NATIONAL CAPITAL COMMISSION
COMMISSION DE LA CAPITALE NATIONALE

No.	2022-P262
To	Board of Directors
Date	2022-10-04

For DECISION**Subject/Title**Energy Services Acquisition Program (ESAP) Modernized Gatineau Energy Centre
Schematic Design**Purpose of the Submission**

- To obtain approval for the Schematic Design of the Energy Services Acquisition Program (ESAP) Modernized Gatineau Energy Centre.

Recommendations

- That the Federal Land Use and Design Approval (FLUDA) for the Energy Services Acquisition Program (ESAP) Modernized Gatineau Energy Centre Schematic Design be granted, pursuant to Section 12 of the *National Capital Act*, subject to the following conditions:
 - That the Developed Design be submitted to the National Capital Commission (NCC) for review and approval prior to implementation;
 - That the FLUDA for Early Works be delegated to the Executive Committee of the Board of Directors as a Level 2 project.
- That the preparation and signature of the FLUDA documents be delegated to the Vice-President, Capital Planning Branch.

Submitted by:Alain Miguelez, Vice-President, Capital Planning Branch

Name

A handwritten signature in black ink, appearing to read "Alain Miguelez", written over a horizontal line.

Signature

1. Authority

National Capital Act, section 12.

Project Context

The Energy Services Acquisition Program (ESAP) will modernize the district energy system operated by Public Services and Procurement Canada (PSPC) that heats 80 federal buildings and cools 67. The first stage of the ESAP involves the conversion of the district energy system to low temperature hot water and electric chillers. There are five existing Central Heating and Cooling Plants that serve the system including plants at Tunney's Pasture west of the core area, Confederation Heights south of the core area, the Cliff Plant located west of the Supreme Court, the National Research Council on Sussex Drive near Rideau Falls and the National Printing Bureau (NPB) in Gatineau, Quebec. The plants at Cliff, Tunney's Pasture and the NPB will be fully replaced by the program. Federal approvals have been granted and construction is underway for both the Cliff and Tunney's facilities, as well as the new River Pump Station on the north shore of the Rideau River.

The Modernized Gatineau Energy Centre (MGEC) will replace the existing district energy system facility in Gatineau with a new, below-grade, electric-powered central heating and cooling plant.

The proposed MGEC site, located at 83 Boulevard Sacré-Coeur, does not form part of the National Interest Land Mass (NILM). The site is part of the urban fabric of Gatineau adjacent to the "Classified" federal heritage NPB building located at 45 Boulevard Sacré-Coeur. The site is bordered by Autoroute de la Gatineau, a designated "Capital Arrival" under the National Capital Commission's (NCC) Capital Urban Lands Plan (2015), and is set back and separated from Boulevard Sacré-Coeur by an existing mixed-use development including a school, a church, office and residential high-rise apartment buildings, and a community garden.

A proposal for the rehabilitation of the NPB and site redevelopment is being undertaken by PSPC as a separate planning initiative with a longer implementation timeline. NCC staff has provided advice and engaged with the Federal Heritage Buildings Review Office (FHBRO) and the NCC's Advisory Committee on Planning, Design and Realty (ACPDR) for comments. Planning and design coordination between these two sites are ongoing to achieve effective urban integration and heritage preservation.

Previous Approvals

In June 2018, the NCC's Board of Directors granted Approval in Principle for the indicative design for the first ESAP components, including the alignment of underground infrastructure.

Project Description

The proposal consists of an electric-powered central heating and cooling plant to be built totally underground where there is currently an existing asphalt parking lot. The site will be converted to a publicly accessible green space with pedestrian connections to the surrounding neighbourhood. Above-grade elements of the MGEC are minimal and include the main entrance pavilion and three exit stairs at the north-east and south berm. Any exterior equipment including mechanical wells and louvres that are required for air supply have been integrated within the stair pop-ups. Above-grade, the project proposes extensive, publicly accessible park-like gardens across the site with a range of landscape treatments including an arrival plaza, a courtyard, rooftop gardens and an undulating, hill-like topography to support stormwater management and winter snow storage.

Vehicular access to the site will be shared with the NPB site via an existing road from Boulevard Sacré-Coeur. The NBP plan will provide pedestrian or cycle routes connecting the MGEC site. Additionally, NCC staff has advised the Proponent that active mobility and pedestrian connectivity with the residential community is to be integrated at the Developed Design phase.

3. NCC Staff Analysis

The proposal is generally aligned with the strategic policies and objectives of the Plan for Canada's Capital, 2017–2067 (2017), particularly the “Thriving and Connected” goals to build a liveable, attractive, resilient, accessible and economically competitive Capital Region that form part of the Plan's Strategic Framework.

The site is non-NILM and is within the Capital's core area. The proposed land use is in line with the NCC's Capital Core Area Sector Plan (2005).

- The proposal is adjacent to a designated federal accommodation and major employment node that will increase density overtime (5,600 employees at full buildout).
- The site is positioned in a strategic location in the Capital along a designated “Capital Arrival” route of high scenic value. The minimal above-grade elements of this proposal do not impede views to the NPB, and the design supports landscape and aesthetic improvements along the corridor.

Comments from ACPDR

On August 24, 2022, the MGEC Schematic Design was brought forward to the NCC's ACPDR for review and comments. The committee positively supported the direction of the schematic design and made suggestions including the following. The draft excerpt of the minutes of the meeting are in Appendix E:

- Emphasis on the importance of integration between the MGEC site and the neighbouring NPB Complex to ensure proper connectivity to the major federal employment node, as well as to surrounding sites.
- Feedback on the proposed materiality of the proposal, as well as to placemaking aspects of the design including lighting, vegetation, and the potential integration of indigenous artwork.
- Further exploration and consideration be given to the treatment of the electrical substation component of the project for better integration into the landscape.

These comments will be carried forward by NCC staff as the project progresses.

4. Strategic Links

- Federal Government Initiatives:
 - Pan-Canadian Framework on Clean Growth and Climate Change (2016)
 - Federal Sustainable Development Strategy (2019)
 - Greening Government Initiative (2020)
- NCC Corporate Plan (2022-2023 to 2026-2027):
 - Priority #2: Plan, rehabilitate and revitalize key assets and transportation networks in the National Capital Region.
- Capital Planning Framework:
 - Plan for Canada's Capital, 2017–2067 (2017)
- Canada's Capital Core Area Sector Plan (2005)

5. Consultations and Communications

- The Communications and Engagement team within the ESAP is responsible for developing engagement plans for external audiences.
- PSPC has engaged with the Algonquins of Pikwakanagan and with the Algonquins of Ontario.
- Regular meetings and ongoing consultations have been held and are planned with key stakeholders, including: NCC, Canadian Heritage, Parks Canada (for the FHBRO), Fisheries and Oceans Canada, Transport Canada, Transportation Safety Board of Canada, RCMP, the City of Ottawa and Ville de Gatineau.
- Internal consultations with NCC portfolios have been held and will continue as this project advances to ensure the reconciliation of diverse corporate priorities and interests.

6. Next Steps

- NCC Approval for Early Works – December 2022
- Site Mobilization and Early Works – January 2023
- ACPDR presentation of Developed Design – February 2023
- NCC Board Approval for Developed Design – April 2023

7. List of Appendices

- Appendix A – Location and Ownership Map
- Appendix B – Architectural Drawings
- Appendix C – Landscape Drawings
- Appendix D – Design Report
- Appendix E – Draft ACPDR Meeting Minutes

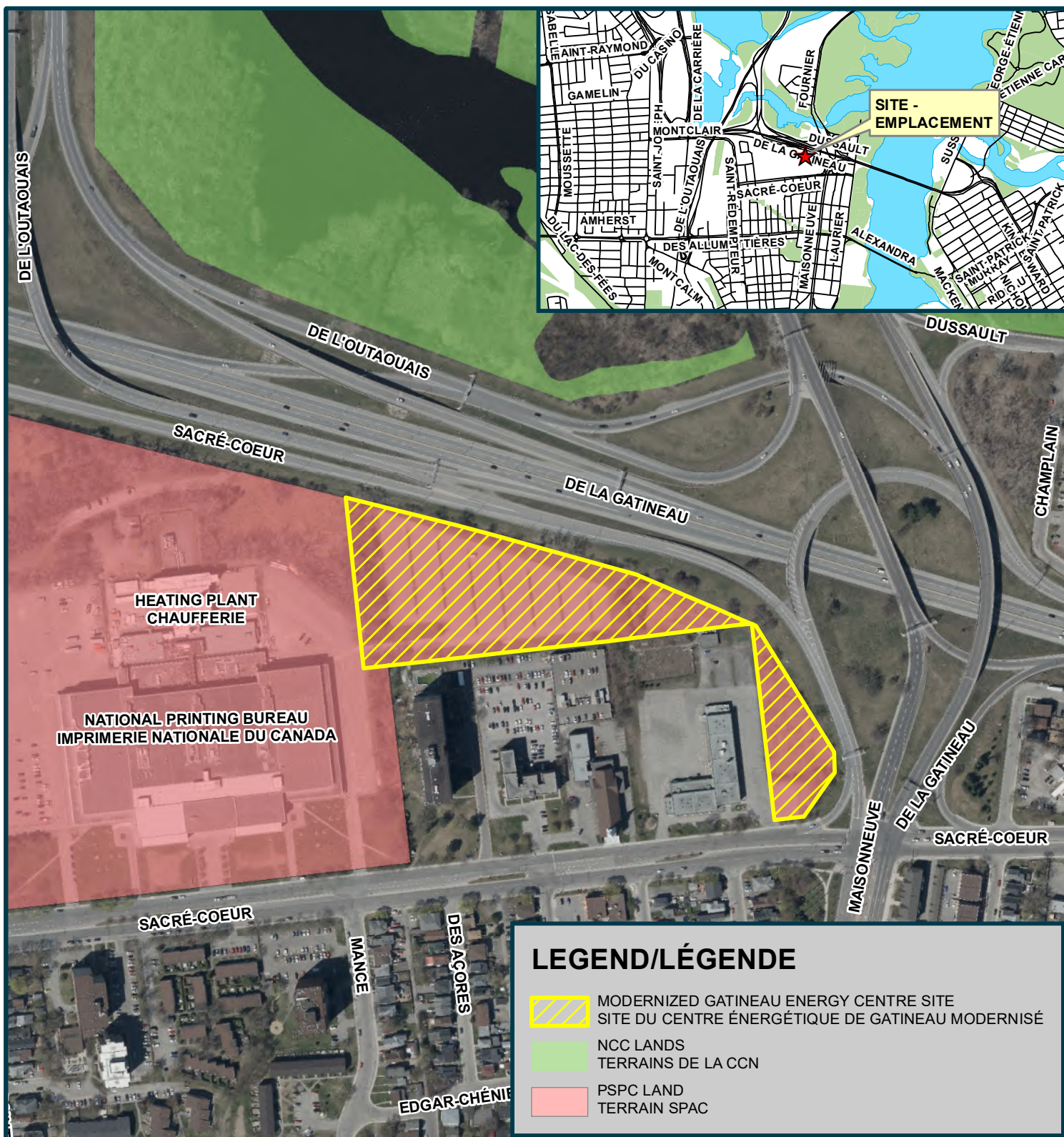
8. Authors of the Submission

Alain Miguelez, Vice-President, Capital Planning Branch (CP)




Isabel Barrios, Director, Federal Approvals and Heritage, and Archeology Programs (FAHA), CP

Kate-Issima Francin, A/Chief, Federal Land Use and Transaction Approvals, FAHA, CP

Christopher Meek, Senior Land Use Planner, Federal Land Use and Transaction Approvals, FAHA, CP



LEGEND/LÉGENDE

-  MODERNIZED GATINEAU ENERGY CENTRE SITE
SITE DU CENTRE ÉNERGÉTIQUE DE GATINEAU MODERNISÉ
-  NCC LANDS
TERRAINS DE LA CCN
-  PSPC LAND
TERRAIN SPAC



COMMISSION DE LA CAPITALE NATIONALE
NATIONAL CAPITAL COMMISSION

Canada

Subject - Objet ESAP - Modernized Gatineau Energy Centre Project
PASE - Le Centre énergétique de Gatineau modernisé

Submitted by - Soumis par
A. MIGUELEZ, Vice-President / Vice-président

Branch - Direction
CP / AC

Date
2022-08-02

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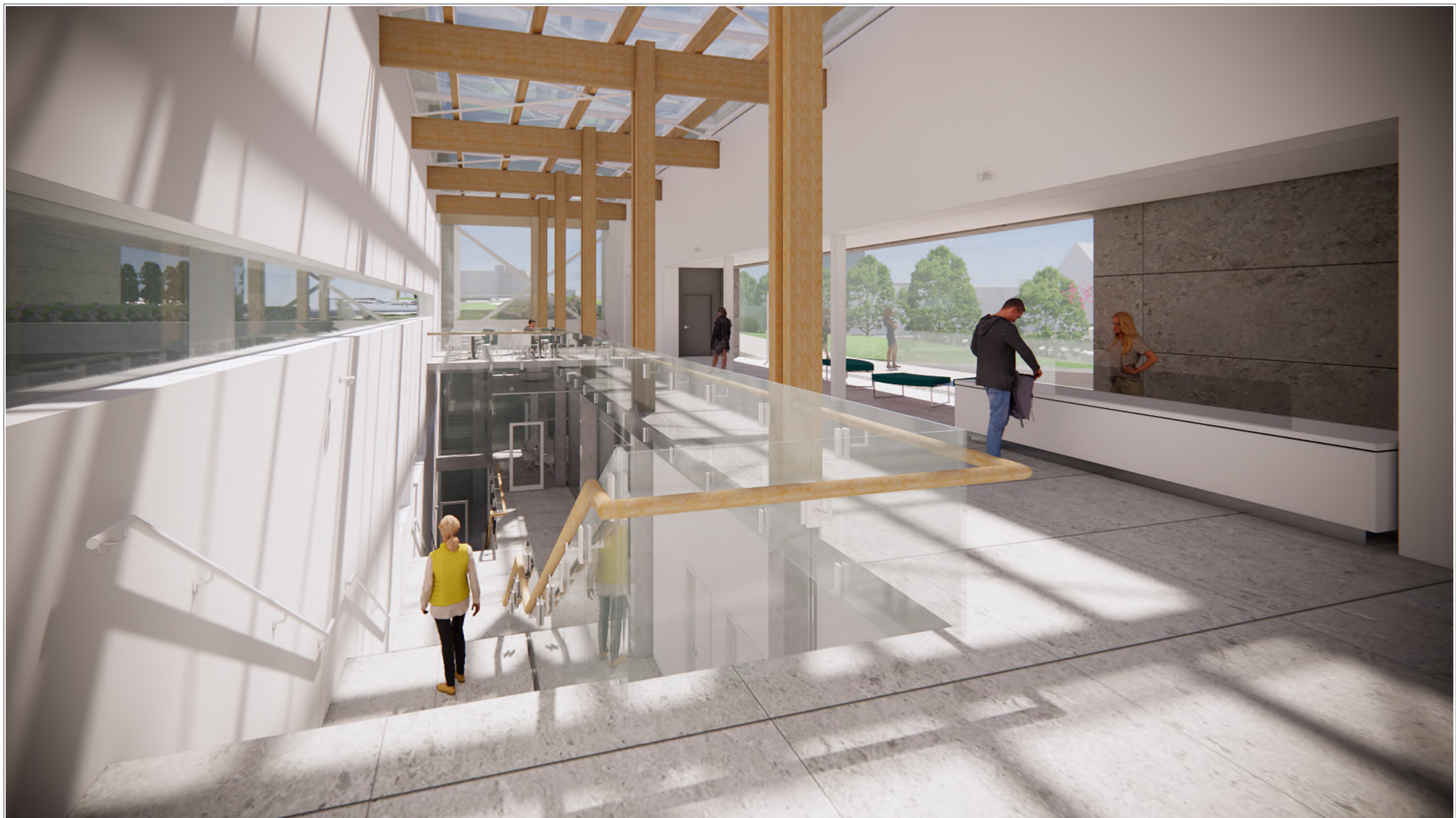




3
A002
INTERIOR VIEW OF LUNCH ROOM



2
A002
INTERIOR VIEW OF HALLWAY



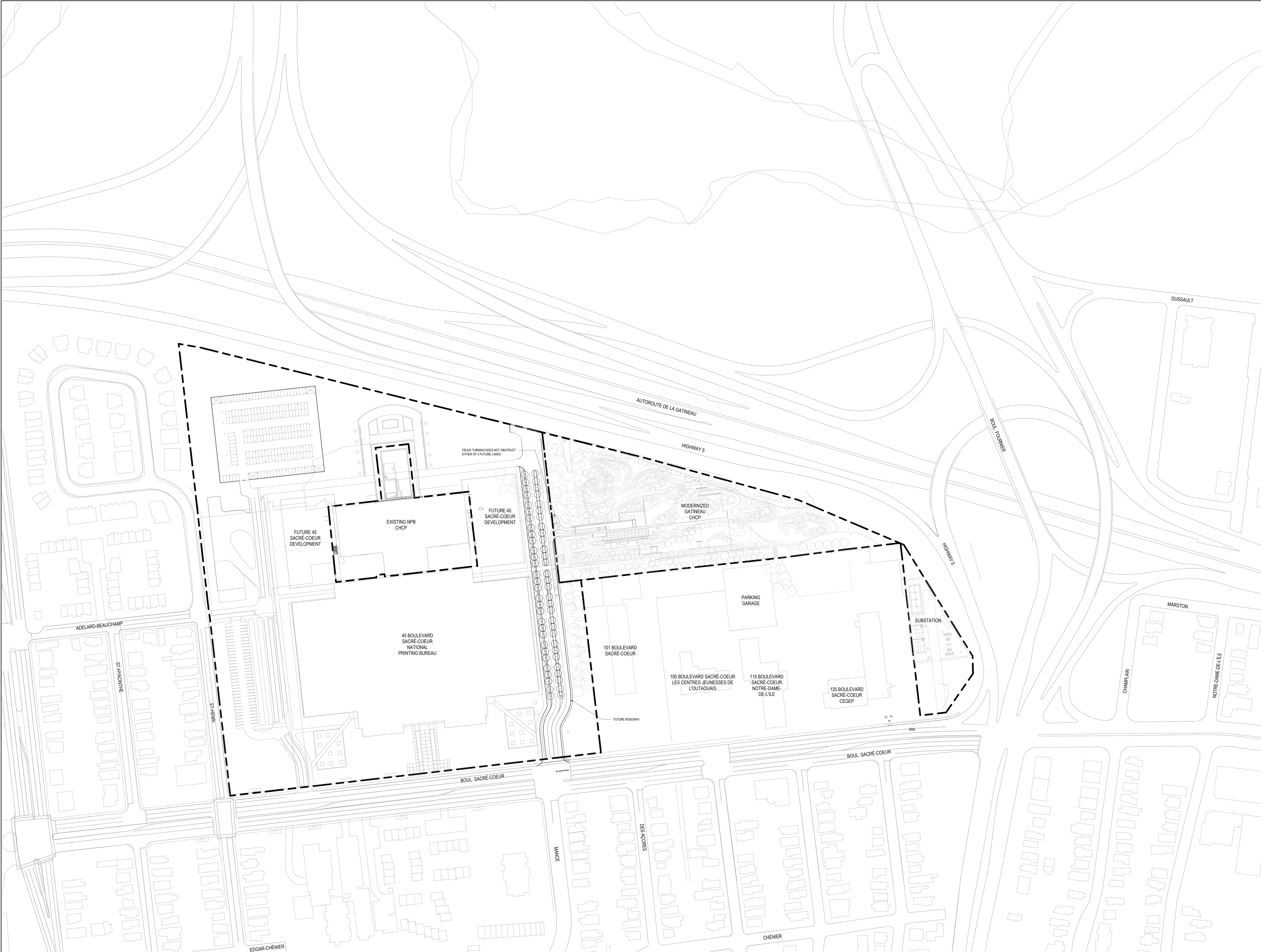
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INTERIOR VIEW AT TOP OF STAIRS

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Project
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ENERGY SERVICE MODERNIZATION PROJECT (ESM)

drawing
MODERNIZED GATINEAU CHCP
INTERIOR RENDERINGS

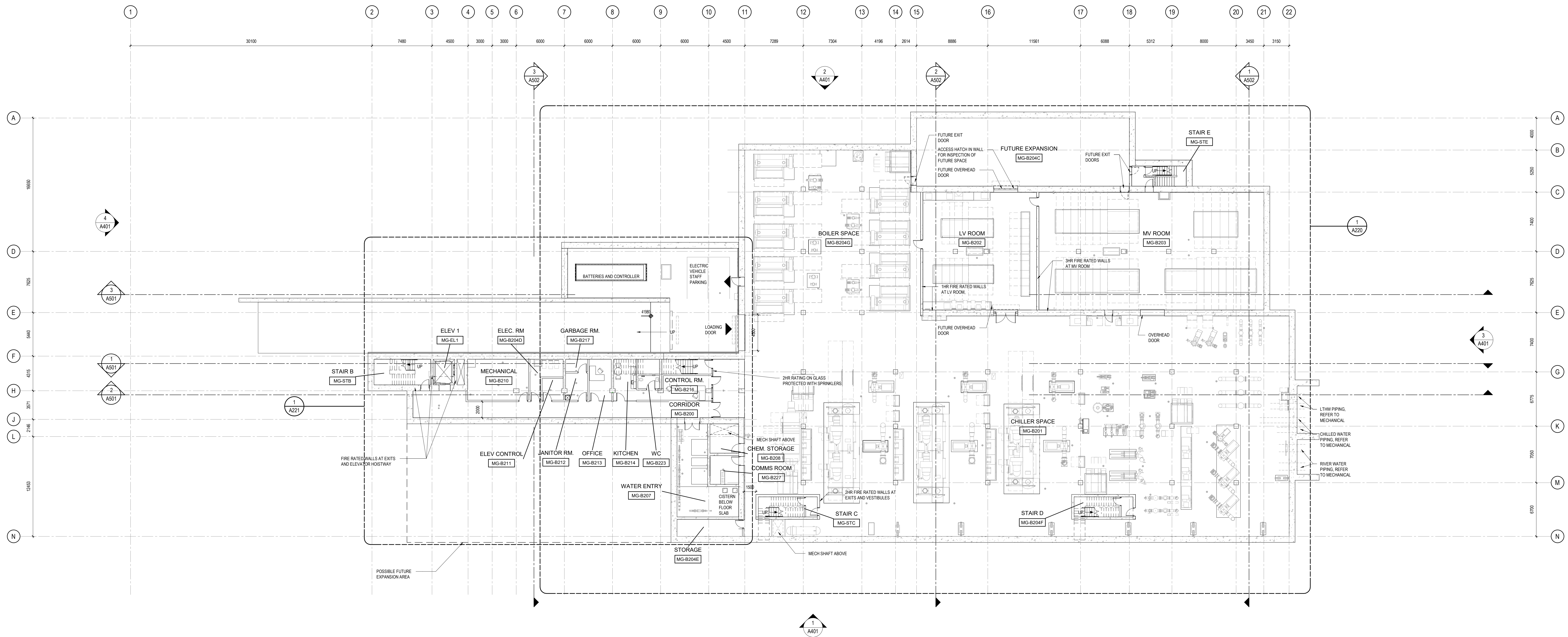
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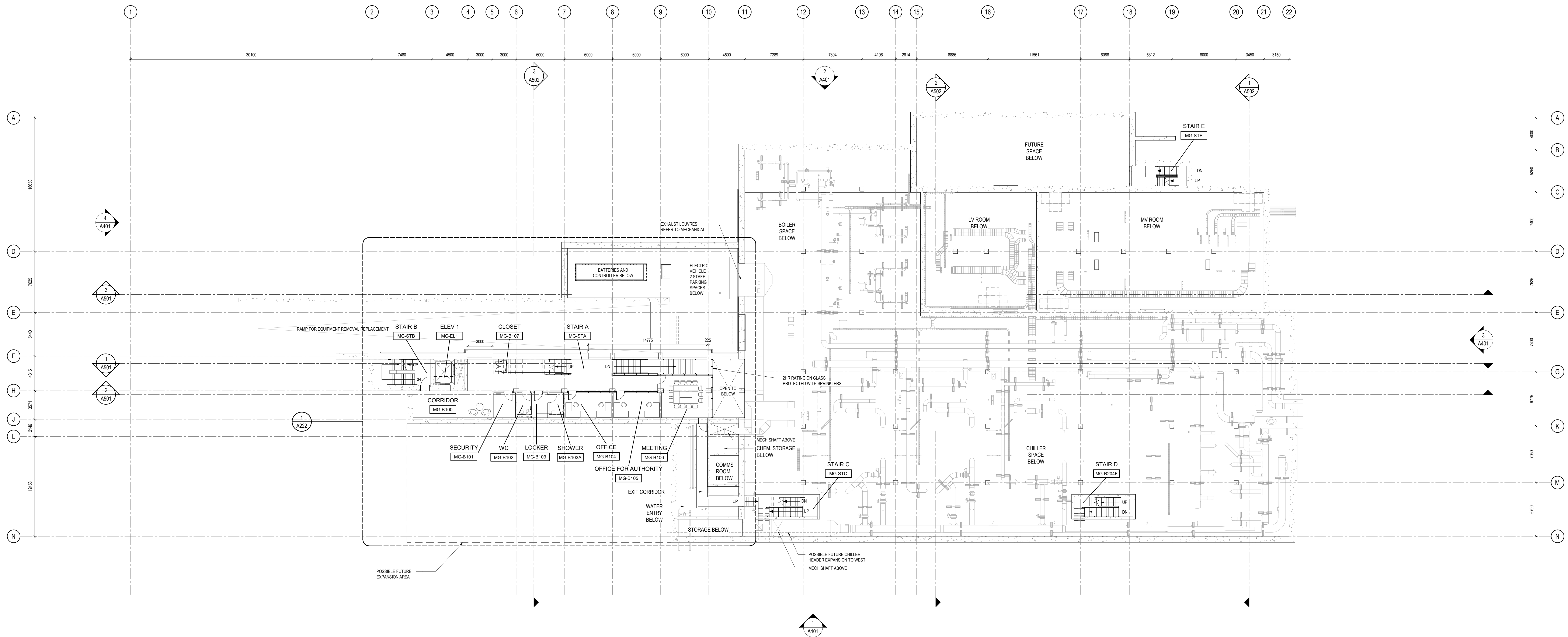


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ENERGY SERVICES
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ENERGY SERVICE
MODERNIZATION
PROJECT (ESM)

MODERNIZED
GATINEAU CHCP
B2 BASEMENT FLOOR
PLAN

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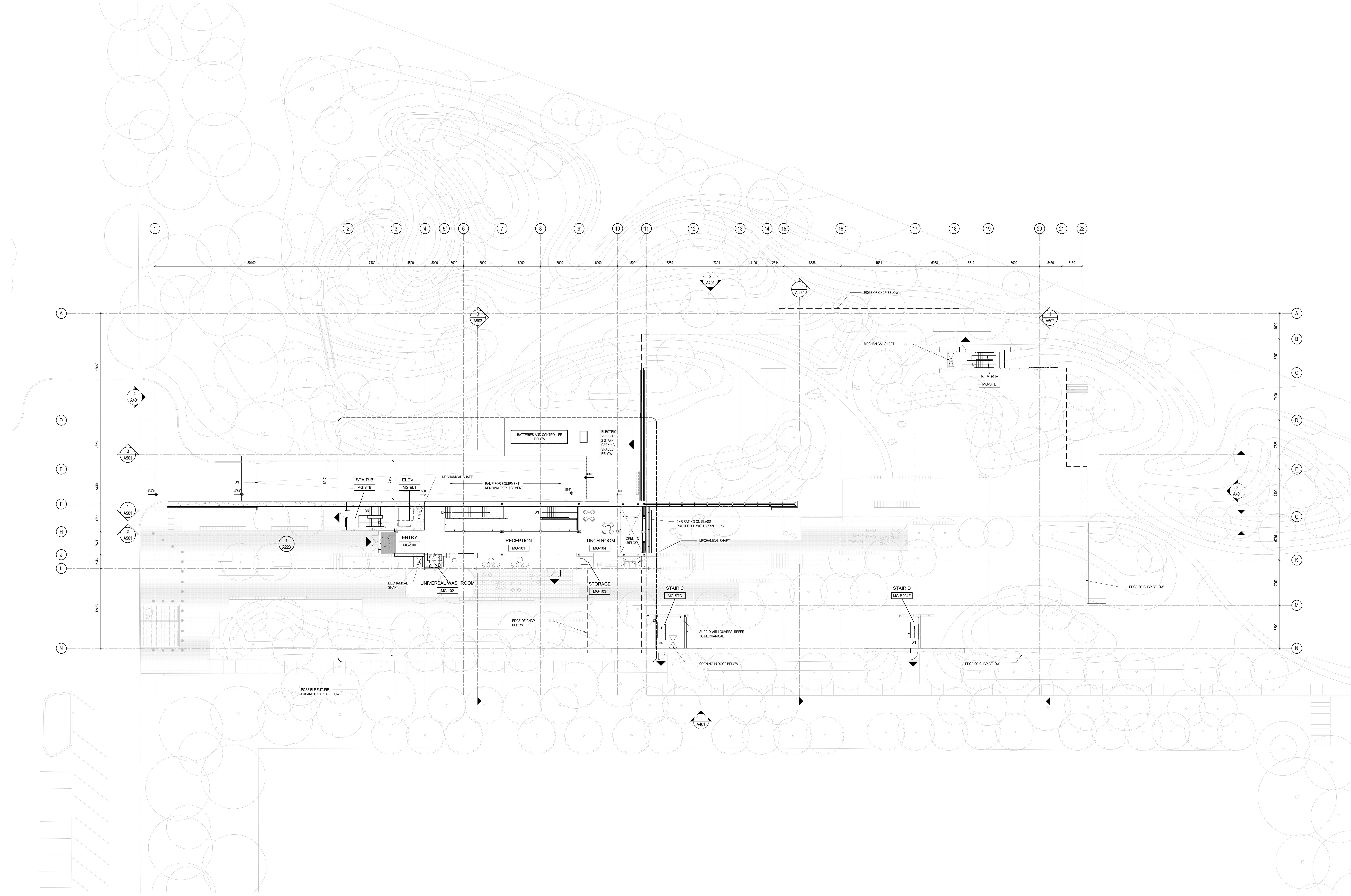


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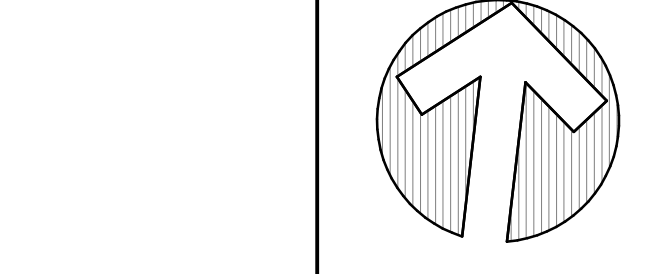
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PLAN

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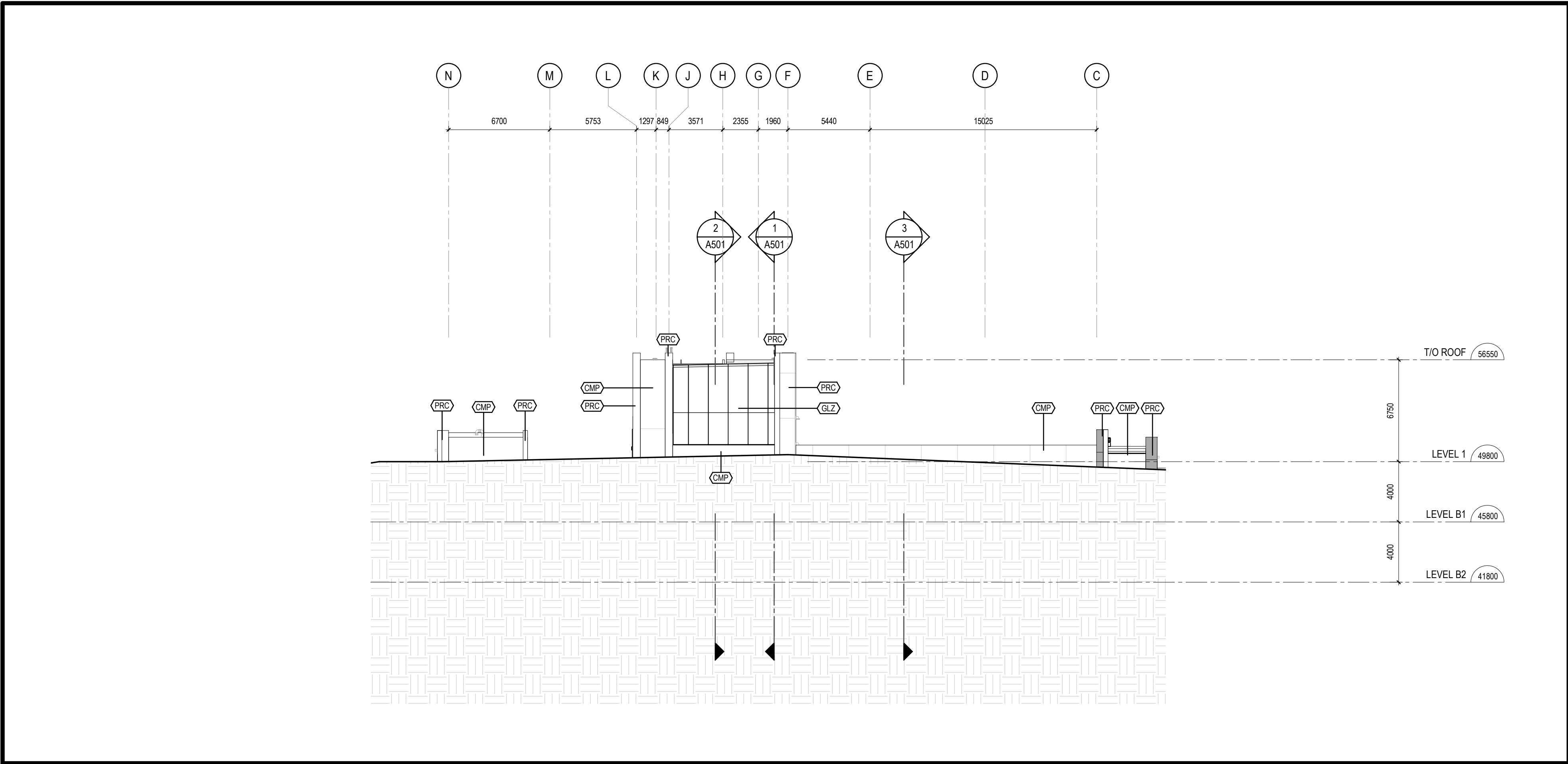
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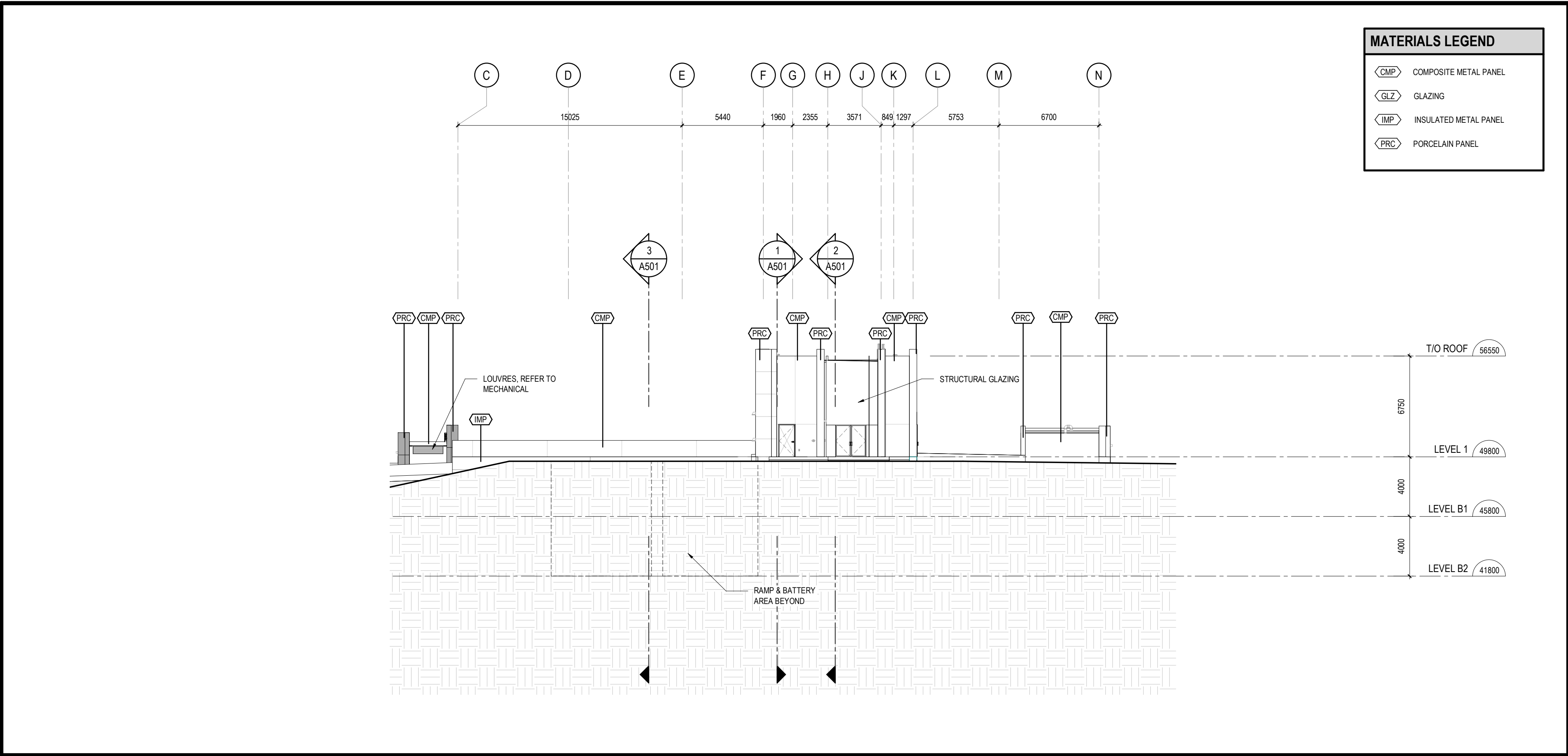
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ENERGY SERVICE MODERNIZATION PROJECT (ESM)

drawing
MODERNIZED GATINEAU CHCP
GROUND FLOOR PLAN

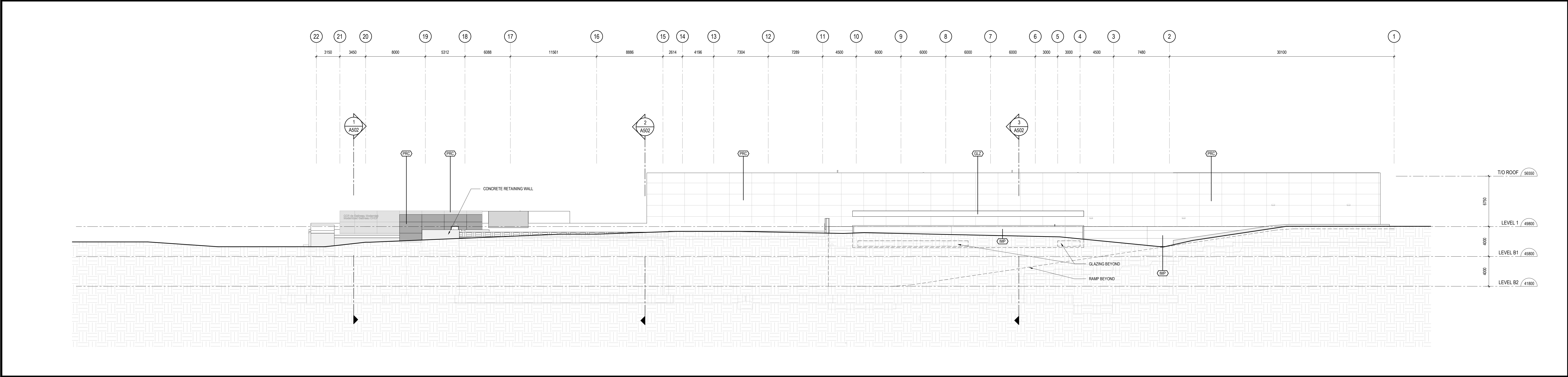
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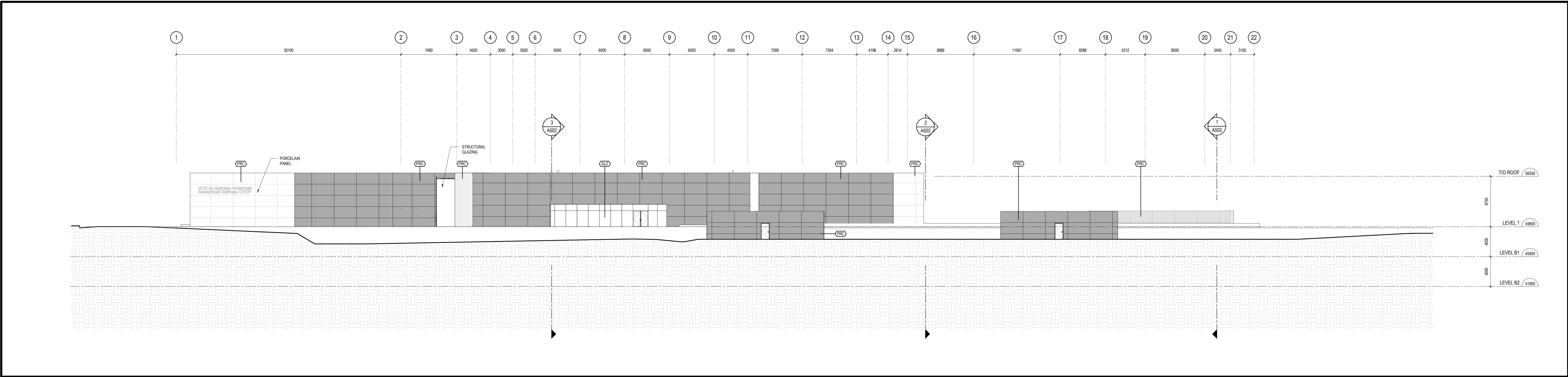
3 EAST ELEVATION
A401 1:200



4 WEST ELEVATION
A401 1:200



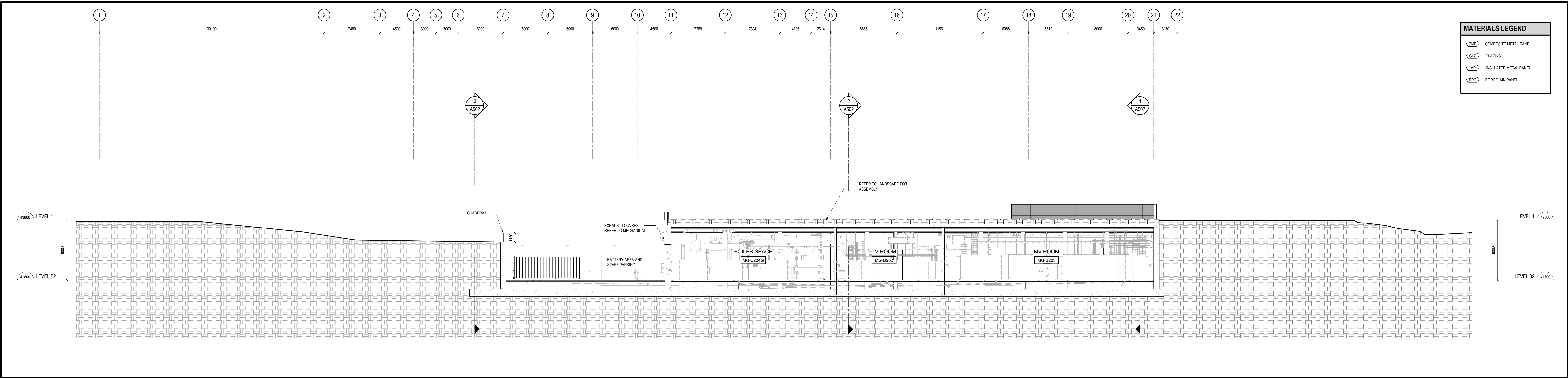
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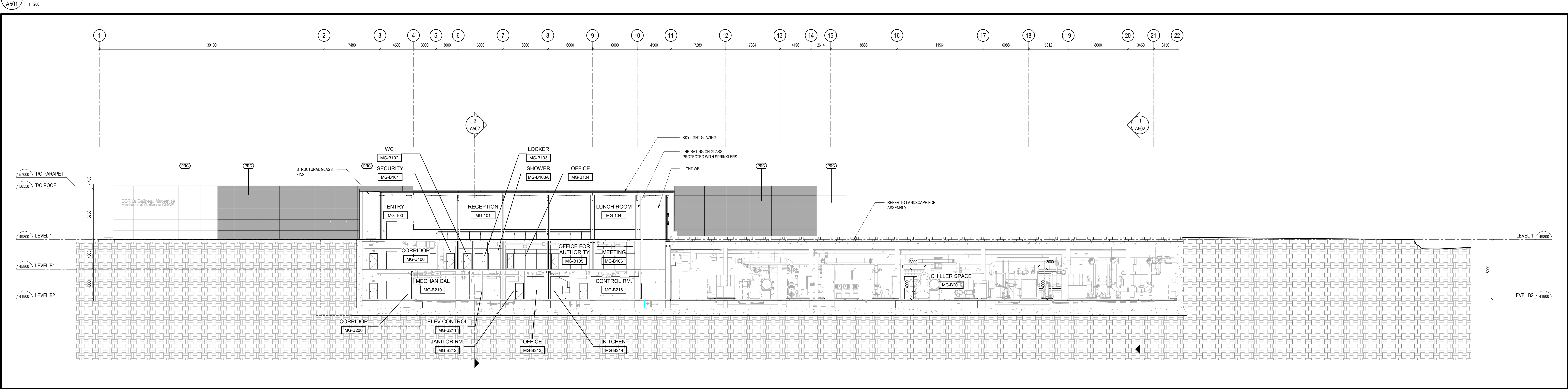
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	INSULATED METAL PANEL
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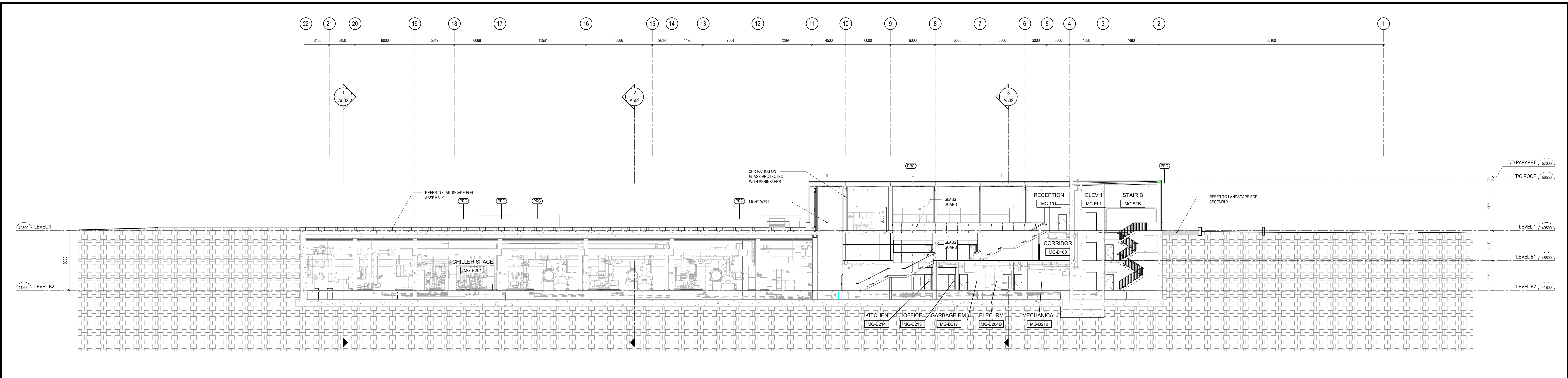
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3 OVERALL LONGITUDINAL BUILDING SECTION 3



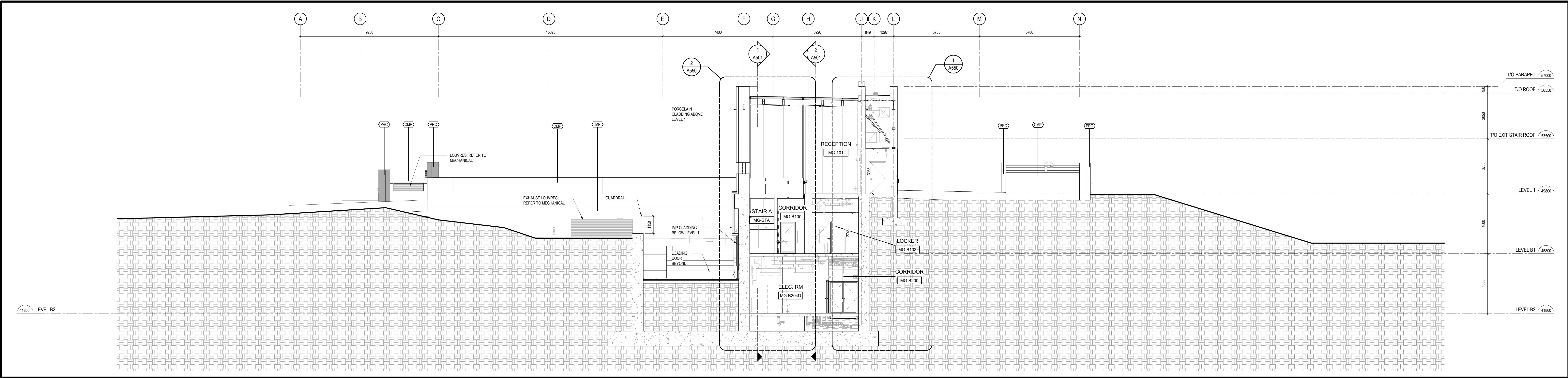
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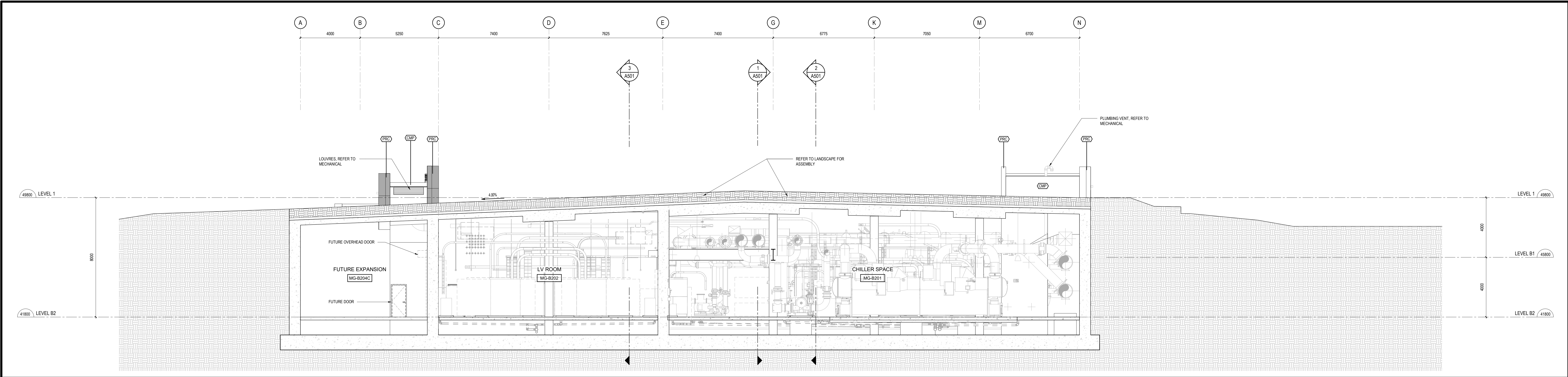
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IMP	INSULATED METAL PANEL
PBC	PORCELAIN PANEL

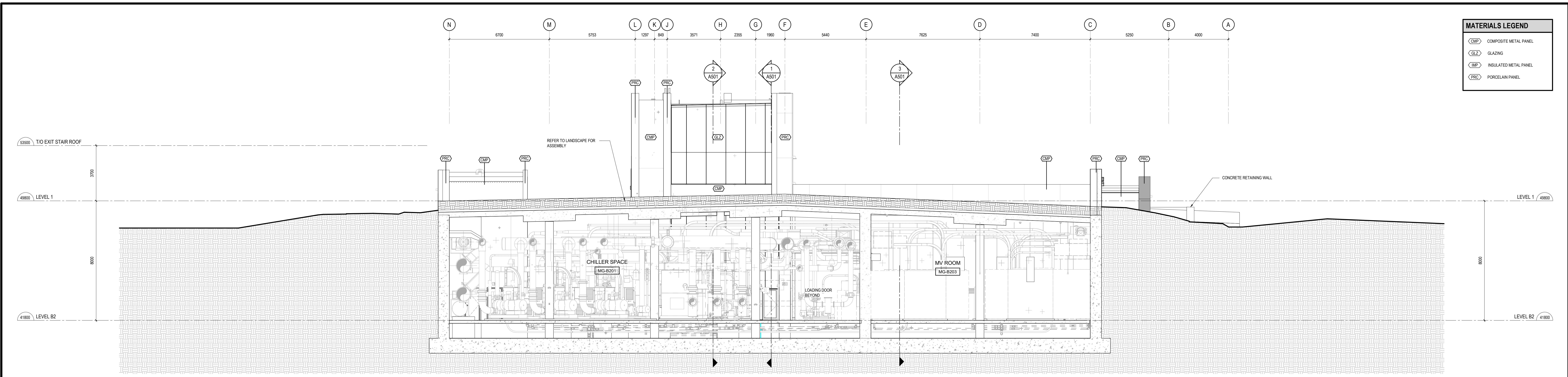
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3 OVERALL BUILDING CROSS SECTION 3
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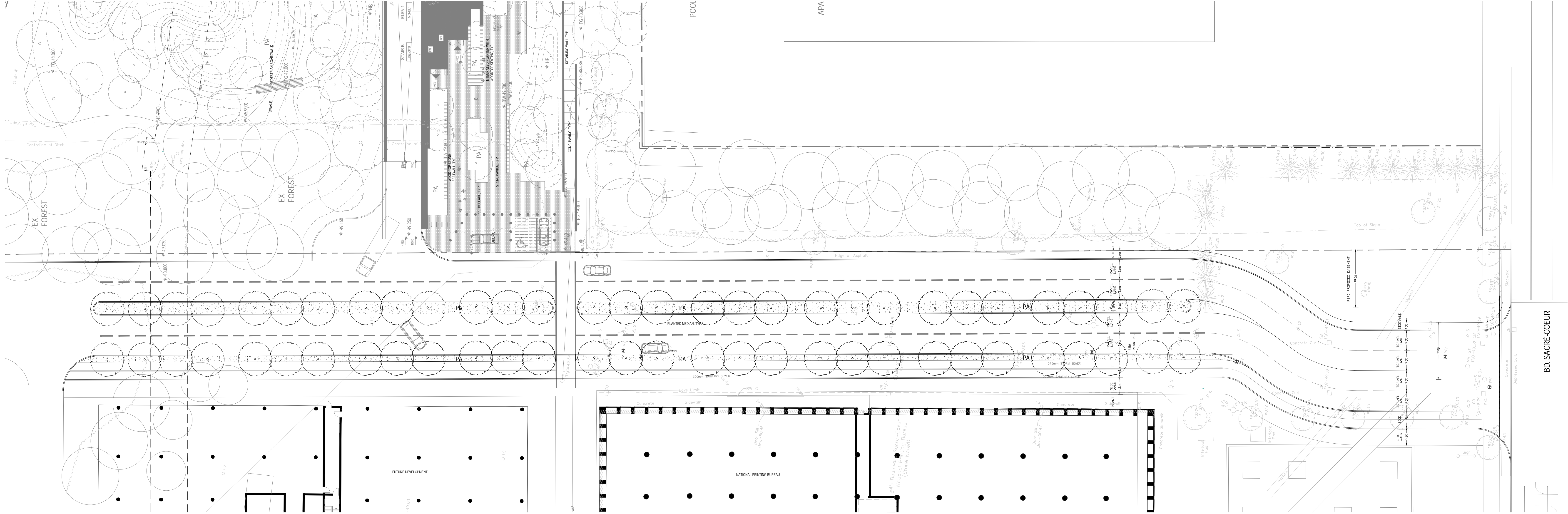
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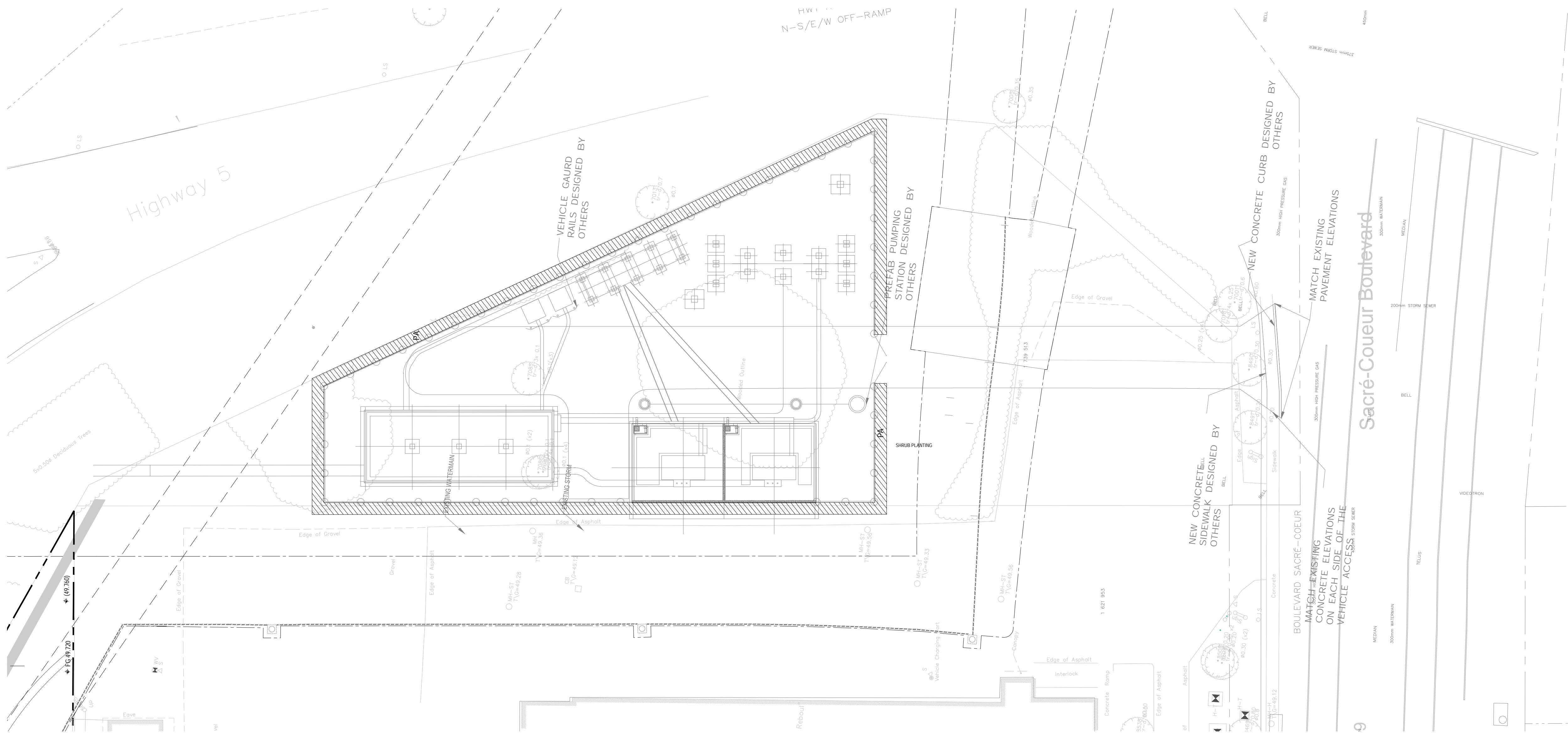
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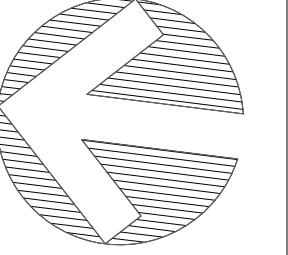


1 FUTURE ACCESS DRIVE AND STREETSCAPE
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2 SUBSTATION
SCALE: 1:300

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Project
ENERGY SERVICES
ACQUISITION PROGRAM
MODERNIZATION
PROJECT

Drawing
MODERNIZED
GATINEAU CHCP
SITE PLAN

Designed By	Conçu par
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Project Manager	Administrateur de projets
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SUBMITTED BY:

Innovate Energy
49 Auriga Drive
Nepean, ON
K2E 8A1

ENERGY SERVICES ACQUISITION PROGRAM MODERNIZATION PROJECT

MODERNIZED GATINEAU CHCP

Preliminary Design Report (33%)

Date: April 27, 2022



ENERGY SERVICE ACQUISITION PROGRAM MODERNIZATION PROJECT

MODERNIZED GATINEAU CHCP

PUBLIC WORKS AND GOVERNMENT SERVICES CANADA (PWGSC)

PRELIMINARY DESIGN REPORT (33%)

EP635-173247/001/NB
APRIL 27, 2022

INNOVATE ENERGY
49 AURIGA DRIVE
NEPEAN, ON
K2E 8A1

SECTION A - DESIGN



PUBLIC SERVICES AND PROCUREMENT CANADA (PSPC)

BASIS OF DESIGN DOCUMENT – MODERNIZED GATINEAU CHCP PRELIMINARY DESIGN REPORT (33%)

APRIL 27, 2022





BASIS OF DESIGN DOCUMENT - MODERNIZED GATINEAU CHCP

PRELIMINARY DESIGN REPORT (33%)

PUBLIC SERVICES AND PROCUREMENT CANADA
(PSPC)

CLIENT REVIEW
PUBLIC

CLIENT PROJECT NO.: EP635-173247/001/NB
DATE: APRIL 27, 2022

bbb architects Ottawa Inc.
with WSP

400 – 47 CLARENCE STREET,
OTTAWA, ON K1N 9K1
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1 ARCHITECTURE AND PLANNING

1.1 ESAP PROJECT OVERVIEW

To lead by example in the context of climate change, the Government of Canada is making its own operations greener and adopting technologies that significantly cut carbon pollution, reduce costs, and ensure a safer future for our children and generations to follow. The Energy Services Acquisition Program (ESAP) demonstrates this enormous commitment in Ottawa to promote Canada as a leader in this work. As part of this ESAP initiative, Innovate Energy, a P3 partnership of ENGIE, PCL Constructors Canada Inc., PCL Construction Eastern Inc., and Black & McDonald, has been awarded the commission to design, build, and operate the new, Modernized Gatineau Central Heating and Cooling Plant (MG CHCP). The design of the plant is led by bbb architects Ottawa Inc., with WSP engineering managing all other design disciplines.

Figure 1.1-1: Aerial of Energy Pavilion and Roof Gardens



1.1.1 FEDERAL GOVERNMENT COMMITMENTS

Canada (and Ottawa as a G7 capital) wants to demonstrate that it is on the leading edge of sustainable and renewable energy use by committing to the following:

- Honour the Pan-Canadian Framework on Clean Growth and Climate Change by committing to move toward Smart and Sustainable buildings that use less energy and open the way for using renewable energy sources;
- Recognise the International / Paris Accord committing Canada to reducing GHG emissions by 30% below 2005 levels by 2030; and
- Implement the Federal Sustainable Development Strategy and Greening Government by reducing emissions in government buildings by 40% by 2030.

Figure 1.1-2: ESAP Logo



The Primary Objectives for the ESAP projects include the following:

- Improving the Government of Canada’s environmental performance;
- Reducing costs of building heating and cooling operations while Increasing safety and reliability;
- Leveraging private sector’s innovation, capacity and expertise;
- Promoting growth of the District Energy System throughout the National Capital Region; and
- Integrating an education platform as part of the system’s transformation and operation.

While the Cliff Plant may be the most public and dramatic part of the ESAP system, and Tunney’s Pasture CHCP may be the most technical (and home base for ESAP / ENGIE’s operations), this new Modernized Gatineau CHCP is likely the most progressive and future looking plant of the entire collection. It is the culmination of Innovate Energy’s five other designs, acting as a demonstration building for future ideas of clean energy in Canada. Utilizing Quebec clean electric energy created by its network of river dams, the Gatineau project is driven at its core by electric boilers on back up battery power eliminating the fuel fired boilers and exhaust stacks that typically dominate heating plant sites. The design also features a Canadian mass timber structural system in the upper level of the pavilion, modern and durable ceramic panel cladding, a cistern for storage of the stormwater from the pavilion roof on site, and an expansive skylight and glazing system with stunning views to the river to the north and to the site’s landscaping to the east and south.

1.1.2 MODERNIZED GATINEAU CHCP CONTEXT

The site chosen for the newest ESAP CHCP is currently an asphalt parking lot located east of the existing central heating and cooling plant, and adjacent to the heritage designated National Printing Bureau (NPB) complex. It is an irregular wedge-shaped site, bound on the north by Highway 5 and the Blvd Maisonneuve off ramp; on the south by the Cégep de l’Outaouais, Notre Dame de L’Île /Centre Jeunesse community services, and the fifteen storey Le Faubourg de L’Île apartment building; and on the west by a mature tree stand separating the NPB complex from the proposed site.

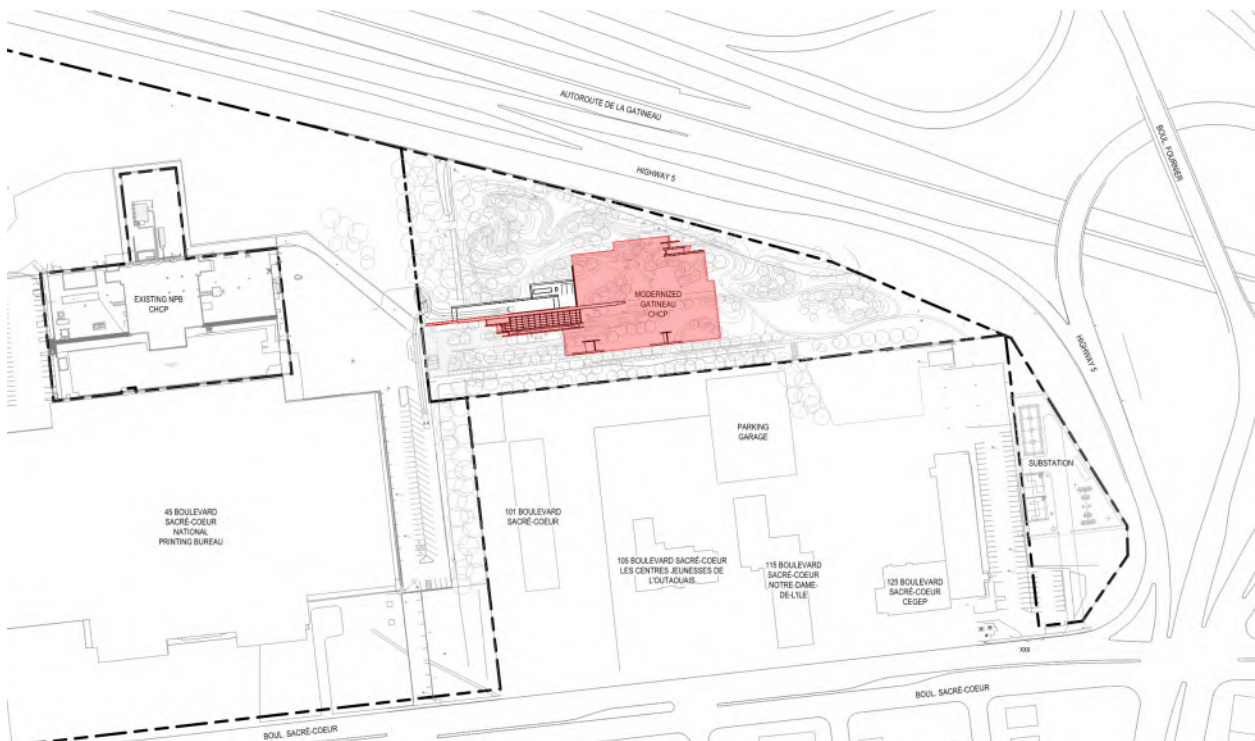
While the lot’s geometry sounds restrictive, the plant’s footprint area can fit efficiently by stepping the floor plan at the east side of the electrical room and exposing the plant wall and stair at the north-east as a signage opportunity. The benefit of this site’s adjacency to the highway lies in its potential for significant exposure of the ESAP program. Working with the existing mature trees along the site’s north and western sides will allow the Modernized Gatineau Central Heating and Cooling Plant (MG CHCP) to be both screened from the highway traffic and intentionally exposed to the people and cars passing by.

The lands crossing the highway are part of the former basin of the Gatineau River. The deep swale along the site’s northern border captures the highway storm water runoff and directs it in a culvert under the highway back to the river. The CHCP site planning will utilise this existing system for storm water management, although the absorption through the green roofs will greatly reduce the storm water runoff of the existing asphalt surface.

Figure 1.1-3: Photo of Existing Parking with Highway 5 beyond



Figure 1.1-4: MG CHCP Context Plan



1.2 PLANNING AND DESIGN STRATEGY

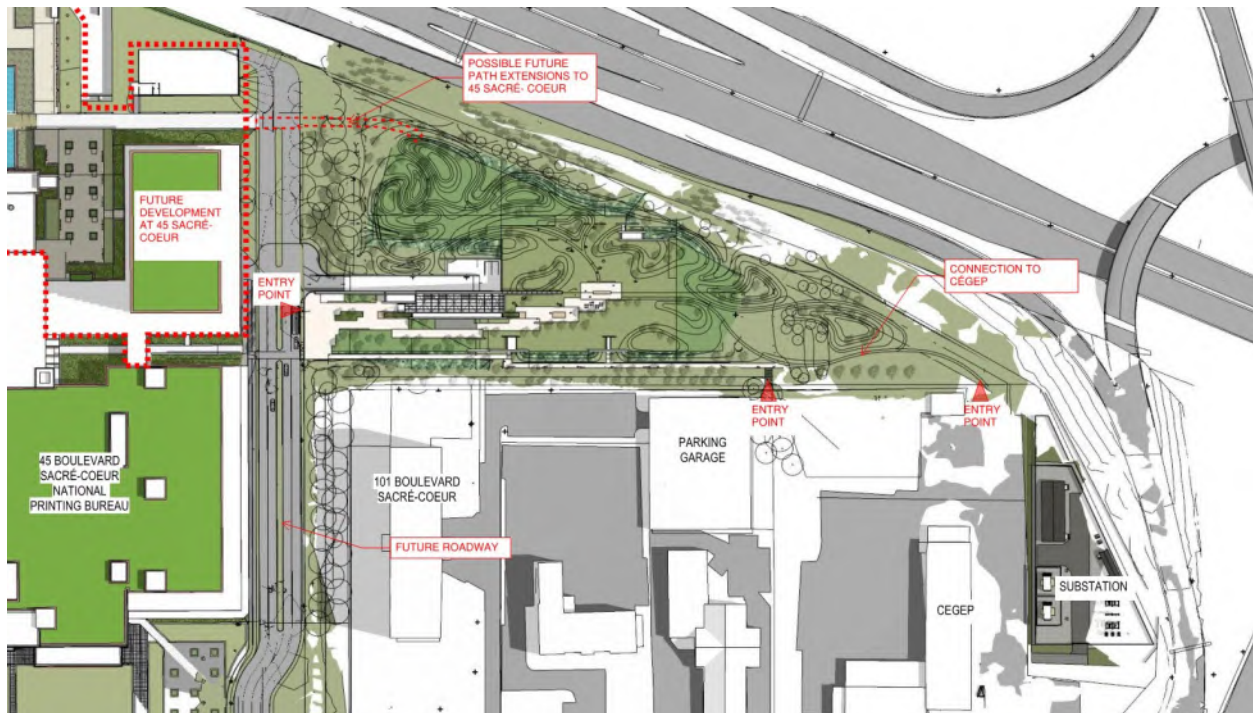
Consistent with the three other new plant designs for ESAP by this same Innovate Energy design team, our planning bias has once again been towards creating public realm over architectural expressions. With the anticipated expansion of the National Printing Bureau for two massive new government office blocks in the near future, this site has a critical role to play in the campus's masterplan. It will become the central public garden space binding the Cégep students, the apartment residents, and the many NPB employees of the expanded complex. By making it public realm, the new gardens will attract visitors and neighbours while exposing them to the advancements of clean energy in Canada through the ESAP program.

Figure 1.2-1: Photo of Proposed Site with Raised Site of Existing NPB Beyond



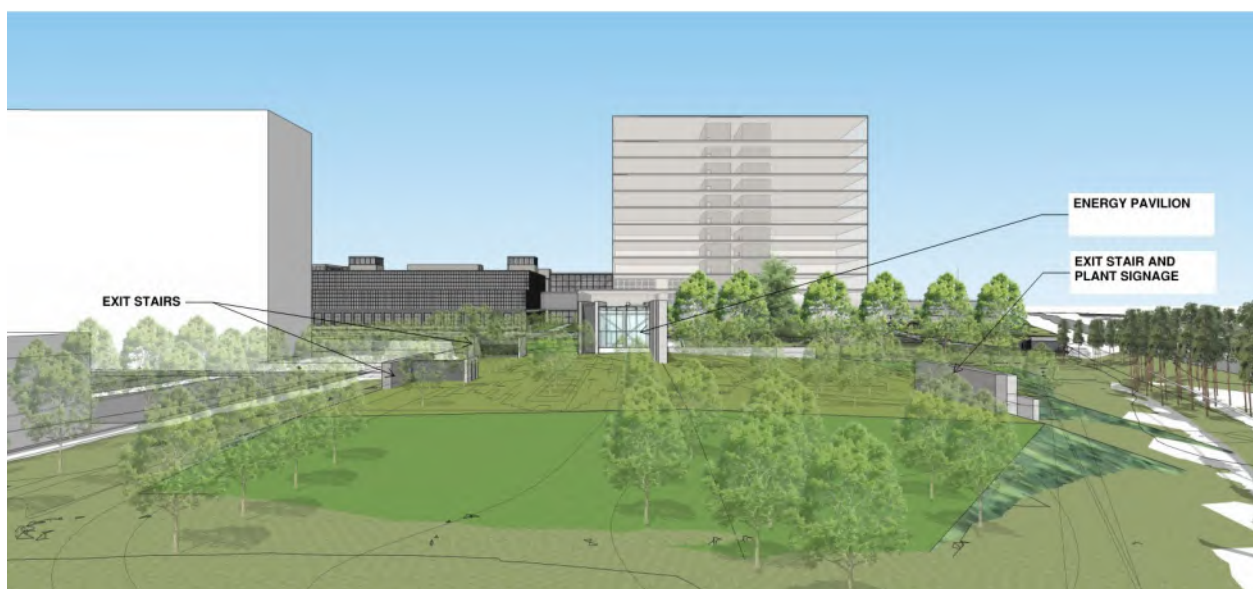
The significantly lower elevation of the existing parking from the NPB lands and the neighbouring institutions offered an easy starting point to burying the majority of the large mechanical central heating and cooling plant (CHCP). Establishing a new ground floor aligned with the existing NPB campus creates a datum well above the existing grade, requiring less excavation and using cut and fill procedures to have the proposed landscaped gardens completely berm over the new plant building. A public pathway passes over the green roof of the plant offering the possibility to connect pedestrians from the southeast corner Cégep lands to the northwest future 45 Sacré-Coeur expansion. Smaller, more intimately scaled paths and resting areas offer additional connections to the main pathway to the MG CHCP entry plaza and the driveway up from Sacré-Coeur.

Figure 1.2-2: Context Plan showing future connections to 45 Sacré-Coeur and Cégep



The only elements of the CHCP that appear above grade are the Energy Pavilion as the plant entry, the north-east exit stair and plant signage, and two exit doors out the south berm that are required from the plant. Any exterior equipment including mechanical wells and louvers that are required for air supply have been integrated with the stair pop-ups so as not to negatively impact the views of the green roof. The immense rectilinear plant below grade is barely identifiable from the garden level. This strategy allows the architectural budget to be kept to a few small but significant moves as opposed to attempting to clad or screen the large plant walls on all faces. Poured concrete walls below grade, tanked with waterproofing, and covered with green roof garden soil build-up make up 90% of the architectural cladding.

Figure 1.2-3: Perspective showing above grade elements of the CHCP



1.3 THE ENERGY PAVILION

The elegant, elongated lines and ceramic panel cladding of the Energy Pavilion become the identifiers or brand for the MG CHCP site. The long east-west wall that separates the pavilion from the ramp stretches out to the west to draw visitors into the site from Sacré-Coeur. At the east, it extends over the roof of the plant to present a long, linear façade that is legible from the highway. Long ribbon windows slice across the façade on the north side, offering views to the river from the interior, while accentuating this elongated geometry.

Figure 1.3-1: Aerial View from North-West



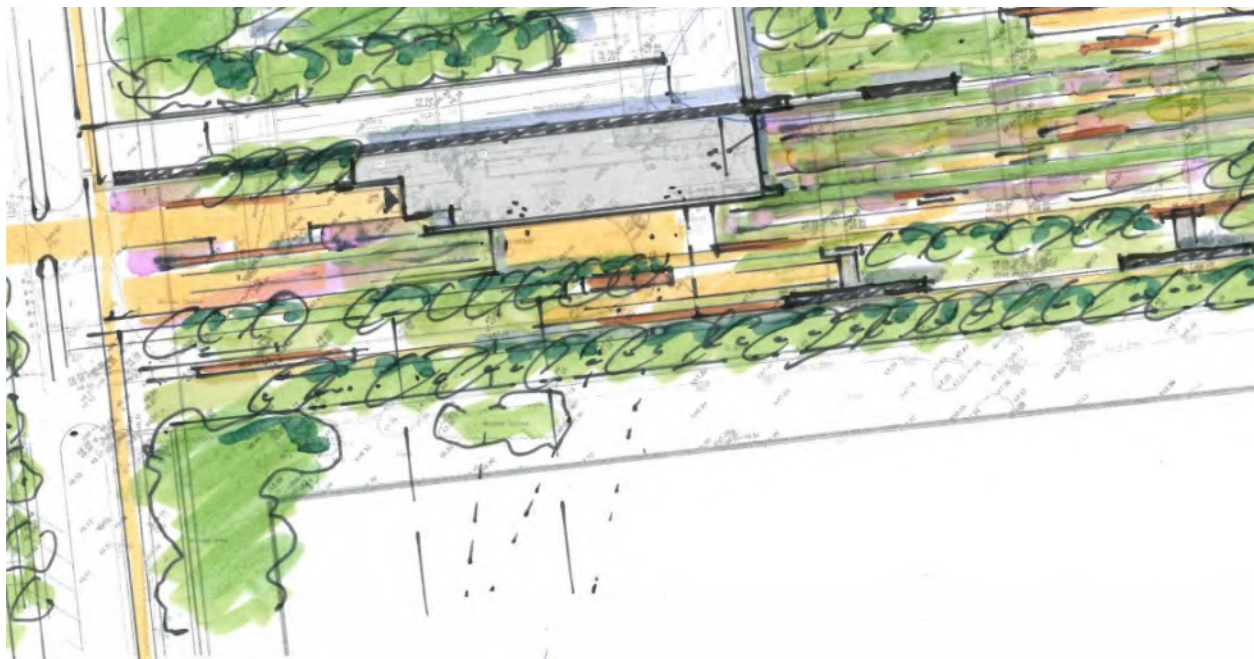
The architectural expression of the pavilion is a repetition of these long east-west lines with a linear entrance and reception area with views to the garden. A skylight extends for the length of this public entrance space with glazing at both east and west ends. These long, linear walls present a very modern and noticeable form when viewed by passing cars on the highway to the north. Approaching from the south along Blvd. Sacré-Coeur, the positioning and orientation of the Energy Pavilion allows the long wall and signage to be glimpsed through the gap between the church and apartment building, as well as from the NPB entry driveway.

Figure 1.3-2: Perspective View of Entry Plaza and Energy Pavilion



The Energy Pavilion is intended to be a showcase for ESAP, not only for this CHCP but for the entire district energy system. While it is not as public as the Cliff Plant, it will be the primary site to host international dignitaries visiting Canada to learn about our leading role in clean energy. The pavilion is set on a stone entry plaza, an intentionally minimal and modern extension of the lush gardens behind. To the south of the pavilion, there is a hardscaped area with wood topped benches and feature planting. This gathering space is the focal point for a large gallery window that runs along the south side of the reception area. While public access to the plant itself is controlled, visitors are welcome to use the plaza and rest areas to connect to the gardens and learn about ESAP's role within this sensitive environment and the advancements being made in the creation of clean energy.

Figure 1.3-3: Landscape Concept Sketch of hardscape areas around the pavilion



Entering the plant offers an equally impressive setting. Like all of our ESAP designs so far, the building explains itself from the first approach. The long ceramic walls supporting the skylight frame the ground floor space from front to back. Upon entering the space, all services are immediately visible. The vertical circulation is on the left with elevator and long public stair that serve all levels. To the right is the reception desk and universal washroom. The waiting area of the reception is along the south window and the lunchroom with kitchenette and seating area is at the end of the gallery. From this entrance space, visitors can see all the way down the stair to the meeting room and offices and beyond to the plant. There will be opportunities in the conference room and on the lobby walls to have digital displays to clearly demonstrate the current operations of the ESAP system.

Figure 1.3-4: Perspective View from top of public stair



Figure 1.3-5: Perspective Section of Energy Pavilion

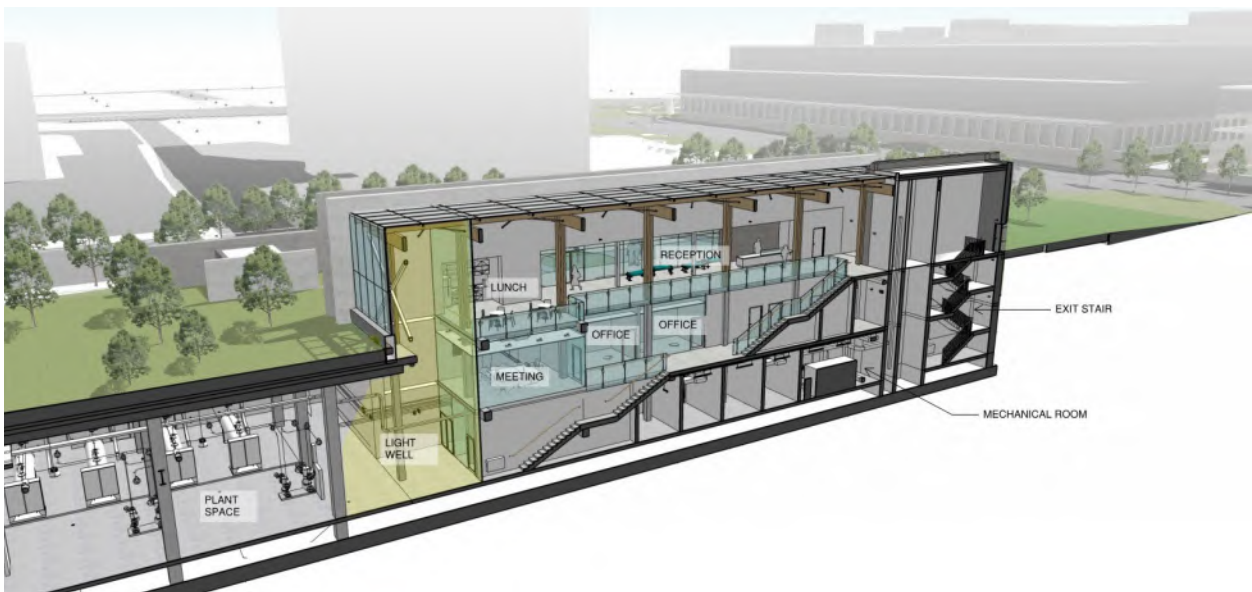


Figure 1.3-6: Energy Pavilion – Ground and Level B1 Floor Plans

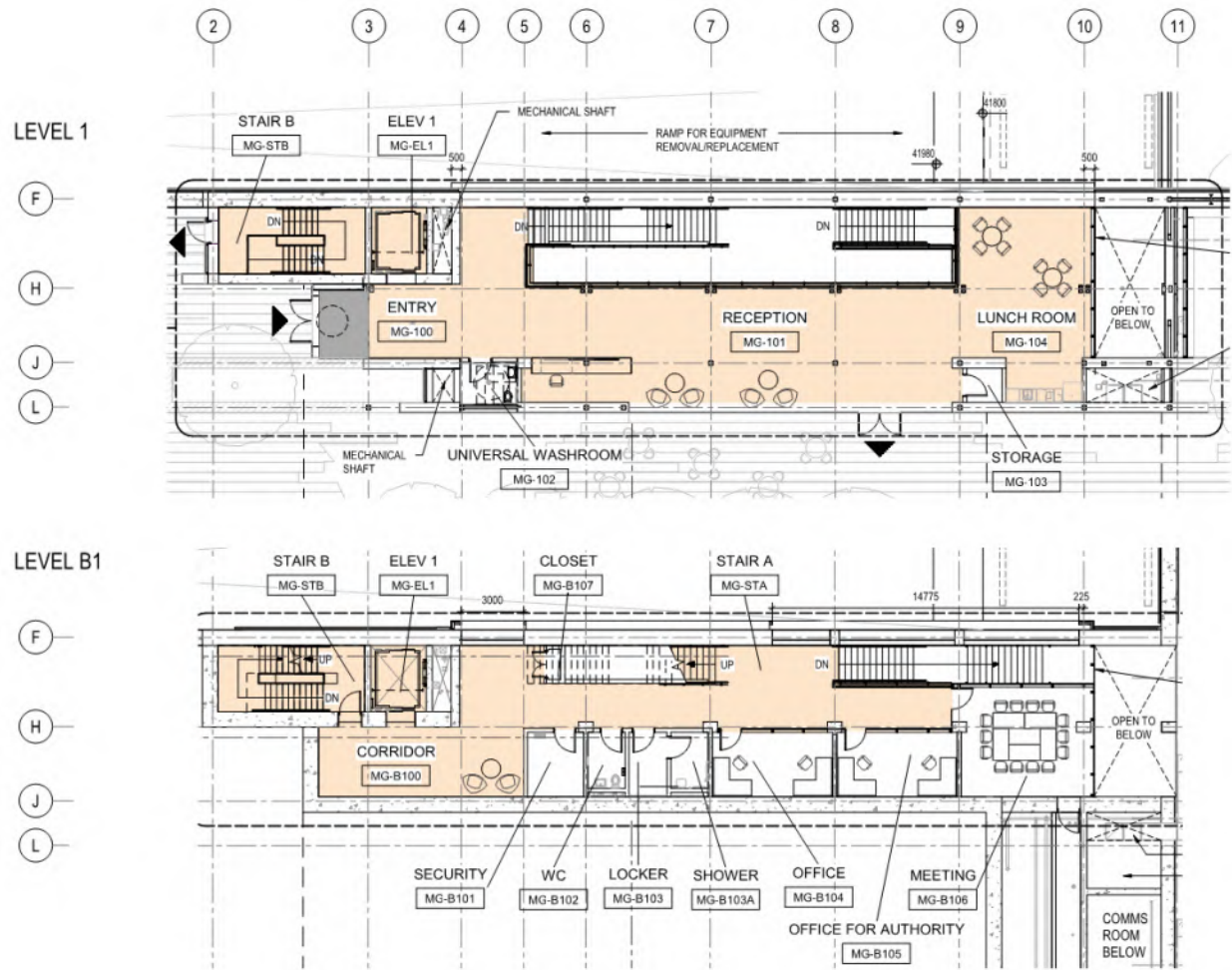
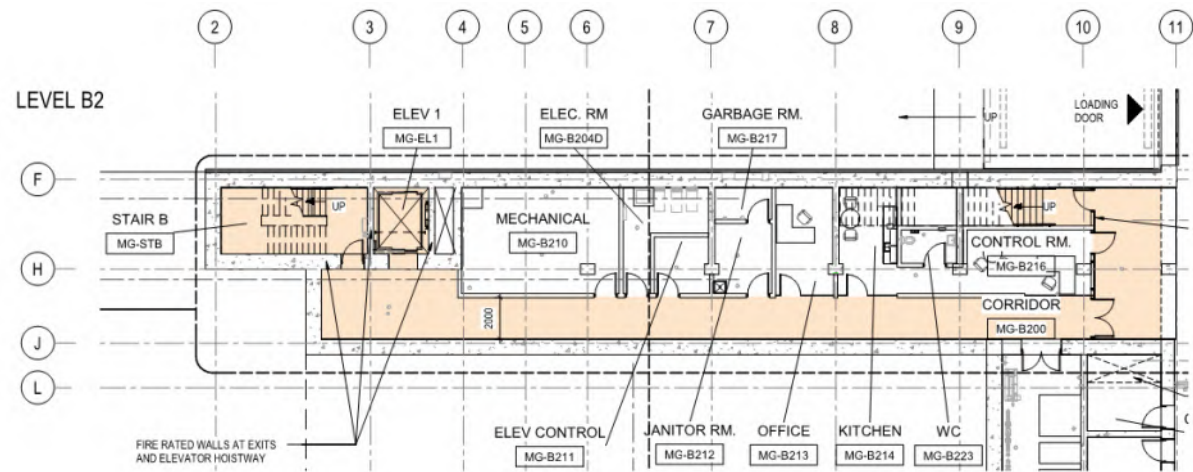


Figure 1.3-7: Energy Pavilion –Level B2 (Plant Level) Floor Plan



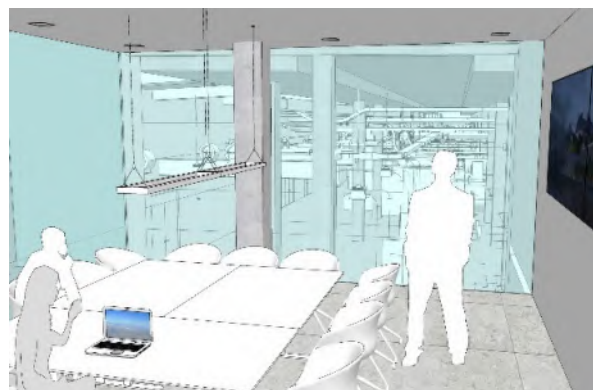
As the visitor is drawn to the east towards the back gardens and daylight, the linear public stair offers access to the lower floors with a large glass wall into the plant. Access to the offices, staff rooms, and other administrative functions on the lower B1 level of the pavilion can be gained from this feature stair or by the elevator at reception. While the mechanical plant floors are not public nor required to meet national accessibility standards, we have ensured that the Energy Pavilion itself is fully accessible to all three levels, for all visitors to understand the operations and contributions of this progressive facility. The ground floor universal washroom is designed to NBC 2015 and other more current standards for accessibility. One of our country's leaders in this field, Betty Dion, has reviewed the current design and her review is included in **Appendix S**.

Figure 1.3-8: Perspective Section of Public Stair and Light Well



The lower B1 level of the Energy Pavilion includes a large meeting room with a view of the plant spaces. A generous light well is located at the east end of the pavilion. It captures daylight and draws it down to the plant level, while providing views into the plant from all three floors.

Figure 1.3-9: View from Level B1 Meeting Room

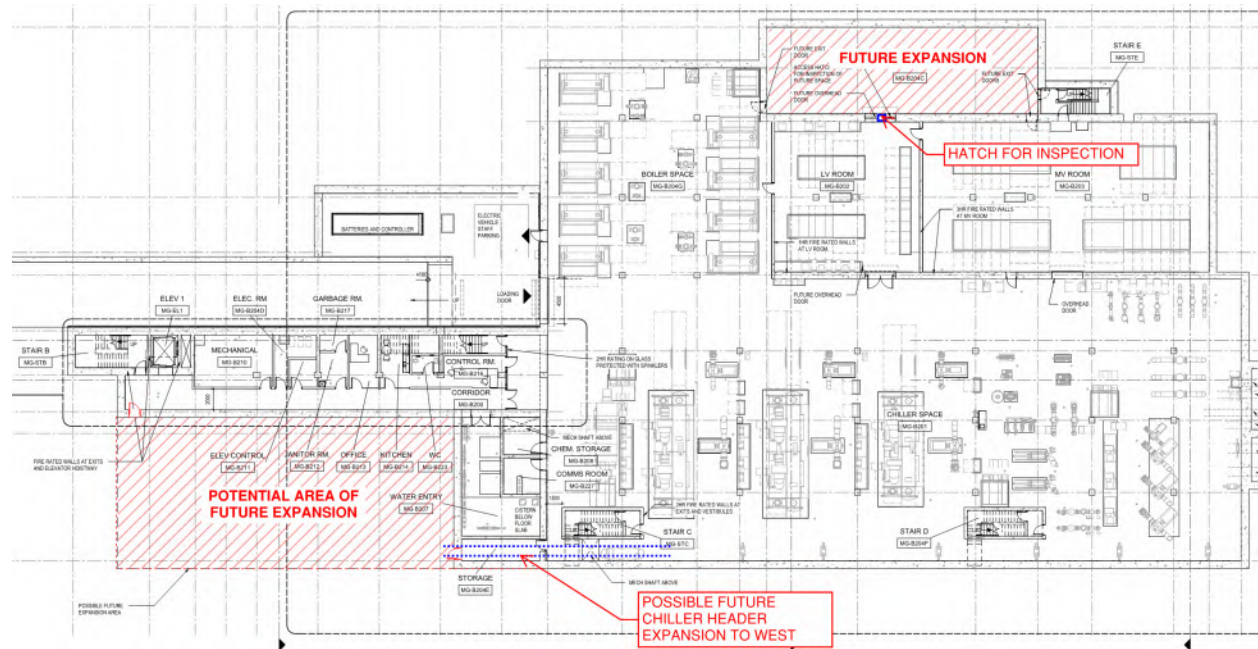


Architectural section drawing of the building, showing the interior layout and structural details. The drawing includes labels for various rooms and areas, such as 'KITCHEN', 'OFFICE', 'GARAGE RM', 'ELEC. RM', 'MECHANICAL', 'RECEPTION', 'CORRIDOR', 'STAIR B', and 'STAIR A'. It also shows the building's exterior walls, roof, and foundation.

PRELIMINARY DESIGN REPORT (33%) - MODERNIZED GATINEAU CHCP

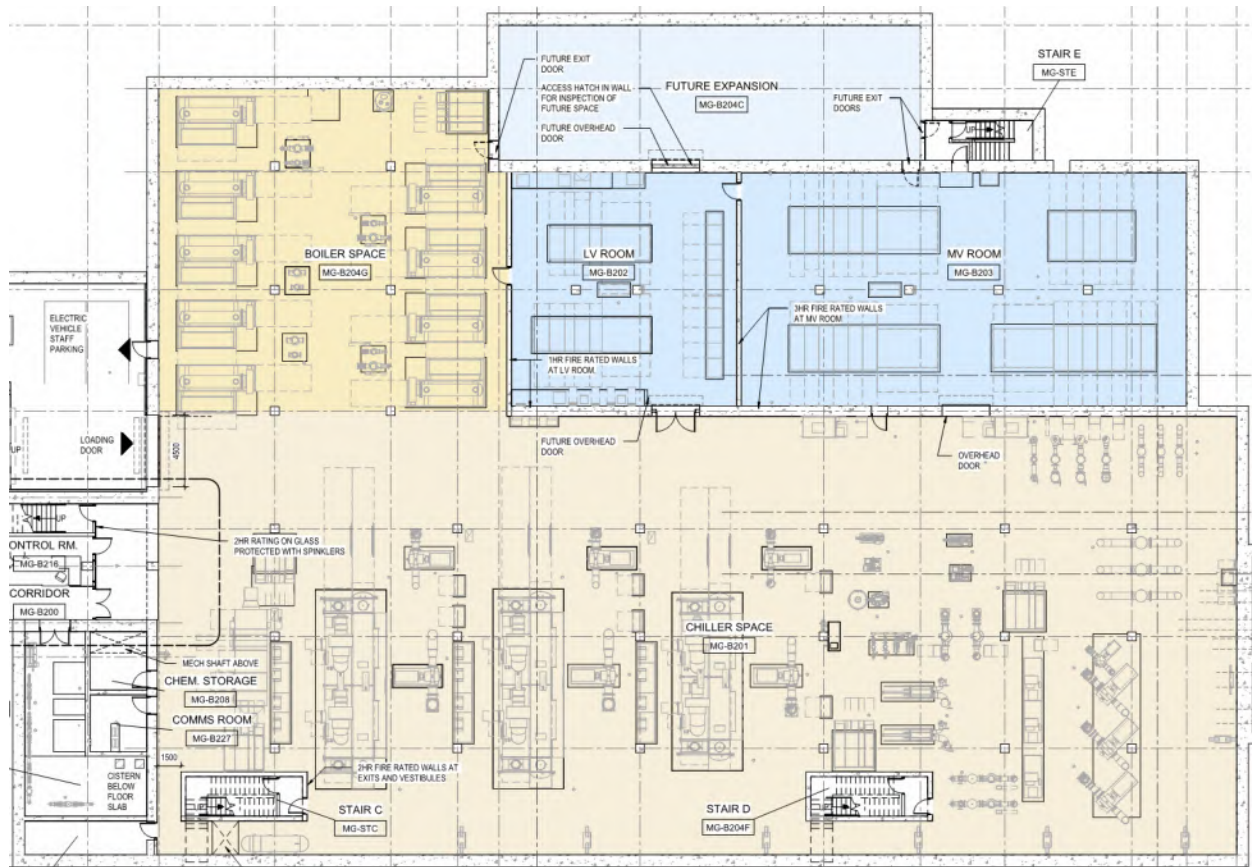
The circulation corridor and exit stair at the B2 level of the Pavilion can be used to connect the plant to a future expansion area to the south-west. The current B2 Storage room reserves the space required for the Chiller Header to be expanded to the west. There is also a north future Electrical Room expansion area that is being built as part of the scope of the project. This future area scope includes the structure and building envelope, but does not include lighting or life safety and would be closed to access from the plant except for a hatch in the future overhead door opening that allows for inspection.

Figure 1.3-12: Plant Floor Plan showing potential areas for future expansion



1.4 THE PLANT FLOOR

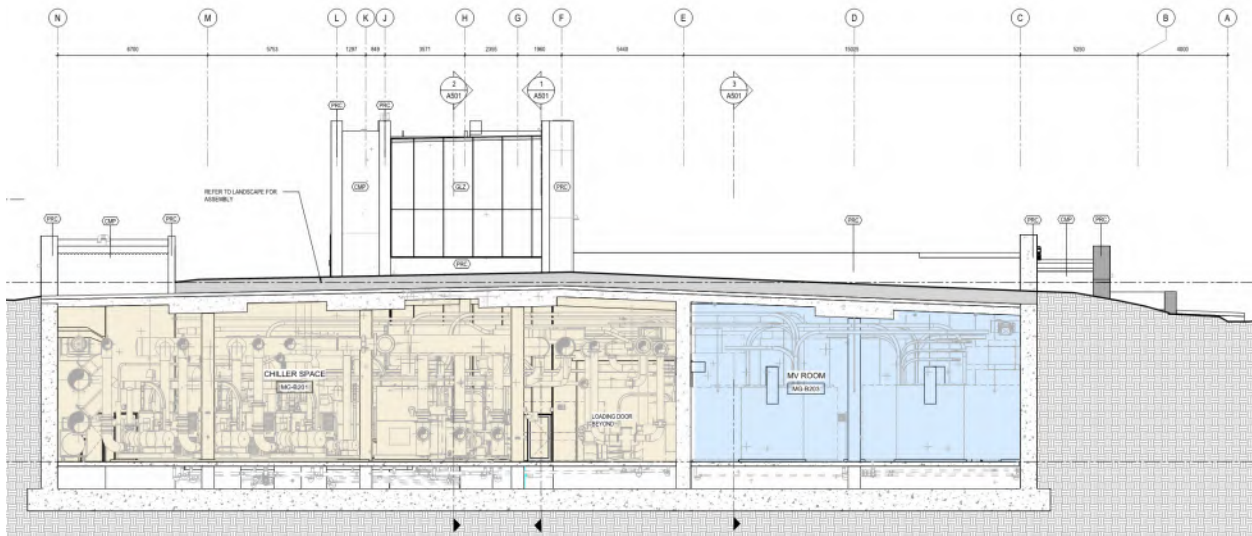
Figure 1.4-1: Plant Floor Plan – Mechanical (beige) and Electrical Rooms (blue)



The layout of the large Boiler and Chiller room spaces is very rational. The distribution lines enter from the east end, a wide east-west corridor and pipe raceway has been located off the north end of the chillers, allowing for easy access, and also providing adequate clear space for servicing the chiller and boilers. Space for future expansion has been allowed for at the north and south-west. The Electric Rooms (both Medium and Low Voltage) are located along the northern edge serving the length of the open plant rooms. The electric boiler space is located at the north-west and includes space for 3 additional boilers. The area has an exit to the outdoors and air exhaust louvres just north of the loading door.

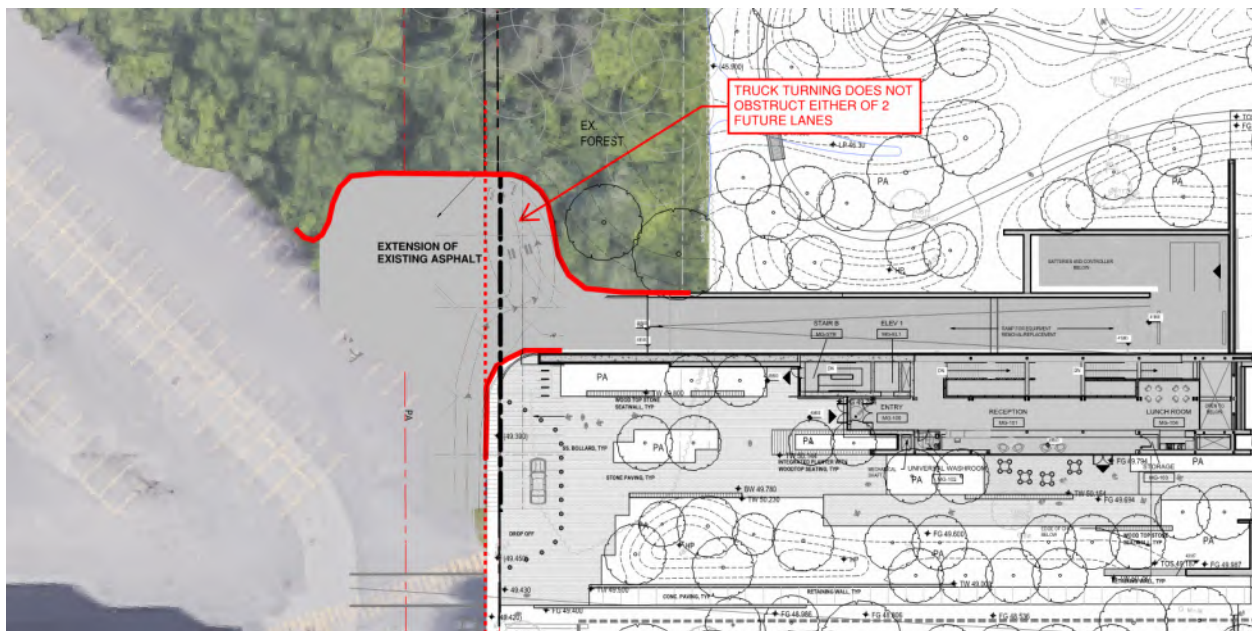
In cross section, the plant's layout has been arranged to best suit the site and landscape grades. The tall chiller room height has a shallow 2% roof slope to drain to a bioswale south of the plant while the lower 5m Electric Room height allows that roof area to slope north at 4% to the large highway stormwater swales. This simple green roof stormwater management solution avoids having drain penetrations into the plant spaces. Exit stair roofs are sloped to shed water on to the landscape roof and also do not require drains.

Figure 1.4-2: Cross Section of Plant with Sloped Green Roof



At the northwest corner of the project, a long shallow sloped 6m wide ramp and 4.5m wide loading door have been provided for equipment removal and replacement. There are 2 staff parking areas with a shared electric vehicle charging station at the bottom of the ramp. West of these parking spaces are the batteries and controller that are located below grade to minimize their impact on urban design and pedestrian views of the site. The ramp, parking area and battery area have hydronic snow melting systems with drains. At the top of the ramp, the existing asphalt parking area has been extended to provide access to the ramp and allow for a turn around area at the top. The turnaround geometry is designed to allow for trucks to access the ramp without obstructing either of the 2 future northbound lanes of the future roadway.

Figure 1.4-3: Plan detail showing ramp area and extension of existing asphalt



The exit stairs within the plant, exits at the northwest end at the bottom of the ramp, and exit corridor within the pavilion at the B2 level all contribute to maintaining a maximum travel distance of 45m to an exit for the entire CHCP. The exit stairs from the plant lead to landscape walkways at grade that extend away from the plant roof at the south along the bioswale or at the north beyond plant at the north-east stair. The walkways will be cleared of snow and include emergency lighting. Refer to Section 7 Civil for further information on fire protection, including hydrant locations.

Figure 1.4-4: B2 Level Plan demonstrating a maximum 45m travel distance to an exit within the plant

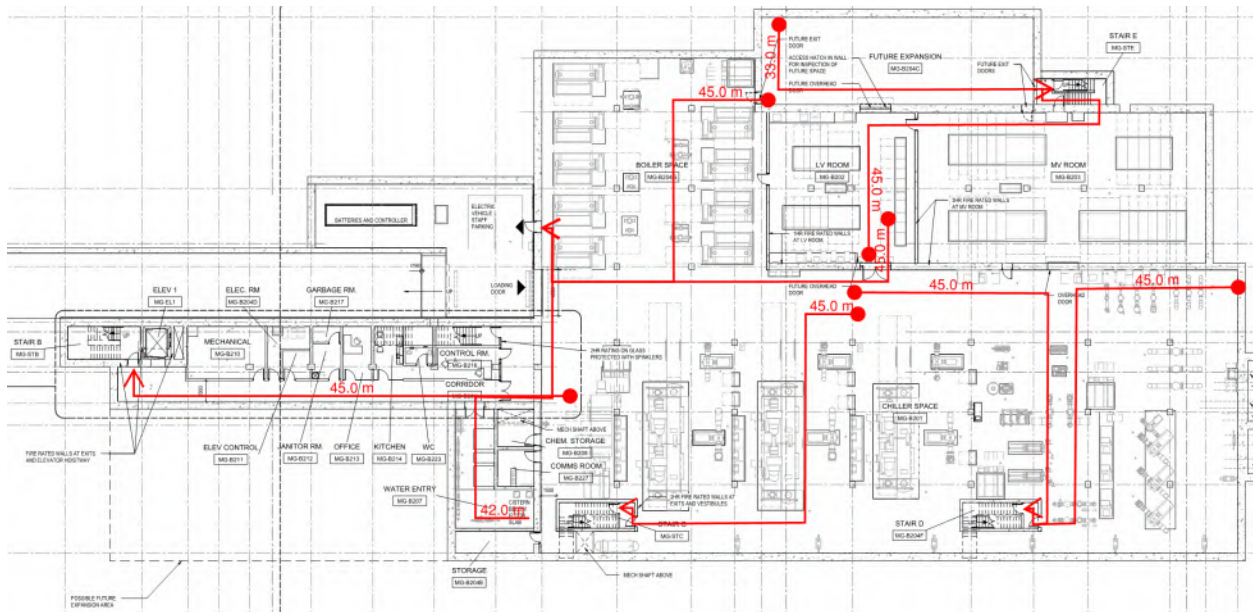
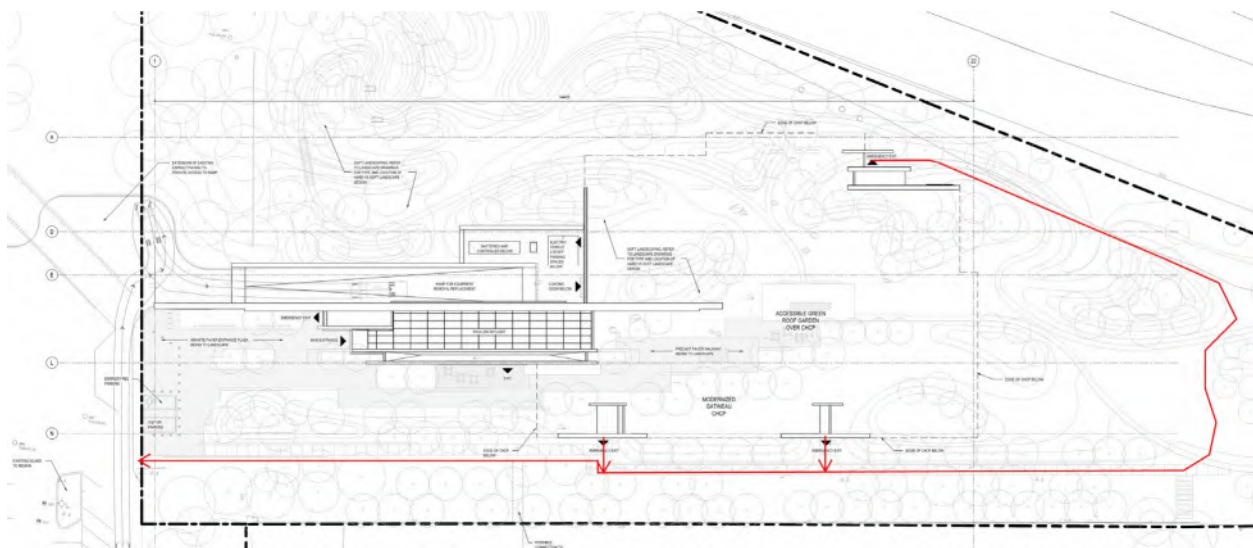


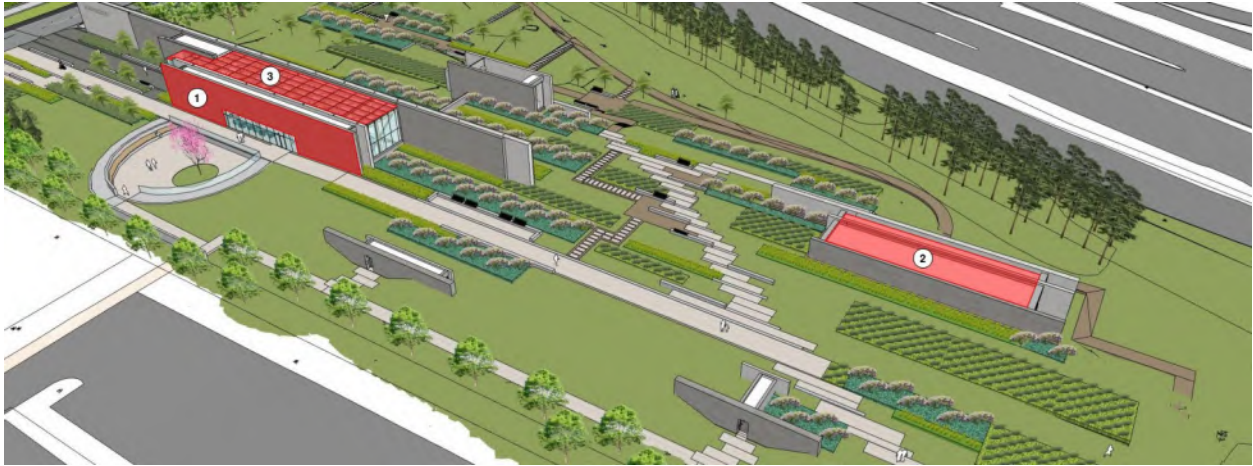
Figure 1.4-5: Site Plan demonstrating exit pathways from exit stairs to public way



1.5 NET-ZERO CARBON – PHOTOVOLTAIC OPTION

The option using Photovoltaic renewable energy production to achieve net-zero carbon onsite for the Energy Pavilion that was submitted with the technical submission was not accepted and will not be executed as part of the scope of the project.

Figure 1.5-1: Perspective identifying opportunities for PV panels – from Technical Submission



6 CIVIL

6.1 BACKGROUND

The National Printing Bureau (NPB) is a Federal Government Campus located on the Île de Hull in Gatineau. The campus is located at the corner of Boulevard Sacré-Coeur and Rue Saint-Henri. The Central Heating and Cooling Plant (CHCP) for the site is located north of the National Printing Bureau building.

The existing steam and condensate piping were constructed in 1971 and is concrete encased east from the NPB CHCP parallel to Autoroute de la Gatineau. There is a concrete tunnel that holds the existing steam and condensate piping under the Autoroute de la Gatineau on/off ramps. The existing piping is concrete encased in Rue Marston before connecting into the abutment of the Macdonald-Cartier Bridge where they cross the river into Ottawa. highlights the existing steam and condensate network for National Printing Bureau as well as the location of the projected MG CHCP.

Figure 6.1-1: National Printing Bureau Existing Steam and Condensate Network



The Civil scope for this project includes the installation of two (2) Low Temperature Hot Water (LTHW), two (2) Chilled Water (CW) pipes and two (2) River Water (RW) pipes between the projected Modernized Gatineau Central Heating and Cooling Plant (MG CHCP) and Boulevard Maisonneuve/Boulevard Sacré-Coeur ramps. A site plan for the proposed MG CHCP has been developed which includes service connections and drainage for the new building as per the corresponding sections below.

It should be noted that the mechanical design addresses the specifics of the piping itself.

6.2 CIVIL DESIGN SPECIFICS

Innovate Energy's design process used industry best practices to determine the existing conditions on site. This information was used to develop an alignment of the LTHW, CW and RW pipes which:

- Protect the workers and the public.
- Minimize the impacts to the Project Schedule and disruption associated with utility relocations.
- Minimize the impacts to both third party and Municipal owned utility infrastructure.
- Prevent damage to the existing Infrastructure.

Innovate Energy has collected preliminary information on the existing utilities including from Public Services and Procurement Canada (PSPC), Services municipaux externe (City of Gatineau's ArcGIS database) and the private utility companies. The information collected from these drawings, as-built and GIS database has been used to determine locations of conflicts between the proposed LTHW, CW and RW pipe alignment and existing utilities. A Subsurface Utility Engineering (SUE) investigation which included utility locates, measuring sewer inverts and completing hydro-excavation and test pits to daylight key utilities was completed at key locations. This information was used to update the current 3D model of the existing utilities using Civil3D software and was used to determine conflicts with the 3D model of the LTHW, CW and RW pipes. The conflicts have been determined and Innovate Energy has either adjusted the LTHW, CW and RW pipe design or develop a utility relocation for the conflicting utilities. Utility relocation plans have been completed as per the corresponding utility owners standards.

Where the LTHW, CW and RW pipe are located in a road Innovate Energy will install the pipe with a minimum cover of one meter to minimize frost heave, elsewhere the pipe will be installed with a minimum cover of 600mm as per the reference design. Spacing between the LTHW and CW will be 450mm to allow for the use of an automated welding machine during construction, the RW pipes will have 600mm spacing. Spacing between LTHW and CW will exceptionally be 300mm on Marston street due to space constraints.

6.2.1 PROPOSED DISTRIBUTION ALIGNMENT

The alignment consists of two 450mm inner diameter LTHW pipes, two 600mm inner diameter CW pipes and two 1050mm inner diameter RW pipes, one supply and one return for each set of pipes. A plan drawing of the proposed alignment is shown below:

Figure 6.2-1: New Alignment for Piping for MG CHCP

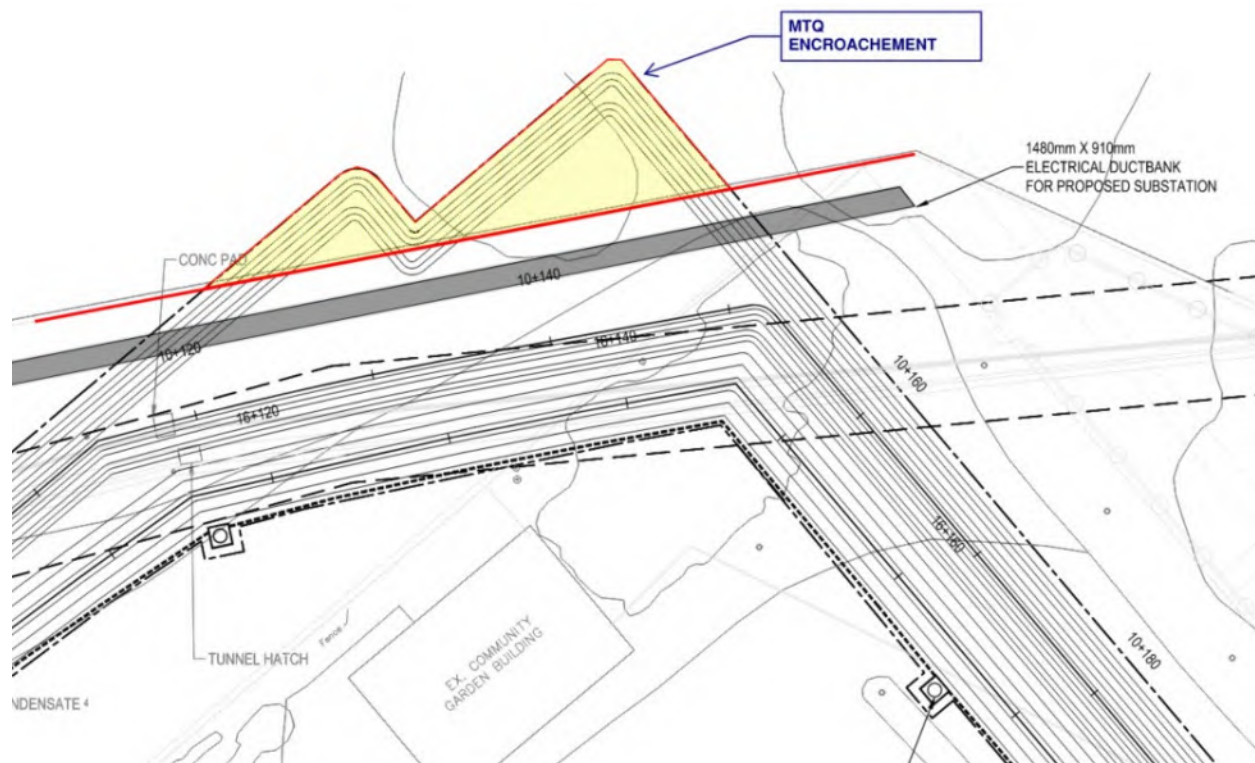


Starting at the MG CHCP the alignment of the LTHW, CW and RW pipes will follow the north lot line of the CEGEP de l'Outaouais, campus Reboul. This section of the CEGEP property is currently used as a municipal community garden by the City of Gatineau.

The alignment then follows the existing right of way for the existing steam and condensate piping for a short distance going south-east. The distribution piping then turns southward, avoiding the community garden building with a clearance of about 4 meters. To avoid the building, the pipes need to be pushed back towards MTQ right of way to the north.

Some encroachment is to be expected and MTQ approval will be required.

Figure 6.2-2: MTQ encroachment



The alignment turns south out of the existing steam and condensate right of way and runs in the CEGEP de l'Outaouais parking lot, avoiding the CEGEP building with a clearance of about 3 meters. This is unavoidable due to the presence of an electrical transfer station to the east. While running through the CEGEP parking, the stormwater drainage network will be severely impacted. Therefore, the parking and its drainage system will need to be completely reconstructed as outlined in drawings. SUE investigation is in progress regarding the final outlet of the private storm network in the parking lot since no as-built drawing is available. This will be confirmed during the detailed design process.

The alignment will then turn east and be installed by trenchless technology under the Autoroute de la Gatineau/Boulevard Fournier ramps.

A geotechnical investigation was completed by Paterson Group Inc. along the alignment. A copy of the investigation report can be found in **Appendix A**.

6.2.2 CLEARANCE WITH ELECTRICAL SUBSTATION

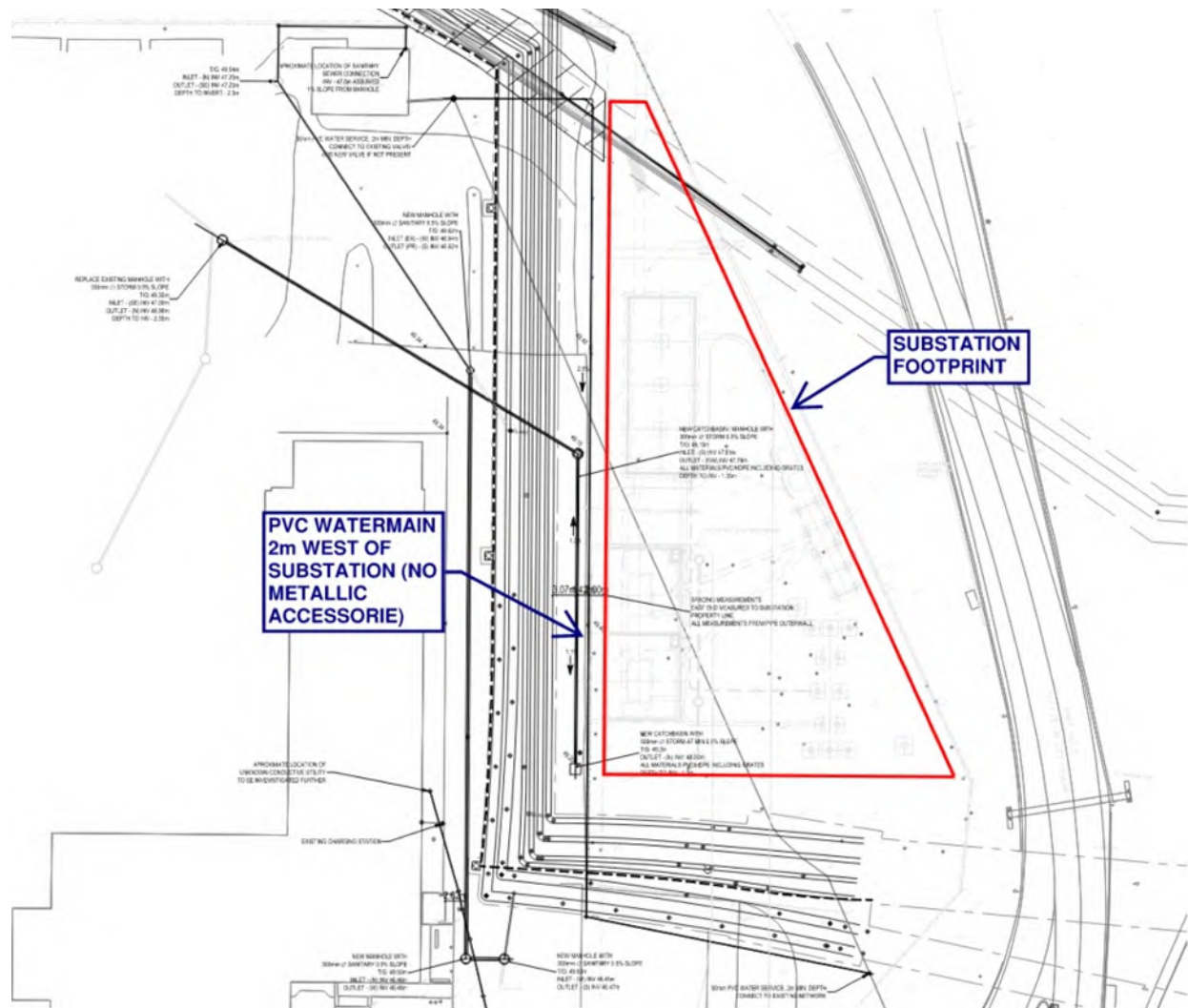
For grounding issues, a 2m clearance is needed between any metallic elements and the electrical substation fence as shown in **Figure 6.2-3** below. Exceptionally, metallic grates on concrete catch basins can be located closer to the electrical substation fence as long as it is surrounded by 1.2m of asphalt.

Grounding issues is the primary reason why the U-loops were removed from the previous iteration. Space between the CEGEP and substation was insufficient to accommodate the presence of U-loops.

In the current state of design, no metallic element is present within 2m of the substation lot line.

A future duct bank is projected south of the substation and will cross the ESAP pipes. This duct bank is currently under coordination.

Figure 6.2-3: Clearance with electrical substation



6.2.3 STRUCTURAL IMPACTS

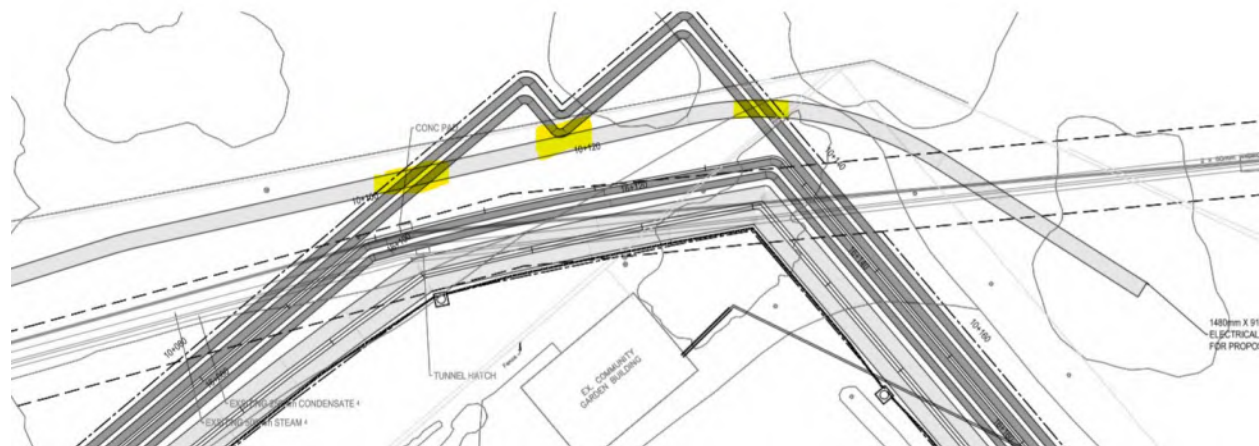
As mentioned above, the distribution piping alignment will be constructed close to the community garden building and the CEGEP building. Therefore, a structural evaluation is recommended to document the impact of the excavations on the building's structures. Moreover, mechanical thrust restraints should be used in opposition with thrust blocks to reduce excavation width near the buildings.

6.2.4 FIRE REGULATION

Gatineau City regulation 774-2015 must be followed. Notably, any wall must be within 90 m of a fire hydrant. Hydrants must have isolation valves and be painted in the color representing their operating pressure. Hydrant location is shown on show in **Figure 6.2-4** below.

[illegible]

Figure 6.2-5: Duct bank crossing with distribution pipes

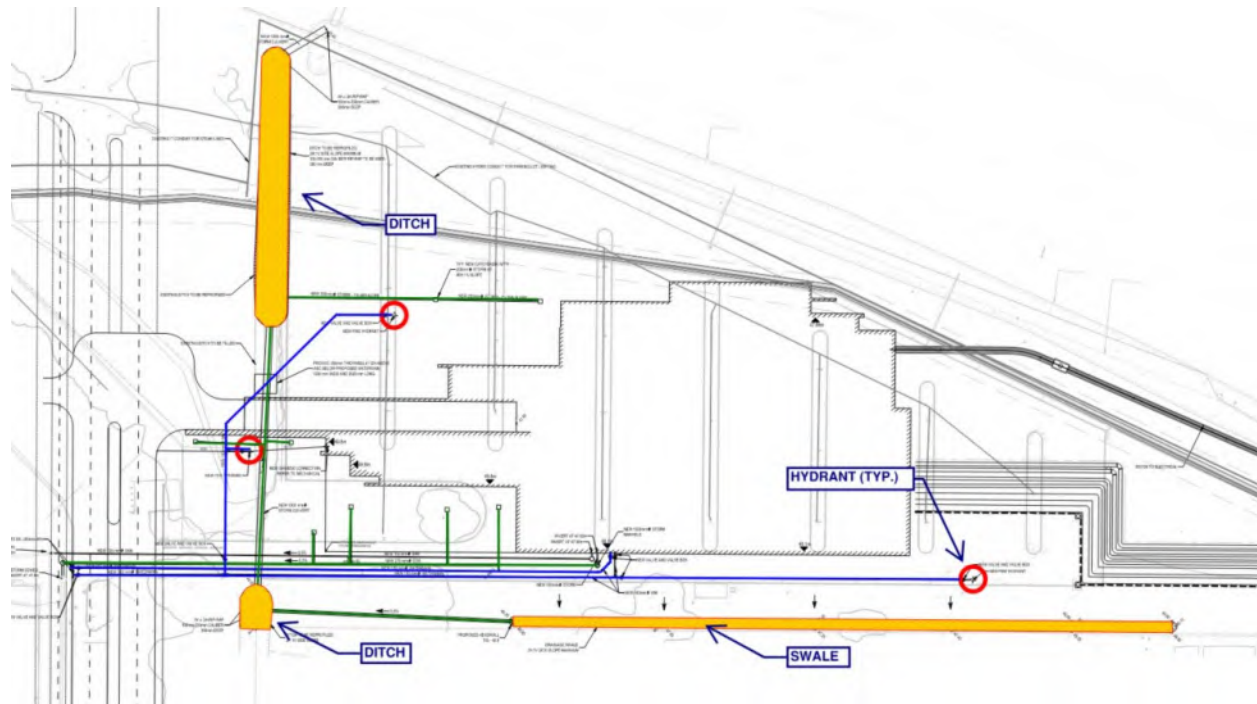


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that this outlet is not directed towards an open ditch. Finally, the sanitary sewer connects to the existing network located near the existing CHCP.

Existing CHCP connections might have to be replaced all the way to Sacré-Coeur blvd. by others because of their bad condition or for capacity reasons. This will be outlined in the site servicing report. A plan drawing of the proposed services show in **Figure 6.2-6** below:

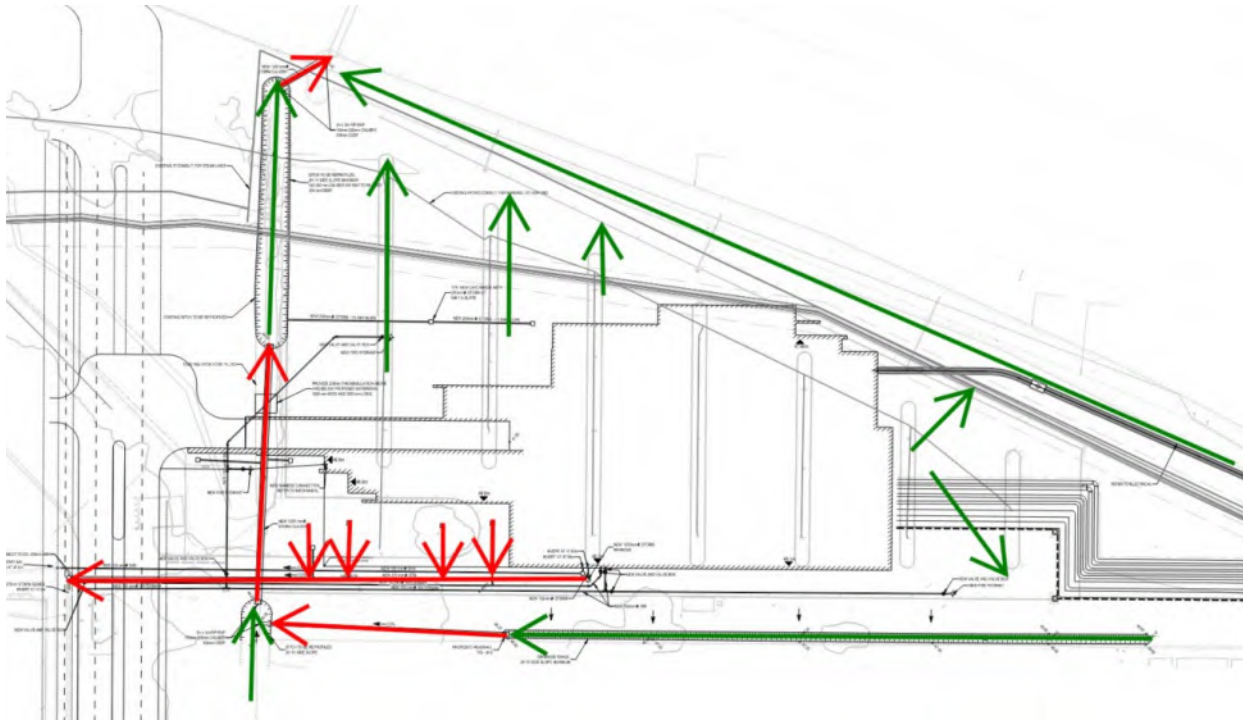
Figure 6.2-6: Preliminary site servicing



6.2.7 SITE DRAINAGE

Site drainage for the MG CHCP will be collected via swales, ditches, storm sewers and culverts located at the perimeter of the site. Some catch basins will be connected to the existing CHCP storm sewer in order to drain small hardscape surfaces. Most of the site drainage will be directed to the existing stormwater outlet located at the north-west corner of the site. This outlet drains into the MTQ ditch south of highway 5. This MTQ ditch is eventually directed underneath highway 5 towards the north through a 1350 mm culvert. Therefore, MTQ will need to be informed of the changes in flowrates coming from this new stormwater drainage strategy. Details on the site drainage is shown on **Figure 6.2-7** below where swales/ditches are shown in green and culverts/storm sewers are shown in red. Plans for temporary drainage will be found in the Construction Report.

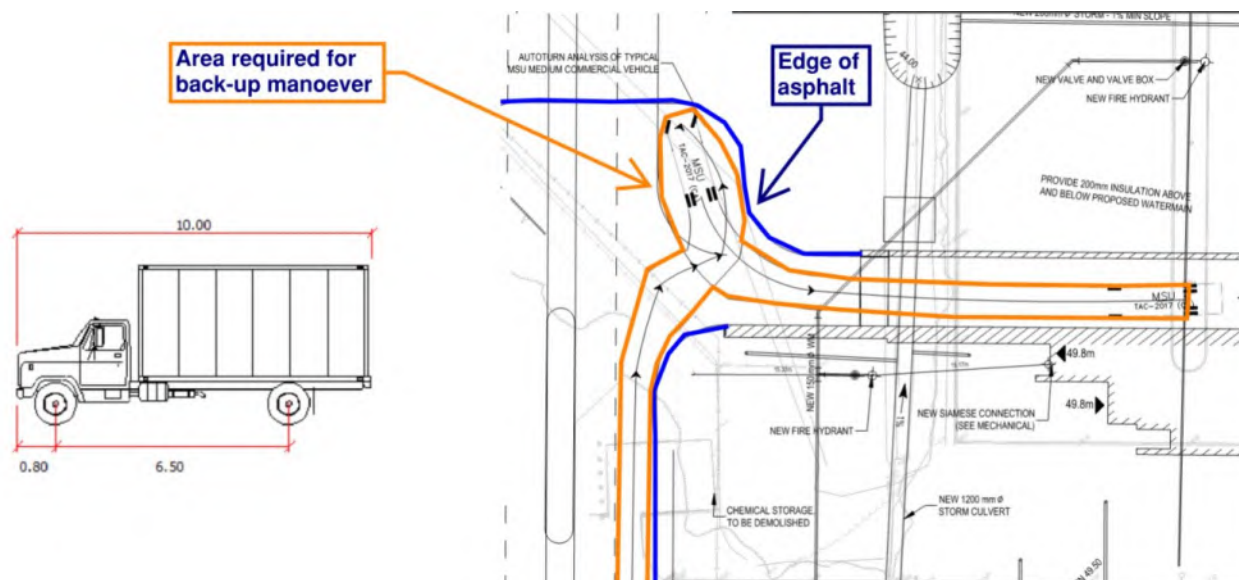
Figure 6.2-7: Preliminary site drainage



6.2.8 BACK-UP MANOEUVRE TO ACCESS MG CHCP

A two-lane roadway access is projected for access to the MG CHCP and for future use. The presence of this future usage requires that delivery vehicle accessing the MG CHCP do not impede on the two-lane roadway while backing down the access ramp. This was verified using an Autoturn simulation and is shown on **Figure 6.2-8** below.

Figure 6.2-8: Back-up maneuver



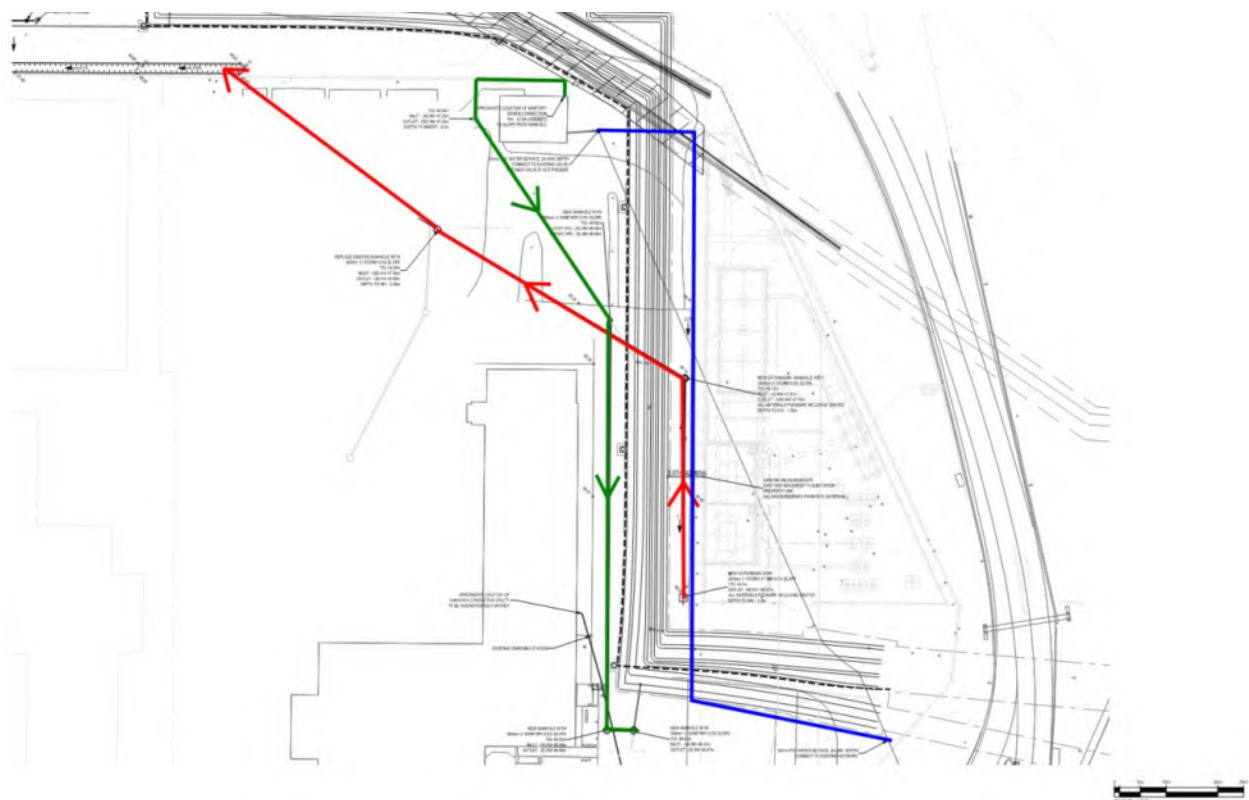
6.2.9 CEGEP UTILITIES RELOCATION

In order to avoid the future substation, the ESAP pipes are running through the CEGEP parking lot. Existing utilities are present in the parking lot, such as sanitary and storm sewers as well as a watermain.

The storm sewer ensures drainage of the parking lot while the sanitary and watermain are servicing the community garden building located on the north side of the CEGEP.

Projected utilities are shown on **Figure 6.2-9** below. Sanitary is shown in green, watermain in blue and storm sewer in red. Please note that the final outlet of the storm sewer is currently assumed. An investigation (SUE) is planned for spring 2022.

Figure 6.2-9: Projected CEGEP utilities



7 LANDSCAPE

7.1 EXISTING CONDITIONS

The proposed CHCP will occupy a site overlooked by the Autoroute de la Gatineau, set back and separated from Boulevard Sacré-Coeur by existing mixed development, including a school, church, office and residential high-rise apartment buildings. These properties have their primary frontage onto Boulevard Sacré-Coeur, with a mix of building treatment, service areas, surface and structured parking abutting the development site. To the west is the National Printing Bureau. To the southeast is the Jardin Communautaire Reboul community garden. Vehicular access to the site will be via an existing road from Boulevard Sacré-Coeur, with proposed new pedestrian routes to tie into planned future development to the adjacent National Printing Bureau. A cycle path is planned for Boulevard Sacré-Coeur. There are no existing pedestrian nor cycle routes connecting to the site, however planned development, including at the National Printing Bureau site, is anticipated to bring a significant number of potential users for outdoor amenities to the area.

The existing and roughly triangular site is predominantly covered by a large, flat surface parking lot. The site is slightly elevated above adjacent properties and surrounded by vegetated swales, in particular along the north and west site boundaries. There are several groupings of mainly deciduous trees around the perimeter of the site, both within and adjacent, with denser vegetation to the drainage swales along the motorway and western site boundary.

Significant considerations for the site include creating a landscape of the scale and dignity to achieve an iconic, landmark building and site viewed from the Autoroute de la Gatineau. It will be important to as plan for future development and increase in potential users living and working in the area, while ensuring the landscape spaces are scaled and comfortable for smaller groups and individual users.

7.2 LANDSCAPE DESIGN OVERVIEW

Overall, the approach to the site's landscape is consistent with the foregoing basis of design, with a number of refinements to improve integration with site context and further development of the landscape expression. The site's main aspect is to the north, with a high level of visibility to and from the Autoroute de la Gatineau, and local views from the immediately adjacent properties to the south. The intent is for a landmark building and integrated landscaped grounds that represent the innovation, sustainability and achievements of the ESAP project. By locating the building primarily below grade, this creates opportunity for extensive landscape park-like gardens across the site, providing a range of landscape treatments.

Arrival Plaza: The design features a ground level public plaza to the building entrance and atrium that rises from the CHCP below grade. The plaza, fronting onto the existing road will provide clear direction to the main entrance, and, frame views to the building, and building signage from the driveway from Boulevard Sacré-Coeur. The plaza will be a lightly shaded primarily hardscaped space, integrating high-canopy dappled shade trees that will maintain clear lines of sight. Horizontal striations of different types of paving interspersed with blocks of plantings and low, seating height walls create a sequence of outdoor spaces and rooms while reinforcing the architectural form and materiality of the building.

The plaza will serve as an outdoor continuity of the building entry, providing gathering / spill out space with strong vantages through the building and to the landscape grounds beyond. The long low rectilinear geometry of the building facades and projecting vertical wall will be echoed horizontally in the plaza plan through the hard surfacing materials.

South Courtyard: The design features a small semi-enclosed courtyard overlooked by the building atrium. The courtyard will provide a sheltered spill out space framed by seating walls to be flexible for a variety of uses. A cluster of canopy shade trees and off-centred planting bed softens the space and provides a backdrop to views out from the building and visual buffering from the adjacent apartment building.

Rooftop Gardens: Extending out from the arrival plaza, a series of hardscaped platforms extend toward the east, creating a variety of spaces. Smaller building elements that project up through the green roof are similarly reinforced through the geometric banding of soft and hard landscaped areas, creating a dynamic landscape that invites exploration. Beyond the hardscaped platforms are a series of curved pathways throughout the site that provide a variety of experiences moving through the landscape, creating a series of seating areas and opening up different areas of view to users as they move around.

Plantings will be grouped into beds comprising low growing shrubs to provide mass and colour, a variety of height grasses to provide texture and movement, herbaceous and pollinator species, and drought tolerant dry-back wildflower meadow. Salt tolerant species will be selected to suit site conditions as appropriate. At the finer grain, a diversity of planting species within each of the planting areas will provide year-round interest in colour and form, and provide dynamic contrasts in texture, kinetics and height inviting to those walking through the grounds. These native species rich planted gardens, interspersed with formal and informal paths, will create an attractive mosaic character and setting for the building that is both bold and striking in its geometry, while celebrating native species and a sense of 'wild' nature.

The central building ridge and north / south slopes of the building roof away from the central axis creates another dynamic in the landscape, subtly reinforcing the sense of geometric forms, angular plains and folds in the landscape, creating a dynamic tension with the more enclosed landscape to the south, and more public exposed to the motorway grounds to the north.

North, South and East Landscape Slopes: Around the perimeter of the rooftop gardens, a series of undulating topographies introduce a typology of small hills to temper the otherwise sharp folds down to wrap the sides of the building. Steeper landscaped slopes will be planted with appropriate species to support slope stabilisation with slopes not exceeding 1V:3H for ease of maintenance. Areas where slopes approaching the angle of repose (maximum of 1V:2H) are necessitated to tie in to existing grade and perimeter swales, soil erosion protection such as biodegradable jute erosion control matting will be provided during the establishment period of new landscape. Low retaining walls have been incorporated along the south west edge where transitions to surrounding grades are the most challenging.

To the north of the site, these undulations allow interconnections with the surrounding landscape and expansion of the perimeter swale, which will soften the northern perimeter geometry. The rooftop gardens dissolve into a series of organic paths and seating / lookout areas that have the potential for future tie in with the planned development of the National Printing Bureau site.

Snow storage areas, with appropriate landscape treatment and salt tolerant species will be designated with consideration to maintenance and operational requirements.

7.3 OPPORTUNITIES FOR ENERGY EDUCATION AND ENGAGEMENT

The intent of the building and site is to showcase the ESAP project. The composition of the site offers a range of opportunities energy education, including integrated signage. The Arrival Plaza offers the

potential for programming for group activities. The South Court offers a visual and physical extension from the building also suitable to small events and gathering. The Rooftop Gardens offer a range of spaces that may be used for outdoor classes, as well as interpretation of the working of the energy centre and landscapes of the site (e.g. green roofs, pollinator gardens, swales). Views through the rooftop meadow are framed and facilitated by variation in planting design heights and seasonal variety. Seating pockets through the meadow offers an opportunity to explore and learn about native species and urban ecological systems and habitat.

7.4 PLANTING MATERIALS

As a showcase of the accomplishments of the ESAP project, and befitting a landmark building, a native planting palette is proposed - composed of species presentative of local biomes and plant communities. Plant species recommendations are proposed to emulate species rich beneficial plantings, establishing a range of different planting typologies, predominantly open wildflower meadow, with groupings of trees and woody shrubs, grasses and herbaceous materials providing undulating planting heights, colours and forms for all season interest.

The landscape is comprised of five (5) principal planting zones.

Urban Courts: A contemporary, urban Arrival Plaza of taller light-shade trees in predominantly hardscaped space, connects to an ensemble of the diverse and vibrant rooftop gardens, the folded landscape slopes 'folding' down to bioretention plantings at grade. Similarly, the south court will be a primarily open, hardscaped space suitable for various uses. High canopy, light shade trees will frame views of the main building entrance and provide a sense of enclosure and buffer to the south and existing residential apartment building.

Rooftop Gardens (Green Roof): The contemporary, urban gardens planting will reinforce the contemporary design and geometries of the site, composed of distinct mass plantings of grasses, shrubs and groundcovers. These mixed species beds will provide a striking visual hierarchy, with clear transition in planting height, structure, stem and foliage colour. The large areas of mosaic planting, comprising Intermixing of species including herbaceous plants and groundcovers will provide seasonal variation and interest year-round. Bands of trees and specimen shrub species are interspersed to frame views and provide backdrops to site features and buildings. Where possible, species that 'dry-back' rather than 'die-back' have been selected to maintain a dynamic winter character. A wide range of native and wild flowering species and grasses planted on the green roof will increase biodiversity by creating habitat for flora and fauna. The green roof is expected to be zoned with intensive and semi-intensive green roof planting. The gardens will be primarily intensive, with a typical 60 cm soil depth for shrubs and groundcover planting.

Meadow Zones: Semi-intensive typologies with a minimum 15 cm of soil depth to support a "meadow mix" of native low grasses selected to tolerate a mesic (dry) condition. The semi-intense green roof structure and species mix is highly drought tolerant, with species that will dry-back and rejuvenate after typical summer dry periods. The zone extends into the perimeter landscape topography of the undulating slopes to allow these various zones to visually complement each other.

Hilly Zones and Landscape Slopes: With varying degrees of steepness, the intent is for the majority of slopes at or slacker than 1V:3H to be low maintenance wildflower meadow with biannual cuts to promote a rich species mix. Grouping of small caliper tree stock introduces a pioneer and succession landscape typology to demonstrate reforestation and further habitat and biodiversity of the landscape. Steeper slopes will be planted with shrub and groundcover plantings suitable for slope stabilization. These

meadow areas are designed to abut the main barrier free paths, as well as be accessible via a series of informal paths for users to enjoy the public rooftop gardens.

Bioretention Planting: Bioretention swales follow the perimeter of the site, taking run-off from the arrival plaza and green roof areas. The planting maintains the geometric blocking established across the site, using herbaceous and grass species that are both wet and dry condition tolerant. These beds will be framed by structural shrub species, such as Red Osier Dogwood, to demark footpaths and create gateways moments with year-round visual interest in foliage, flower and stem colour.

7.5 EXTERIOR FURNISHINGS

A series of park benches and seating walls provide public seating throughout the site. Pole top lighting will be provided to all primary pathways and public spaces. Larger masts will be limited where possible, with a preference for lower pedestrian scale lighting and amenity lighting features, including tree and building uplighters. Bike racks will be provided at building entries. Form and character of all furnishings will be contemporary in style, integrated with overall project materials and finishes.

7.6 LANDSCAPE AND SUSTAINABILITY

The primary focus of the exterior works is to provide a native, showcase resilient landscape. This is to include a purely native planting strategy, with species mixes suited to location (i.e. species to support slope stabilization to the meadow). All species have been selected to be of an appropriate natural form to meet the desired impact to reduce the need for pruning and maintenance (i.e. naturally low growing). Planting in primarily hardscape areas, including the arrival plaza, and planting on structure are highly drought tolerant, and the integration of drainage swales along the site perimeter will help reduce runoff and potential for erosion. A preference has been specified for all plant material, including seed mixes to be of local provenance.

Areas of hard standing have been located strategically, including the use of a permeable stone dust surfaces, where appropriate in consideration to universal access and equitable ability to enjoy the site, increase rain infiltration for site trees, and green roof to the new building.

7.7 ACCESSIBILITY AND CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

The intent of accessibility follows the principles of universal design; this means that everyone of all ages and abilities has equitable ability to access, experience and interact with every space, every place and every feature of publicly accessible spaces on site. The primary public circulation spaces on site include the arrival plaza, the rooftop gardens, and the footpaths through the site.

CPTED principles are based on the dual focuses of anticipating potential misuse and/or antisocial or undesirable behaviours and creating an environment that discourages these actions achieving a sense of security for users. The main principles of CPTED within the landscape have been addressed in the site design in the following ways:

Natural Surveillance – clear lines of site are maintained across the site and from the adjacent roads and properties through the use of high canopy trees and lower growing shrubs and groundcovers. Planting is strategically used to provide screening of exterior equipment and building features (exhausts, etc.) while potential hiding spots are avoided or deterred. This is achieved through a combination of careful site

layout, and selection of species, such as tall grasses, that are either deterrent or of an open structure to provide screening without blocking views. Lighting is incorporated into the exterior spaces to light the plaza and pathways, while minimising light spill onto the adjacent landscaped areas and neighbouring properties.

Natural Access Control – soft (planting) and hard (railings) landscaping are used to deter access to areas not intended for public access. This includes the rooftop gardens and folded meadow areas with a mix of paths reflecting desire lines and framed by wildflowers and longer grasses to encourage specific lines of travel and access.

9 TRANSPORTATION

9.1 TRAFFIC MANAGEMENT

The site chosen for the Modernized Gatineau CHCP is an asphalt parking lot located a few metres east of the existing central heating and cooling plant, and adjacent to the heritage designated National Printing Bureau (NPB) complex. PSPC completed a Transportation Master Plan (April 2020) in support of the site modifications described in the NPB Long-Term Vision plan which provides a comprehensive discussion of the transportation impacts of the end-state of the Modernized Gatineau CHCP.

The traffic impacts of the constructing the MG CHCP are anticipated to be minimal and could potentially include modifications to the existing access along Boulevard Sacré-Coeur to support increased truck movements, temporary reduction in on-street parking, additional trucks entering and exiting the site, and, while unlikely, construction staging encroachments requiring temporary lanes closures along Boulevard Sacré-Coeur.

Boulevard Sacré-Coeur adjacent to the site is a City of Gatineau Road that travels on a generally east-west alignment from Rue Saint Rédempteur to the west to Laurier Street to the east. Boulevard Sacré-Coeur has a posted speed limit of 50 km/h and includes two through lanes in each direction, with wide curb lanes that accommodate on-street parking and additional auxiliary turn lanes approaching intersections. The two directions of traffic on Boulevard Sacré-Coeur are separated by a concrete median for the full length of the corridor. Peak hour volumes on Boulevard Sacré-Coeur are as high as 1,480 and 955 vehicles per hour to the west and east of Boulevard Maisonneuve, respectively.

STO Transit Service operates along Boulevard Sacré-Coeur with bus stops for Routes 31 and 67 within 50m of the site entrance. It is not anticipated that there will be impacts to transit service resulting from the construction of the MG CHCP.

The development and assessment of impacts associated with any access modifications or construction staging encroachments requiring temporary lane closures will be confirmed through the design development of the MG CHCP. Not considered as part of the MG CHCP Traffic Management are impacts from the distribution network and on-site construction coordination items such as, parking or on-site pedestrian movement. A comprehensive Traffic Management Plan for the distribution network was provided as part of the separate ESAP NPB Distribution Design Report.

10 LEED

10.1 BACKGROUND

Innovate Energy is designing to the LEED v4™ Building Design + Construction: New Construction Gold Certification for the Modernized Gatineau CHCP. The LEED® scope of work includes the newly constructed plant and building systems serving the plant itself and not the district process / distribution systems.

The project has not yet been officially registered with the CaGBC. However, in order to gain access to the use of the LEED® trademark throughout the life of the project and valuable LEED® resources (i.e. LEED® Coach) that will support our mandate and project team, the project should pursue official registration with the CaGBC in the upcoming design phases.

10.2 LEED OBJECTIVE

At a minimum, the Modernized Gatineau CHCP (not including district process / distribution systems) will achieve LEED® v4 BD+C: New Construction Gold level of certification. A minimum of 60 points is required to reach the LEED® Gold threshold, in addition to satisfying all LEED® prerequisites. To mitigate risk of not achieving the project's LEED® objective, the project team will target a minimum of 64 points to allow for a few buffer points above the minimum threshold for a LEED® Gold certification. Targeting provisional credits above the 60-point threshold has proven to be an essential component of the LEED® strategy to help ensure the level of certification targeted is ultimately achieved.

It should be noted that a variety of LEED® v4.1 requirements are being substituted for certain targeted LEED® credits. LEED® v4.1 was released as a market response update to LEED® v4, making certain credit requirements less stringent and addressing certain issues with the LEED® v4 requirements. Those credits using the LEED® v4.1 requirements are indicated on the LEED® Scorecard (**Appendix O**).

10.3 LEED CREDIT STRATEGY

The preliminary LEED® strategy outlined below and the LEED® scorecard (refer to **Appendix O**), was developed using an integrated design approach with input from all design team members and relevant project stakeholders. Each LEED® credit will require further investigation during the following phases of the project (evaluated from a sustainability, feasibility, cost, and value add perspective). It is important to note that the LEED strategy is an iterative process and the LEED scorecard will evolve throughout design and possibly construction.

Our targeted points total is 64 points. There are 23 points Pending and 23 points Not Pursued.

The following is LEED® category summary that provides all targeted and pending individual prerequisite and credit status updates, results to date, associated risks and next steps.

Refer to the LEED® scorecard (**Appendix O**) for each prerequisite and credit status. Note that the credits using the LEED® v4.1 requirements have a "LEED® v4.1" in red text next to the name of the credit.

10.3.1 INTEGRATIVE PROCESS

Currently targeting 1 point out of a possible 1 point.

IPc1 – Integrative Process (1 point available; 1 point Targeted)

A LEED® Charrette will be held early on in the 66% detailed design phase where the results of a preliminary “simple box” energy modeling analysis and water budget analysis will be presented. The purpose of the charrette and analysis is to identify and use opportunities to achieve synergies across disciplines and building systems. Energy performance improvement and water conservation measures will be presented to the design/build/ operations team for their consideration.

10.3.2 LOCATION AND TRANSPORTATION

Currently targeting 8 points out of a possible 16 points, with 3 points Pending and 5 points Not Pursued.

LTc2 – Sensitive Land Protection (1 point available; 1 point Targeted via Option 1)

The project is located on previously developed land. Credit targeted for 1 point.

LTc3 - High Priority Site (2 points available; 2 points Pending via Option 3)

Innovate Energy to determine if the level of contaminants onsite meet the definition of brownfield as per LEED® early in 66% design.

LTc4 - Surrounding Density and Diverse Use (5 points available; 3 points Targeted via Option 1 and 2 points Targeted via Option 2)

The project is located within 800 meters walking distance to over 8 diverse amenities and meets the LEED surrounding density requirements. Credit targeted for 5 of the 5 points.

LTc5 - Access to Quality Transit (5 points available; 5 points Not Pursued)

It has been determined that the transportation services located within LEED® range do not meet the requirements for any of the 5 points. To be revisited if changes occur to frequency and quantity of service near the site.

LTc6 - Bicycle Facilities (1 point available; 1 point Pending)

Innovate Energy will install the needed bicycle parking spots and on-site showers to meet the LEED® requirements for amenities; however, there is currently no bicycle network nearby that meets LEED® requirements. Per the City of Gatineau’s Transportation Master Plan, dated April 6, 2020, there is a designated cycling route planned along boulevard Sacré-Coeur in front of the project site, which is set to be constructed and operational by 2025. Confirmation that this route is fully funded and confirmed is required to move this credit to Targeted. This credit will be revisited in subsequent design phases as more information becomes available.

LTc7 – Reduced Parking Footprint (LEED®v4.1, 1 point available; 1 point Targeted via Option 2)

The project is targeting to not exceed the minimum local code requirements for parking capacity and to provide parking capacity that is a 30% reduction below the base ratios recommended by the Parking Consultants Council, as shown in the Institute of Transportation Engineers’ Transportation Planning Handbook, 3rd edition.

LTc8 - Electric Vehicles (LEED®v4.1, 1 point available; 1 point Targeted via Option 1)

Currently, Innovate Energy plans to install two Level 2 electric vehicle chargers.

10.3.3 SUSTAINABLE SITES

Currently targeting 2 points out of a possible 10 points with 7 points Pending and 1 Not Pursued.

SSp1 Construction Activity Pollution Prevention (Prerequisite)

A construction prerequisite and mandated credit. Innovate Energy will follow local standards or 2012 U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) requirements, whichever is more stringent.

SSc1 Site Assessment (1 point available; 1 point Not Pursued)

Credit not pursued due to certain studies not included in scope of work.

SSc2 Site Development - Protect or Restore Habitat (LEED®v4.1, 2 points available; 2 points Pending via Option 1)

This credit will be documented in the LEED® end of construction submittal. Currently, over 25% of the site will be restored according to LEED's soil and vegetation requirements; however, it is not clear yet if the requirements for greenfield areas can be met. This will be assessed further in 66% design.

SSc3 Open Space (1 point available; 1 point Targeted)

Innovate Energy is designing the landscaping to meet requirements. With a green roof and ample vegetated space, the current design indicates the project will exceed the outdoor space requirements of LEED®.

SSc4 - Rainwater Management (LEED®v4.1, 3 points available; 3 points Pending via Option 1)

Civil, Landscape, and Sustainability to determine through analysis if feasible to achieve up to 3 points for the project during the 66% detailed design phase.

SSc5 Heat Island Effect (2 points available; 2 points Pending via Option 1)

LEED calculations to demonstrate compliance will be performed in the next phase of design and LEED® strategy updated based on results.

SSc6 Light Pollution (1 point available; 1 point Targeted via Option 1)

Electrical has confirmed that pursuing Option 1 for Uplight and Light Trespass Requirement is feasible. Electrical continues to develop lighting design along with LEED® compliant calculations.

10.3.4 WATER EFFICIENCY

Currently targeting 6 points out of a possible 11 points with 3 points Pending and 2 points Not Pursued.

WEp1 (Prerequisite, Targeted via Option 2) & WEc1 - Outdoor Water Use Reduction (2 points available; 1 point Targeted via Option 2 and 1 point Pending)

Mechanical and Landscape have developed the irrigation needs for the landscaping and a permanent automatic irrigation system with drip and fixed spray irrigation is included in the current design. The project design also includes the installation of a rainwater cistern for planting irrigation.

The project is targeting reducing the landscape water requirements by at least 50% from the calculated baseline to achieve 1 point, with 1 point pending if water can be reduced by 100%.

Mechanical & Landscape are continuing to work on the irrigation system to be as water efficient as possible. Landscape continues to work on plantings list with the focus being on selecting native/adaptive/drought tolerant species.

WEp2 (Prerequisite) & WEc2 – Indoor Water Use Reduction (6 points available; 4 points Targeted and 2 points Pending)

The project is currently targeting a 40% indoor water use reduction when compared to the baseline, targeting 4 points out of 6, with an additional 2 points pending. The following flow rates are being specified for the following fixtures and fittings:

- Water closets: 4.2 litres per flush (LPF) or less
- Urinals: 0.5 LPF
- Lavatories: 1.2 litres per minute (LPM) or less
- Showers: 5.7 LPM or less
- Kitchen Faucet: 5.7 LPM or less

All newly installed toilets, urinals, private lavatory faucets, and showerheads that are eligible for labeling will be WaterSense labeled. Dishwasher included in design to be confirmed as ENERGYSTAR later in design phase.

WEp3 – Building-Level Water Metering (Prerequisite) & WEc4 - Water Metering (1 point available; 1 point Targeted)

For WEp3, Innovate Energy will provide a permanent, whole building water meter, working with the utility provider.

For WEc4, the project design also includes permanent water meters for additional water subsystems. The current design plan includes irrigation and domestic hot water meters to meet LEED® requirements.

WEc3 – Cooling Tower Water Use (2 points available; 2 points Not Pursued)

Mechanical has confirmed that the project does not have cooling towers or evaporative condensers.

10.3.5 ENERGY AND ATMOSPHERE

Currently targeting 24 points out of a possible 33 points with 2 points pending and 7 points not targeted.

EAp1 - Fundamental Commissioning (Prerequisite) & EAc1 - Enhanced Commissioning (6 points available; 3 points Targeted via Option 1- Path 1, 2 points Targeted via Option 2, and 1 point Not Pursued via Option 1- Path 2)

Fundamental Commissioning (Cx) and Enhanced Cx are primarily a construction-related prerequisite and credit; Cx Authority will provide required design-related LEED® Cx services.

For Enhanced Cx, 3 points are targeted via Option 1- Path 1 for enhanced commissioning. The additional 1 point associated with developing monitoring-based procedures and follow up inspection is not in the scope of work and therefore not pursued for LEED®.

For building envelope commissioning (BECx) worth 2 points, 2 points are targeted. The BECx agent will provide required design related LEED® Cx services.

EAp2 – Minimum Energy Performance (Prerequisite) & EAc2 - Optimize Energy Performance (18 points available; 16 points Targeted and 2 points Pending)

Based on experience with Modernized Cliff and Tunney's CHCPs, this project is targeting 16 of the 18 available points. The first LEED simple-box energy model is scheduled to be completed early in 66% design.

EAp3 Building-Level Energy Metering (Prerequisite) & EAc3 - Advanced Energy Metering (1 point available; 1 point Not Pursued)

For EAp3, Innovate Energy will provide a whole building energy meter, working with the utility provider.

For EAc3, based on our experience on Modernized Cliff and Tunney's CHCPs, Innovate Energy is not pursuing this credit due to level of effort required compared to value added.

EAp4 - Fundamental Refrigerant Management (Prerequisite) & EAc6 Enhanced Refrigerant Management (1 point available; 1 point Targeted via Option 1)

Prerequisite and credit targeted. The HVAC&R equipment in the current design uses R123, does not contain chlorofluorocarbons (CFCs). It is a Hydrofluoroolefin (HFO) with a very low Ozone Depleting Potential and Global Warming Potential.

EAc5 - Renewable Energy Production (3 points available; 3 points Not Targeted)

The option of using Photovoltaics was assessed. It was determined that renewable energy production will not be executed as part of the scope of the project.

EAc7 - Green Power and Carbon Offsets (2 points available; 2 points Targeted)

Currently this credit is targeted; however, it may be removed from the strategy at a later date if additional points from other credits are possible. Whether or not to pursue this credit is based on the risk associated with all other LEED® credit statuses. These credit points can be purchased late the LEED® certification process, up until the last submittal the project has with the LEED review authority. Quote can only be produced once As-Design energy model has been completed, after Post-IFC is complete.

10.3.6 MATERIALS AND RESOURCES

Currently targeting 6 points out of a possible 13 points with 6 points pending and 1 point Not Pursued.

MRp1 - Storage and Collection of Recyclables (Prerequisite)

Current design confirms that a garbage room has been included and is capable of collection and storage of recyclables. Two hazardous waste streams (batteries, mercury-containing lamps, and/or electronic waste) will be collected, stored and disposed of according to LEED® requirements.

MRp2 – Construction and Demolition Waste Management Planning (Prerequisite) & MRc5 - Construction and Demolition Waste Management (2 points available; 2 points Targeted via Option 1)

Innovated Energy will produce a waste management plan that includes a demolition and construction waste diversion rate target for the project of at least 75%, to meet the LEED® requirements.

MRc1 - Building Life-Cycle Impact Reduction (LEED®v4.1, 5 points available; 1 point Targeted via Option 4, 3 points Pending, and 1 point Not Pursued)

Mandatory requirements as per Schedule 9 - Output Specifications, Section 5.6.12.3.vii, the project is required to pursue this credit, Option 4.

During detailed design, the WSP Sustainability – Life-Cycle Assessment (LCA) team will work with Structural, Architect and Construction Manager to determine preliminary results as per LEED® credit requirements – Option 4. A baseline performance will then be established.

Design-related credit results to be finalized once 100% IFC is complete. Should the results demonstrate the project achieves more than the automatically awarded 1 point for performing a LCA using LEED® v4.1 requirements, the LEED® point total will be updated.

The project is not targeting the 1 point associated with Option 2- Path 4 because it is not anticipated to incorporate reused and/or salvage material into the design and construction.

MRc2, MRc3 and MRc4 – Building Product Disclosure and Optimization (LEED®v4.1, 6 points available; 3 points Targeted and 3 points Pending, Options TBD)

Innovate Energy will pursue credit requirements and determine which Option within each credit is best suited for the project. Although these credits are results based and determined during construction, the necessary preliminary analysis will be done between relevant team members earlier in the design phases.

Credits are pursuable via both Option 1 and 2, however material credits (MRc2, MRc3, MRc4) under LEED® v4 have significantly changed and the materials industry is still catching up to the new LEED® v4.1 documentation requirements.

Meeting these requirements may limit the number of manufacturers / suppliers capable of providing materials that meet requirements. Innovate Energy is aware that these will be challenging credits to achieve, and that early and ongoing collaboration is required between disciplines.

10.3.7 INDOOR ENVIRONMENTAL QUALITY

Currently targeting 9 points out of a possible 16 points, with 0 points pending and 7 points not pursued.

IEQp1 - Minimum Indoor Air Quality Performance (Prerequisite)

Mechanical has confirmed that regularly occupied spaces will meet prerequisite requirements. Confirmation of outdoor airflow measurement device will be completed in 66% design phase.

IEQp2 - Environmental Tobacco Smoke Control (Prerequisite)

Signage will be installed within 3 meters of all building entrances indicating the no smoking policy in place at the project.

IEQc1 Enhanced Indoor Air Quality Strategies (2 points available; 2 points Targeted via Option 1 and 2)

Architectural and Mechanical have confirmed that the project will install permanent entryway systems at least 10 feet (3 meters) long in the primary direction of travel to capture dirt and particulates entering the building at regularly used exterior entrances. Each ventilation system that supplies outdoor air to occupied spaces will have a minimum MERV 13 filter. Where hazardous gases or chemical are present, these spaces will be sufficiently exhausted to create negative pressure with respect to adjacent spaces when the doors to the room are closed. These spaces will have self-closing doors and deck-to-deck partitions or a hard-lid ceiling. All densely occupied spaces will have CO2 monitoring.

IEQc2 - Low-Emitting Materials (LEED®v4.1, 3 points available; 3 points Targeted)

Credit targeted via Option 1 for all 3 points using LEED® v4.1 requirements.

Innovate Energy will pursue credit requirements and determine which product categories will be targeted (ex. Adhesives & Sealants). Although these credits are based in and determined during construction, the necessary preliminary analysis will be done between relevant team members during design and LEED requirements included in specifications.

IEQc3 -Construction Indoor Air Quality (IAQ) Management Plan (1 point available; 1 point Targeted)

Although these requirements are implemented during construction, requirements will be included in the Specifications and Innovate Energy will develop a Construction IAQ management plan prior to construction.

IEQc4 – Indoor Air Quality Assessment (2 points available; 2 points Targeted via Option 2 preferred)

Indoor air quality testing will be completed prior to occupancy for 2 points.

IEQc5 – Thermal Comfort (1 point available; 1 point Not Pursued)

Based on experience with Modernized Cliff and Tunney's CHCPs, this credit is Not Pursued.

IEQc6 – Interior Lighting (2 points available; 1 point Targeted via Option 1, and 1 point Not Pursued via Option 2)

Electrical has confirmed that individual lighting controls with at least three lighting levels (on, off, midlevel) will be provided for at least 90% of individual occupant spaces and for 100% of multi-occupant spaces in the pavilion. Previously confirmed that sufficient lighting controls would be provided for both individual and multicount spaces. Lighting controls will be indicated in pavilion lighting drawings.

IEQc7 – Daylight (LEED®v4.1, 3 points available; 3 points Not Pursued)

Approximately 90% of the occupied spaces are below ground with no exposure to daylight.

IEQc8 - Quality Views (1 point available; 1 point Not Pursued)

Similar to IEQc7, approximately 90% of the occupied spaces are below ground with no outdoor views.

IEQc9 – Acoustic Performance (1 point available; 1 point Not Pursued)

Based on experience with Modernized Cliff and Tunney's CHCPs, this credit is Not Pursued.

10.3.8 INNOVATION

Currently targeting 6 points out of a possible 6 points. It should be noted that for INc1, any LEED® project can only target 4 points from the LEED® Innovation Catalogue and the 5th point must target a Pilot Credit.

INc1.1 - Innovation in Design Credit - Purchasing – Lamps (1 point available; 1 point Targeted)

Credit targeted via all LED lighting strategy.

INc1.2 - Innovation in Design Credit - Green Cleaning Program AND Integrated Pest Management Policy (1 point available; 1 point Targeted)

The project is pursuing this credit for 1 point that is taken from the LEED® O+M: Existing Buildings v4 rating system. Innovate Energy has confirmed that a compliant Green Cleaning and Integrated Pest Management Policy will be developed, and credit requirements met.

To be provided to CaGBC during the LEED® Construction submission for compliance feedback, should the project decide to pursue official full LEED® certification.

INc1.3 – Exemplary Performance (1 point available; 1 point Targeted)

Innovate Energy is anticipating being awarded 1 point for exemplary performance for EAc2 – Optimize Energy Performance and/or LTc7 - Reduce Parking Footprint.

INc1.4 – Occupant Comfort Survey (1 point available; 1 point Targeted)

Innovate Energy will develop an occupant comfort survey to be provided to CaGBC during the LEED® Construction submission for compliance feedback should the project decide to pursue official full LEED® certification.

IPpc98 – Pilot Credit: Assessment & Planning for Resilience (1 point available; 1 point Targeted)

The Climate Risk and Vulnerability Assessment (CRVA) was conducted during schematic design (refer to **Appendix P** for completed CRVA report). During 66% design phase, the project team will work with the designers to incorporate requirements and integrate into the LEED® credit strategy.

INc2 – LEED Accredited Professional (1 point available; 1 point Targeted)

WSP has LEED-accredited professionals.

10.3.9 REGIONAL PRIORITY

Currently we are targeting meeting 2 Regional Priority credits out of 4, with 2 pending credits.

Due to the project's location, we are limited in the number of base LEED® Prerequisite/Credit that are identified by CaGBC as regional priorities, so if we do not achieve those base requirement thresholds then we cannot meet the Regional Priority requirements.

RPc1 - Regional Priority for SSc5 Heat Island Reduction (1 point available; 1 point Pending)

Credit is automatically awarded if SSc5 base credit is met for 2 points. SSc5 currently pending 2 points.

RPc2 - Regional Priority for WEc2 Indoor Water Use Reduction (1 point available; 1 point Targeted)

Credit is automatically awarded if WEc2 base credit is met for 4 points (40% savings). WEc2 credit currently targeting 4 points.

RPc3 - Regional Priority for EAc2 Optimize Energy Performance (1 point available; 1 point Targeted)

Optimized energy performance is a selected regional priority credit for Ottawa. At least 10 points must be achieved for credit EAc2 to get this RP credit. EAc2 is currently targeting 16 points.

RPc4 - Regional Priority for TBD (1 point available; 1 point Pending)

Innovate Energy is investigating the potential to achieve 1 point for Regional Priority based on the achievement of the following credits:

- LTc3 High Priority Site: Must achieve 1 point
- SSc4 Rainwater Management: Must achieve 2 points

APPENDIX

S ACCESSIBILITY REPORT





Accessibility Report for ESAP- MG CHCP – Accessibility Review of 33% Drawings

1. Introduction

An accessibility review of the drawings for the Gatineau ESAP facility was conducted by Betty Dion and Collinda Joseph of BDEL on March 22, 2022.

Although the contract specifies a requirement to comply with CAN-CSA B651-12, this review was conducted to assess compliance with CAN-CSA B651-18 which provides a higher level of accessibility.

The three level Gatineau facility expects to welcome visitors primarily to the exterior landscape, although small delegations are expected at the facility.

2. Exterior

Street access will be from Boulevard Sacre Coeur. It is not known now whether there will be bus service or where it might be. One accessible parking space is planned but it appears that there will a considerable distance to walk/wheel to the main entrance from both parking and the bus, approximately 35m.

There is an exterior ramp on the north-west side of the facility which is designed for equipment access. There will be two parking spaces for staff at the bottom. These parking spaces are not required to be accessible.

There are four exit stairs coming up from the lower levels. As plant staff are required to be able-bodied, accessibility of the exit stairs is not required.

The route to the main entrance is not obvious, therefore some wayfinding techniques such as a directional TWSI would be helpful.

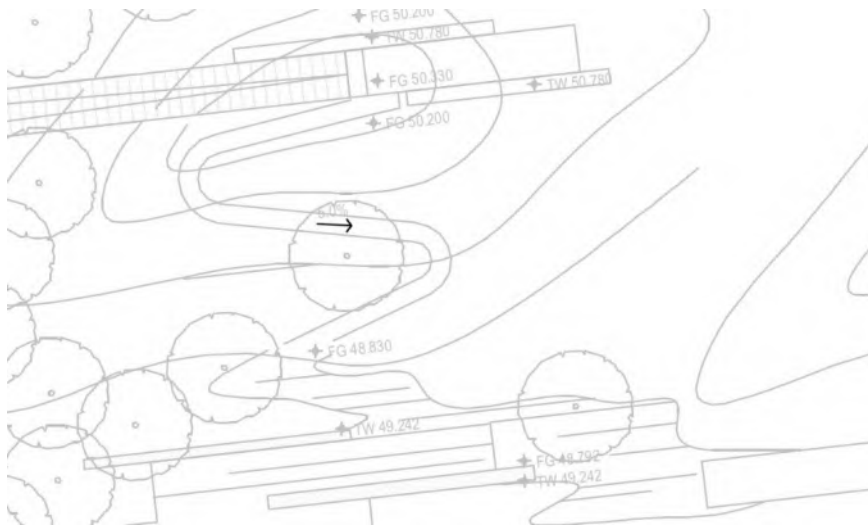
Recommendations:

- 2.1 Directional TWSIs are recommended to bring people from the parking/drop off area as well as the bus stop. This will assist everyone in finding their way to the main entrance.
- 2.2 A bench should be provided along the route for people to rest.
- 2.3 Care should be taken to ensure that the stair exits do not create a protrusion hazard.

3. Landscape

The north courtyard has a meandering pathway leading to a series of belvederes. Meandering pathways can be difficult for people using mobility devices to use safely as they might catch a wheel and tip over. They are a nightmare for people with vision loss.

There is also a long snaky pathway with the same problem that appears to be quite narrow and long. Although building codes allow a slope of 1:20 without requiring level resting landings, it is preferred to provide some relief for people walking or wheeling up or down a slope.



The surface materials are not yet identified. There are plenty of trees which is great and hopefully benches will be provided throughout the plaza.

Recommendations:

- 3.1 The use of meandering pathways should be reviewed to ensure that there is a consistently wide surface and that there are no drop offs at the edges.
- 3.2 The long snaky pathway should also be reviewed and should have a minimum width of 1500mm.
- 3.3 A level resting area of 1500mm x 1500mm should be provided every 9m on long ramps with a slope of 1:20.
- 3.4 Benches and rest areas should be provided throughout the plaza.

4. Interior

The facility has 3 levels but the lower levels are for plant staff, including the second level locker, kitchen and staff room. Therefore, only the ground level and B1 level offices and meeting room are required to be accessible.

There is a meeting room that will require further review to ensure that there is adequate maneuvering space throughout the room and access to controls and screens.

Automatic door openers are required at the front entrance.

TWSIs are required at the top of stairs.

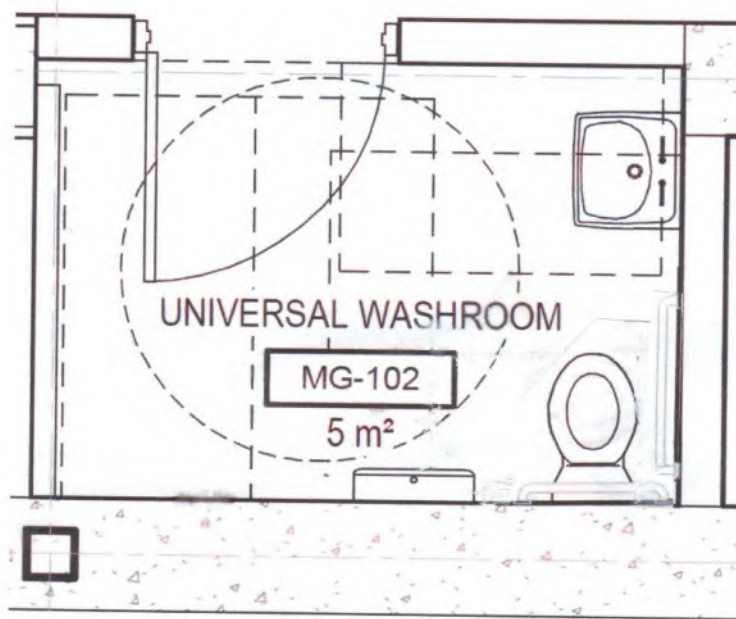
Recommendations:

- 4.1 Automatic door openers should be provided at the main entrance.
- 4.2 TWSIs should be provided at the top of the stairs.

5. Universal Washroom

An automatic door opener is required by code if there is a self-closing device on the universal washroom. The self-closing device makes the door very difficult to open for some people with disabilities.

The universal washroom has an interior turning radius of 1700mm, which is great but the maneuvering space beside the toilet does not look adequate.



Recommendations:

- 5.1 Automatic door openers should be provided at the universal washroom.
- 5.2 The universal washroom should be reconfigured with the toilet rotated 90 degrees. This will allow for sufficient maneuvering space beside the toilet and still provide room for the change table and adequate maneuvering space in front of the sink. See the drawing above.

APPENDIX

T CPTED REPORT



PUBLIC SERVICES AND PROCUREMENT CANADA (PSPC)

CPTED REPORT – MODERNIZED GATINEAU CHCP

DETAIL DESIGN REPORT (33%)

APRIL 20, 2022

[CLICK HERE TO ENTER TEXT.](#)





CPTED REPORT (33%) – MODERNIZED GATINEAU CHCP

DETAILED DESIGN REPORT (33%)

PUBLIC SERVICES AND PROCUREMENT CANADA
(PSPC)

CLIENT REVIEW
PUBLIC

PROJECT NO.: EP635-173247/001/NB
DATE: APRIL 20, 2022

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1. INTRODUCTION

Public Services and Procurement Canada (PSPC) is responsible for the delivery of essential heating services to over 80 federal buildings in the National Capital Region (NCR) and cooling services to 67 of these buildings, including mission-critical sites within the Parliamentary Precinct.

The Energy Services Acquisition Program (ESAP) was established in 2009 and involves the modernization of the heating and cooling energy service capability currently being met by the existing infrastructure. One of the project objectives is to design the Modernized Gatineau Central Heating and Cooling Plant (CHCP) to be an Architectural Landmark to:

- Ensure the CHCP is architecturally pleasing, integrated with the local landscape.
- Build these facilities as a community asset that inspires community pride and attracts interest in the energy system.

Security Through Safe Design (STSD) was retained to provide a Crime Prevention Through Environmental Design (CPTED) review of the proposed CHCP design. Specifically, the review will address the Project Objectives regarding the architectural and landscape designs for the Gatineau heating and cooling plant.



Figure 1: Modernized Gatineau CHCP Rendering

2. CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)

Proper design and effective use of the built environment can lead to a reduction in the incidence and fear of crime and facilitate an improvement in the quality of life.

The principles of CPTED are widely used by design and architectural firms to create a secure and safe environment for its users by creating an environment that has a positive impact on the reduction of crime. The three main principles of CPTED are Natural Access Control, Natural Surveillance, and Territorial Reinforcement.

Unlike a Threat and Vulnerability Analysis (TVA), CPTED does not incorporate a methodology that identifies assets and/or threats specific to each asset. Threat scenarios are not used to assess the effectiveness of a recommended security countermeasure. CPTED addresses the existing and/or planned environment and provides general recommendations that can be incorporated in many similar environments. There is no CPTED methodology to evaluate if a CPTED recommendation reduces the overall risk to the environment other than the subjective consideration by the actual CPTED practitioner that is conducting the review.

It is also important to note that CPTED is not intended to provide design-specific requirements for security systems. CPTED provides general recommendations regarding the implementation of a mechanical / electrical security feature and only after it is determined that the same result could not be achieved through natural means.

CPTED principles of design affect elements of the built environment ranging from the small-scale (such as the strategic use of planting, and furniture) to the overarching, including design and function. The implementation of the recommendations provided within this report can prove to elevate / improve individual safety and security as well as the protection of assets.

2.1 NATURAL ACCESS CONTROL

The strategy behind Natural Access Control is to increase the perceived risk to the potential offenders by restricting or denying access to possible crime targets. The CPTED review of the architectural design will assess both vehicular and pedestrian access into and within the site. The incorporation of Natural Access Control strategies will limit the opportunity for crime by clearly differentiating between and demarcating public and private spaces.

Mechanical Access

When the physical design or the environment does not support natural means of access control, mechanical methods are considered. Mechanical Access controls include the incorporation of physical security systems and features such as Integrated Access Control (IAC), locks, barriers, gates, and fences to restrict access.

Organized Access

Organized Access controls require legitimate users of a property to enforce or restrict access either by their job function or through routine patrols. The fact that there are legitimate users within a space may also be enough to deter access by criminals.

Although considered secondary to Natural Access, both Mechanical Access and Organized Access are essential methods to consider in the design of this Project.

2.2 NATURAL SURVEILLANCE

Natural Surveillance decreases the risk of a criminal act being committed by improving visibility of potential offenders to the general public and to staff. Natural Surveillance occurs by designing the placement of physical features, activities, and allowing legitimate use in such a way as to maximize visibility of the space and its users, fostering positive social interaction among legitimate users of private and public space. Potential offenders feel increased scrutiny, and thus inherently perceive an increase in the risk of their being identified or caught. This perceived increase in risk to the offender extends to the perceived lack of viable and covert escape routes.

Mechanical Surveillance

In the absence of the ability for Natural Surveillance, mechanical and organized forms of surveillance are required, dependent on the level of risk. One form of Mechanical Surveillance includes the use of closed-circuit video equipment (CCVE).

Recommendations to incorporate CCVE are based on:

- The lack of ability to provide Natural Surveillance where a potential threat exists.
- To reduce or eliminate the potential for concealment that may impact safety and/or security.
- For an operational requirement.
- As a mitigation measure identified through a Threat and Vulnerability Assessment.

Organized Surveillance

Organized Surveillance requires that legitimate users of a property have the ability for witness potential in and around the site. The fact that there are legitimate users within a space will increase a criminal's risk which in turn will deter crime.

2.3 TERRITORIAL REINFORCEMENT

Territorial Reinforcement promotes social control through increased definition of space and improved proprietary concern. An environment designed to clearly delineate private space from public space does two things. First, it creates a sense of ownership. Owners have a personal stake and are more likely to challenge intruders or report them to the authorities. Second, the sense of owned space creates an environment where "strangers" or "intruders" stand out and are more easily identified.

By using buildings, fences, pavement, signs, lighting, and landscape to express ownership and define public, semi-public, semi-private and private space creates the sense of Territorial Reinforcement. Territorial Reinforcement notifies legitimate users and non legitimate users of the boundaries of a space and or area of a facility. It creates a psychological deterrent to criminals by notifying users of the space or area of the facility that they are being watched or monitored.

3. CPTED REVIEW

This CPTED review is intended to identify potential areas or concerns where the architectural and/or landscape design could be improved with additional or modified security strategies to mitigate the potential for crime to occur as well as create a space desirable to legitimate users.

3.1 GATINEAU CHCP

The Modernized Gatineau Heating and Cooling Plant will be located adjacent to the existing CHCP. Gatineau Auto Route 5 and Boulevard Sacre-Coeur border the site to the north and south respectively. The environment located directly south of the site includes a high-rise apartment building, the Outaouais Child and Youth Protection Centre, a mixed-commercial building and Church, a Secondary School, a community garden, and two parking lots. Currently, the site of the new CHCP is a parking lot supporting the existing Gatineau CHCP.

A perimeter chain-link fence separates the majority of the proposed Gatineau CHCP site from the parkade and community gardens to the south. A pathway provides pedestrian access to the site through an opening in the south perimeter fence.

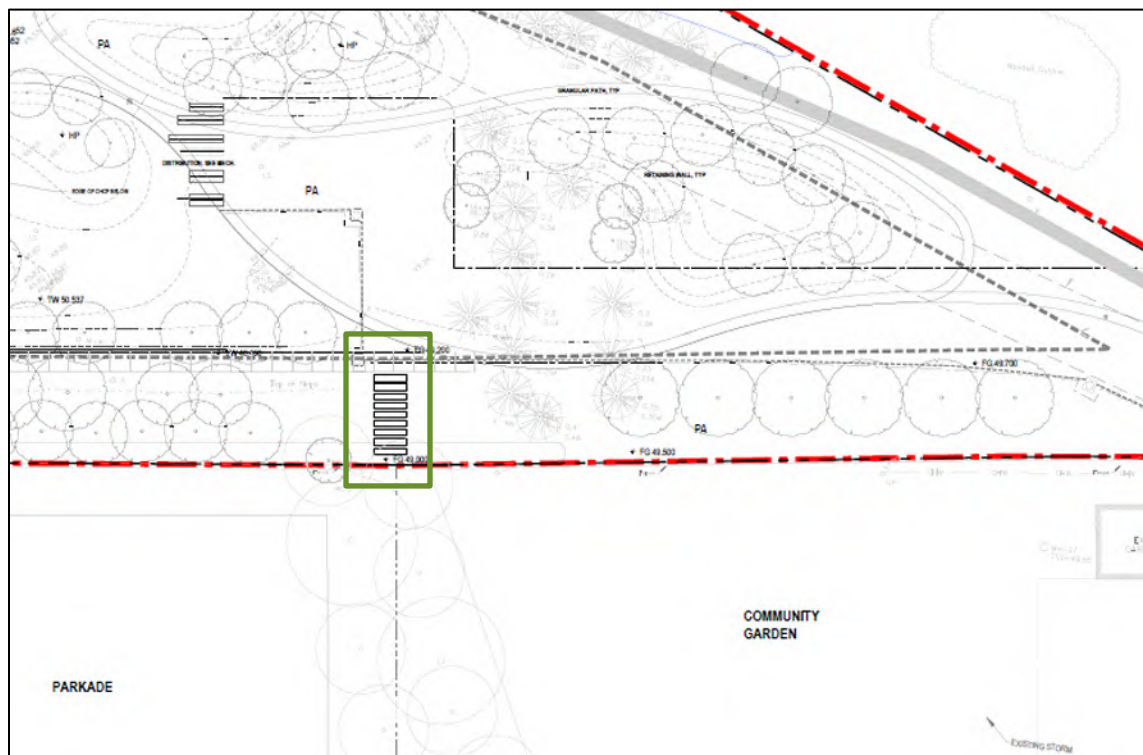


Figure 2: South Pathway from Green Roof

A set of high-rise buildings, expected to house corporate offices, are proposed adjacent to the existing Gatineau CHCP. There were no details regarding the design or timelines for the proposed development.

The site is accessible through the existing CHCP parking lots and roadway behind the National Printing Bureau. The existing parking lot enables access to the new CHCP loading dock and public parking area. Two parking spaces are accessible to the west of the facility (identified in blue in Figure 3). One parking

space is barrier-free. In a future phase, a roadway will be constructed providing vehicular and pedestrian access directly from Boulevard Sacre-Coeur.

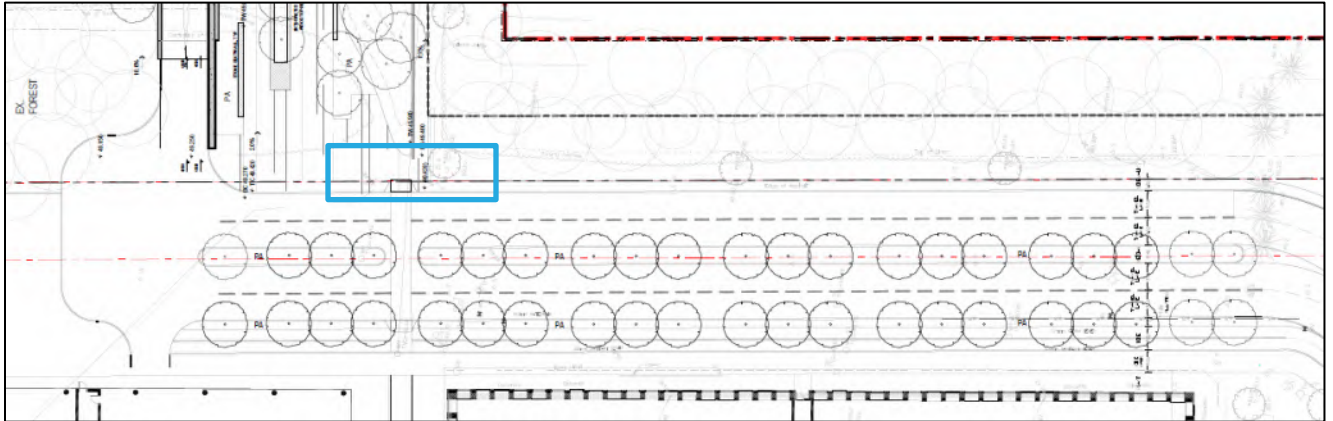


Figure 3: Proposed Roadway Accessing Gatineau CHCP

A loading dock, located on the west side of the building, slopes down to below grade level. The loading dock entrance will be accessible to the public, with no planned mitigations to control access. When the loading dock door is open, one could gain full access to the building interior at Level B2. This level accesses the chiller and boiler plant.

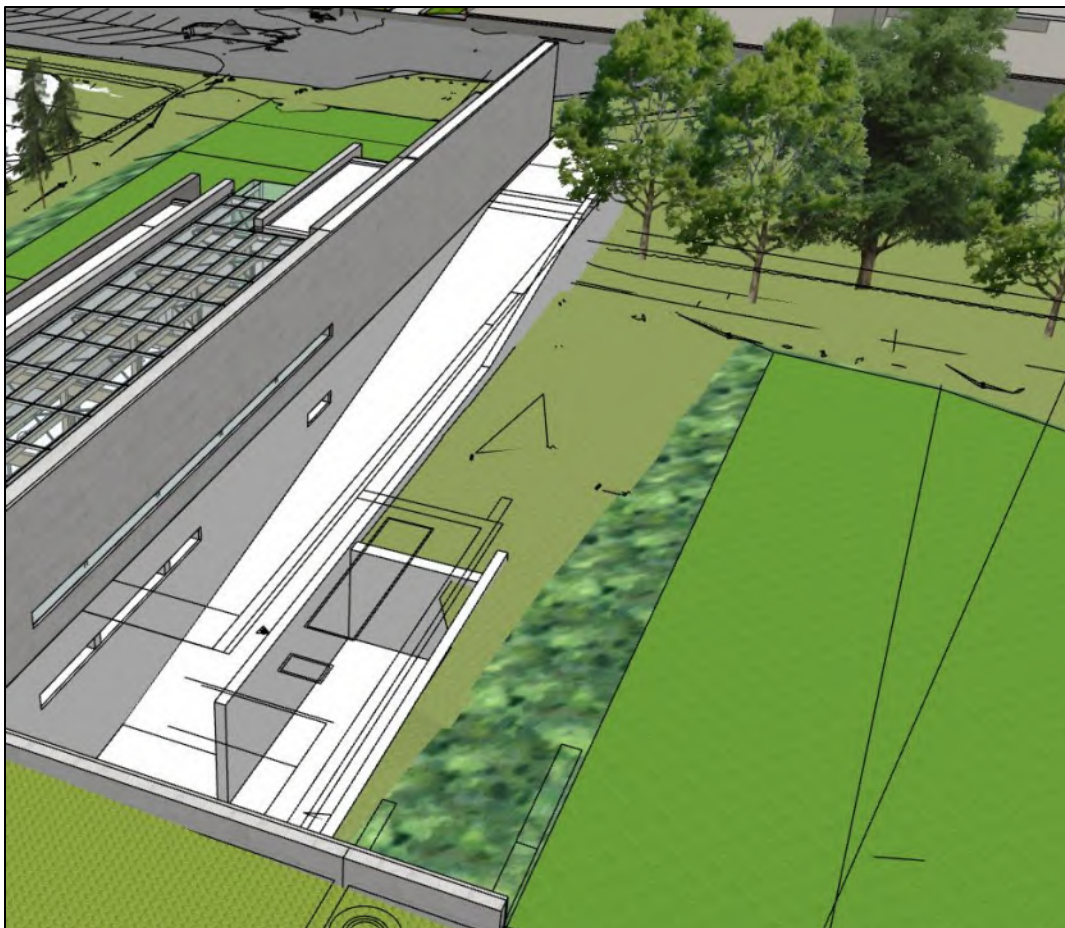


Figure 4: Loading Dock and Staff Parking

At the lower exterior landing of the loading dock, there are two electrical vehicle staff parking spaces. There are no vehicle or pedestrian barriers to restrict access to this area.

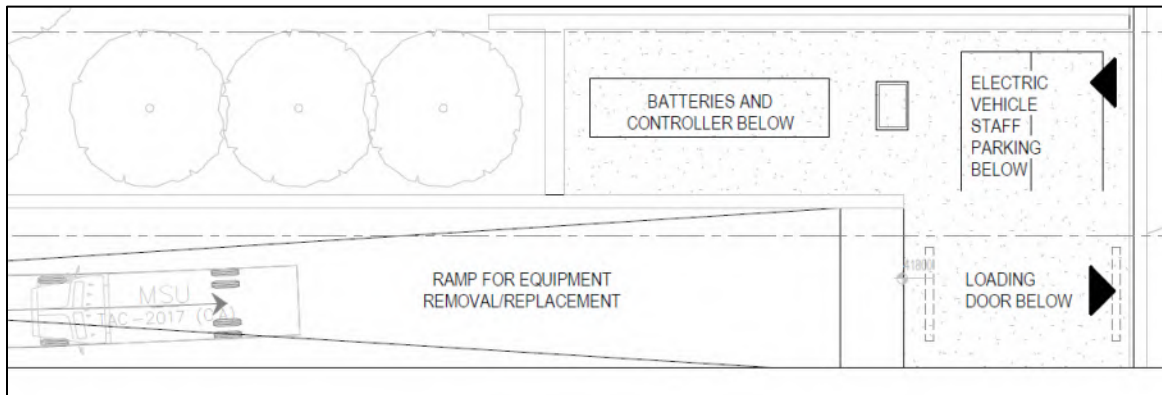


Figure 5: Staff Parking / Loading Dock Doors

Similar to the Cliff and Tunney's Pasture Heating and Cooling Plant, the Gatineau CHCP will be integrated into the ground cover creating a green roof where the public will be invited to access. Although the exterior of the site will be open for the public to visit, the Gatineau CHCP will not include a Visitor's Centre and is not considered a public facility.

As an aesthetic design, the exterior of the facility incorporates porcelain panel fin walls. The fin walls are located adjacent to the facility emergency egress stairwells and building access points. The design and location of the fin walls create ambiguous spaces, and provides the ability for concealment. These fins may also attract loitering which may result in other criminal activity such as graffiti. One of the vulnerable areas is located adjacent to the main entrance doors (refer to Figure 6).



Figure 6: Revit Model of Gatineau CHCP Main Entrance

The accessible green roof garden will incorporate hard and soft landscaping, inclusive of stone pathways and seat walls throughout. The landscaping provides an inviting environment to the neighbouring residential area. A lower plaza, at the main entrance to the CHCP building, also provides landscaping consisting of seat walls, planters and plantings, accessible from the adjacent street. Throughout the green

roof, low-lying shrubbery and grasses will be used along building edges, to maintain territorial reinforcement. Currently, the 33% landscape design is limited, with further details yet to be provided.

Three emergency exit buildings empty onto the green roof via Stairwell C, D and E. The walls of the emergency exit buildings are constructed of concrete. Sloped landscaping surrounds each emergency exit building to direct water around the walls.



Figure 7: South Emergency Exit Buildings

From the elevated portion of the green roof, the porcelain panel walls of the south emergency exit buildings are approximately eight-feet in height.

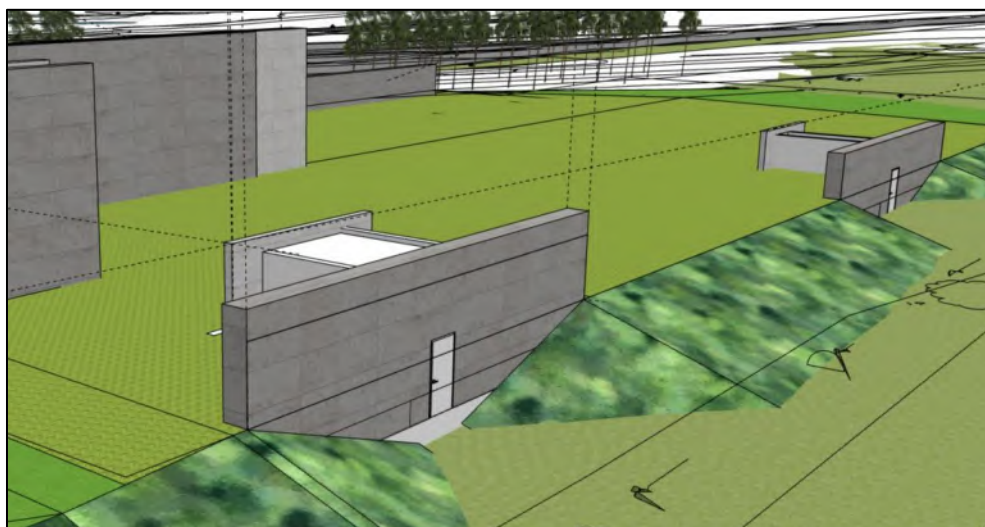


Figure 8: Revit Model of South Emergency Exit Buildings

The north emergency exit building features porcelain panel walls much like the south buildings; however, the door exiting the building is facing north with minimal ability for Natural Surveillance. Additionally, the design of the walls surrounding the north emergency exit building create concealment areas (circled in red in Figure 9).

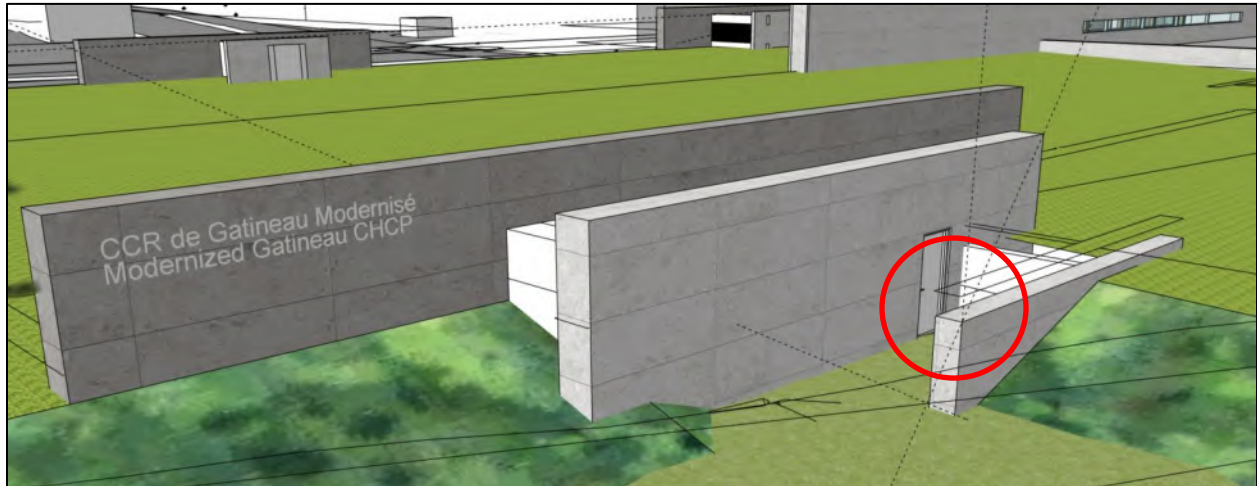


Figure 9: North Emergency Exit Building (View from the north)

As shown in Figure 9, a lower-level portion of the roof appears to allow unrestricted access to the emergency exit building roof (circled in blue).

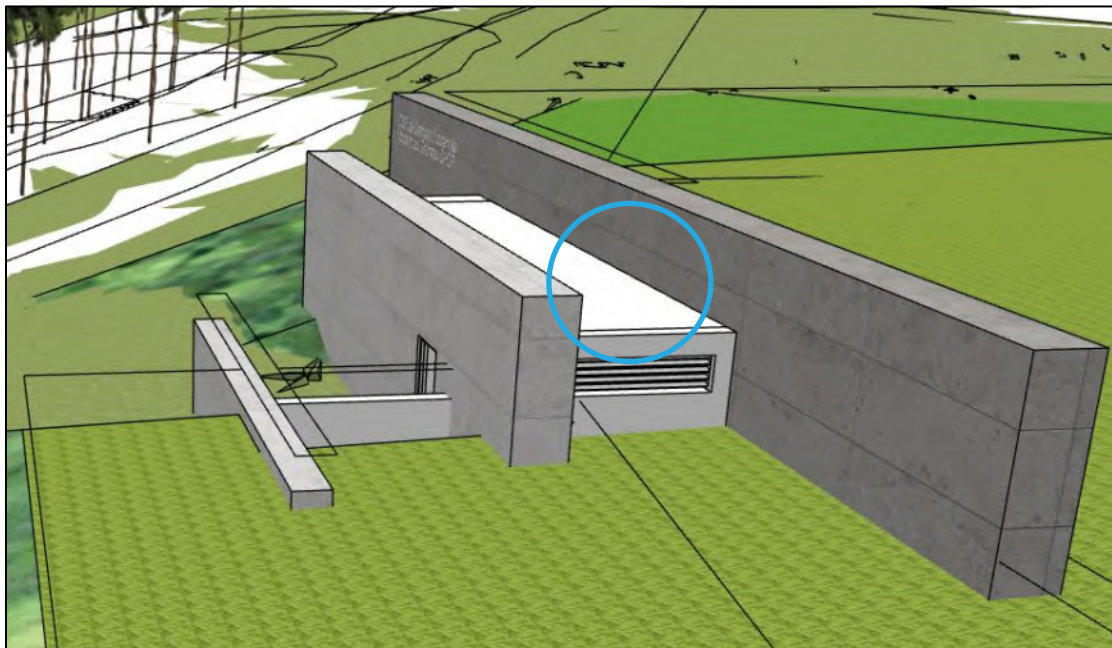


Figure 10: North Emergency Exit Building (View from the west)

Located to the east of the CHCP facility, an electrical substation is accessible via a laneway from Boulevard Sacre-Coeur. The substation building, along with exterior equipment, is enclosed and secured with fencing and a vehicle gate to restrict access.

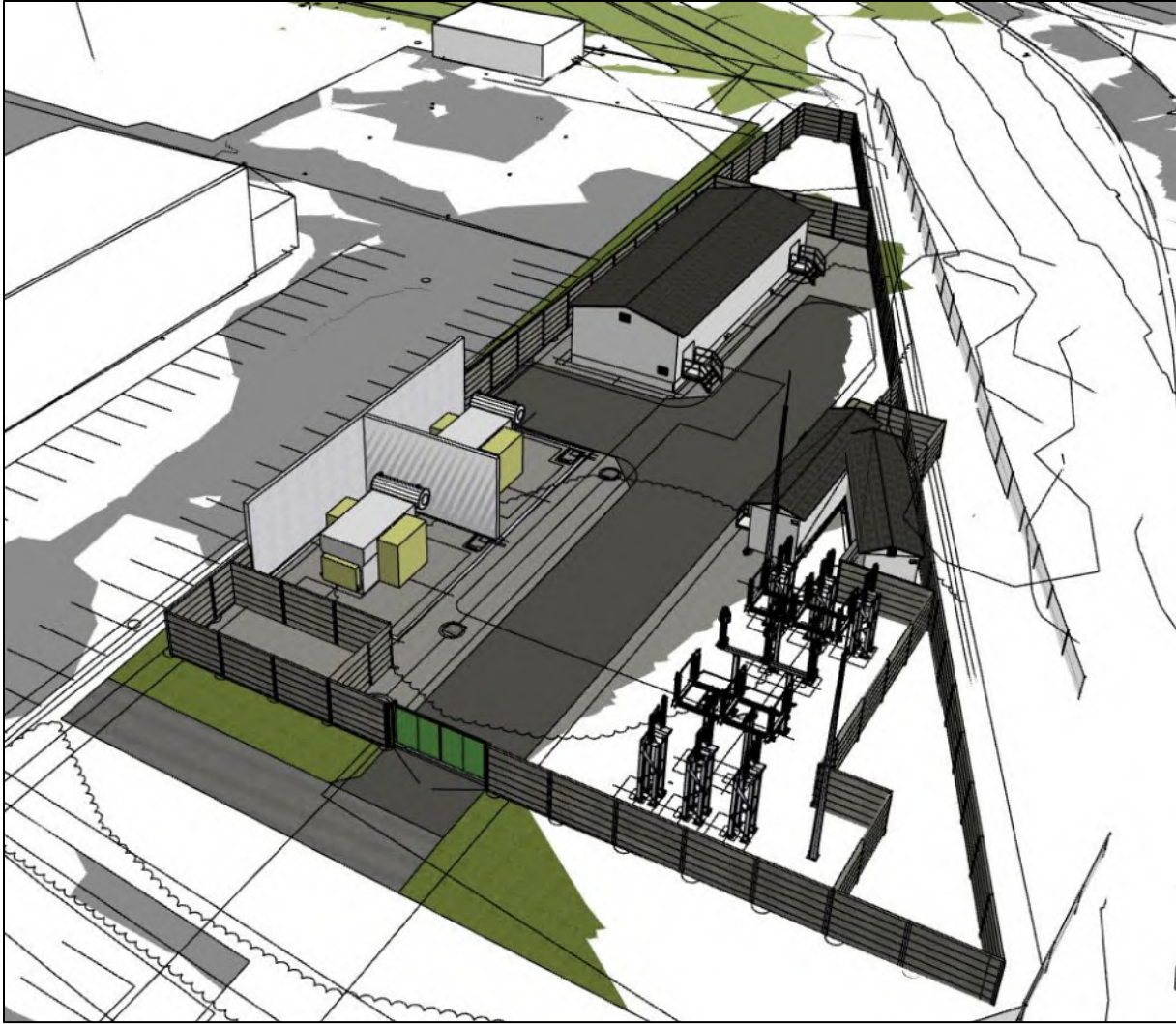


Figure 11: TPSS Location

3.2 EXTERIOR LIGHTING

The luminaire schedule provided, indicates that lighting used at CHCP will provide a minimum of 70 CRI capability, allowing for a perspective of colour differentiation, while supporting witness potential.

Currently, the lighting design incorporates exterior wall mounted luminaires at the main entrance and exterior recessed wall-pack luminaires along the ramp leading to the loading dock doors. Pedestrian lighting throughout public areas on the green roof and entrance plaza has not yet been developed and will be addressed at the 66% design package. Additionally, the emergency exit buildings on the green roof are not illuminated and has not been assessed at this design submittal stage.

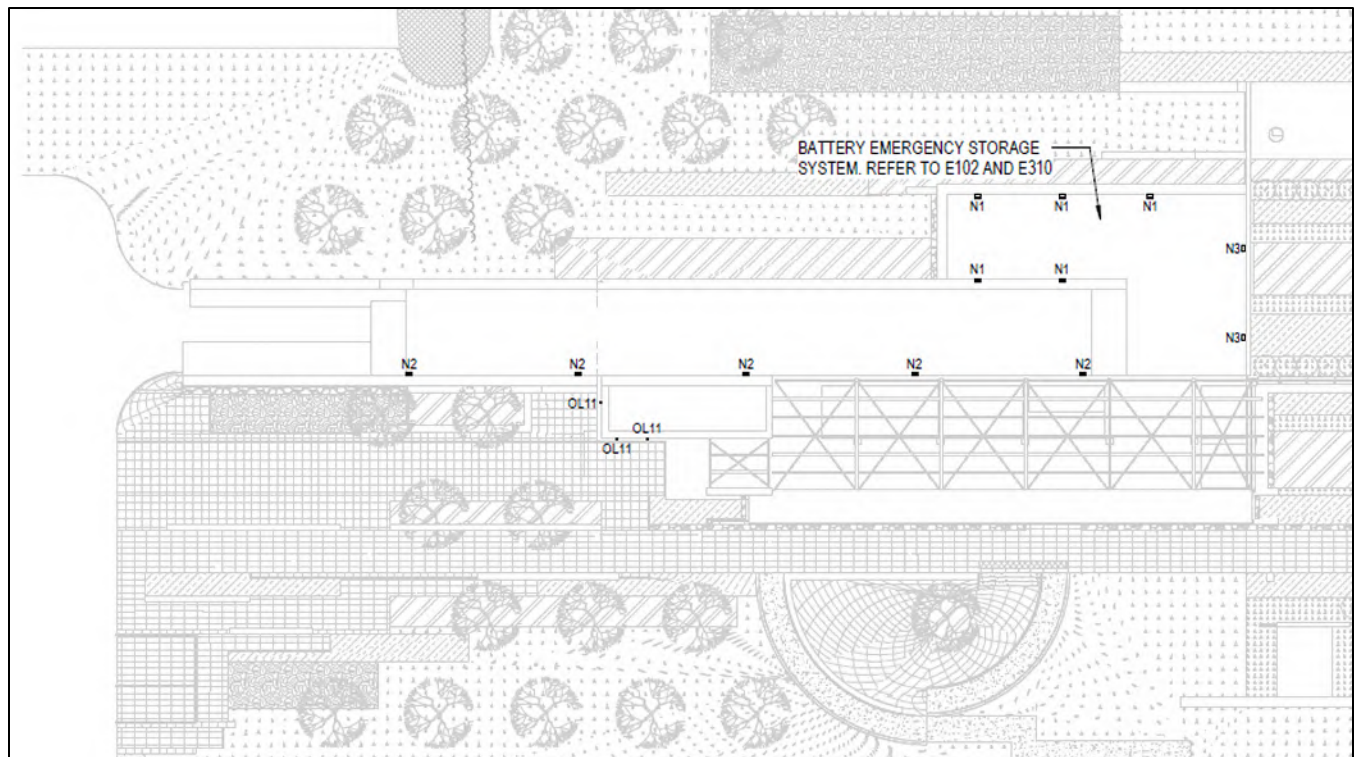


Figure 12: Exterior Lighting Plan

3.3 LANDSCAPE DESIGN

After review of the 33% landscape drawings, the details of the specific plantings were not provided.

From the west of the facility, a walkway leads to the green roof from the CHCP entry plaza. The entry plaza incorporates stone seat walls and wood-top planters with tree plantings.

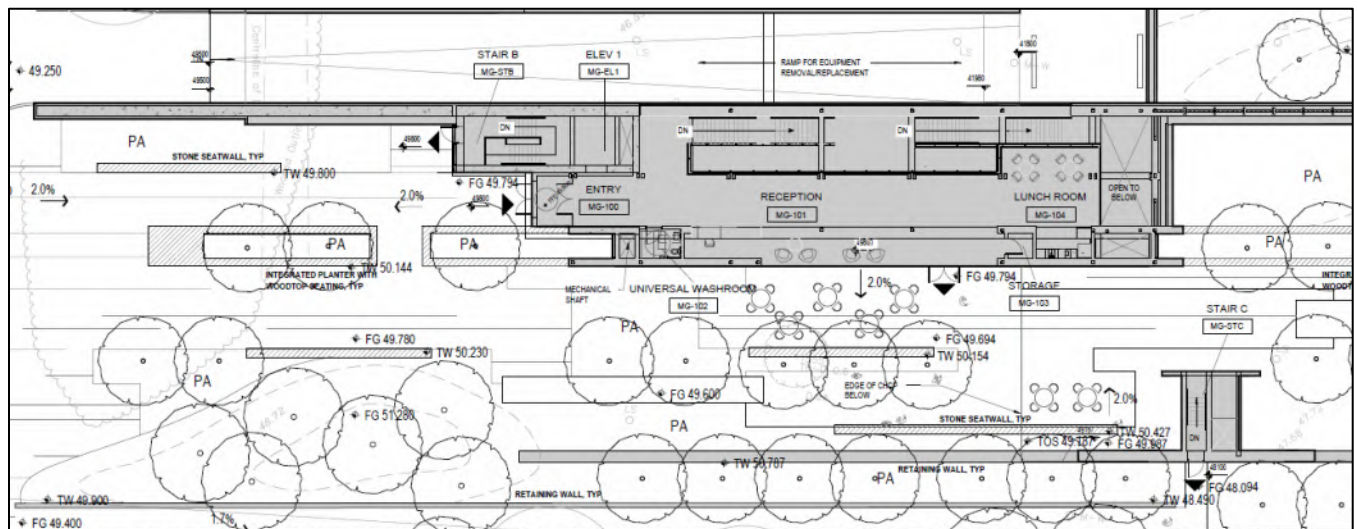


Figure 13: Entry Plaza Landscape Plan

The landscape design of the green roof incorporates hardscaped walkways, with seat walls and wood-top planters with tree plantings throughout.

Information on the incorporation of waste receptacles and bicycle parking was not provided with the 33% landscape drawings.

The landscape drawings did not identify design strategies to mitigate the potential for skateboarding.

3.4 INTERIOR REVIEW

The Gatineau CHCP facility features three floors, inclusive of the roof, housing mechanical, operational and office spaces. The west side of the building houses the maintenance, office spaces and day-to-day operational rooms. The east side of the building consists of the chiller and boiler floors on Level B2.

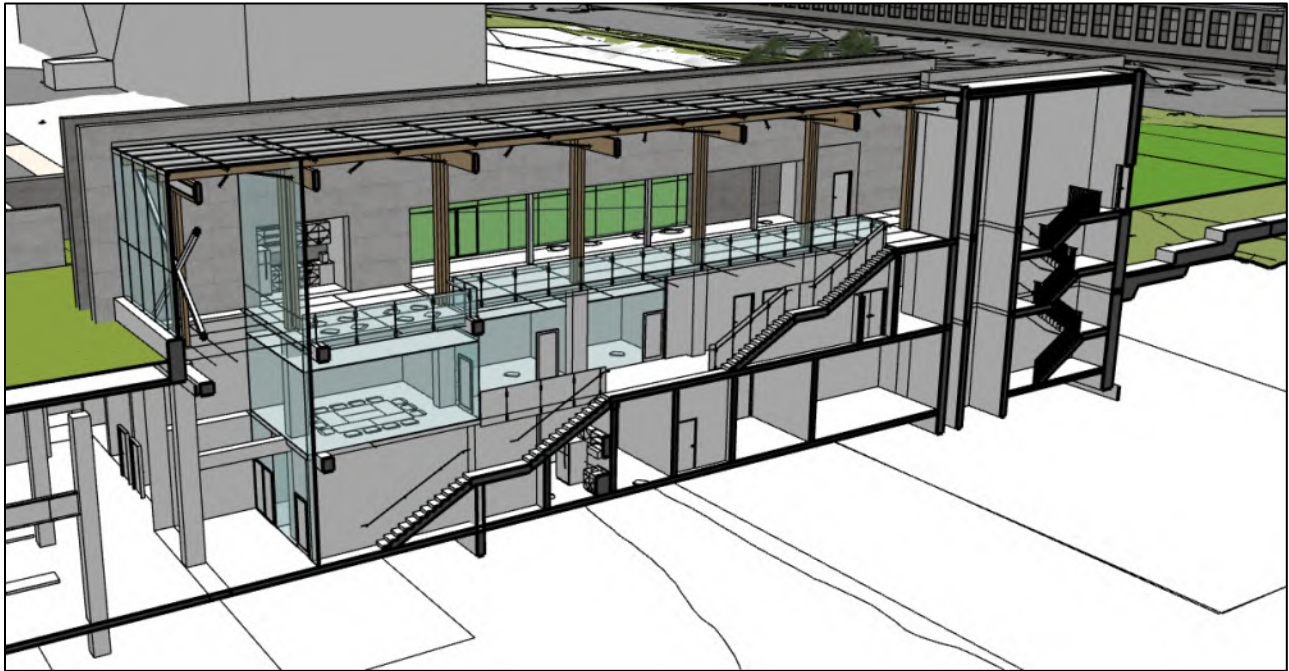


Figure 14: Rendering of Interior Facility Design

At grade level, the west of the building provides access to the main lobby and reception area. The service access is located adjacent to the loading dock door at Level B2.

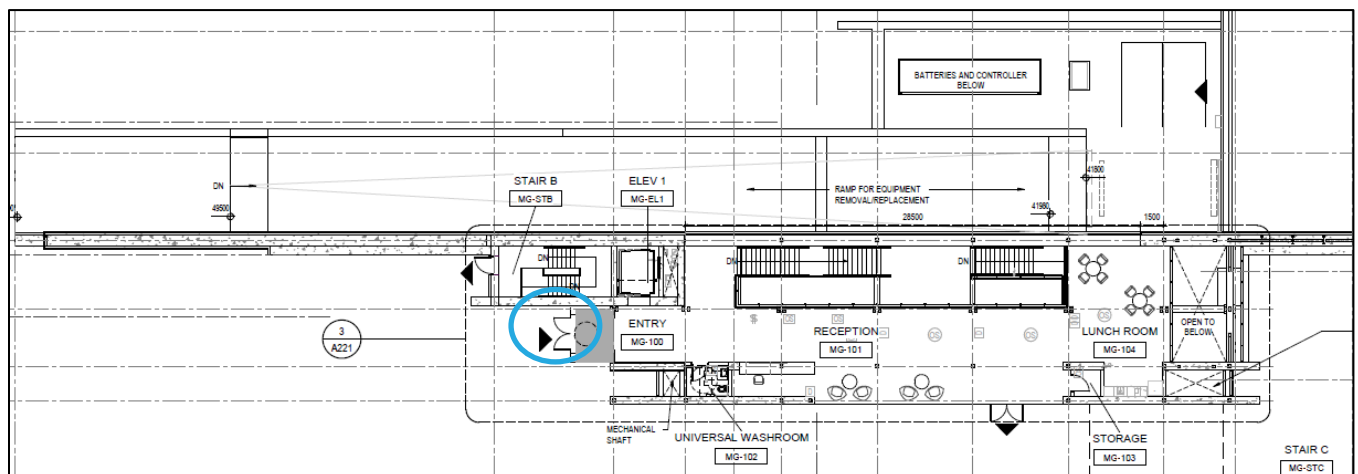


Figure 15: Entrance Level into CHCP Building

Stairwell A (MG-STA) is located adjacent to the main entrance and provides employee circulation to each floor. Stairwell B (MG-STB) is located on the west side of the building and provides emergency egress to the exterior of the building. Elevator 1 (MG-EL1), located within the main entrance lobby, provides access to floors B2 to Level 1.

Stairwells C and D are emergency egress stairwells that exit to the south side of the building which houses the chiller and boiler units, Through the MV Room, Stairwell E (MG-STE) provides a northern emergency egress route.

3.4.1 LEVEL B2

On the west side of Level B2, a corridor (MG-B200) houses day-to-day operational rooms inclusive of a Mechanical Room, Electrical Room, Garbage Room, Elevator Control Room, Janitor Room, Office, Kitchen, Washroom, Control Room, Water Entry Room, and chiller and boiler space. From the stairwell landing on Level B2, three doors provide access to Corridor MG-B200. No information was provided on whether these doors incorporate access control to manage access from the operational rooms to the chiller and boiler space.

The chiller and boiler spaces are located to the east side of Level B2, inclusive of a Chemical Storage Room, Communications Room, LV Room and MV Room. The drawings indicate that a future expansion area has been allotted for to the north of the MV Room.

At Level B2, the chiller and boiler space can be accessed directly from the loading dock and staff entry door. An employee access door is also located adjacent to the loading door. Although the use of the loading door will not be used frequently, the absence of an interior vestibule from the loading dock increases the risk of an unauthorized individual to enter the building, while the loading dock door is open, Operational procedures will be in place at the facility, to ensure a member of staff is present when the door is open.

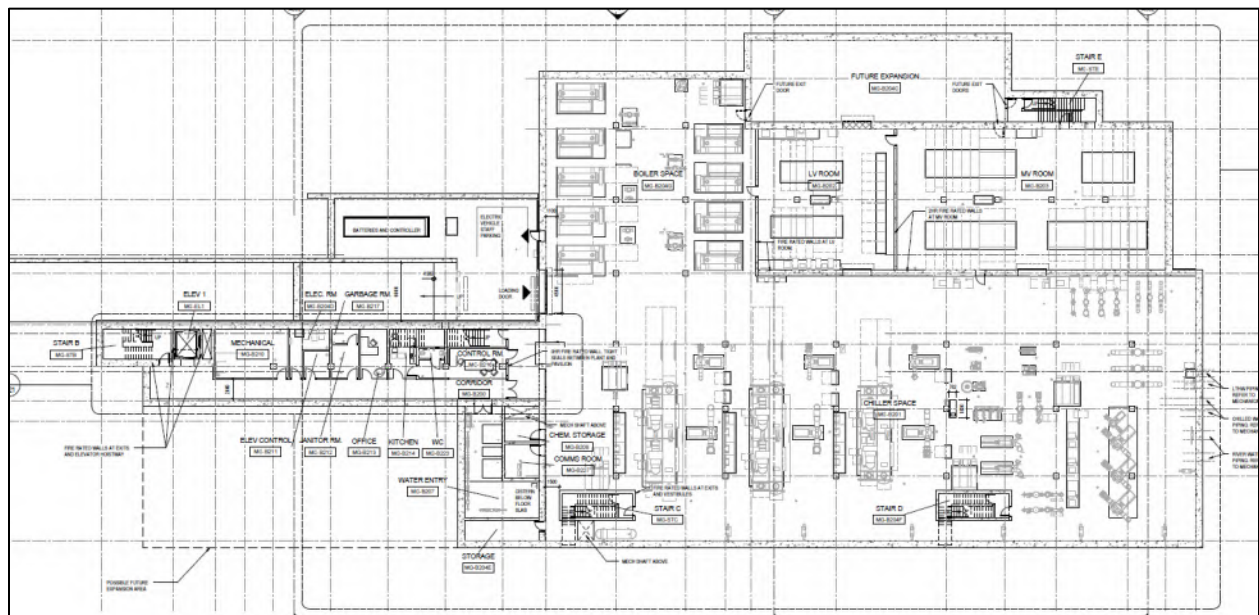


Figure 16: Level B2 Floor Plan

Space is reserved for a potential future expansion in the south west corner of Level B2.

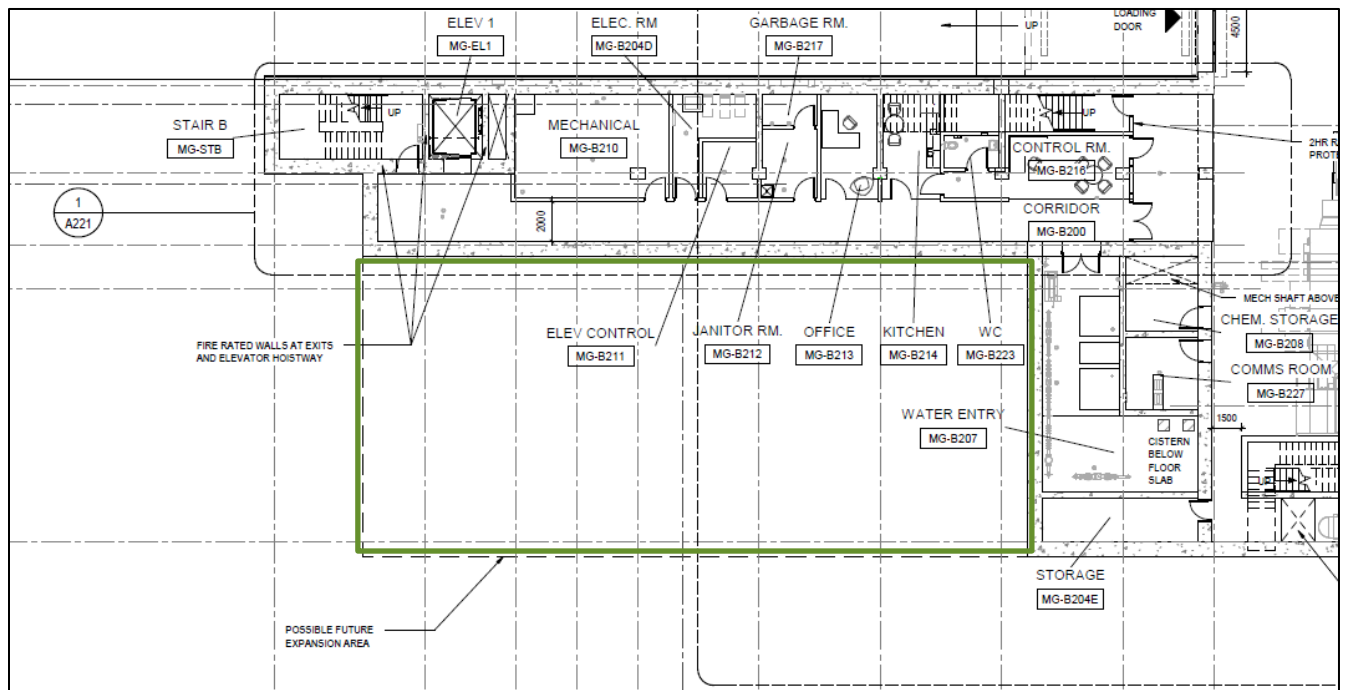


Figure 17: Level B2 Potential Future Expansion

3.4.2 LEVEL B1

Level B1 provides access to a Meeting Room, Office, Locker Room with a Shower, Washroom, Office for Authority and Security Room. The intent of the Security Room is not yet provided; however, it is assumed that it will house any future security systems for the facility. It was not known if the use of security guards will be required from an operational perspective to restrict and manage access.

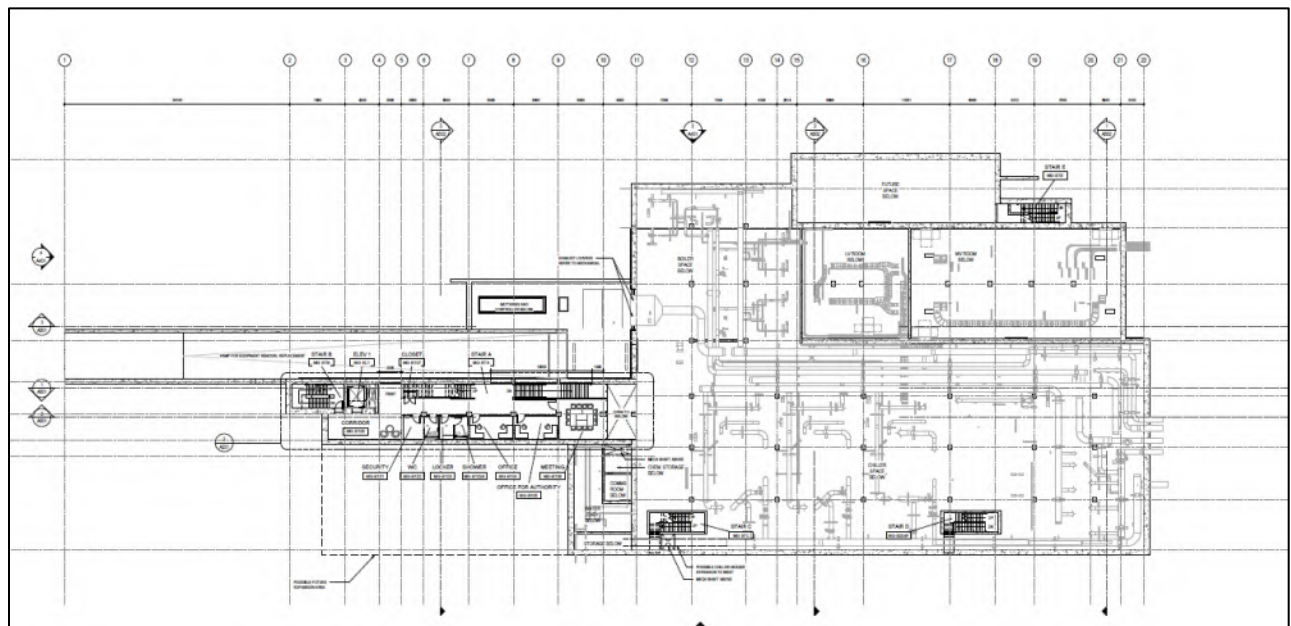


Figure 18: Level B1 Floor Plan

3.4.3 GROUND FLOOR PLAN

The main entrance is located on the west side of the building on the ground Floor. The ground level houses a Reception desk, Universal Washroom, open concept Lunchroom, and Storage. A set of doors egress to the exterior of the building, from the reception area.

Although the reception desk is located close to the main entry, the position of the Universal Washroom reduces the opportunity for sightlines to the front entry.

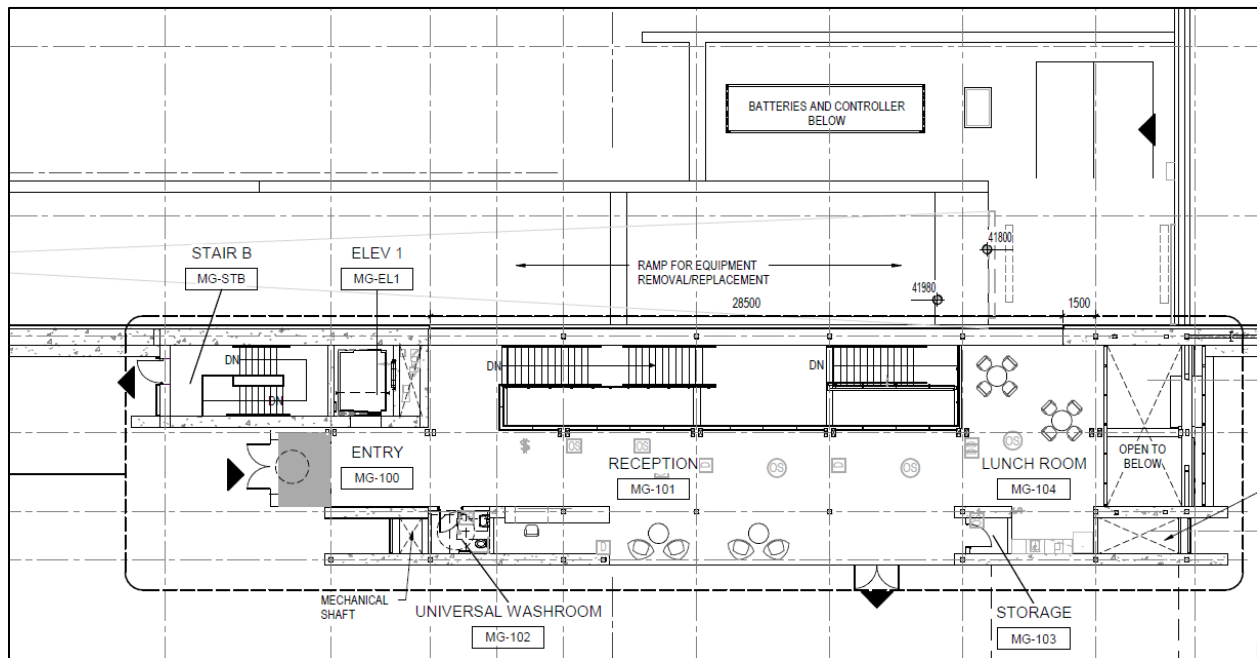


Figure 19: Ground Floor Plan

3.4.4 ROOF PLAN

Gatineau CHCP incorporates a green roof, accessible to the public.

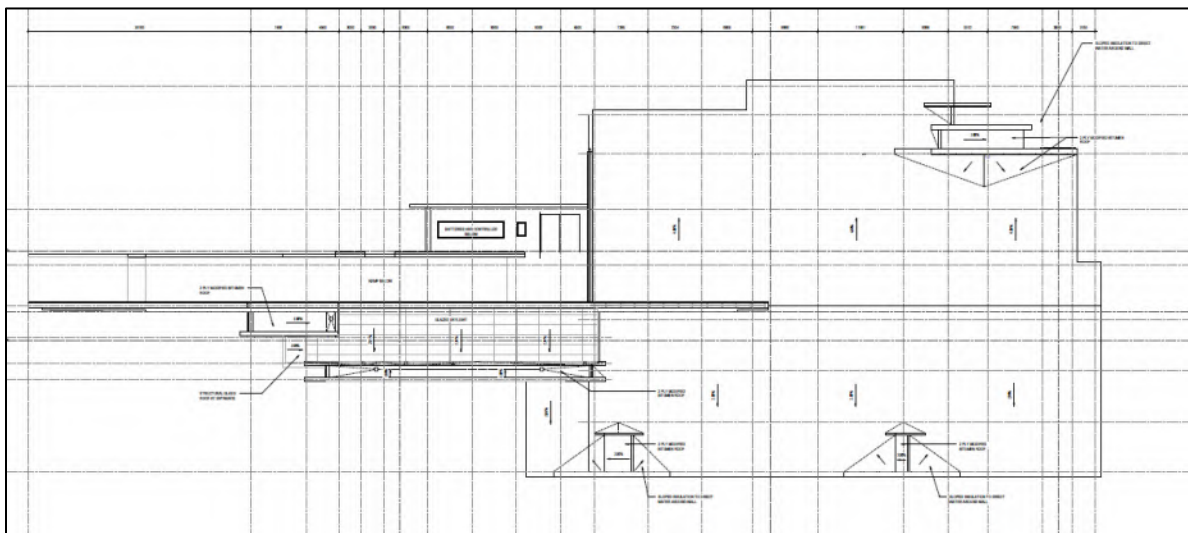


Figure 20: Overall Roof Plan

3.5 REFERENCES

The following drawings were used in support of this CPTED review:

<i>DRAWING NAME</i>	<i>DRAWING NUMBER</i>	<i>DATED</i>
Architectural Drawings	MGp-207-A001 to MGp-207-A550	March 11, 2022
Electrical Drawings	MGp-207-E001 to MGp-207-E810	March 11, 2022
Landscape Drawings	MGp-201-L101 to MGp-201-L102	March 11, 2022
Sketch-up Revit Export		March 11, 2022

4. 33% CPTED RECOMMENDATIONS

The following are recommendations specific to the 33% CPTED review. The recommendations are not based on any Project Agreement requirements or Threat and Vulnerability Assessment and, as such, may be superseded by such an assessment.

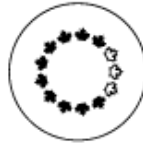
While the review of security systems is a critical element of a CPTED review, it does not fall under PCL's project scope. The following list includes security system recommendations, which from a CPTED perspective, are valuable considerations for the Client throughout the design stages of the project.

- 1 Ensure that proper signage is posted that identifies the legitimate use and hours of operation of the exterior space(s), if any.
- 2 Utilize pedestrian-height pole-mounted fixtures along the green roof pathways that will provide a constant light level at a minimum of 30 Lux.
- 3 Ensure the exterior emergency egress doors and supporting walkways are illuminated.
- 4 At minimum, incorporate CCVE cameras for the following:
 - a General coverage of the plazas and green roof inclusive of seating areas
 - b General coverage of the reception area
 - c Coverage of all facility entrance and egress points
 - d Coverage of bicycle parking areas, if any
 - e General coverage of the exterior loading dock area, loading dock door and employee entrance.
 - f Interior coverage of the loading dock area
 - g General coverage of the substation access gate and exterior equipment
 - h Coverage of the substation access doors
- 5 At minimum, post CCVE signage that meets the requirements of the Information Privacy Commission at the main entry point to the site, at the main entrance to the facility and on the perimeter fence and gate of the substation.
- 6 Ensure 'Restricted Access' signage is placed on the perimeter fence and access gate of the substation.
- 7 Incorporate a vestibule between the loading dock doors and operational area to restrict access to the CHCP building.
- 8 Ensure exterior door hardware is not installed on the emergency egress doors.
- 9 Install door contacts on the emergency egress doors to detect unauthorized access.
- 10 Incorporate anti-skateboard mitigations on the concrete/stone seat walls throughout the exterior of the facility.
- 11 If the Security Room is intended to support the presence of a security resource, redesign the space to support direct visual sightlines to the main entrance.
- 12 Secure and manage access (electronic access control) on the doors accessing Corridor MG-B200 on Level B2, between the day-to-day operational space and chiller and boiler space.

Appendix E – Draft ACPDR Meeting Minutes

Protected A

Protégé A



NATIONAL CAPITAL COMMISSION COMMISSION DE LA CAPITALE NATIONALE

Excerpt of the Minutes of the
Advisory Committee
on Planning, Design and Realty
Meeting of August 25, 2022

Extrait du procès-verbal du
Comité consultatif
de l'urbanisme, du design et de l'immobilier
Séance du 25 août 2022

2022-P262 Energy Services Acquisition
Program (ESAP) – Modernized Gatineau
Energy Centre (MGEC) – Schematic
Design

2022-P262 Programme d'acquisition de
services énergétiques (PASE) – Centre
énergétique modernisé de Gatineau
(CEMG) – Avant-projet sommaire

Members received a presentation on the Energy Services Acquisition Program (ESAP) – Modernized Gatineau Energy Centre (MGEC) – Schematic Design. They provided the following comments:

Community Garden

- Opportunity to expand the garden as a service that could be offered to the population.
- Ensure accessibility from the apartment building to the garden and site.

Movement

- Integration between the sites will be important for both buildings to complement each other and to allow connection to pathways.
- A planning strategy will be fundamental to ensure connectivity to the Printing Bureau and its surroundings and to promote it as a destination.
- Important to increase the use of the site as a means of security.

Les membres assistent à une présentation sur le programme d'acquisition de services énergétiques (PASE) – Centre énergétique modernisé de Gatineau (CEMG) – Avant-projet sommaire. Ils font les commentaires suivants :

Jardin Communautaire

- Opportunité d'agrandir le jardin en tant que service pouvant être offert à la population.
- Assurer une accessibilité de l'immeuble d'appartements au jardin et au site.

Mouvement

- L'intégration entre les sites est importante afin que les deux bâtiments se complètent et permettent une connexion aux sentiers.
- Une stratégie de planification est fondamentale pour assurer une connectivité à l'imprimerie et les environs et de la promouvoir comme destination.
- Important qu'il y ait une utilisation accrue du site, en tant que moyen de sécurité.

2022-P262 Energy Services Acquisition Program (ESAP) – Modernized Gatineau Energy Centre (MGEC) – Schematic Design

- An architectural lighting plan would strengthen this project to favor full-day and all-season use.

Landscape

- Recommendation to use a more stable material (i.e., asphalt) for the path to avoid dust, erosion, and supplementary maintenance.
- Reducing the number of vegetated landforms on the west cross-section, facing the highway would give it a softer appearance.
- Opportunity to incorporate pilot projects within the landscape as an education and learning component on sustainability matters.

Placemaking

- Seating throughout the site should be further studied to allow individuals to remain and enjoy the site.
- Creating cultural and Indigenous placemaking is important.

Plant space

- Opportunity to open the station to visualize and showcase what is underneath. This could serve as a tourism site.
- The substation requires further considerations for better integration into the landscape of the project.

Committee Secretary

2022-P262 Programme d'acquisition de services énergétiques (PASE) – Centre énergétique modernisé de Gatineau (CEMG) – Avant-projet sommaire

- Un plan d'éclairage architectural renforcerait ce projet pour favoriser une utilisation de pleine journée et en toutes saisons.

Aménagement

- Recommandation d'utiliser un matériau plus stable (c'est-à-dire de l'asphalte) pour le sentier afin d'éviter la poussière, l'érosion et l'entretien supplémentaire.
- Réduire le nombre de reliefs végétalisés sur la coupe transversale ouest, face à l'autoroute, lui donnerait une apparence plus douce.
- Possibilité d'intégrer des projets pilotes dans le paysage en tant que composante d'éducation et d'apprentissage sur les questions de durabilité.

Création de lieux

- Les sièges sur l'ensemble du site doivent être étudiés davantage afin de permettre aux gens d'y demeurer et de profiter du site.
- La création de lieux culturels et autochtones est importante.

Espace de la centrale

- Possibilité d'ouvrir la station pour visualiser et mettre en valeur ce qu'il y a en dessous. Cela pourrait servir de site touristique.
- La sous-station nécessite d'être étudié davantage pour offrir une meilleure intégration dans l'aménagement du projet.

Secrétaires des comités

ERIKA DOUAIRE