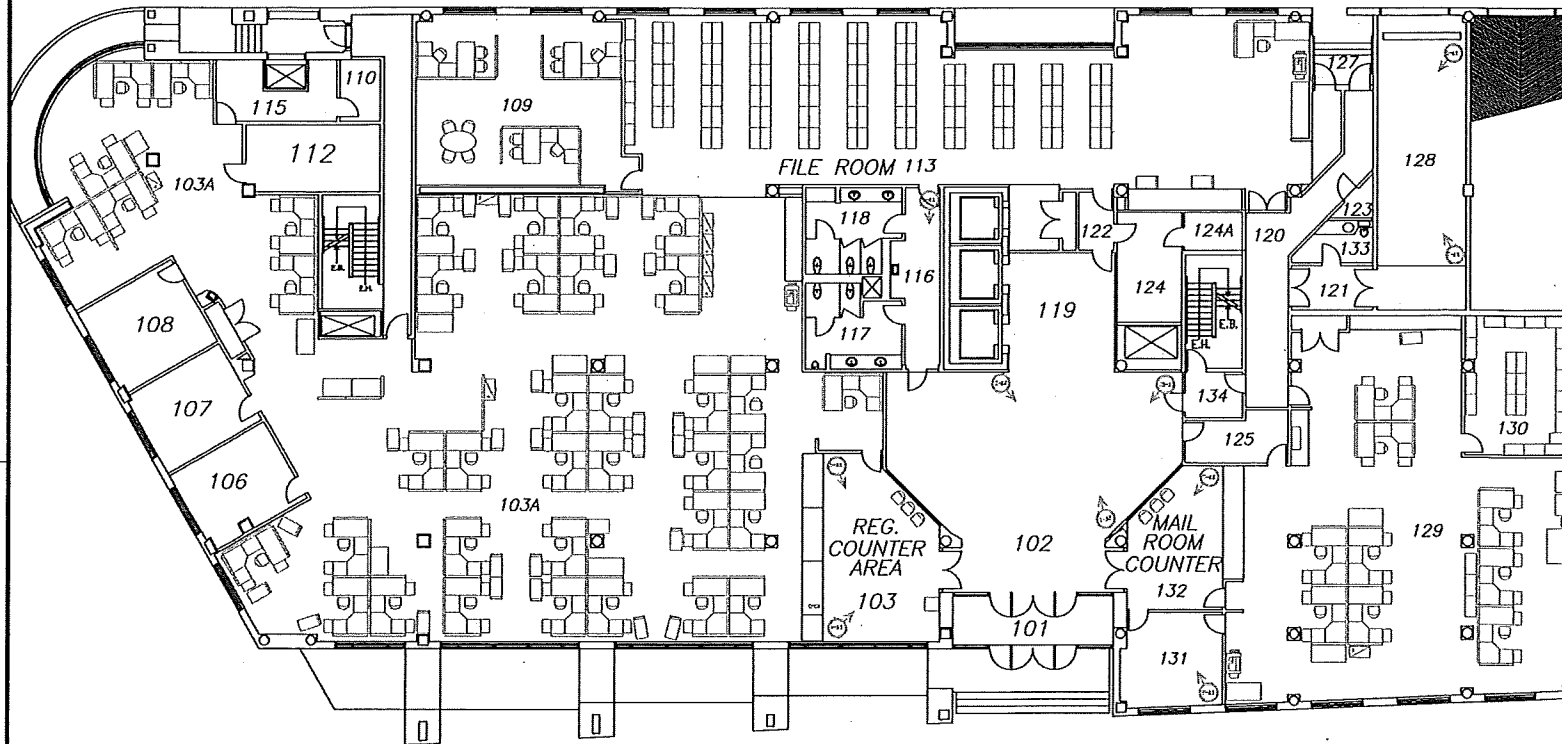
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I N N O V A T I O N S	O	I01. Innovate WELL	10				I01.1 / 10 Points Propose Innovations	À valider selon les discussions avec le client.	Coordonnateur WELL/ Client	For All Spaces The proposal meets the following requirements: a) Consistent with applicable laws and regulations and leading practices in building design and operations. b) Positively impacts project occupants or the general public through one of the below: <ul style="list-style-type: none">Goes above and beyond the current requirements of an existing WELL v2 feature.Relates to health and wellness in a novel way that is not covered in WELL v2. c) Substantiated by existing scientific, medical and/or industry research.		
	O	I02. WELL Accredited Professional (WELL AP)	1		1		I02.1 / 1 Points WELL AP	À valider selon l'équipe de conception.	Coordonnateur WELL	For All Spaces At least one member of the project team: a) Has achieved the WELL Accredited Professional credential. b) Maintains accreditation until project's initial certification is achieved.		
	O	I03. Educate WELL	1				I03.1 / 1 Points Offer WELL Educational Tours	Le critère n'est pas possible pour des enjeux de sûreté.		For All Spaces Projects meet the following requirements: a) Projects provide free tours of the WELL Certified space. Tours may be offered on a pre-determined schedule or upon request and achieve the below: <ul style="list-style-type: none">Offered at least six times per year.Attended by at least 50 people per year. b) Projects include at least two WELL educational components alongside the tours (e.g., permanent signage highlighting WELL features, a case study about WELL Certification, a newsletter or other printed/online publication featuring occupant engagement with WELL). c) Projects describe at least one way in which availability of tours is advertised (e.g., project website, signage, social media).		
	O	I04. Gateways to Wellness	1		1		I04.1 / 1 Points Complete Health and Wellness Program	À valider selon les discussions avec le client.	Coordonnateur WELL/ Client	For All Spaces Within the last three years, the project has completed an independent health and wellness program or initiative that meets the following requirements: a) Addresses a minimum of three WELL Concepts. b) Primary goal is to advance the health and well-being of individuals or communities. c) Includes transparent development, rating and scoring or evaluation. d) Based on supporting scientific, medical and/or industry research. e) Viewable online at no cost.		
	O	I05. Green Building Rating Systems	5	5			I05.1 / 5 Points Achieve Sustainable Building Certification	Réalisé selon la recommandation d'obtenir la certification LEED Platine.	Coordonnateur LEED/ Client	For All Spaces Within the last three years, the project has completed an independent health and wellness program or initiative that meets the following requirements: a) Addresses a minimum of three WELL Concepts. b) Primary goal is to advance the health and well-being of individuals or communities. c) Includes transparent development, rating and scoring or evaluation. d) Based on supporting scientific, medical and/or industry research. e) Viewable online at no cost.		
Concept Total: 0												
Somme				31	61	41						

.16 Plans of Existing CAS and ATSSC Facilities

.16.1 Existing plans CAS Montreal

RESTRICTED CIRCULATION



LEGEND
 □ LAB ROOM
 ○ REST CLOSET

Approved by: _____
 Date: _____

General notes:

Site plan:

By: / de / de

A. 01/12 A. 01/12 1. page de provenance 2. page de référence
 B. 01/12 B. 01/12 1. page de provenance 2. page de référence
 C. 01/12 C. 01/12 1. page de provenance 2. page de référence
 D. 01/12 D. 01/12 1. page de provenance 2. page de référence

O4			
O3			
O2			
O1			
No.	Date	Rev'sion	Drawn by:



Courts Administratives Montréal
 Service administratif
 des tribunaux judiciaires

Project: #4SMC MONTRÉAL

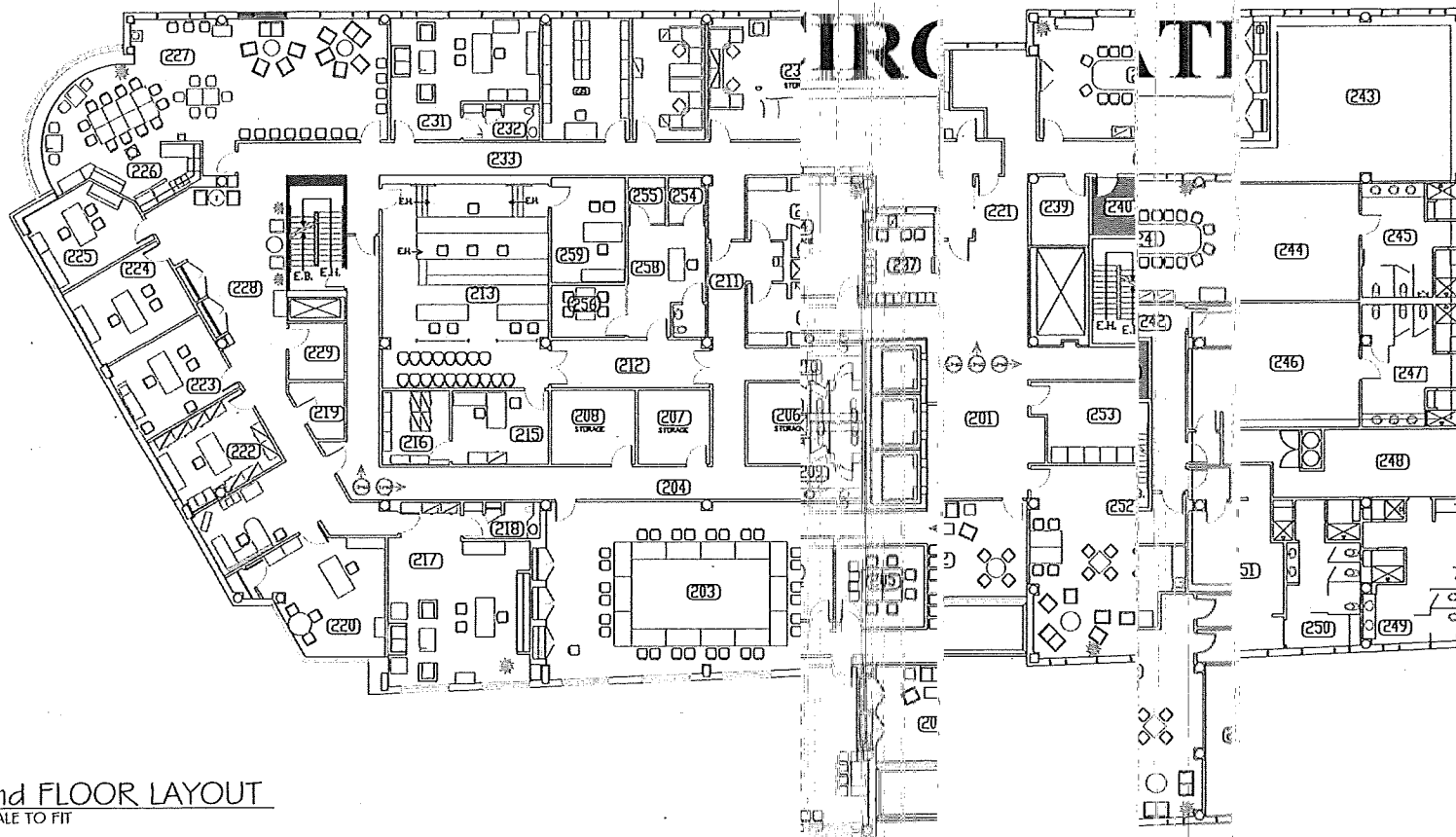
Drawing: LAYOUT (1st FLOOR)

Scale: SCALE TO FIT

Date: SEPT 2, 2016

By: FACILITIES MANAGEMENT

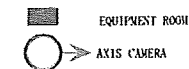
RESTRICTED CIRCULATION



2nd FLOOR LAYOUT
SCALE TO FIT

General notes:

LEGEND



Site plan:

Bulletins de référence:

A 1/2	A. détail 1. page de provenance 2. page de référence	C 1/2	C. élévation 1. page de provenance 2. page de référence
B 1/2	B. coupe 1. page de provenance 2. page de référence	D 1/2	D. coupe élévation 1. page de provenance 2. page de référence

04		
03		
02		
01		
1h.	Date	Revisé by:



Courts Administration Service
Service administratif
des tribunaux judiciaires

Project: #45MC MONTRÉAL

Drawing: LAYOUT (2nd FLOOR)

Scale: SCALE TO FIT	No page:
Date: JUNE 16, 2016	
By: FACILITIES MANAGEMENT	

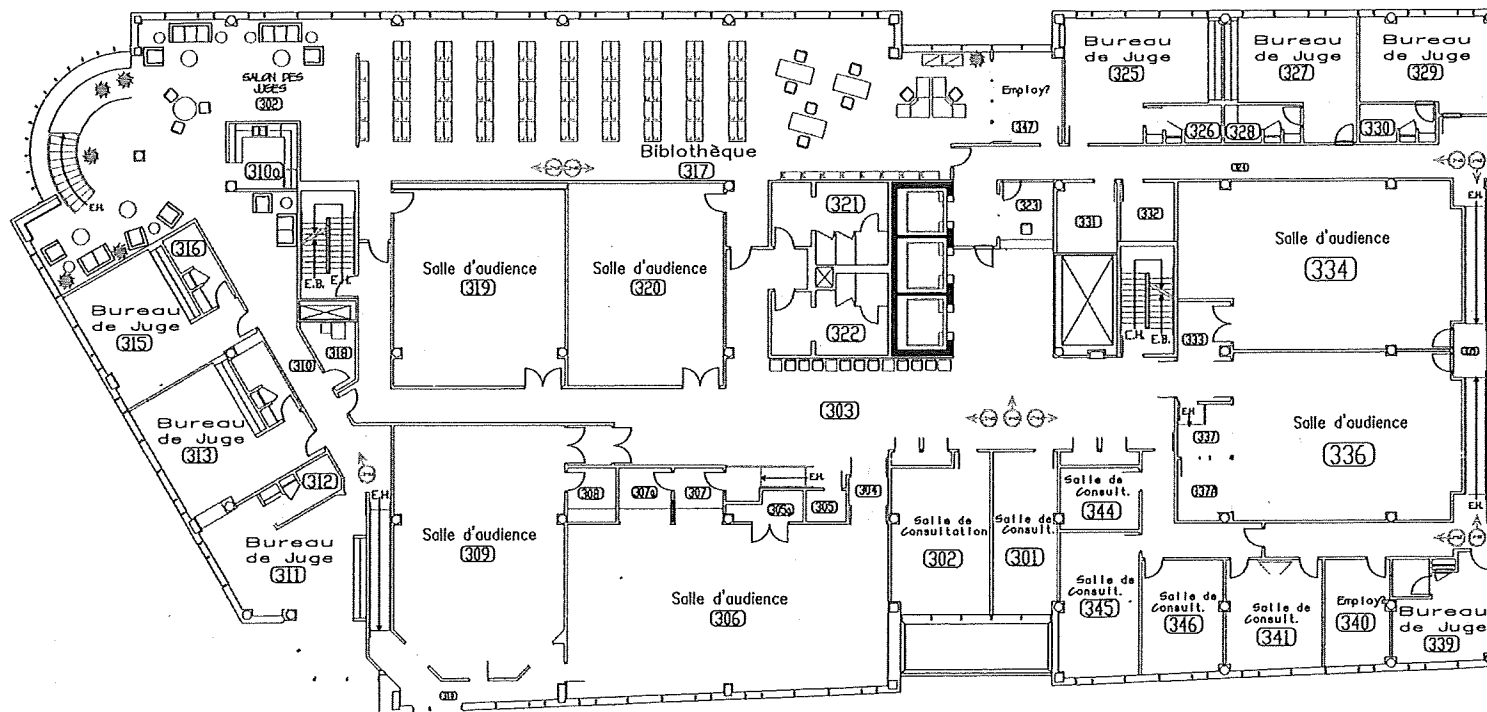
Drawn by:

Appr.
Date

RESTRICTED CIRCULATION

General notes:

LEGEND

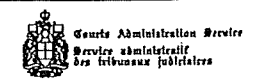


Site plan

Rules of reference:

A 1/2	A. détail 1. page de provenance 2. page de référence	C 1/2	C. élévation 1. page de plan 2. page de relief
B 1/2	B. coupe 1. page de provenance 2. page de référence	D 1/2	D. coupe élévit 1. page de plan 2. page de relief

O1		
O2		
O3		
O4		
No.	Date	Revised by

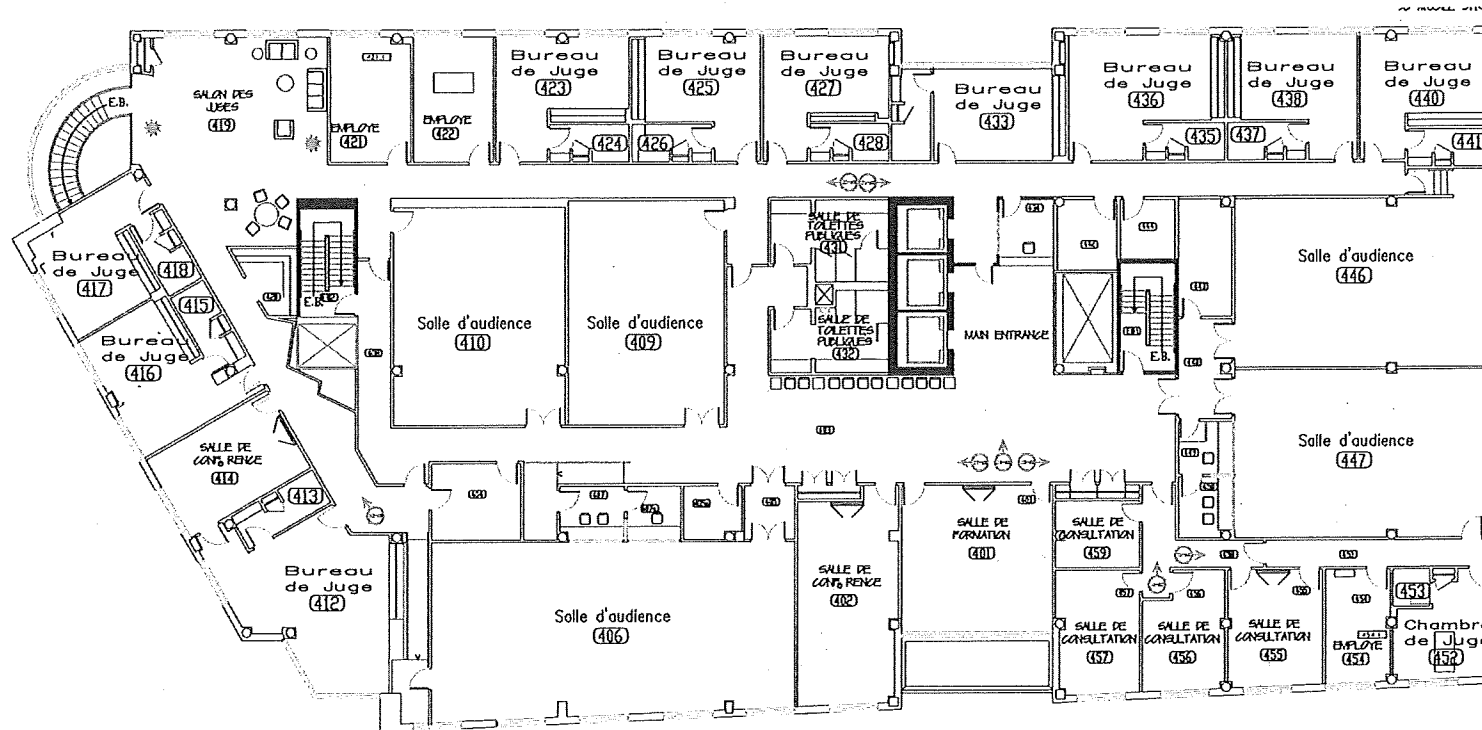


Project	#4SMC MONTRÉAL
Drawing	LAYOUT (3rd FLOOR)
Scale	SCALE TO FIT
Date	JUNE 10, 2016
By	FACILITIES MANAGEMENT

3rd FLOOR LAYOUT
SCALE TO FIT

Approved by: _____
Date: _____

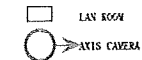
RESTRICTED CIRCULATION



4th FLOOR LAYOUT
SCALE TO FIT

General notes:

LEGEND



Site plan

Notes de référence:

A 1/2	A. détail 1. page de provenance 2. page de référence	C 1/2	C. élévation 1. page de provenance 2. page de référence
B 1/2	B. coupe 1. page de provenance 2. page de référence	D 1/2	D. coupe élévation 1. page de provenance 2. page de référence

O4			
O3			
O2			
O1			
Nb.	Date	Revisé	Exécuté by:



Courts Administration Service
Service administratif
des tribunaux judiciaires

Project: #45MC MONTRÉAL

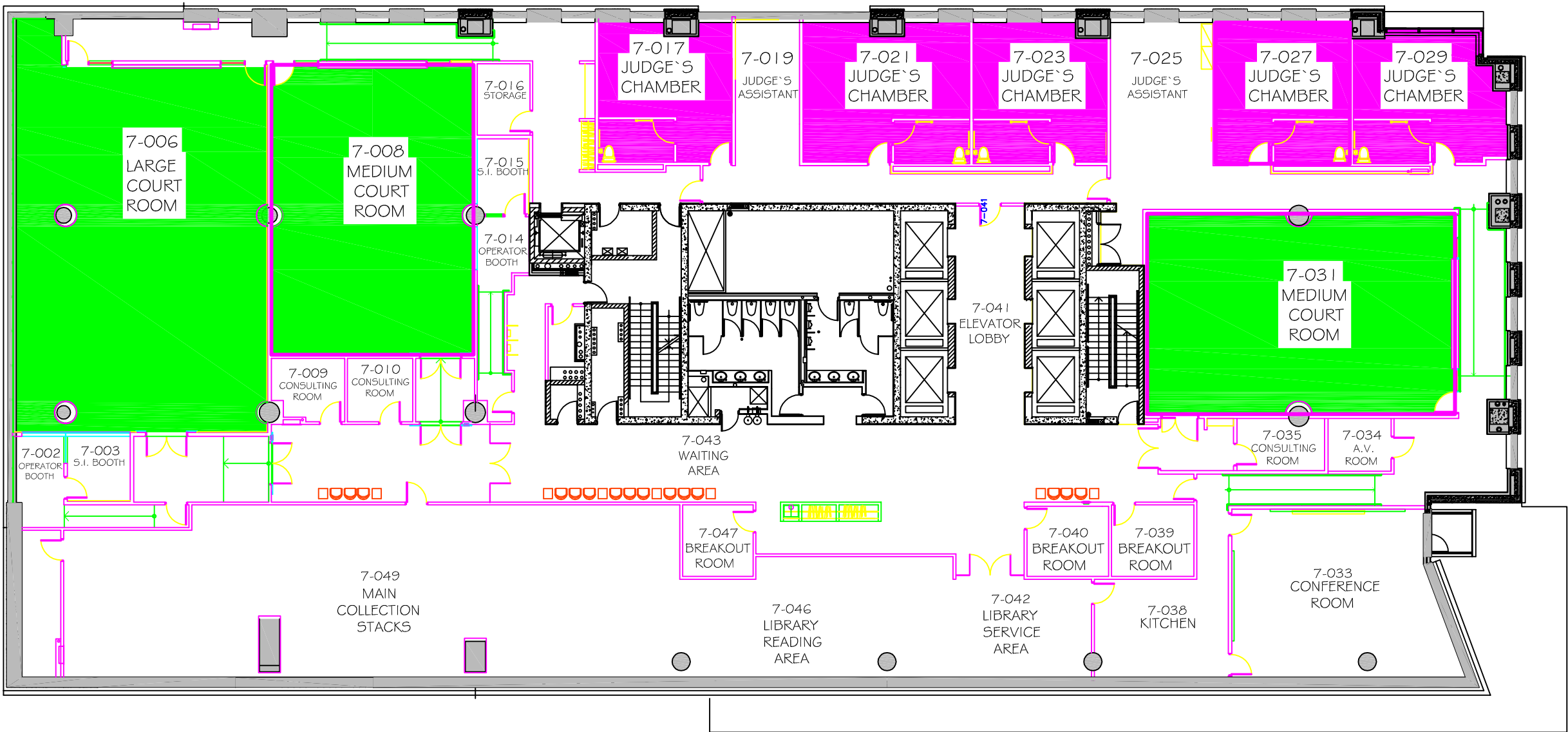
Drawn by: LAYOUT (4th FLOOR)

Scale:	SCALE TO FIT	1/10 page:
Date:	JUNE 10, 2016	
By:	FACILITIES MANAGEMENT	

Approved by: _____
Date: _____

.16.2 Existing plans CAS Toronto

RESTRICTED CIRCULATION



General notes :

Site plan:

Bulles de référence:

A

1

2

A. détail
1. page of provenance
2. page of reference

C

1

2

C. elevation
1. page of provenance
2. page of reference

B

1

2

B. coupe
1. page of provenance
2. page de référence


D

1

2

D. coupe élévation
1. page of provenance
2. page de référence

O4			
O3			
O2			
O1			
No.	Date	Revision	Excuted by:



Courts Administration Service
Service administratif
des tribunaux judiciaires

Project: TORONTO - 180 QUEEN

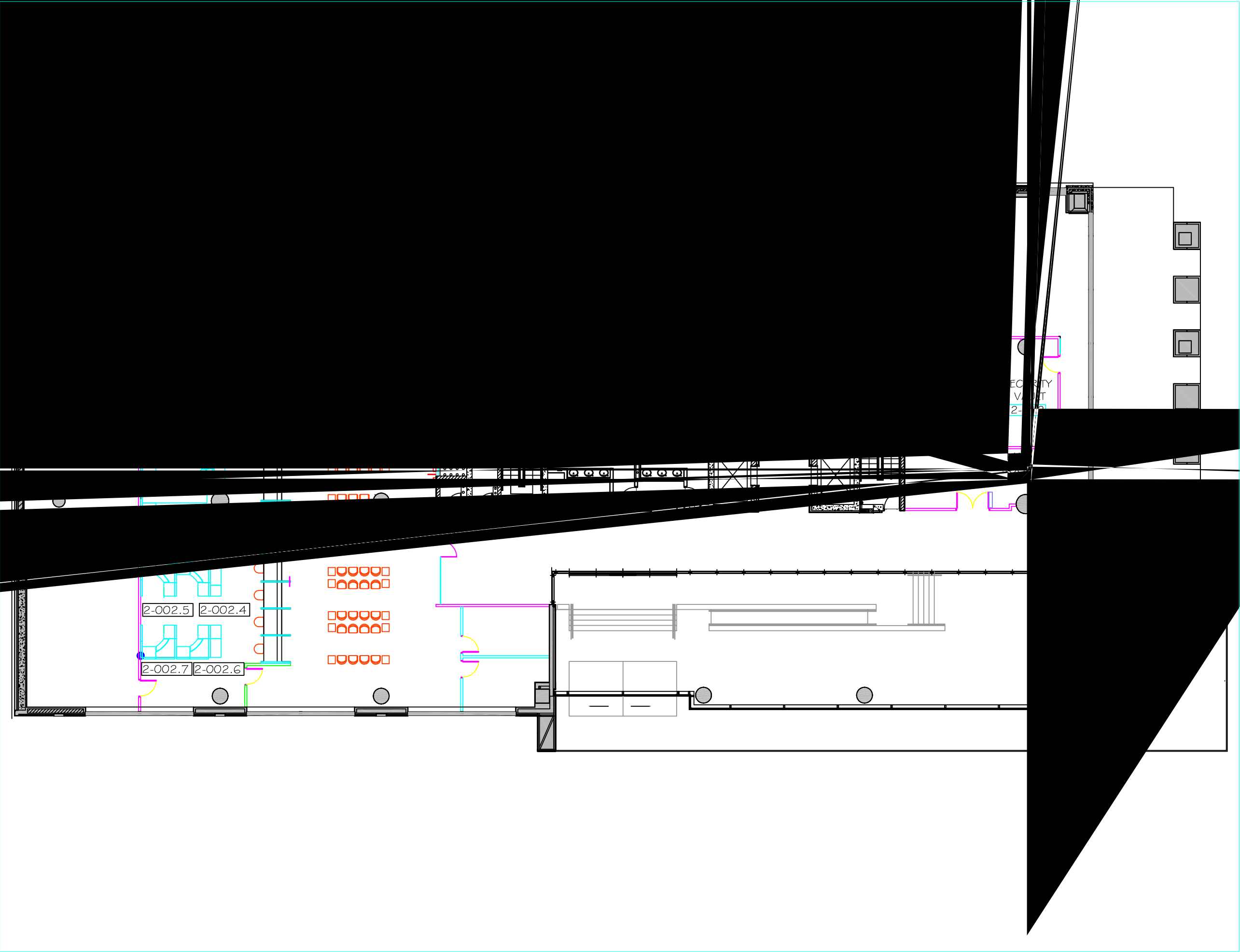
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Scale : SCALE TO FIT

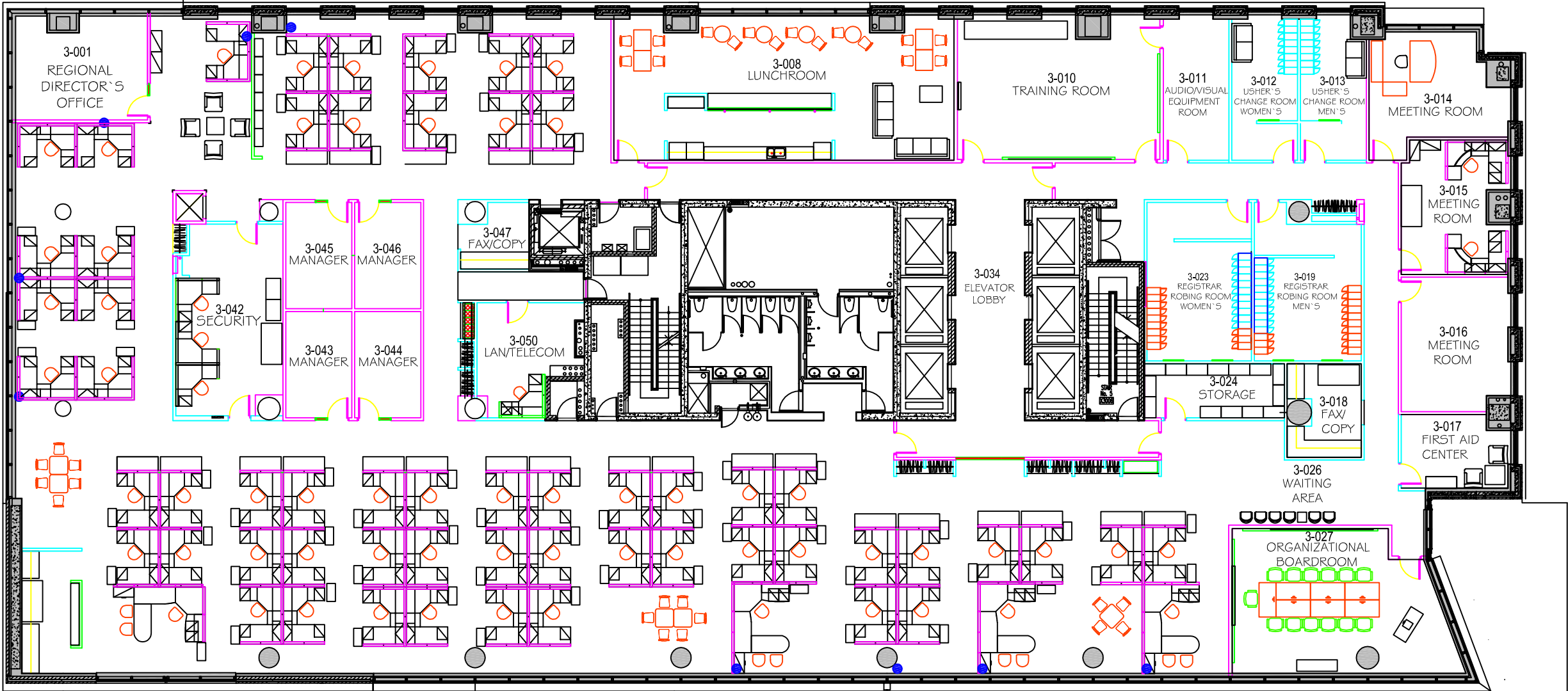
Date : March 25th, 2013

By : FACILITIES MANAGEMENT

No page:



RESTRICTED CIRCULATION



General notes :

Site plan:

Bulles de référence:



A. détail
1. page of provenance
2. page of reference



C. elevation
1. page of provenance
2. page of reference



B. coupe
1. page of provenance
2. page of reference



D. coupe élévation
1. page of provenance
2. page of reference

O4			
O3			
O2			
O1			
No.	Date	Revision	Excuted by:

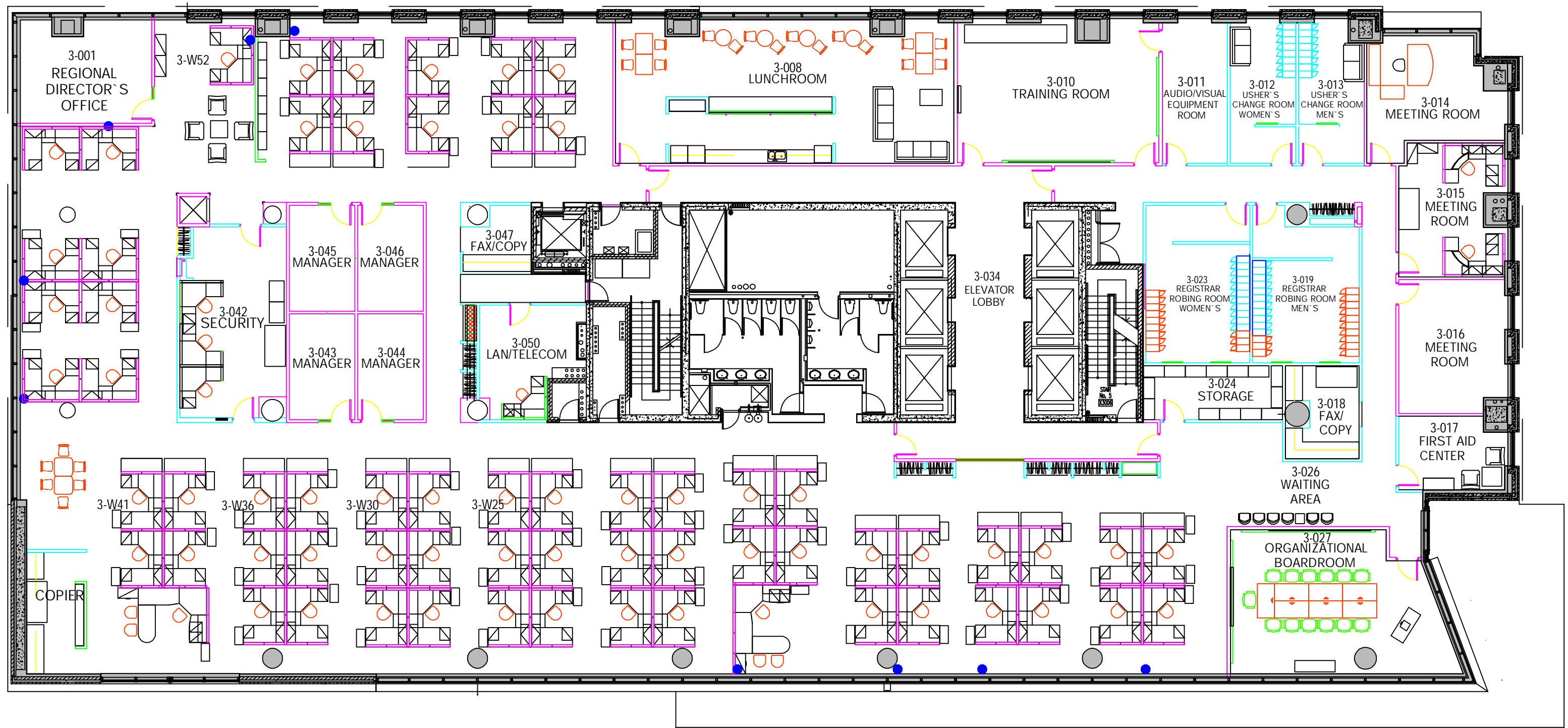


Courts Administration Service
Service administratif
des tribunaux judiciaires

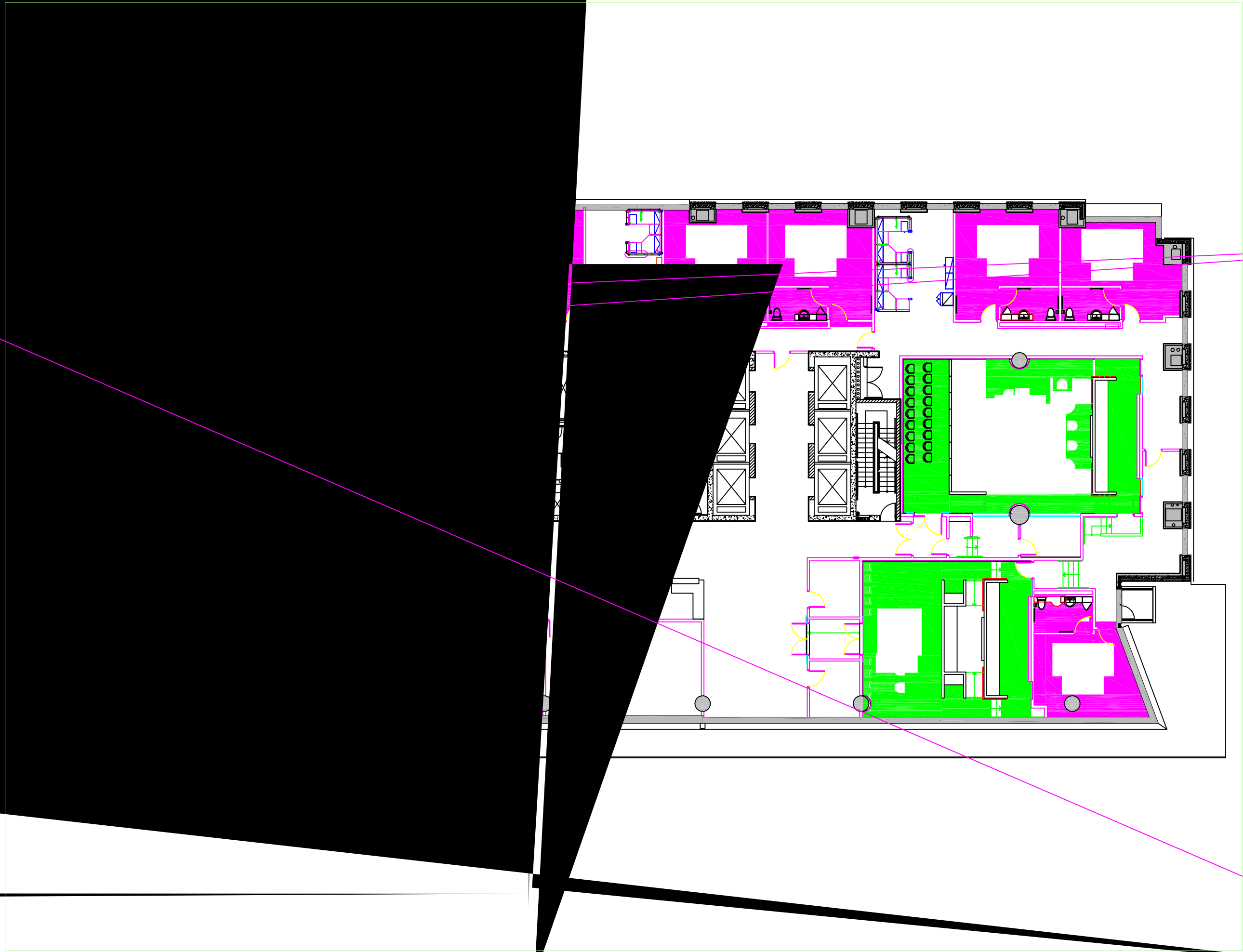
Project: TORONTO - 180 QUEEN

Drawing : LAYOUT (3rd FLOOR)

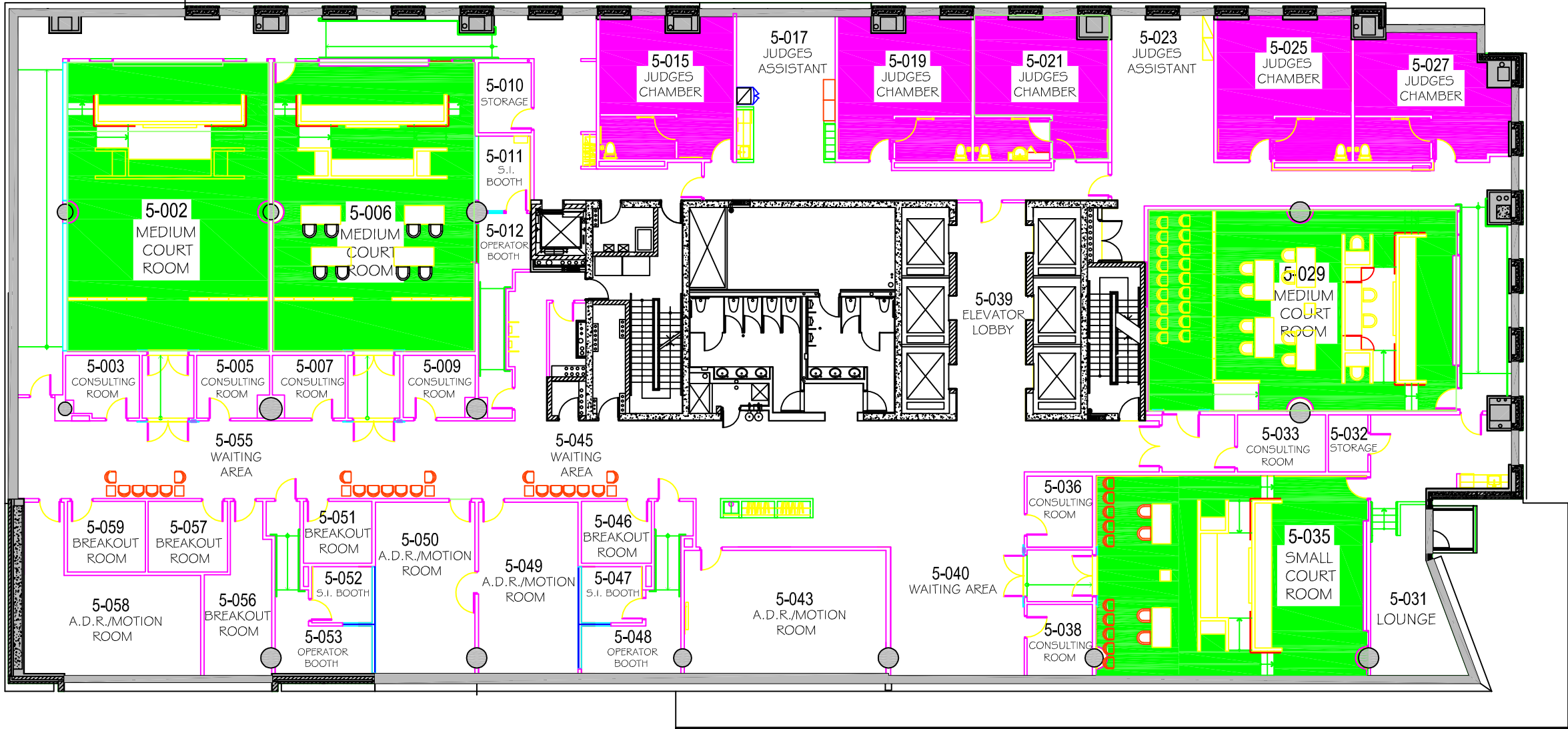
Scale :	SCALE TO FIT	No page:
Date :	MARCH 25th, 2013	
By :	FACILITIES MANAGEMENT	



3-W55



RESTRICTED CIRCULATION



General notes :

Site plan:

Bulles de référence:

A

1

2

A. détail
1. page of provenance
2. page of reference

B

1

2

B. coupe
1. page of provenance
2. page de référence

C

1

2

C. elevation
1. page of provenance
2. page of reference


D

1

2

D. coupe élévation
1. page of provenance
2. page de référence

04			
03			
02			
01			
No.	Date	Revision	Excuted by:



Courts Administration Service
Service administratif
des tribunaux judiciaires

Project: TORONTO - 180 QUEEN

Drawing : LAYOUT (5th FLOOR)

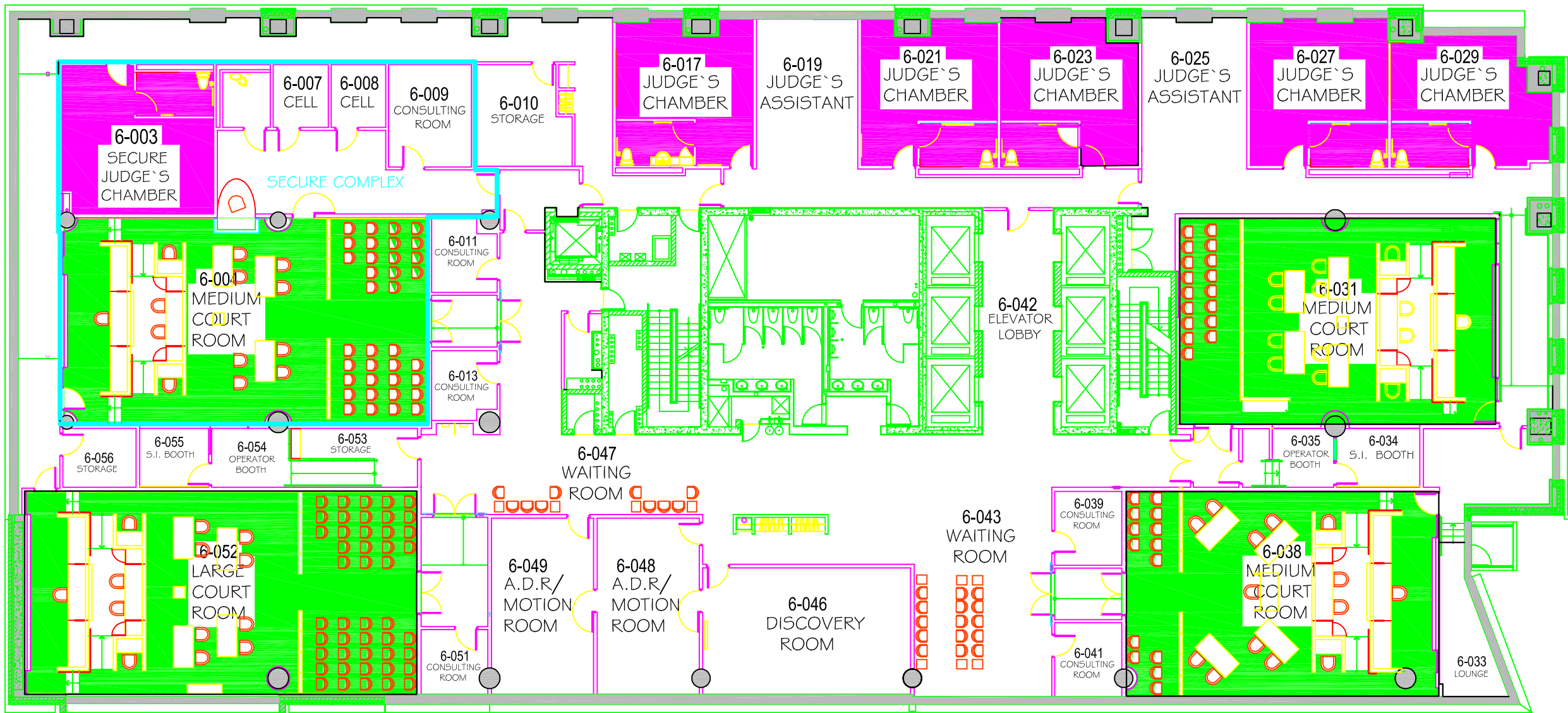
Scale : SCALE TO FIT

No page:

Date : March 25th, 2013

By : FACILITIES MANAGEMENT

RESTRICTED CIRCULATION



General notes :

Site plan:

Bulles de référence:



A. détail
1. page of provenance
2. page of reference



C. elevation
1. page of provenance
2. page of reference



B. coupe
1. page of provenance
2. page of reference



D. coupe élévation
1. page of provenance
2. page of référence

04

03

02

01

No.

Date

Revision

Excuted by:



Courts Administration Service
Service administratif
des tribunaux judiciaires

Project:

TORONTO - 180 QUEEN

Drawing :

LAYOUT (6th FLOOR)

Scale :

SCALE TO FIT

No page:

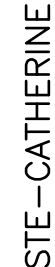
Date :

March 25th, 2013

By :

FACILITIES MANAGEMENT

.16.3 Existing plans ATSSC Montréal



HAUTEURS:	
RADIATEUR:	487mm
ALLÈGE DE FENÊTRE:	525mm
FENÊTRES (VERRE):	2170mm
PLAFOND:	2735mm (MOYENNE)

US LES PLANS

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