MOSAIC CENTRE FOR CONSCIOUS COMMUNITY AND COMMERCE - 213180

SCHEMATIC DESIGN REPORT

June 26, 2013 Edmonton, AB

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Schematic Design Report

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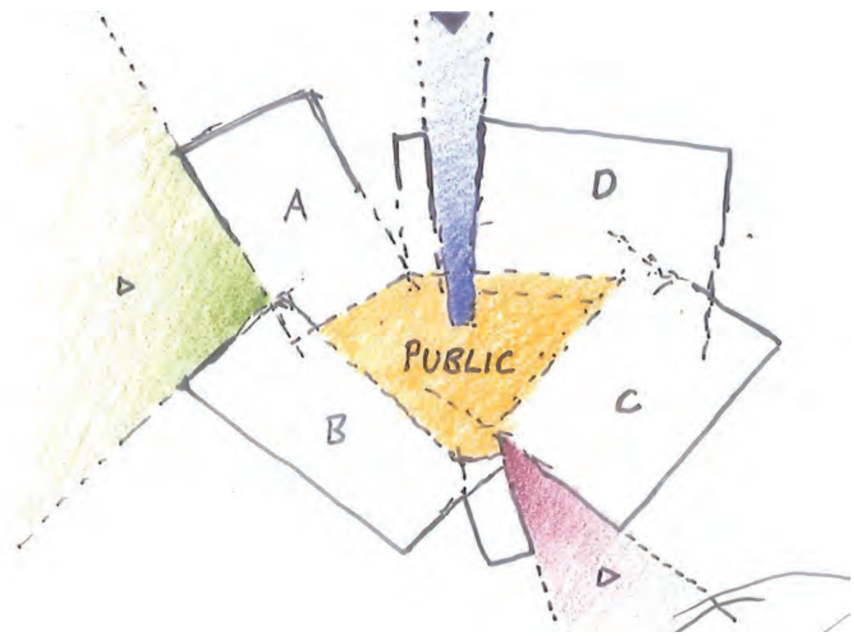
1.0 PROJECT OVERVIEW

The Mosaic Centre for Concious Community and Commerce is to create a bright, comfortable, environmentally sustainable space that promotes a healthy collaborative work environment which resonates with the unique ethos of its occupants that is replicable and inspiring for all.

We'll "Awesomize" it.

1.1 INTENT

The intent of this project is to create a new 30,000 square foot office building for the Mosaic Family of Companies that will also provide accommodation for a childcare facility, a wellness centre and a restaurant. The building is aptly named the Mosaic Centre for Conscious Community & Commerce and hopes to become a community hub that engages local entrepreneurs, small businesses and residential community members to use the building as a gathering place and meeting point.



Work completed to date, includes multiple visioning sessions and charettes with the building end-users, owners and the design team, and has articulated a vision with several key goals:

- To create an ideal workplace for current and future Mosaic employees.
- To role model the Mosaic Vision "A Better Way... By Design."
- To demonstrate that commercial design, construction and operation can be done on standard budgets in an environmentally responsible way without compromising aesthetics.

Oil Country Engineering conducted a "Gemba Run" (survey) to attempt to discover what their employees found desirable in terms of their working environment. Natural lighting, air quality and ergonomics were the main concerns. See Appendices for full Gemba Package.

1.2 SCOPE/PROGRAMME

This project's scope includes the delivery of a building design that will house the various companies that form the Mosaic Family, along with a leasable office space, "the beehive" that will be aimed at local businesses and support facilities, such as a childcare centre, a wellness centre and a restaurant. It is intended that these facilities will be available first to staff of the Mosaic Group of Companies, and then to the residents of Summerside, and workers in the surrounding commercial and business buildings. It is also anticipated that a future Mosaic Building will be created on the site over the next 5-10 years to accommodate the projected growth of the Mosaic Family of Companies.

Phase 1 of the Mosaic Centre is intended to house the following programmes:

- Restaurant/ Café with a Juice/ coffee bar
- Childcare Centre 0-6 yr olds
- Wellness Centre for yoga and other exercise acitivities
- Beehive Open Office Space
- Oil Country Engineering Office Space
- Shared Office Facilities (meeting rooms, copy/print rooms, etc.)

A "Wellness Centre" is among the many programme requirements

The total gross area including all programme elements and base building requirements amounts to no more than 30,000 sq ft/ 2800 m2 . See Appendices for Owner's Programme Requirements.

1.3 STAKEHOLDERS

The pre-design process has revealed the following stakeholders, who will be engaged at different points in the design process to ensure efficient permitting, approval, design, and construction processes:

- Oil Country Engineering end-users
- Mosaic Family of Companies (building owners)
- Local developer that will need to approve development (Carma/Brookfield)
- Summerside residential community
- Businesses adjacent to the 91 Street commercial corridor
- City of Edmonton Sustainable Development / Planning Department
- General Contractor and major sub-trades
- Design Team

SMART start charette with OCE

A wordwall of "wants" from the SMARTStart Charette

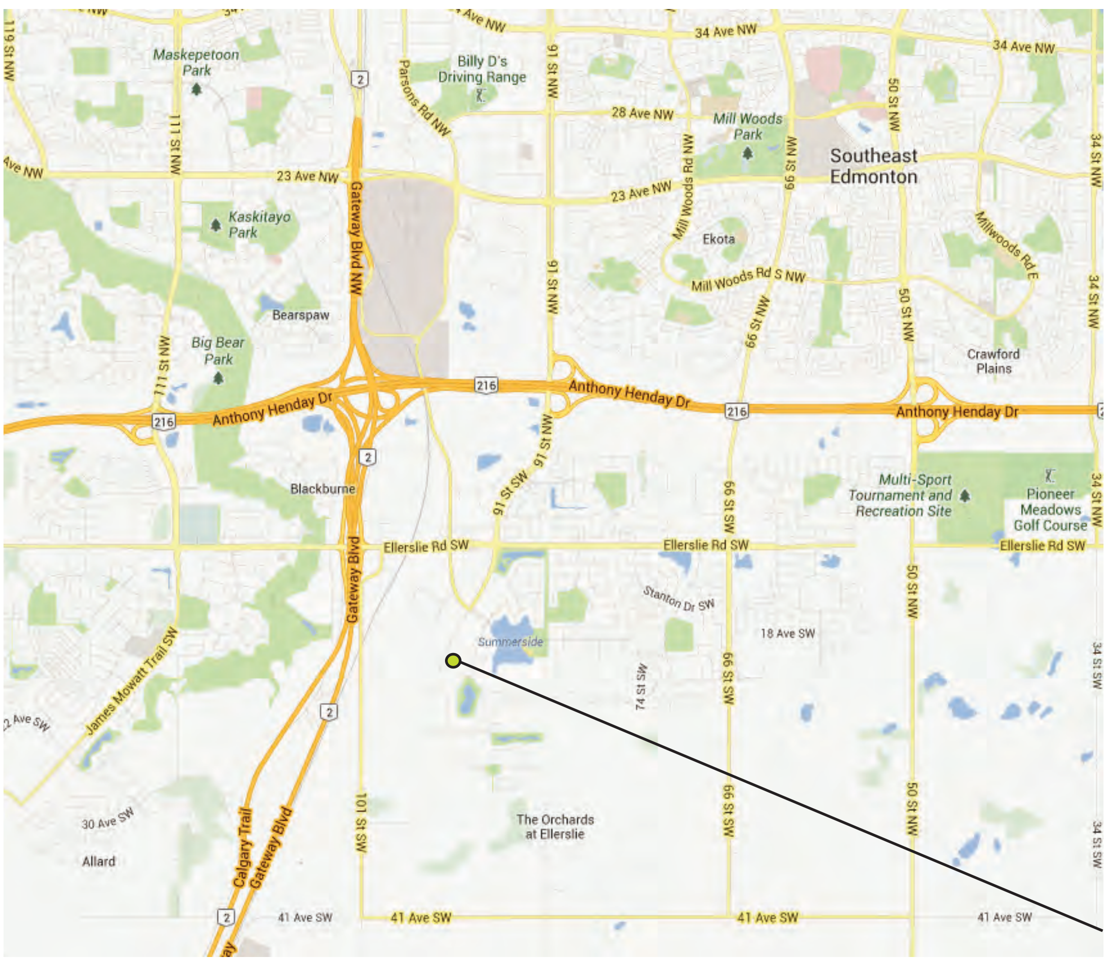
1.4 CHALLENGES AND OPPORTUNITIES

Work thus far revealed a number of key challenges and opportunities:

Exisiting nearby water retention pond

- The childcare program is classified as a B2 occupancy type in the 2006 Alberta Building Code. This will create some fire protection complexities that will require the addition of 2hr fire resistance ratings, fire walls or even a change to non-combustible construction or separation of this programme in a pavillion or out-building.
- The site is very tight for accommodating 120 parking stalls and the new building with a landscape and site amenity. If a second building is built on site, it will require demolition of parking areas and likely require underground or above-grade parking structures.
- Access to the site is likely from the south-east corner. A second right-in/right-out is proposed for the northwest corner. These access points need to be approved by the City of Edmonton's Streets and Transportation department.
- There is an existing stormwater retention pond nearby and the site does not need to store water from storm events on site.
- The original geotechnical report referred to an underground parkade condition and described how this might be used as a foundation. However, the geotechnical report was recently amended to suggest alternate foundation systems including a structural slab on grade or engineered fill is compacted to mitigate settling over time.

View of site from SW Corner



Location of site in South Edmonton

1.5 SITE CONTEXT

The Mosaic Centre for Concious Community and Commerce will be located on the corner of 91 Street and Savaryn Drive. The site is in the Ellerslie Industrial Zone and is adjacent to the newly emerging Summerside Community.

In observing current street patterns it is anticipated there will be a connection from 91 Street to 41 Avenue to the south and Savaryn Road will eventually lead to further commercial/residential development and may connect to 101 Street to the west.

There are existing multi-use trails - one that is immediately west of the site and one that is to the east, hugging the boundary of the residential community. It is anticipated that walking and biking traffic will come east from Savaryn Road and north from 91 Street. There is an existing storm water pond to the south east of the site.

Site as seen on Google Maps showing the Ellerslie area and Gateway Business Park in relation to the Summerside Community

1.6 BUILDING PERFORMANCE STANDARDS

The Mosaic Centre for Conscious Community and Commerce will reference and be informed by the following standards and guidelines:

- Owner's Project Requirements (see appendi)
- National Building Code of Canada (NBCC) 2005
- Alberta Building Code (ABC) 2007
- National Plumbing Code
- Canadian Electrical Code
- National Fire Code of Canada (NFCC)
- Alberta Fire Code
- LEED Canada Reference Guide for New Construction
- Passivehaus Design Standards
- Living Building Challenge

1.7 SCHEDULE

This report completes the Schematic stage of the project.
Further development stages follow:

Phase	Date
Schematic design	June 21 2013
Development Permit Drawings	July 5 2013
Construction documents	August to November 1 2013
Tender/Procurement	November to December 2013
Construction	January 2014 mobilization to May 2015
Commissioning	April to May 2015
Occupancy	May 2015

2.0 PROGRESS TO DATE

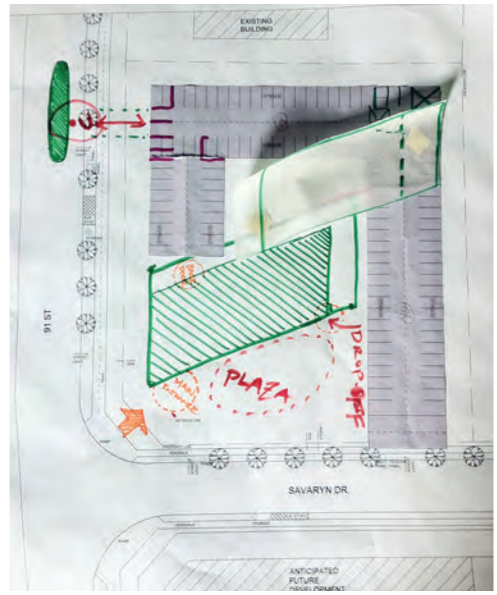
2.1 VISIONING AND STAKEHOLDER ENGAGEMENT

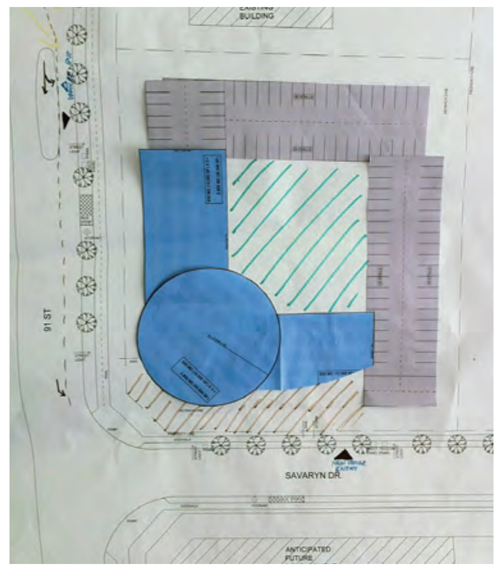
With the intent of developing the information and consensus necessary to inform the Mosaic Centre building design, the main focus of the pre-design phase has been the engagement of project stakeholders. This process is briefly summarized in the table below.

SMART start charette with OCE

Meeting	Date
SMART Start Vision Workshop	April 04 2013
Site Workshop	April 22 2013
Space Planning Workshop	01 May 2013
First Concept	08 May 2013
Living Futures Unconference	15-18 May 2013
Petal Concept Design Review	24 May 2013
Preliminary Energy Modelling	29/30 May 2013
Rectangular Concept Review	4 June 2013
Integrated Design Workshop	14 June 2013


Site visit to Eastgate





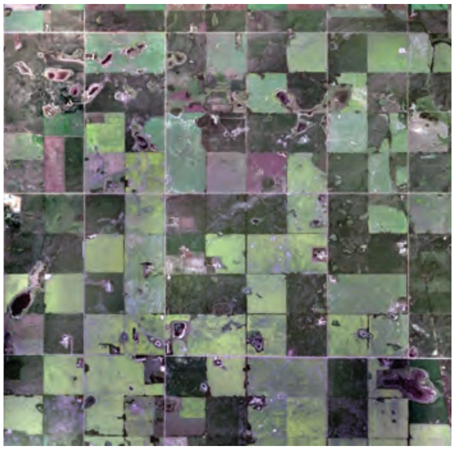
Results from Site Planning Workshop

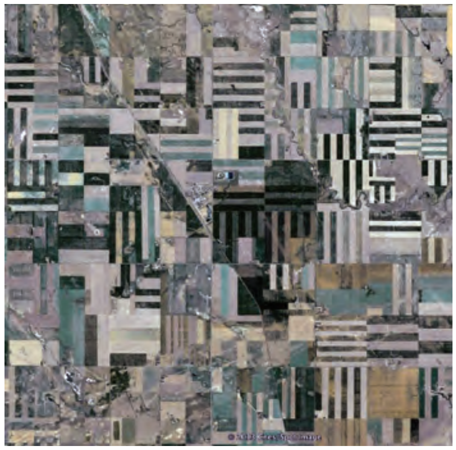
2.2 SITE DEVELOPMENT AND MASSING STRATEGIES

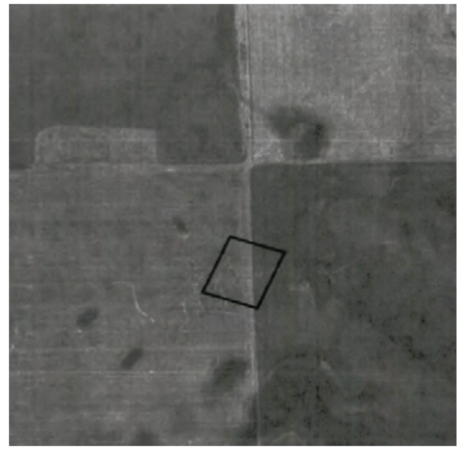
Preliminary site and massing strategies have been developed with the following considerations in mind:

- Placement and orientation of the proposed building to maximize solar gains and natural daylight exposure.
- Anticipated future developments were factored into the sun/shading analysis.
- Creation of a public plaza/park within landscape on the SW corner, to encourage the local community to come to and use the building.
- Vehicular access to site to be placed on the SE corner off Savaryn Drive. Car Park requirements to be facilitated on the north and east of the site behind and beside the building while still allowing for a public plaza to the southeast and integration of landscape design elements.

Initial Conceptual Studies of
the Albertan Landscape

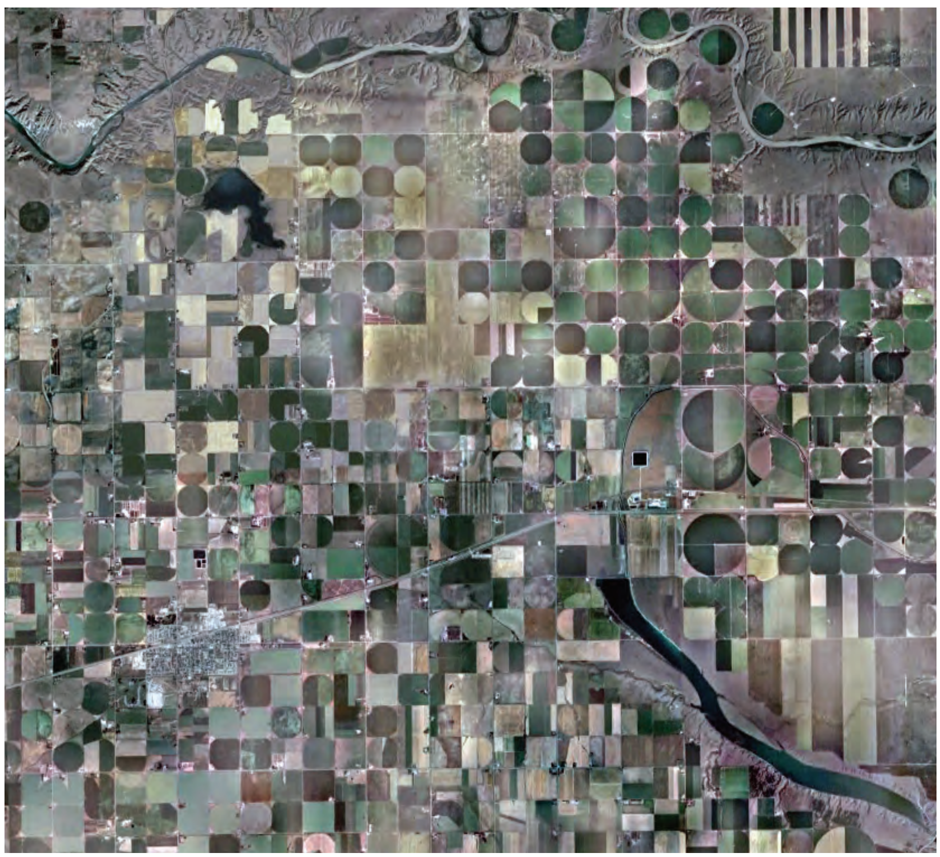

South of Elk Point, AB


South of Vulcan, AB


Aerial photo of site (1962) before
Ellerslie Business Park


South-East of Lethbridge, AB


East of Fort MacLeod, AB

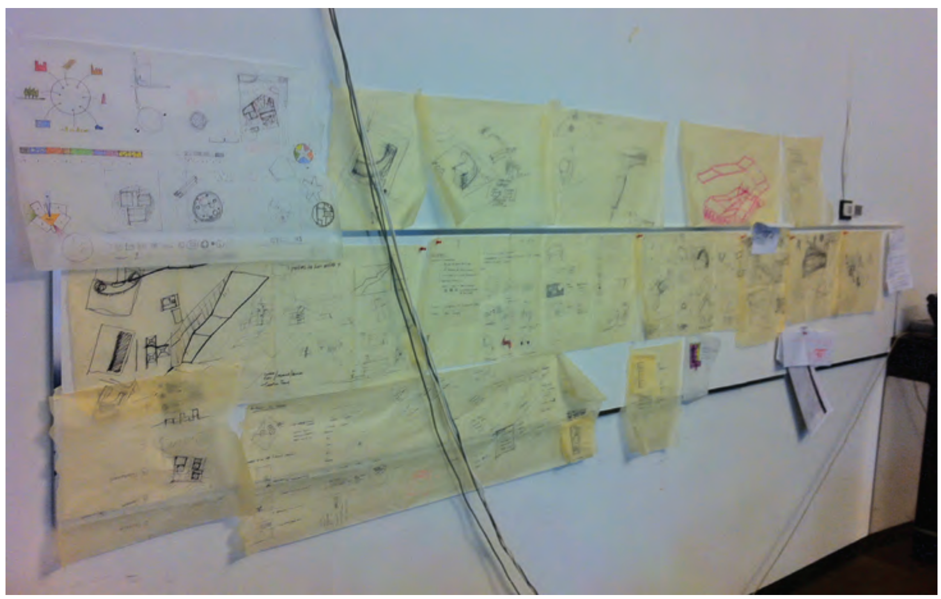

North-East of Lethbridge, AB

3.0 DESIGN/CONCEPT

3.1 GENERAL CONSIDERATIONS

"The idea of space, stands for everything that widens or removes existing limitations and for everything that opens up more possibilities, and is thus the opposite of hermetic, oppressing, awkward, shut up and divided into drawers and partitions, sorted, established, pre-determined and immutable, shut in and made certain.

Space and certainty are strangers. Space is the potential for the new."
- Herman Hertzberger

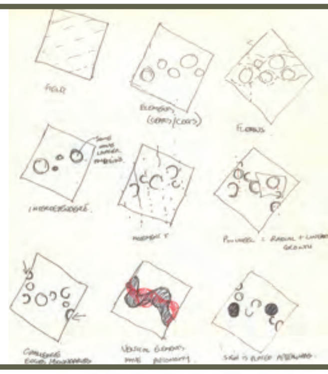


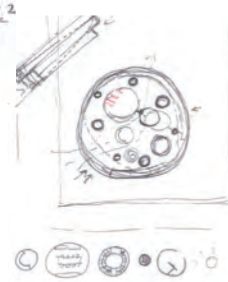
The Client, Mosaic Family of Companies, approached us with a vision for this something "new". They described a business model that had rejected traditional ways of operation in favour of embracing new possibilities, in an attempt to "do business a better way". They had experienced a system, which they described as "broken", and were willing to put their faith in a new future, which they felt would not only benefit their business, but would improve society and the environment as a whole. They were less interested in creating a building, than in creating architecture. In short, they were the ideal clients.

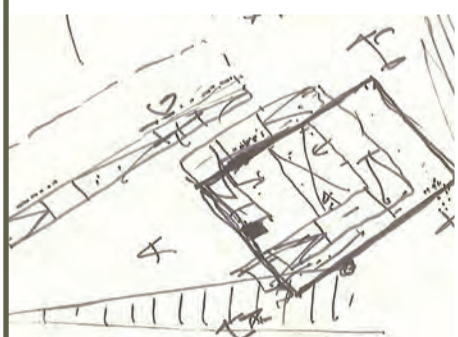
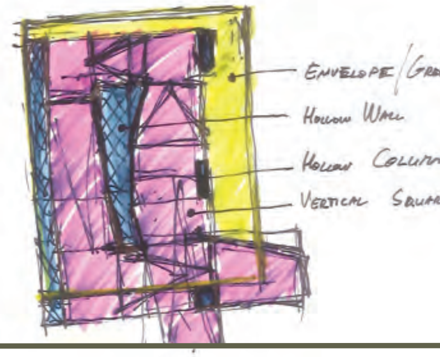
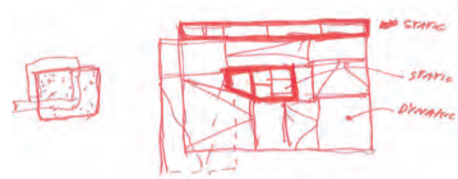
3.2 CONCEPT EXPLORED

It was the intent of the design team from the outset, to discover a new "typology" to realise these idealistic ambitions.

We considered that the design should be a system, a collection of elements, porous, with the capacity to grow, rather than an object, a





Hollow Wall
Hollow Column
Vertical Square

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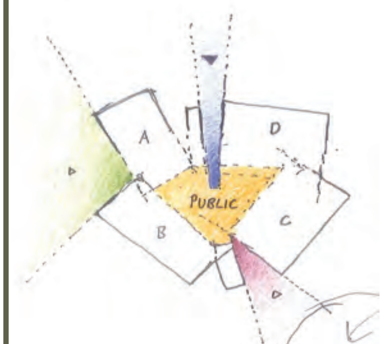
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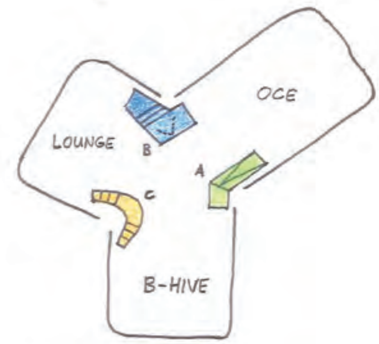
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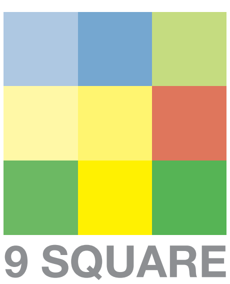
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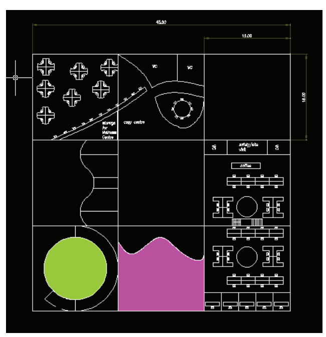
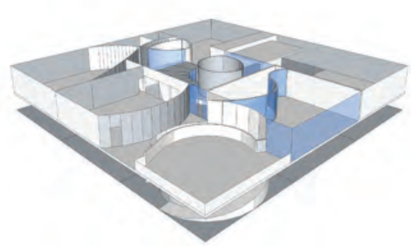
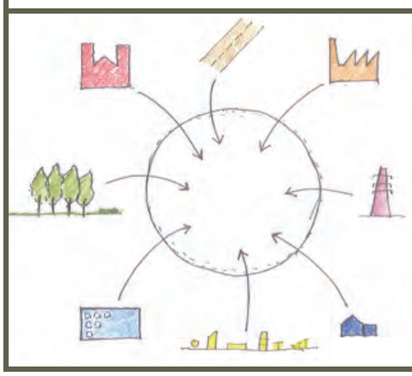
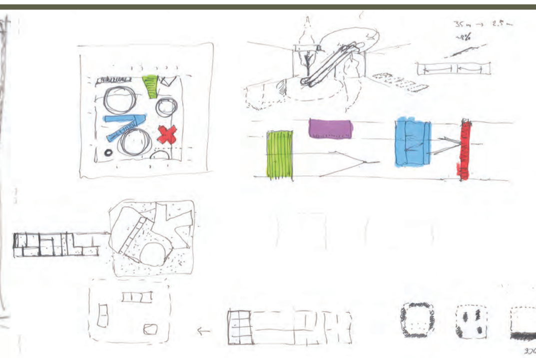
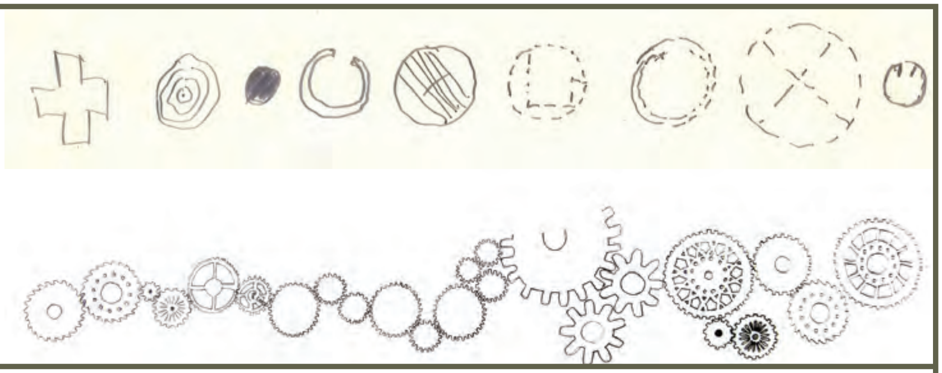
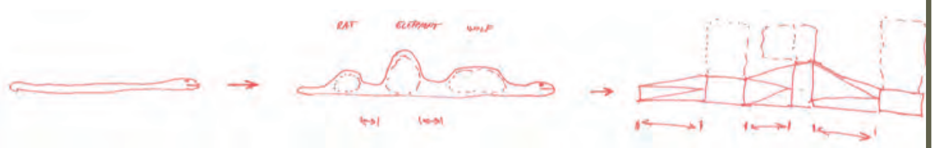




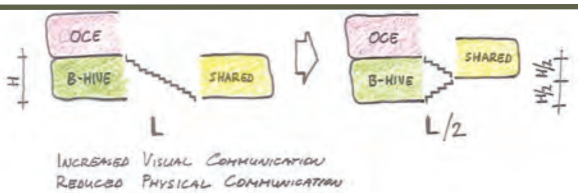
Exploration of Concepts



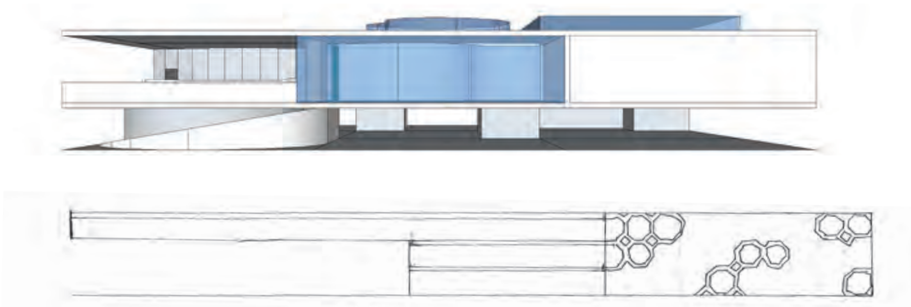
"The Circle"
The programmatic elements of the Mosaic Centre as a series of cogs/gears creating a landscape of interdependent elements.



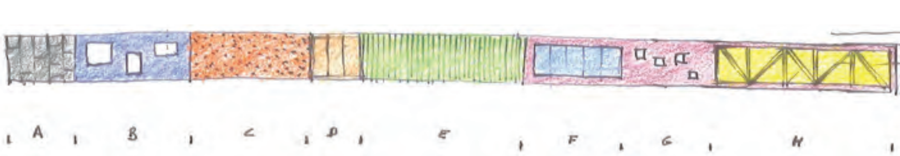
"Vertical Square"
A vertical landscape is created using ramps and platforms along which "dynamic" and "static" programmes are accommodated. The geometry of the ramps and platforms changes depending on the programme.



"In Between Public"
This concept explored the vertical relationships between the programmes placing the public circulation at the heart of the proposal. This "collision" space enhances a connnection between the various elements of the programme.



"9 Square"
This concept combined the programme into 9 "pieces" that hovered over the landscape. The geometry of the floor plans played the curved organic internal layout against the absolute geometry of the "square". Elevations were also exoplored such as a "honeycomb" facade on the "Beehive".



"House City"
This concept examined the urban landscape, where all the elements of a city, industry, public amenities, parks, housing are all inter-connected and interdependent, and the in-between space becomes a highly valuable collision space.

mass, a hermetic form. We felt that realising the design as a biological system, provided an opportunity to see the project as "sustaining life", with light, air, water and spatial systems creating a connective tissue along which programme needs would be met and energy requirements would be achieved. The design would create an interdependence between the disparate elements of the programme.

We began by looking at the landscape, before it became Ellerslie Business Park, and saw that it was part of this formal grided landscape that now defines the prairie in Alberta. This square networked landscape was created by the first Western settlers as a reaction to what they previously had experienced as a "broken system" in Europe. It is an equitable, unified system that has the capacity to adapt to the climatic conditions of its location as well as the agricultural needs of its users.

We also examined the urban landscape, where all the elements of a city, industry, public amenities, parks, housing are all inter-connected and interdependent, and the in-between space becomes a highly valuable collision space. The geometry of the spaces were also deemed as highly desirable to the client, particularly organic ones such as, the "flower of life" or the Fibonacci Series.

3.3 CONCEPT DEVELOPED

Concept [noun]
; something conceived in the mind
; thought, notion
; an abstract or generic idea generalized from particular instances

The development of the concept was important to the design team, as it provides an enduring framework against which all subsequent decisions are based. The complex and often contradictory nature of the programme, coupled with the demands of Net Zero Energy, required a sound architectural concept.

As sustainability was at the heart of the design, the orientation of the building and form needed attention to maximise the capacity to achieve net zero energy. Scenarios modelling future development in the business park, revealed the optimum position for the building in terms of maximising solar gains.

As future involvement from the adjacent Summerside community was to be encouraged, we considered a "public square" on the South West corner of the site an important design consideration.

3.4 EMERGENT DESIGN

Initial designs attempted to grapple with the large parking requirements by elevating the building over the car-park area, however this approach proved too costly.

On attending the Living Building Conference in Seattle, the Client wanted the project to encompass the ideals of the Living Building Challenge.

The design approach used the idea of petals to mass the 3 categories of programme together around a circular atrium. The highly public, public and private elements of the programme were accommodated in these 3 volumes. The heights between the volumes were varied both to create interest and to express the relationships between the programmes. The design also attempted to reduce the paths of travel throughout as well as eliminate corridors.

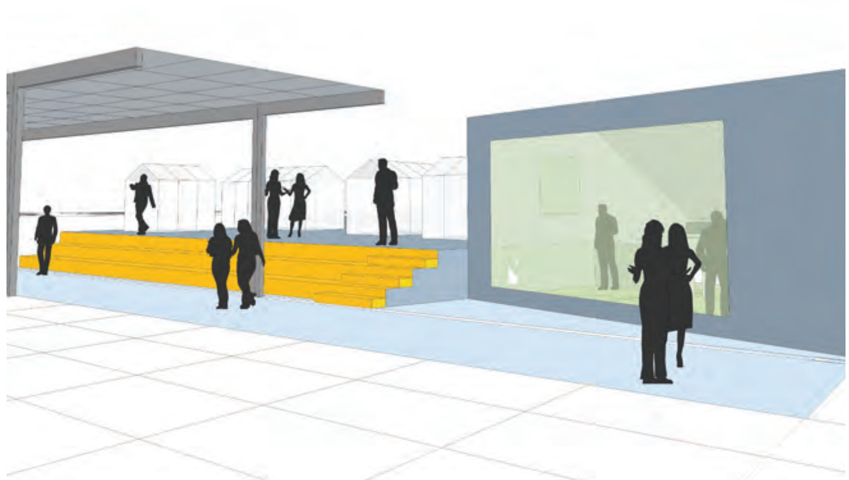
Although this design performed relatively well in the energy analysis, cost still remained an issue. The next realisation of the project was an attempt to simplify the "petal" concept into a rectangular volume, while still retaining its character and intent.

"In-Between Public", proposes a 3 storey building and a 2 storey building with a central highly-charged atrium. Again each programme is afforded its own level and circulation throughout the building occurs on the stairs/bleacher seating. These elements bridge both wings of the building to provide a visually arresting "collision space".

The idea was and continues to be driven by the energy modelling and daylighting analysis to ensure it maximises to effort to achieve net zero.

Conceptual Exploration of Design

South East corner of proposal



View of Roof Terrace

Internal Views of “Collision Space”

3.5 MATERIALS

A wide range of materials were considered for this project according to certain criteria such as sustainable qualities, affordability and aesthetic qualities, and a desired materials palette was created as shown in adjacent table.

Carbonized/ Charred Wood
This process of burning wood renders it nearly maintenance free and makes it resistant to fire, rot and pests. Siding created by this method also has an expected life span of more than 80 years, thanks to a protective layer created by carbon released during burning.

Carbonized/Charred Wood

PV Panels
The technology employed in photovoltaic (PV) systems is well-developed and there are improvements and modifications occurring regularly, primarily in production processes. The systems are quite reliable and have been well tested. The primary obstacle to increased use of photovoltaic systems is their high initial cost. Continuous price reductions have been occurring.

Glass Panels
Glass Panels were considered due to their aesthetic qualities and low maintenance.

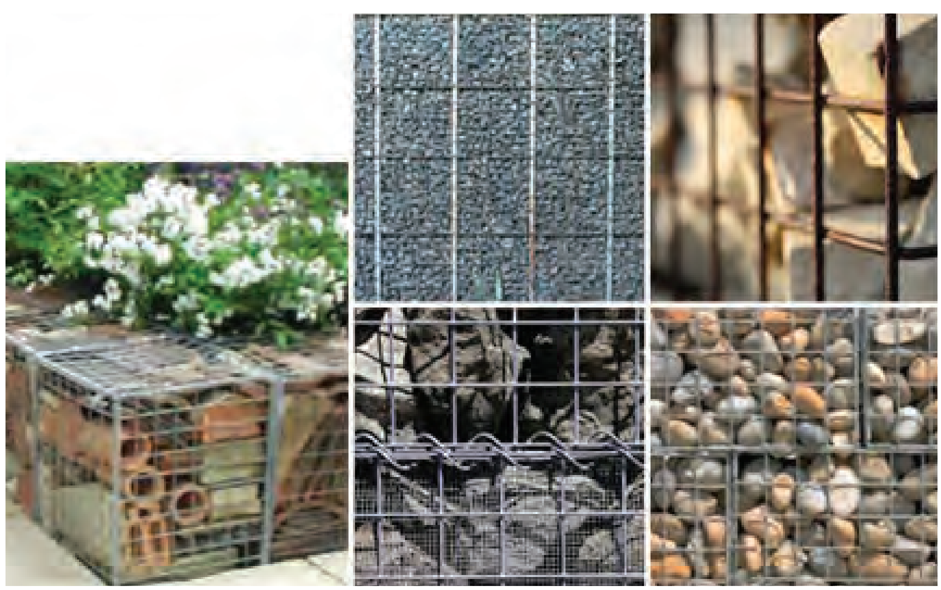
Hardie Boards
Hardie boards are an inexpensive readily available, high performance external cladding made from fibrous cement that come in a variety of colours.

Gabion Walls
A gabion wall is a retaining wall

Material	Local Materiality	Durablity	Low Maintenance	Innovative	$	Embodied Energy	Performance	Re-purposing	Aesthetic
Carbonized Wood	+	+	+	+	$	+	+	+	+
PV Panels	-	+	+	+	$	-	+	-	+
Glass Panels	+	+	+	-	$$	-	+	+	+
Hardie Boards	-	+	+	-	$	-	+	-	-
Gabion	+	+/-	+	+	$$	+	+	+	+
Kalwall	-	+	+	+	$$	+	-	+	+
Curtain Wall	+	+	+	-	$$$	+	+	+	+

made of stacked stone-filled gabions (baskets), tied together with wire. They can be filled with rocks, stones, bricks and even recycled materials. In this proposal the gabion wall will be considered as a cladding.

Kalwall
Kalwall's primary element is a structural composite sandwich panel formed by permanently bonding fiberglass-reinforced translucent faces to a grid core, constructed of structural aluminum/composite, thermally broken "I" beams.

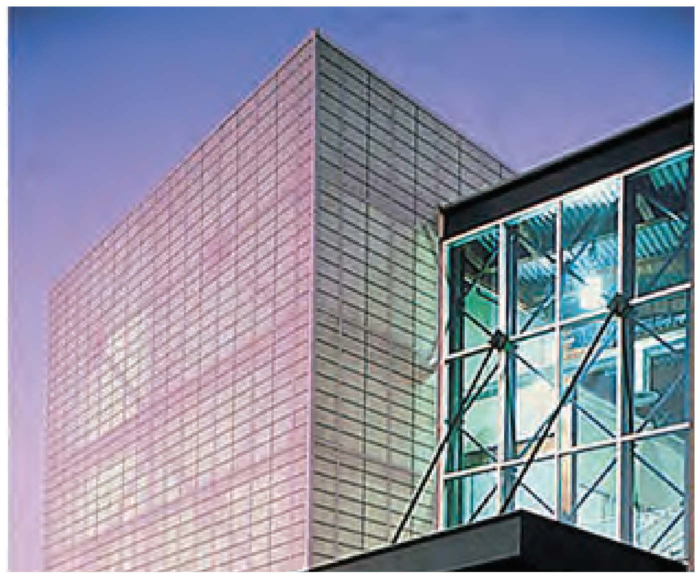


Gabion Wall

Glass Panels

Hardie Panels

PV Panels



Kalwall

Curtain Wall

Curtain Wall

This is an exterior envelope consisting of high performance glass. Although it is expensive, again it fulfills the clients desire for a greater connection to the outdoors, and allows the majority of the space to be naturally day-lit. When paired with high performance glass, curtain-wall can achieve a good thermal performance.

4.0 CIVIL SITE CONSIDERATIONS

4.1 GENERAL CONSIDERATIONS

The Site is located in the Summerside district of Edmonton in the north east quadrant of the intersection of 91 Street SW and Savaryn Drive. The Legal lot description is Lot 47, Block 1, Plan 072 9580.
The site is in a newly constructed subdivision and rises slightly from an elevation of 693.25 along the property lines to 693.8 at the north east corner of the site.

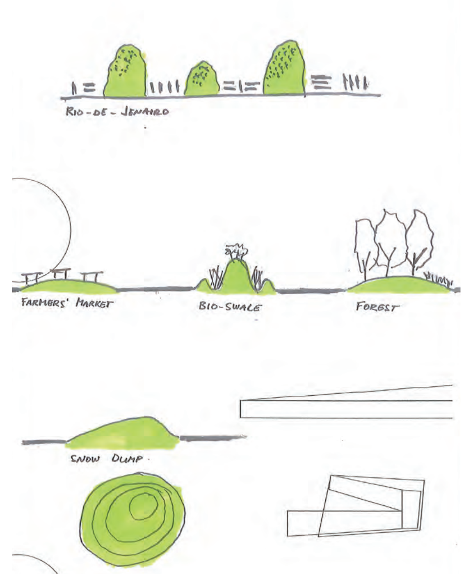
A Geotechnical Report was prepared for the site by Shelby Engineering Ltd. And it indicates that the site has a layer of medium plastic clay fill extending to depths ranging from 2.3 to 5.3m Below Ground level. The Clay fill was placed on native glaciolacusterine clay with depths ranging from 4.5 to 7.5 m below ground elevation. Clay till underlies the glaciolacustrine clay to depths ranging from 9.5 to 10.5m below ground level. Bedrock comprised of clay shale underlies the clay till. Groundwater measurements at 23 days after drilling indicate water levels of 2.3 to 8.1m below ground level.

Site Access
It is expected that the main, all directional, site access will be off of Savaryn Drive. A right-in right-out access will be required on 91 Street.

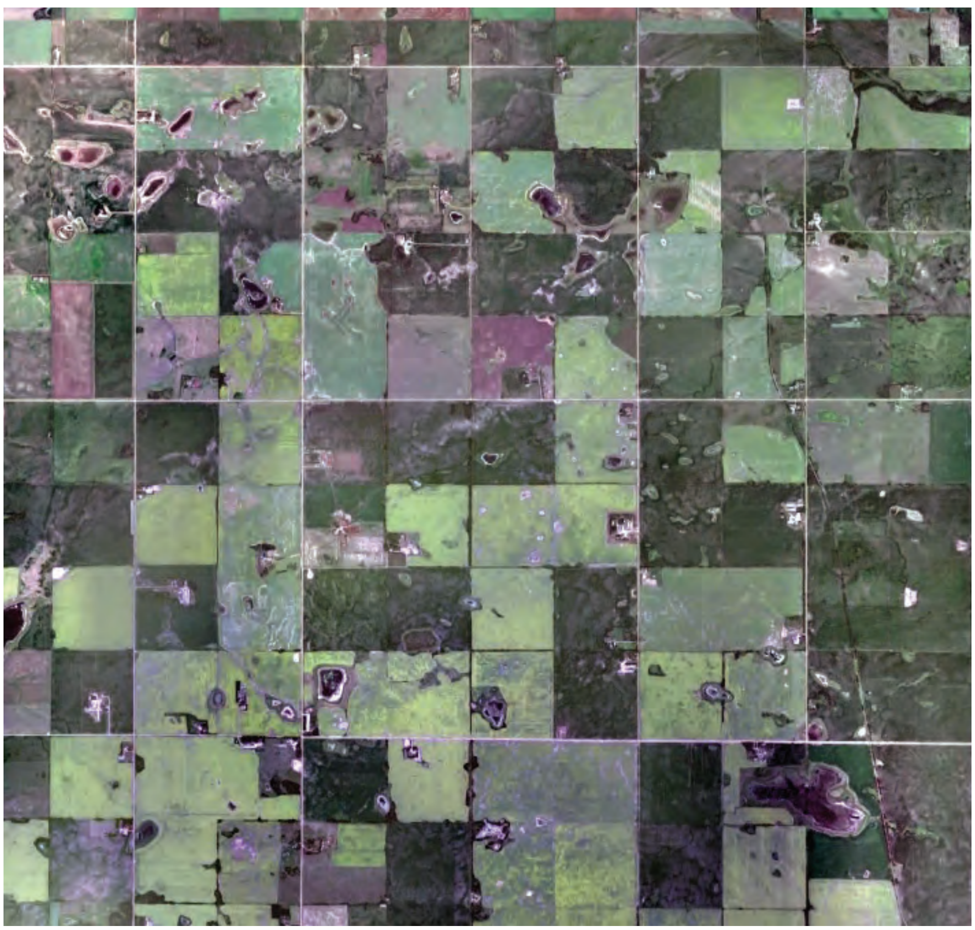
Site Servicing
The site is provided with a 150 mm potable water, 200 mm sanitary and 300 mm storm sewer service from City mains.

Site Grading and Storm Water Management
The site does not require storm water management, 1:5 year flows are to be directed to the storm sewer service. Flows in excess of the 1:5 year flow are to be directed to the street and will then flow to the storm water pond.

Site Considerations
The site development envisions a sunken outdoor play space. Drainage from this area is a concern because of the limited depth of the storm sewer connection. Special consideration will be required when designing the drainage from this area.



Sketch showing sculpted landscape



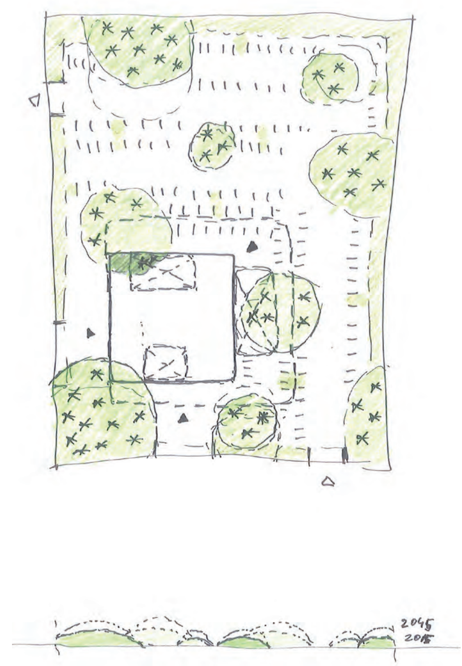
4.3 LANDSCAPING

Borrowing from landscape urbanism and inspired by the idea of a mosaic, a unique opportunity exists to imagine a synthesis of human and natural ecology through the exploration of a geometry which can accommodate present and (to the best of our ability) future use within the Mosaic Centre landscape.

Typically, key determinants of site planning and design quality on this type of site are dominated by vehicular geometry, parking demands and maintenance requirements. However, there is a significant opportunity to explore, even within these constraints, improved design (through high quality materials and thoughtful landscaping), Low Impact Development (LID), and ultimately, the blurring of the pedestrian and vehicular zones to create a multi-dimensional public realm very atypical of our built environment.

A key component of this geometry is the tree canopy, which defines space and contributes to human comfort and ecological function. While it must respond to parking constraints, there is an opportunity to imagine a more rigorous pattern of trees across the site which can organize and integrate present outdoor functions (eg. daycare spaces and plaza areas) and accommodate future needs.

The other key component is the network of bioswales, rain gardens and similar LID elements which collect, convey and harvest stormwater – to minimize the impact on the environment and urban infrastructure, and at the same time create an amenity for building users.



Sketch showing landscape as part of building concept

Improved design of existing typology + Low Impact Development + Blurring of pedestrian and vehicular realm = A glimpse of the possible

5.0 SUSTAINABLE STRATEGIES AND PRELIMINARY ENERGY ANALYSIS

5.1 SUSTAINABLE DESIGN STRATEGIES

Alvaar Alto once recounted an anecdote about an insurance agent, who received a call from a client in a state of complete panic. His house had been severely damaged in a storm. In an attempt to calm him down, the agent asked: “Sir, just tell me whether the house is still standing, yes or no.” To which the stricken victim replied: “Yes, the house itself is still standing, but all the architecture has blown away.”

In empathy with the sentiment of this story, the design team were adamant that the sustainability of this project should not be “blown away.” Undertaking this project required the design to embrace sustainable building principles in an integrated and holistic sense, and not use green technology as appendages, after-thoughts, but as an integral part of the design.

Living Building Challenge Requirements

Likewise it was strongly felt that the integrity of the architectural design itself affords a long term sustainability that the mutable nature of technology is incapable of. The pursuit of net zero energy demands an exhaustive effort in 2013. It will be because of this enormous effort expended now, that in the near future, net zero energy will become the standard norm of building practices. Technology will improve, knowledge will increase and net zero will be achieved with a minimum of effort and equipment.

In such a scenario, what is to become of this project? It is the belief of the design team that it is the architectural integrity of the building that will ensure its future and justify the effort and embedded energy spent in pursuit of a sustainable approach to construction.

From the beginning it was considered highly beneficial to the design process to harness the collective wisdom and expertise of the stakeholders, and the consultants in an integrated team approach. Workshops and charettes collected valuable information early on which proved essential to the design.

Other strategies employed to achieve the Living Building and potentially LEED certification, and to ensure that the project conforms to the Mosaic group's commitment to incorporating sustainable design principles into its facilities, come from several sources: the Owner's Project Requirements, along with the help of the Living Future Institute's community of resources and people.

Chief among the sustainable strategies being employed will be the minimization of the building's energy use through the provision of high-performance building envelope, minimal mechanical and electrical systems, that together form an integrated response to the building's physical environment. This proven strategy addresses the owner's requirements and forms the core of the design team's approach to the creation of a sustainable building.

As net zero energy is immense part of the programme energy modelling early on was an extremely valuable exercise in ensuring that the design remained on track with regard to its energy requirements. Modelling occured almost at the conceptual level of the design.

5.2 SUSTAINABLE DESIGN REQUIREMENTS

The Mosaic group has specified the achievement of the “Living Building Challenge Petal Certification” and Net Zero Energy Certification as a requirement for this project. The Mosaic Centre will also aim for LEED Platinum Certification. This separate certification will consider only the LEED credits that are logical and cost effective to achieve.

The design aims to attempt at least 3 petals in the Living Building Challenge:

Energy

One hundred percent of the project’s energy needs must be supplied by on--site renewable energy on a net annual basis.

Equity

Human Scale: The project must be designed to create human scaled rather than automobile scaled places.

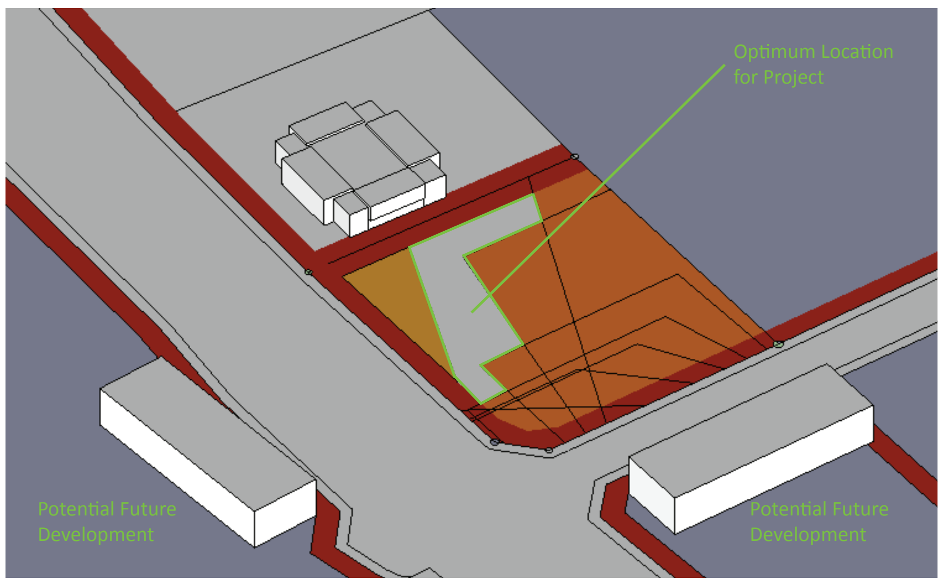
Democracy and Social Justice: Access for those with physical disabilities must be safeguarded through design.

Rights to Nature: The project may not block access to, nor diminish the quality of fresh air, sunlight and natural waterways for any member of society or adjacent developments.

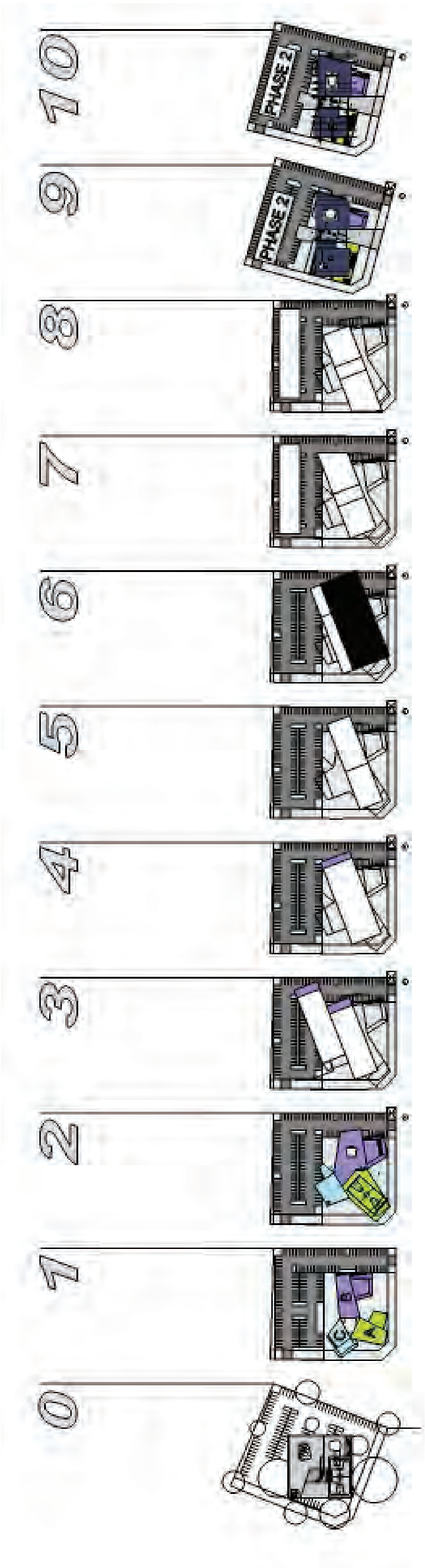
Beauty

Beauty and Spirit: The project must contain design features intended solely for human delight and the celebration of culture, spirit and place appropriate to its function.

Inspiration and Education: Educational materials about the operation and performance of the project must be provided to the public to share successful solutions and to motivate others to make change.



Sun/Shade studies of site and potential future developments



Evolution of the design informed by the energy modelling

5.3 PRELIMINARY ENERGY ANALYSIS

Work began following preliminary meetings in 2012 and the feasibility of achieving Passive House and/or Net Zero Energy performance with a development like the Mosaic Center was investigated. In early March, a basic floor plan & programme had been developed, working around a 60ft x 170ft, 14ft floor: floor, three storey building.

An energy model of this design was generated in IES<VE> and preliminary occupant profiles and loads were developed using ASHRAE standards, summarized in Table 1. The building was then outfitted with numerous envelope designs and performance levels, seeking the limits of energy conservation through building envelope design. Ventilation was assumed to have 95% effective temperature heat recovery for all designs.

This early analysis showed that when pushing envelope efficiency and passive solar design to the upper limits, which is the typical residential approach to reaching Passive House and/or Net Zero Energy design, the building's internal gains are dominant and counterproductive (see Table 2). The already excessive and inefficient lighting and equipment levels of typical office buildings commonly cause overheating throughout the year, causing an annually cooling dominant building, even in our extremely cold climate.

Table 1: 2013.03.11 Prelim Mosaic Center internal loads summary.

Mosaic Center of Awesomeness - Building Occupancy Loads							
	Area	#Occupants	Metabolic Gain [kW]	Peak Equip. Gain [kW]	Peak Lighting Gain [kW]	Vent Exhaust Rate [CFM]	Vent Supply Rate [CFM]
Main Floor Total	10866 ft2	185 p	2.9 kW	6.1 kW	9.2 kW	977 CFM	3420 CFM
2nd Floor Total	10539 ft2	45 p	0.5 kW	4.6 kW	9.1 kW	400 CFM	911 CFM
3rd Floor Total	10539 ft2	45 p	0.7 kW	6.6 kW	8.9 kW	400 CFM	1469 CFM
Whole Building Total	31943 ft2	275 p	4.1 kW	17.3 kW	27.2 kW	1777 CFM	5801 CFM

Table 2: 2013.03.11 - Annual performance summary of the preliminary Mosaic Center design outfitted with very high performance envelope and passive solar design (Run#3). Envelope includes: R30/R50/R70 on slab/walls/roof, 20%/15%/0% glazing ratios on South/East&West/North, R10 with low SHGC glass. ASH_3 refers to ASHRAE Heat Balance load calculations, AP_3 refers to dynamic annual simulation. Mechanical COP's assumed to be 1.

Run	Peak Heating Load	Peak Cooling Load	Annual Heat Demand	Annual Cooling Demand	Annual Lighting Energy Demand	Annual Equipment Demand	Annual Total Energy Demand	Annual Demand Intensity
ASH_3	213 kW	81 kW						
AP_3	46 kW	70 kW	53443 kWh	81496 kWh	106419 kWh	78448 kWh	319806 kWh	108 kWh/m2

Annual PV Generation Potential	+137 000kWh
(10 000ft2 roof area, flat mount, mid-range panel efficiency, 141kW peak)	
Annual Building Demand	-320 000kWh
Percentage to NZE	43%

To improve performance, we looked to reduce internal loads through aggressive daylighting design, leading edge lighting fixtures, and virtualized workstations. The client also requested more glazing, to improve the occupant's connection with the outdoors. Through case study review, we set the aggressive target of reducing the building's lighting energy demand by 75%.

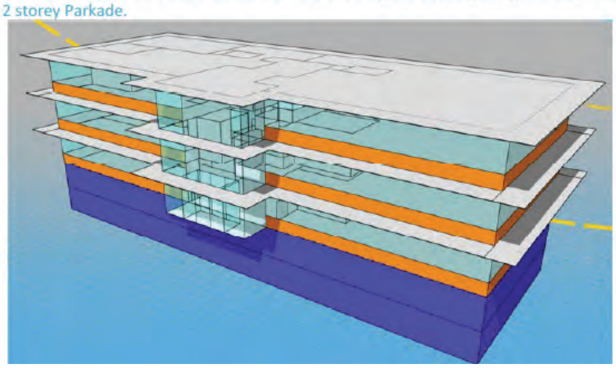
Assuming that this could be met, the model was updated with larger glass areas (57% on all facades), higher performance glazing to compensate, optimized solar shades were added on all sides, a two level Parkade was added, and the data center heat gains were rejected into the Parkade year round. The improved performance of this design is summarized in Table 3, and a screenshot of the IES model is shown in Figure 4.

Table 3: 2013.03.14 – Annual performance summary of the further optimized Mosaic Center design with 75% reduced lighting loads, improved passive solar design, and improved usage of data center heat production. Envelope includes: R30/R50/R70 on slab/walls/roof, 57% glazing ratio typ, R20 with low SHGC glass. ASH_15 refers to ASHRAE Heat Balance load calculations, AP_15 refers to dynamic annual simulation. Mechanical COP's assumed to be 1.

Run	Peak Heating Load	Peak Cooling Load	Annual Heat Demand	Annual Cooling Demand	Annual Lighting Energy Demand	Annual Equipment Demand	Annual Total Energy Demand	Annual Demand Intensity
ASH_15	218 kW	75 kW						
AP_15	44 kW	63 kW	59000 kWh	26300 kWh	45500 kWh	78448 kWh	209248 kWh	70 kWh/m2
Parkade	0 kW	0 kW	0 kWh	0 kWh	19021 kWh	0 kWh	19021 kWh	6 kWh/m2
Just BLD	44 kW	63 kW	59000 kWh	26300 kWh	26479 kWh	78448 kWh	190227 kWh	64 kWh/m2

For the first project Charrette, held on March 15, this design work was presented along with the then-current best performing model, including discrete windows and mechanical COP's typical of a Variable Refrigerant Volume (VRV) heating & cooling system. This performance and appearance are shown in Table 4 and Figure 5. By reducing lighting loads by 75%, virtualizing workstations and centralizing their loads to a central datacenter which rejects heat into the Parkade, and further envelope optimization, the design became heating dominant, with 52% reduced annual energy demand.

Figure 4: 2013.03.14 – Screenshot of Mosaic Center run#15, showing increased glazing area, optimized solar shading, and addition of a 2 storey Parkade.



Post-Charrette #1, Manasc Isaac began the process of conceptual design and programming development through work with the Oil Country Engineering employees. During the Charrette, the proposed underground Parkade was taken off the table due to cost. We took advantage of this break to refine the modeling approach and add daylighting into the calculations. Through case studies and expert feedback, we determined that the typical ASHRAE office lighting level could be reduced from 1W/ft2 down to 0.5W/ft2 through LED fixture usage and task-specific lighting level design. We updated the pre-Charrette IES model to include this reduced lighting level as well as

activated the RadianceIES daylight simulation module to test our target of 75% overall lighting demand. The results, shown in Table 5, indicate an overall lighting energy reduction of 62%; a good start.

Table 5: 2013.05.20 - Annual performance summary of the Charrette #1 Mosaic Center design with 0.5W/ft2 lighting. Daylighting simulation included, and no Parkade. Envelope includes: R30/R50/R70 on slab/walls/roof, 50% glazing ratio typ. R20 with low SHGC glass. ASH_19 refers to ASHRAE Heat Balance load calculations, DOFF_3 refers to dynamic annual simulation without daylight, DON_3 refers to dynamic annual simulation WITH daylighting effects included on lighting. Mechanical COP's assumed to be 1. Daylight allows lights to dim linearly from 100%-20% as sensor reads daylight from 5fc-50fc.

Run	Peak Heating Load	Peak Cooling Load	Annual Heat Demand	Annual Cooling Demand	Annual Lighting Energy Demand	Annual Equipment Demand	Annual Total Energy Demand	Annual Demand Intensity
ASH_19	212 kW	67 kW						
DOFF_3	43 kW	58 kW	50070 kWh	28174 kWh	59373 kWh	78448 kWh	216065 kWh	80 kWh/m2
DON_3	43 kW	46 kW	60530 kWh	14986 kWh	22750 kWh	78448 kWh	176714 kWh	66 kWh/m2
% Diff	0%	21%	-21%	47%	62%	0%	18%	18%

By Charrette #2, on May 24, the architecture team had developed a preliminary 'Petal' design, which we modeled for comparison with our earlier work. With the same envelope & internal profiles as Table 5, the first Petal design's approximate performance is shown in Table 6. Compared to the original box design, the preliminary Petal geometry was more effective at collecting daylight, but also more prone to overheating.

Without mechanical system efficiencies, the Petal design would consume more energy annually than the box, however with high cooling COP's, the difference between the two designs was considerably less. This perspective as expressed by our team during the Charrette. The major difference between the two early designs was the larger envelope surface area of the Petal, especially glazing, which could have considerable cost implications.

During the week of May 27th, we spent considerable time in-house at Manasc Isaac, working with the architectural team to vet the performance of a number of conceptual geometric building designs. Realizing that any preliminary model can be refined & optimized for improved performance, our goal was to help the group develop a conceptual design that was well-suited to meeting the Net Zero Energy design goal as cost-effectively as possible, while meeting the rest of the project requirements. At your request, the Petal design was shelved due to cost reasons, and designs with reduced surface area were investigated, including the original 3 storey box, a 2 storey box, a 2-3 storey bi-level split with East-West light well, and a 2-3 bi-level split with a North-South light well. The comparative performance of these designs is shown in Table 7. The bi-level designs are shown in Figures 6 & 7.

Table 6: 2013.05.24 – Annual performance summary of the first 'Petal' design with 0.5W/ft2 lighting, Daylighting simulation included, and no Parkade. Envelope includes: R30/R50/R70 on slab/walls/roof, 50% glazing ratio typ, R20 with low SHGC glass. ASH_18 refers to ASHRAE Heat Balance load calculations, DOFF_2 refers to dynamic annual simulation without daylight, DON_2 refers to dynamic annual simulation WITH daylighting effects included on lighting. Mechanical COP's assumed to be 1. Daylight allows lights to dim linearly from 100%-20% as sensor reads daylight from 5fc-50fc.

Run	Peak Heating Load	Peak Cooling Load	Annual Heat Demand	Annual Cooling Demand	Annual Lighting Energy Demand	Annual Equipment Demand	Annual Total Energy Demand	Annual Demand Intensity
ASH_18	237 kW	100 kW						
DOFF_2	48 kW	86 kW	48870 kWh	61000 kWh	61400 kWh	78448 kWh	249718 kWh	93 kWh/m2
DON_2	48 kW	75 kW	60087 kWh	42360 kWh	17600 kWh	78448 kWh	198495 kWh	74 kWh/m2
% Diff	0%	13%	-23%	31%	71%	0%	21%	20%

Table 7: 2013.05.31 – Estimated annual performance summary of 5 different conceptual geometries. Envelope performance & internal loads kept constant in all cases, to show effect of geometry on performance.

Description	Run	Peak Heating Load	Peak Cooling Load	Annual Heat Demand	Annual Cooling Demand	Annual Lighting Energy Demand	Annual Combined Demand
3 Storey Box, 60'x170'	ASH_25	157 kW	154 kW				
	AP_25	50 kW	130 kW	21564 kWh	161150 kWh	19675 kWh	202389 kWh
2 Storey Box, 75'x200'	ASH_26	153 kW	135 kW				
	AP_26	50 kW	112 kW	27390 kWh	125690 kWh	23655 kWh	176735 kWh
Petal Design	ASH_29	138 kW	148 kW				
	AP_29	50 kW	126 kW	27455 kWh	162470 kWh	17880 kWh	207805 kWh
North/South Bi-level	ASH_24	170 kW	169 kW				
	AP_24	58 kW	147 kW	42100 kWh	169628 kWh	24025 kWh	235753 kWh
East/West Bi-level	ASH_28	152 kW	143 kW				
	AP_28	50 kW	120 kW	26985 kWh	143953 kWh	23423 kWh	194361 kWh

Figure 6: Screenshot of North/South Bi-Level conceptual design, viewed from SE. Footprint of 100ft x 150ft.

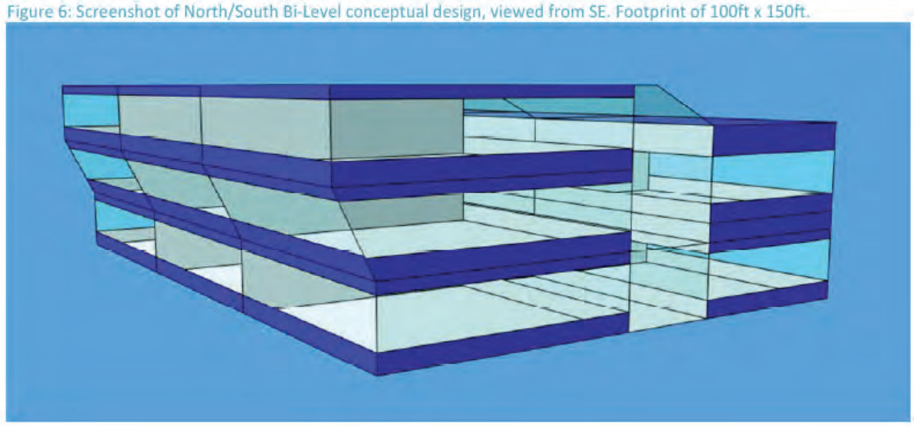
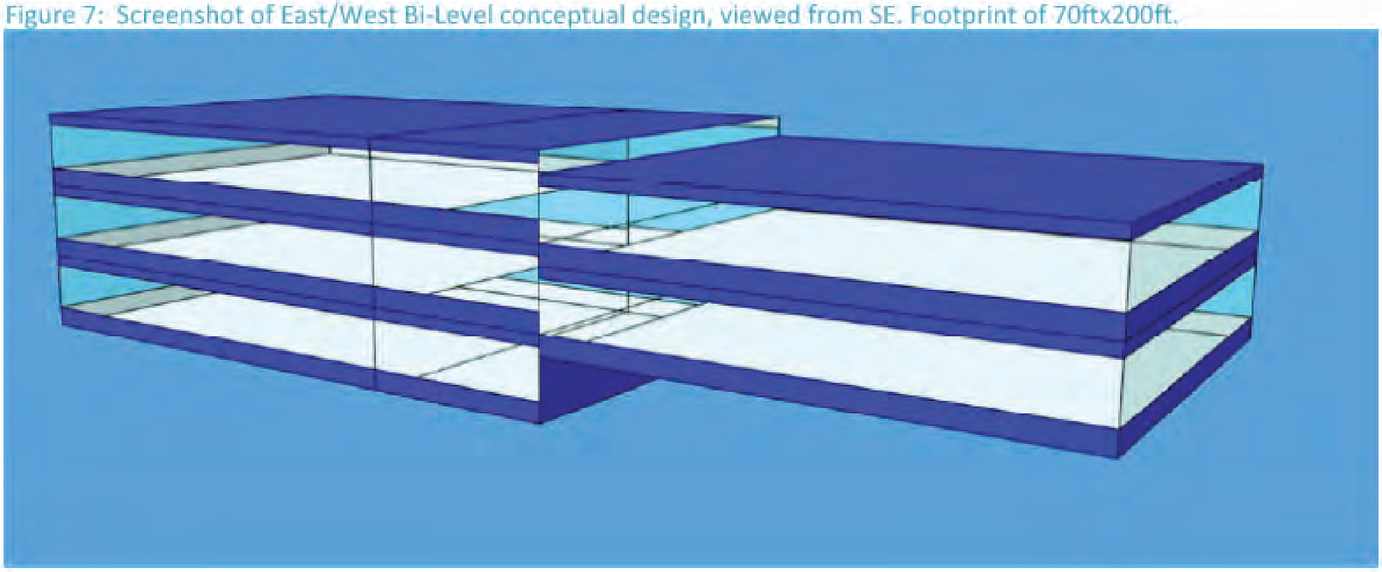


Figure 7: Screenshot of East/West Bi-Level conceptual design, viewed from SE. Footprint of 70ftx200ft.



Examples of Glulam Heavy Timber Construction

6.0 STRUCTURAL DESIGN STRATEGIES

6.1 GENERAL

The proposed new Mosaic Centre for Conscious Community and Commerce in Edmonton will be a 2 and 3-storey heavy timber structure supported on a concrete slab and piles.

In general, the goal is to develop economical structural solutions with opportunities for sustainable design. This will be achieved by use of renewable recourses including timber elements with careful attention to detail where the structure may be exposed.

6.2 DESIGN ASSUMPTIONS

The building will be designed for the following load conditions as required by the 2006 edition of the Alberta Building Code:

1.2.1 Snow loads

- S_s = 1.7 kPa
- Sr = 0.1 kPa

+ snow accumulation where appropriate

1.2.2 Live loads

- Main Floor Load = 4.8 kPa (includes 1.0kPa partition allowance)
- Office Floor Load = 2.4 kPa
- Assembly Areas = 4.8 kPa

1.2.3 Seismic

- Sa (0.2) = 0.095 g
- Sa (0.5) = 0.057 g
- Sa (1.0) = 0.026 g
- Sa(2.0) = 0.008 g
- PGA = 0.036 g

1.2.4 Wind

- q 1/10 = 0.35 kPa
- q 1/50 = 0.45 kPa

1.2.5 Importance Category

- Normal

6.3 FOUNDATIONS

Preliminary foundation design was based on the September 2012 geotechnical report prepared by Shelby Engineering.

- Based on the column spacing, concrete belled end piles are recommended. A factored bearing capacity of 600kPa is provided for bells extending into bedrock. Belled ends are to extend approximately 11 to 12m below grade.
- Moderate sulfate soils are present so concrete mixes for all concrete in contact with soils will need to meet durability requirements (S-2 classification assumed).

A suspended concrete slab placed on void form will be cast for the main floor. The thickness of the slab will be dependent on the pile spacing but will most likely be 250 to 300mm thick.

All concrete and foundation elements will incorporate a high content of flyash into the concrete mix design to help achieve sustainability goals

6.4 SUPERSTRUCTURE

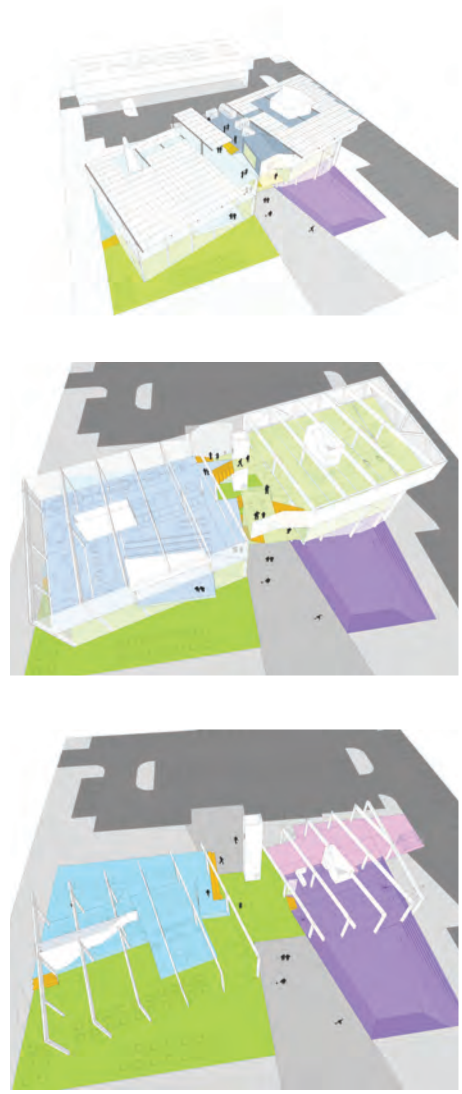
The building is a 2 storey structure and a 3 storey structure interconnected by an elevator and a series of bridges and stairs. In order to achieve architectural and sustainability objectives, a heavy timber framing system will be utilized for the primary floor and roof framing. Framing at the west 2 storey structure:

- Exposed solid wood flooring will be supported on a series of glulam beams and columns at the second floor and roof level. A concrete topping will be added at the second floor level.
- The majority of the roof will be covered by photovoltaic panels. A secondary steel support frame will be required below the panels.

Framing at the east 3 storey structure:

- Exposed solid wood flooring will be supported on a series of glulam beams and columns at the second floor, third floor, and roof level. A concrete topping will be added at the second and third floors.
- At the north, south and east perimeter of the third storey, an exposed heavy timber truss will be used to support the cantilever of the floor at the east side.
- The majority of the roof will be covered by photovoltaic panels. A secondary steel support frame will be required below the panels.

The main entry will feature a full height atrium space with an elevator and bridges connecting the 2 structures. A heavy timber structure will be used for the elevator. The stairs will be a mix of steel and timber framing. The primary means of lateral support for the building will consist of a series of steel braced frames in both directions.



Proposed Wooden Structure

7.0 ELECTRICAL DESIGN STRATEGIES

7.1 GENERAL

The following information is provided as the electrical portion of the Scope report for the Mosaic Center for Conscious Community and Commerce. The information contained in this report represents the electrical consultant's interpretation of the information provided to date by the client and the architect.

The electrical design will conform to the latest versions of the Canadian Electrical Code, Alberta Building code and any other applicable codes.Electrical systems and equipment will be designed and specified to be energy conscious, with ease of operation and maintenance, reliable, and flexible, while keeping in mind the possibility for future modifications.

7.2 SITE SERVICES

The building is expected to be fed by an exterior utility transformer located on the West side of the building. The electrical distribution will be designed to handle the loads of the building that is being designed. If a future/second building is created on site, a separate transformer and electrical service will be required. It would be cost prohibitive to allow for the first building to connect and provide power to a second building or a large future addition.

LED pole mounted site lighting will be designed with time clock/daylight controller to meet minimum light levels; the majority of the site lighting will be accomplished by building mounted lighting. The site lighting will follow IESNA standards for light level as well as maximum and minimum ratios. The Electrical consultant's design will ensure that the light level around the building will be such as not to disturb the adjacent buildings, but provide adequate light to address any visual and safety concerns. No car park receptacles will be included. No generator will be required for this site. All site lighting is to be "Dark-Sky" compliant with full cut-off fixture and down light only.

LED Site Lighting

7.3 POWER DISTRIBUTION

Utility transformer will likely come from the West side of the site and therefor the electrical room will be located on the main floor close to the incoming service. The service provided to the facility may be 600V depending on mechanical equipment efficiencies. 120/208V distribution panels will be located throughout the building as required, separating different spaces (Wellness, restaurant...) as identified by the architect with separate panels. The electrical distribution will be designed to handle the loads of the building that is being designed. There has been no indication that the service is required to be designed for future building additions. There is no need for a UPS system tied to a distribution system.

High efficiency transformers will be used in order to contribute to the sustainable design of the building. All panels and distribution throughout the building will be designed with 20% spare capacity to allow for future expansion. The entire building's wiring will be placed in rigid conduit and run within ceiling spaces where possible. All wiring will be copper, minimum #12AWG.

7.4 LIGHTING SYSTEMS

Direct/Indirect dimmable lighting

Open Office: direct/indirect lighting will be provided down egress paths to a 150lux lighting level. Each fixture will be supplied with a built in motion and daylight sensor and dimmable ballast. Central low voltage lighting control will not be included in this space. Minimal lighting will be provided in workstation areas in order to reduce building energy requirements. Day lighting and task lights will be utilized where possible to achieve proper workstation light levels.

Meeting area: all meeting spaces will be provided with direct/indirect dimmable lighting fixtures at the center of the table, with dimmable pot lights around the perimeter of the meeting rooms. Central low voltage lighting control will not be included in this space.

Restaurant: the space will be provided with 2x recessed LED fixtures in the kitchen space with a 500lux lighting level. The restaurant area will be looked at with further input from the client.

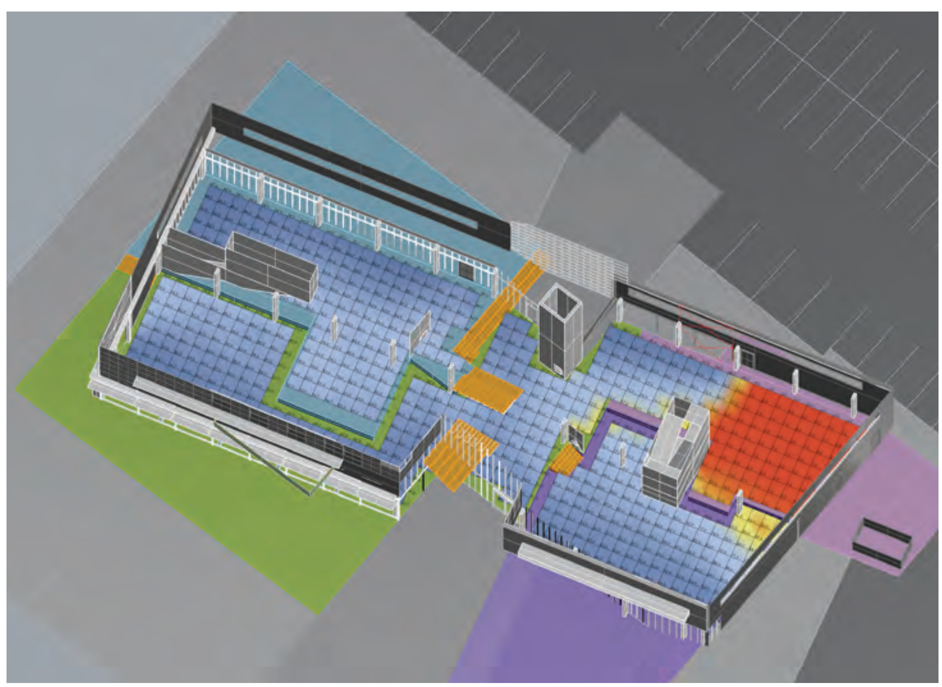
Daycare: The space will be designed with recessed direct LED lighting with a general light level of 300lux. Motion and daylight will be provided through the space but will not have centralized low voltage lighting controls.

LED Task Lighting

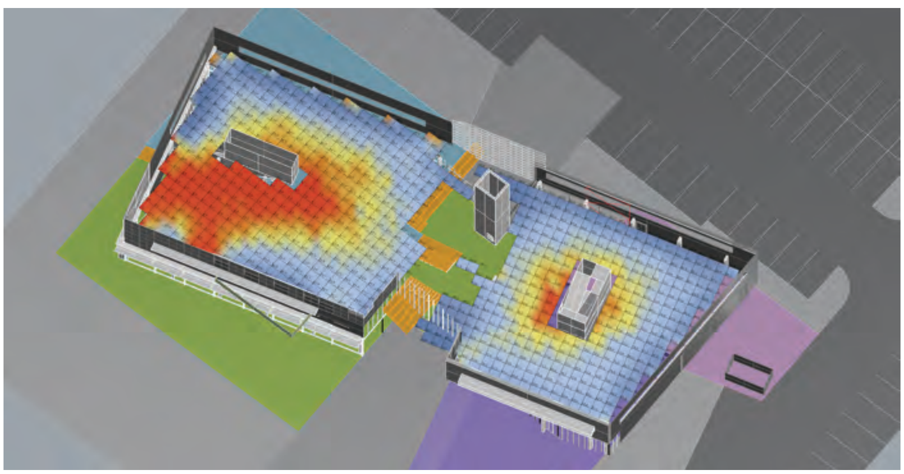
Workout/wellness/rental offices: all these space will be designed will appropriate light levels are further discussed with the client and tenants. LED fixtures with individual motion and daylight sensors and dimming will likely continue to be used within these spaces.

Washroom spaces: Washroom areas will be designed at a 200 lux lighting level. Specific fixture type and lighting strategy for this space will be discussed with the client later on in the construction document process.

Exit signage and emergency lighting will be designed to code with the NBC acceptable green running man throughout the building. Emergency lighting will be provided within all corridors serving as an egress path, within congregational spaces such as boardrooms, services spaces including mechanical and IT & Electric rooms and all stair shafts. Emergency lighting will be accomplished with the use of battery pack remote heads.



Daylight Autonomy Model



Daylight Autonomy Model

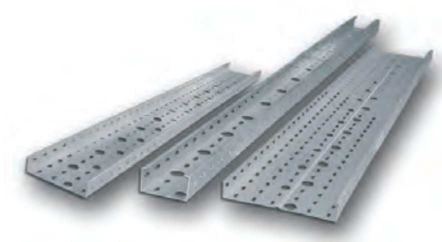
7.5 COMMUNICATION SYSTEMS

Cable tray will be provided throughout the building to allow future renovation, for all horizontal cabling. Category 6A horizontal cabling will be utilized to meet the high bandwidth requirements of the client and will be provided from the communication backboard in the communication room to each workstation location. Cabling will be run in conduit in walls and closed ceilings and in a cable tray within the accessible and open ceiling spaces.

The telephone system will utilize VoIP (Voice over Internet Protocol) technology in addition to power over Ethernet. This technology will also be used in the design of the public address system.

A single communication room located central on the main or second floor will be used to serve the entire building. Design, specification and layout of the equipment within this space will be provided by the client during the construction document process.

All cables within the building will be tied and tested from the furniture to patch panels located in each of the telecommunication rooms.



Cable trays

7.6 FIRE ALARM SYSTEMS

An addressable fire alarm system will be provided to meet all relevant codes. There will be smoke detectors within each Mechanical and IT & Electric room, at the top of the stair shaft and the elevator shaft. Heat detectors will be provided throughout the facility to meet current code requirements. All initiating signals will be sent to the FACP (Fire Alarm Control Panel) located within the main entrance vestibule.

Sprinkler requirements have not been provided at this stage and will be worked out during the construction document process by the mechanical engineering team. Horn and strobe locations will be determined by ambient noise levels anticipated in the building. The fire alarm will also be tied to the security doors to allow for proper evacuation.

7.7 PUBLIC ADDRESS

A complete public address system will be provided in the building, allowing general paging throughout the facility for key locations identified during the construction documents phase of design. There will be separate zones within workout, daycare and each separate space as required by the client during the construction document process.

The PA system will utilize VoIP technology to incorporate voice paging and additional features as specified by the owner. The system will include an amplifier located in the communication room, ceiling mounted speakers for office areas and horn speakers for outdoor notifications.

7.8 CARD ACCESS SYSTEM

A programmable card access system will be provided to control access into the new building, and likely to separate areas within the building to be determined during the construction document process. The access system will include multi technology card readers and security panel. It is our intent to provide a complete system including conduit wiring and devices with proper instruction by the manufacturer to allow the owner to program, alter, and maintain the system at a later date. The building access system will also be tied to the fire alarm to allow for proper evacuation during an emergency.

7.9 MONITORING

The buildings electrical loads will be monitored throughout the building down to the individual plug loads through a power bar at each work station. A preliminary calculation by the client has allotted 20W per work station which includes task lighting, work station computer and receptacle for charging phone etc. Work incentives will be provided by the owner to control usage rate and promote sustainability.

Card Access System

7.10 AUDIO VISUAL

An audio visual system will be provided in the new building within meeting spaces. Specific requirements will be worked out during the construction document process.

LED displays will be used on the outside of certain meeting rooms to indicate occupancy. These displays will also be utilized in booking meeting rooms and other spaces as indicated by the owner further along in the construction document process.

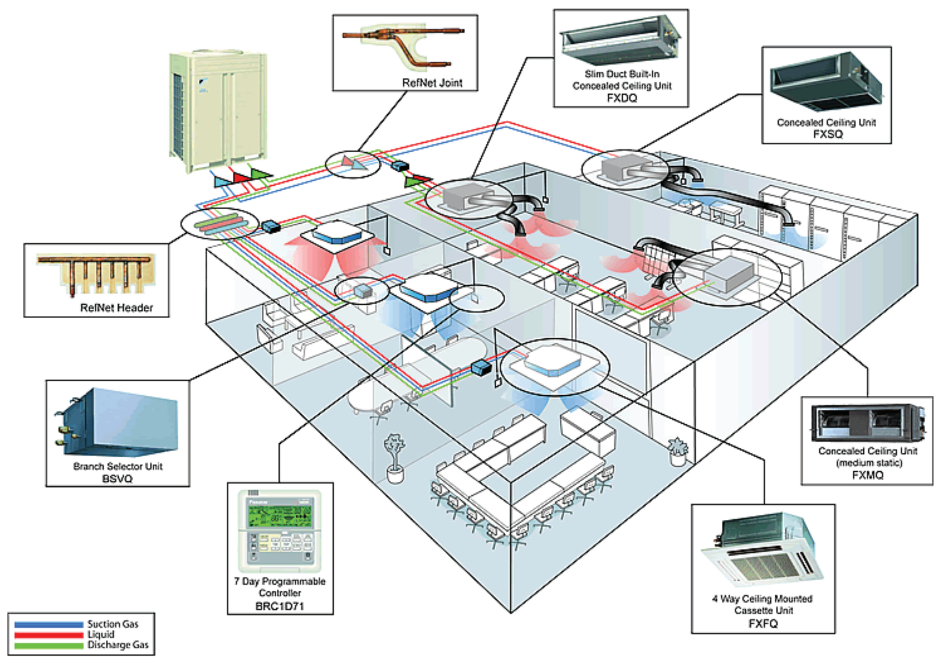
LED TV

7.11 LIGHTNING PROTECTION

The entire building, including roof top equipment, will be provided with a lightning protection system unless otherwise indicated by the client.

8.0 MECHANICAL DESIGN STRATEGIES

Heating, ventilation, and air-conditioning requirements for the facility will be minimized through building geometry and orientation, the use of high performance building envelope design, targeted shading, and a reduction of interior loads. It is also anticipated that a broader envelope for occupant comfort will be tolerated in order to permit more flexibility in the operation of the mechanical systems. Carbon neutral thermal energy systems will be preferred where possible.



VRF - HR System

8.1 VENTILATION

The ventilation load for the facility will be in the 2,000 lps to 2,500 lps range. Natural ventilation will be permitted when ambient conditions are suitable through the use of manually operable perimeter window and powered louvres or awnings in the upper atrium area. Dual-core reversing air-to-air heat exchangers will be provided to extract contaminated air from washrooms, and service area, along with providing general common area exhaust as needed. Tempered supply air form these units will be directed into the occupied spaces as needed to meet the ventilation air quality requirements for each space.

The heat recovery ventilation system will include a heat exchanger by-pass mode of operation that will permit ambient air free cooling of the ventilation air when conditions are suitable. It could also allow for a small amount of manual or automated nighttime purge cycle. An evaporative cooling cell in the exhaust air stream could be used in the summer months to pre-cool the fresh air using indirect evaporative cooling when it is too warm for ambient air free cooling.

8.2 HEATING AND COOLING

Two options for thermal control within the facility are being investigated. The first would be a thermal floor system that uses plastic water piping embedded in a concrete floor. The second system would be a Heat Recovery Variable Refrigerant Flow VRF-HR system that uses direct expansion fan coils units distributed throughout the building.

Thermal Floor Conditioning
The thermal storage capacity of the concrete floors can allow for peak load shifting, and provide the opportunity to use this system in association with alternative cooling sources such as night-time ambient cooling, evaporative cooling system, and air or ground source heatpumps. Tempered water flows through plastic piping embedded in the concrete. The thermal mass acts to stabilize the space temperatures, but control response of this system is limited. Surface temperatures for cooling must be limited to ensure that condensation does not form on the surfaces of the floor assembly and to avoid uncomfortable conditions. The cooling effect of the system is therefore somewhat limited.

Through control of the flow sequencing in the embedded piping, low grade energy transfer between zones is possible. The warming of spaces with a higher thermal load can be reduced by cycling the circulation pumps to achieve a balance with rooms with a lower thermal load. In order to take advantage of these load variations effectively, rate-of-change controllers are needed. Zoning systems for simultaneous heating and cooling can become cumbersome.

Ceiling Mounted VRF Cassette

Although the core heating and cooling system can operate very efficiently, it is unlikely that the comfort cooling requirements for the building can be completely satisfies using this system alone. Additional air-conditioning of areas with high heat gains would be required.

Heat Recovery Variable Refrigerant Flow

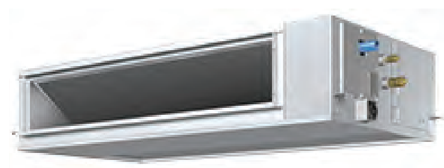
Variable refrigerant flow (VRF), also referred to as variable refrigerant volume (VRV) is an air-condition system configuration that uses a single outdoor condensing unit serving multiple indoor evaporator units. The term variable refrigerant flow refers to the ability of the system to control the volume of refrigerant flowing to the evaporators. This allows the use of a number of evaporators with different capacities and configurations on a single condensing circuit. The arrangement provides an individualized comfort control, with an option of allowing simultaneous heating and cooling in different zones.

VRF systems are essentially an extension of the concept of the ductless split air conditioning systems that operate on the direct expansion (DX) principle. This means that heat is transferred to or from the space directly by circulating refrigerant to evaporators located near or within the conditioned space.

In its simplest form, the ductless split air-conditioning system has a single indoor fan coil evaporator unit connected via refrigeration piping to a condensing unit, normally mounted outside. The indoor unit draws heat from the space, the outdoor unit rejects that heat to the atmosphere.

Multi-split systems are also available that have a single condensing unit that can accommodate a number of indoor fan coil units. Applications for these systems are generally limited to single thermal zone applications. They do not have the ability for individual zone control and usually cycle on and off in response to thermostat control for the entire system.

Variable refrigerant flow systems are similar to the multi-split systems, but the VRF system allows continuous adjustment of the refrigerant flow to each indoor evaporator. The control is achieved through the use of a microprocessor controlled pulse modulating valve (PMV) that opens in response to a signal from the thermistor sensors in each indoor unit. The indoor units are linked by control wiring to the outdoor unit which responds to the demand from the indoor units by varying its compressor speed to match the total

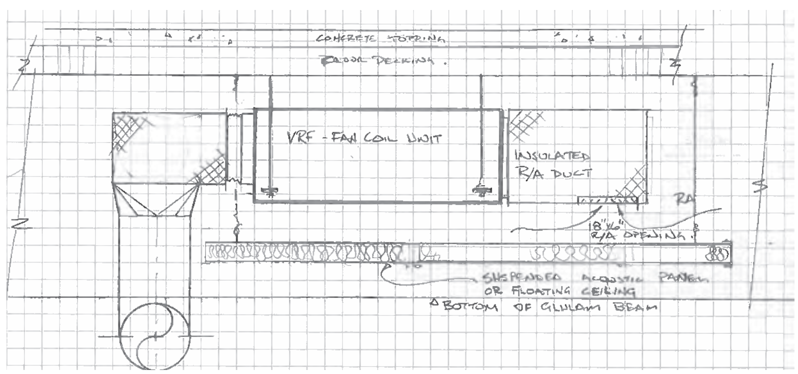


VRF Ducted Fancoil

cooling and/or heating requirements as determined by the suction gas pressure at the condensing unit. The compressors are inverter-driven scroll compressors that allow significant capacity control.

Heat recovery variable refrigerant flow systems (VRF-HR) provide the capability to operate fan coils associated with a single outdoor unit simultaneously in heating and/or cooling mode, enabling heat drawn out of one space to be used in another rather than rejected outdoors. The system can then operate in balanced, net heating, or net cooling mode.

VRF-HR system can have significant efficiency benefits when simultaneous heating and cooling are taking place within a single system, effectively adding the efficiency rating of the portion of the system in heating mode to the efficiency of the system when running in cooling only. For this reason, VRF-HR systems are most beneficial when there is a need for some of the spaces to be cooled and some of them to be heated during the same period. This often occurs in the winter in medium-sized to large sized buildings with a substantial core and with significant perimeter exposures.



Possible Fancoil Arrangement

8.3 PRIMARY HEATING

Although the heating requirement for the building will be low, there will be a need to augment the heating in the building during the most severe winter time conditions. It is anticipated that the peak heating load could be in the order of 160kW. Heatpumps, either air-source or ground-coupled, could be a viable option for providing heating. The peak electrical input required for the heatpumps would be about 35-45 kWs with additional electric heating required for the air-source heat pumps during the coldest days.

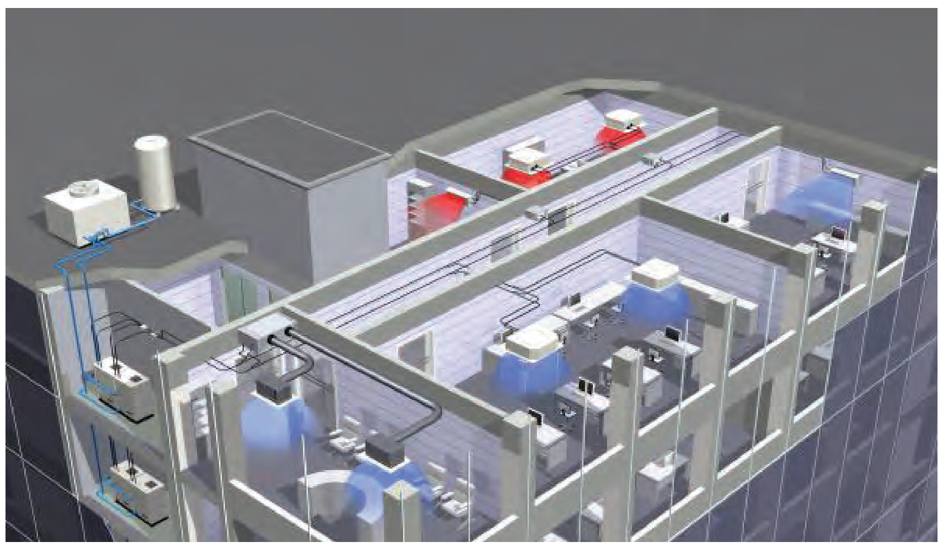
[1]The term variable refrigerant volume (VRV) is protected by Japanese manufacturer Daikin.

[2]A thermal zone refers to a space or group of spaces with similar heating and cooling requirements. Each thermal zone must have independent control to ensure comfortconditions are provided.

Biomas boilers were considered for this project but do not meet the “Living Building Challenge” requirement of no carbon emmissions to the atmosphere.

8.4 PRIMARY COOLING

Primary cooling for the building, whether through thermal floor conditioning or VRF-HR systems, could use evaporative cooling. This could be done using a standard induced draft cooling tower, or incorporated into a rooftop rainwater collection and roof cooling system. In either case, collected rainwater could be used as make-up water.



VRF - HR System

8.5 CONTROL SYSTEM,

The majority of the automated interior climate control for the building will be via local zone-based thermostats with integrated occupancy sensors. Centralized equipment, such as heat pumps, pumps, and boilers, are equipped with their own, factory mounted controls and can operate semi-autonomously, only needing a command to run.

A limited building management control system would be provided using locally supported systems. The system would include a graphical interface that would be accessible via the Internet using a standard web browser. The control system would provide scheduling and for any of the common equipment along with monitoring and alarm functions. Pre-cooling and nighttime purge functions could be provided through this Building Management System as either a manual or automated function.

ACKNOWLEDGEMENTS

The design team would like to recognize the important contributions of the individuals listed below to the ongoing development of the Mosaic Centre for Community Consciousness and Commerce

Mohammad Abtahi, Manasc Isaac Consulting
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Russ Clark, Clark Engineering
Christy Cuku, Mosaic Family of Companies
Dennis Cuku, Mosaic Family of Companies
Julien Fagnan, Fast and Epp
Stuart Fix, ReNu Building Science
Martin Gillett, DCE Group Inc.
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Shafraaz Kaba, Manasc Isaac Architects
Matt McCombe, Manasc Isaac Consulting
Eleanor Moloney, Manasc Isaac Architects
Stephan Pasche, Fast and Epp
Sonny Shem, Manasc Isaac Architects
Vedran Skopac, Manasc Isaac Architects
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Gregg Emmerling

APPENDICES

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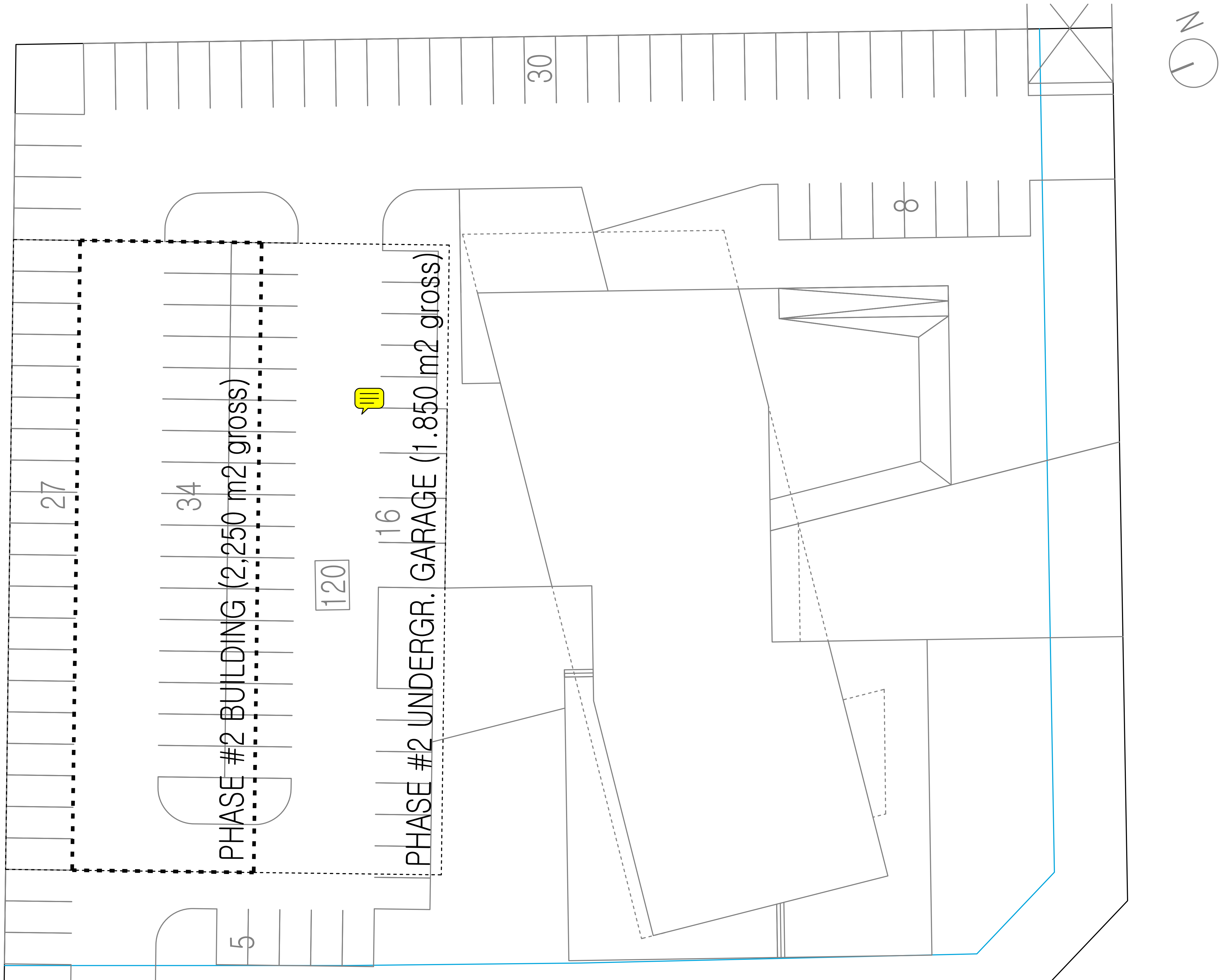

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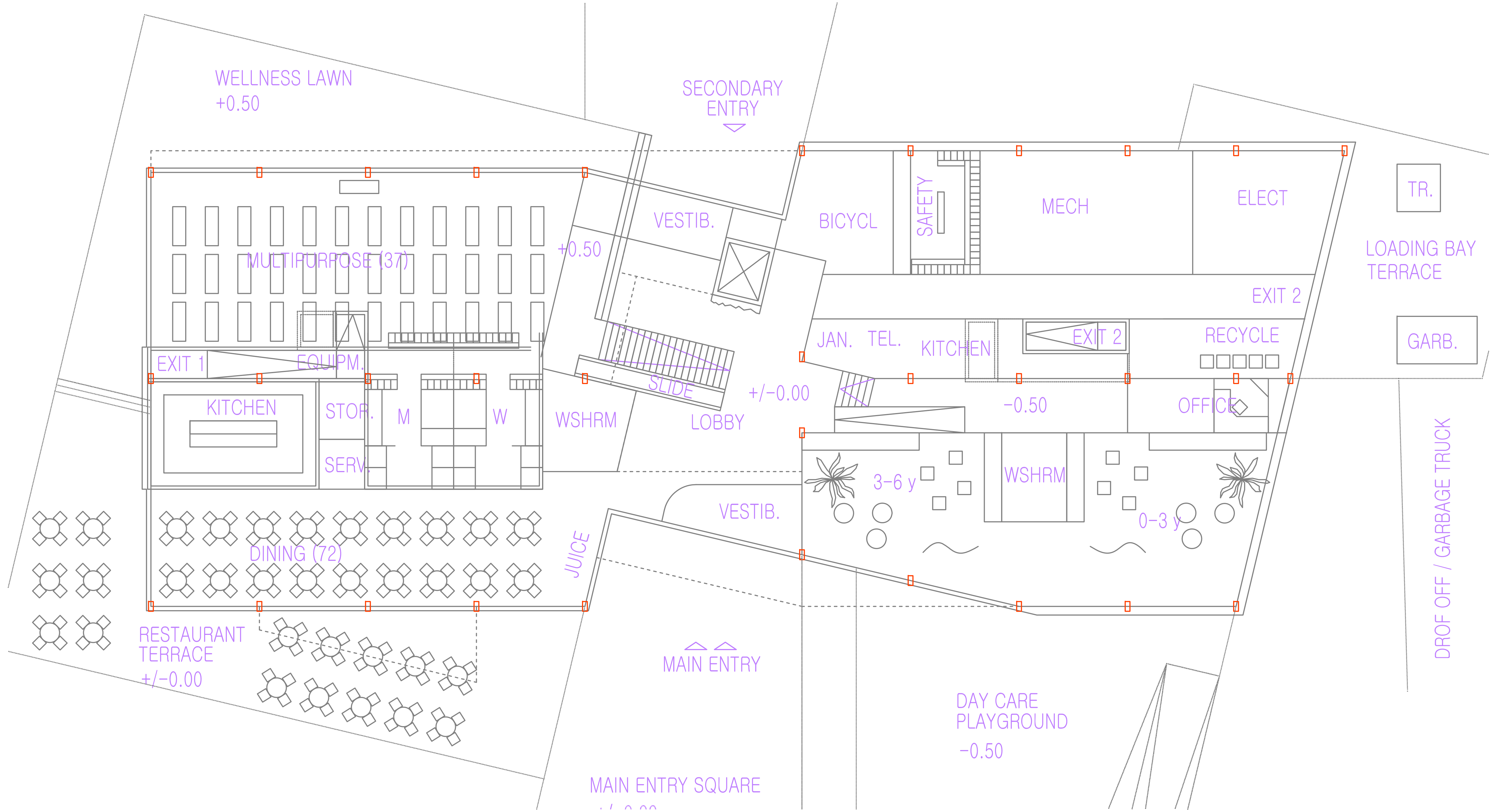
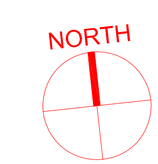
MANASC ISAAC 10225 100 Avenue Edmonton, Alberta T5J 0A1 Canada manascisaac.com reimagine.ca	MOSAIC CENTRE	Schematic Design Drawing Info SITE PLAN	26/06/13 Scale 1 : 350 Project No 21-3180	A-01





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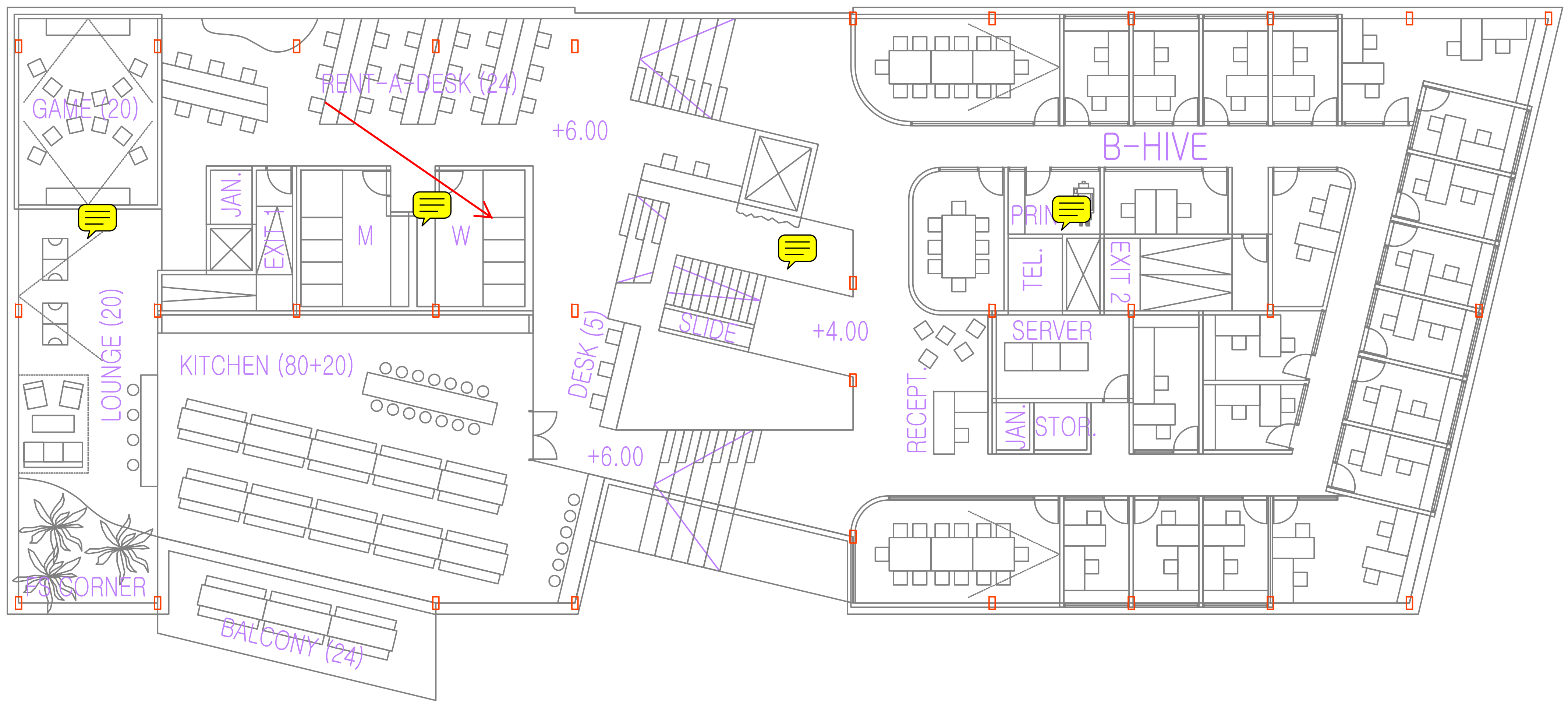
		Drawing Info	Scale 1 : 200	
		MAIN FLOOR PLAN	Project No 21-3180	



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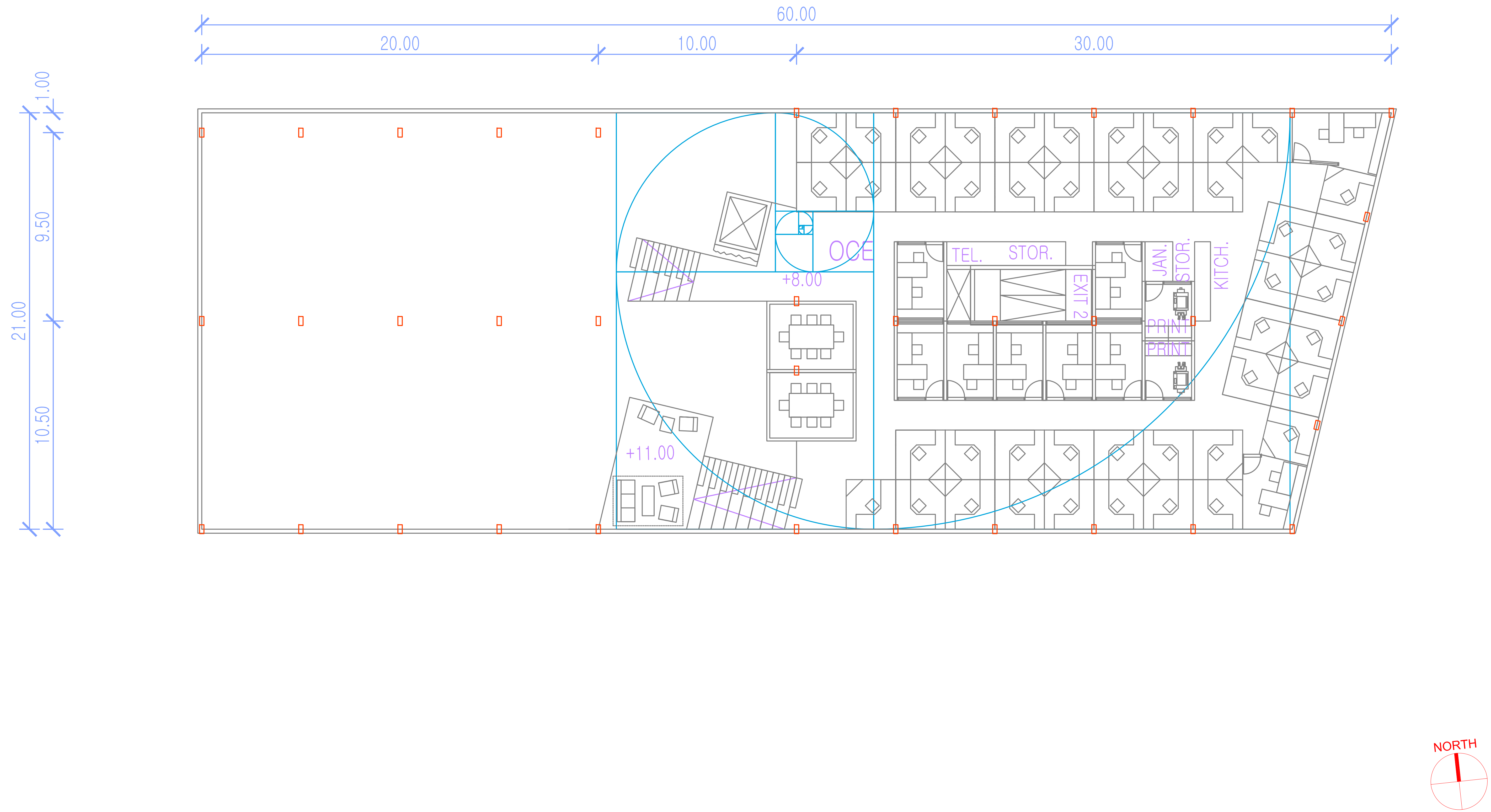
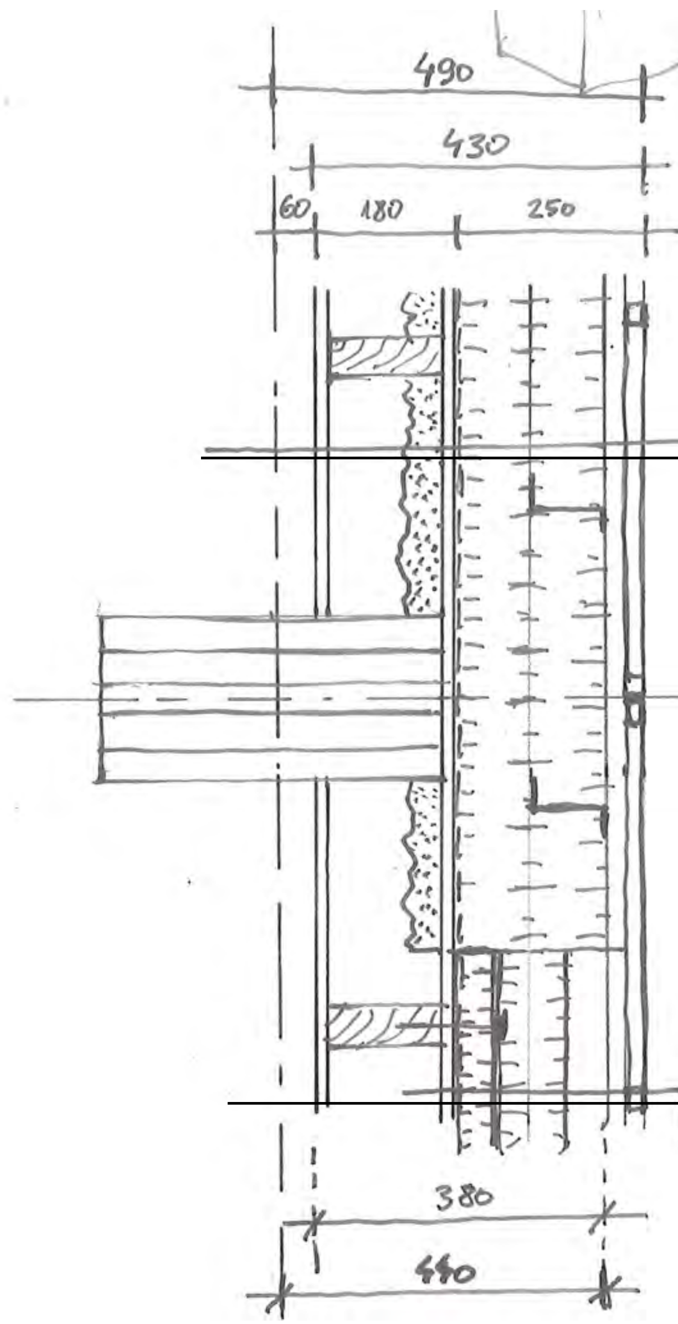
		SECOND FL. PLAN	Project No 21-3180	



Consultant	Project	Issued for	Date (d/m/y)	Drawing:
MANASC ISAAC T: 780.429.3977 10225 100 Avenue Edmonton, Alberta T5J 0A1 Canada manascisaac.com reimagine.ca	MOSAIC CENTRE	Schematic Design Drawing Info THIRD FL. PLAN	26/06/13 Scale 1 : 200 Project No 21-3180	A-04



- 450 x 215 Exposed Glulam Column
- 13mm Gypsum Board
- 50 x 150 Wood Studs w/38mm spray-on foam
- 13mm Ply
- Peel and Stick Vapour Barrier
- 100mm Rigid Insulation on horizontal z-girts
- 100mm Rigis Insulation on vertical z-girts
- 25mm Air Gap w/panel support system
- 25mm PV Panels

- 50mm High Density Rigid Insulation
- 175mm Horizontal z-girts w/100mm Rigid Insulation w/75mm Air Gap
- Cladding Mounted on z-girts

Consultant	Project	Issued for	Date (d/m/y)	Drawing:
MANASC ISAAC T: 780.429.3977 10225 100 Avenue Edmonton, Alberta T5J 0A1 Canada manascisaac.com reimagine.ca	MOSAIC CENTRE	Schematic Design Drawing Info Exterior Wall Assembly	26/06/13 Scale Project No 21-3180	A-01

Consultant	Project	Issued for	Date (d/m/y)	Drawing:
MANASC ISAAC T: 780.429.3977 10225 100 Avenue Edmonton, Alberta T5J 0A1 Canada manascisaac.com reimagine.ca	MOSAIC CENTRE	Schematic Design	26/06/13	
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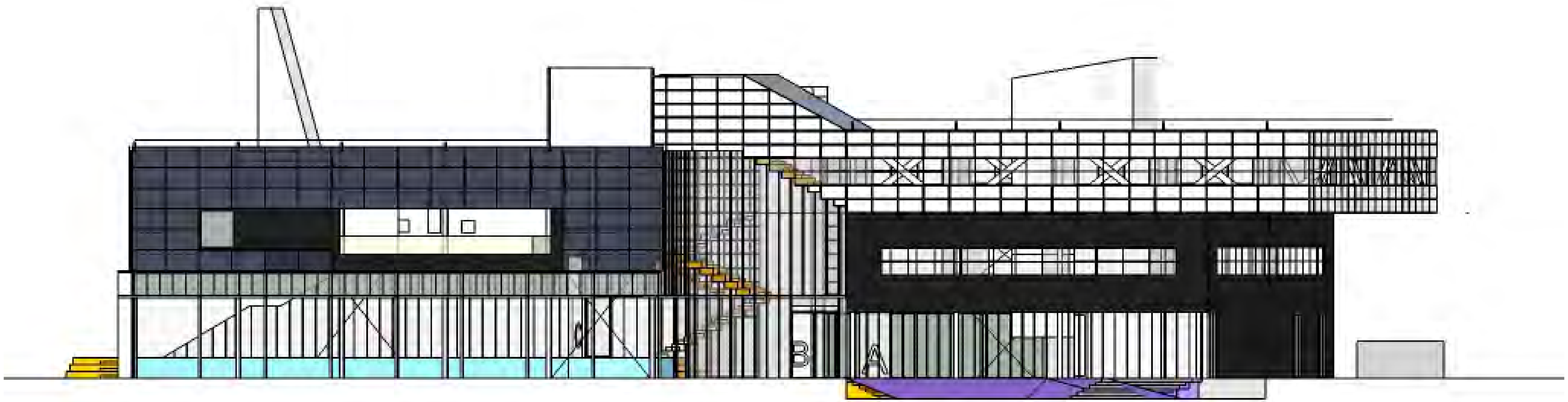
		NORTH ELEVATION	Project No	
			21-3180	



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		Drawing Info	Scale	
		SOUTH ELEVATION	Project No 21-3180	

Consultant	Project	Issued for	Date (d/m/y)	Drawing:
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			Scale	
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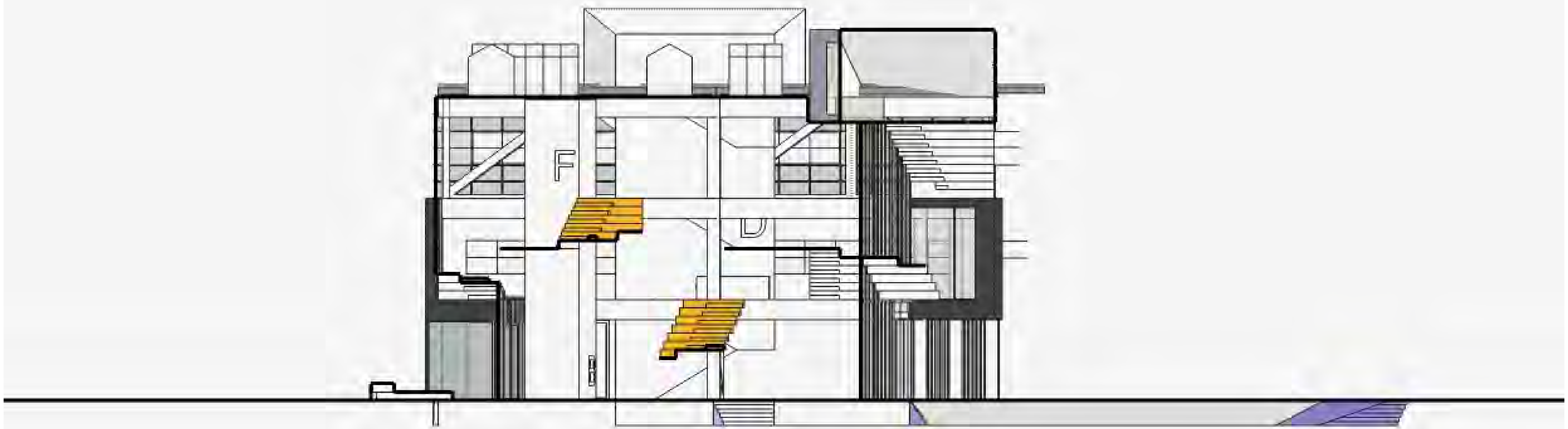

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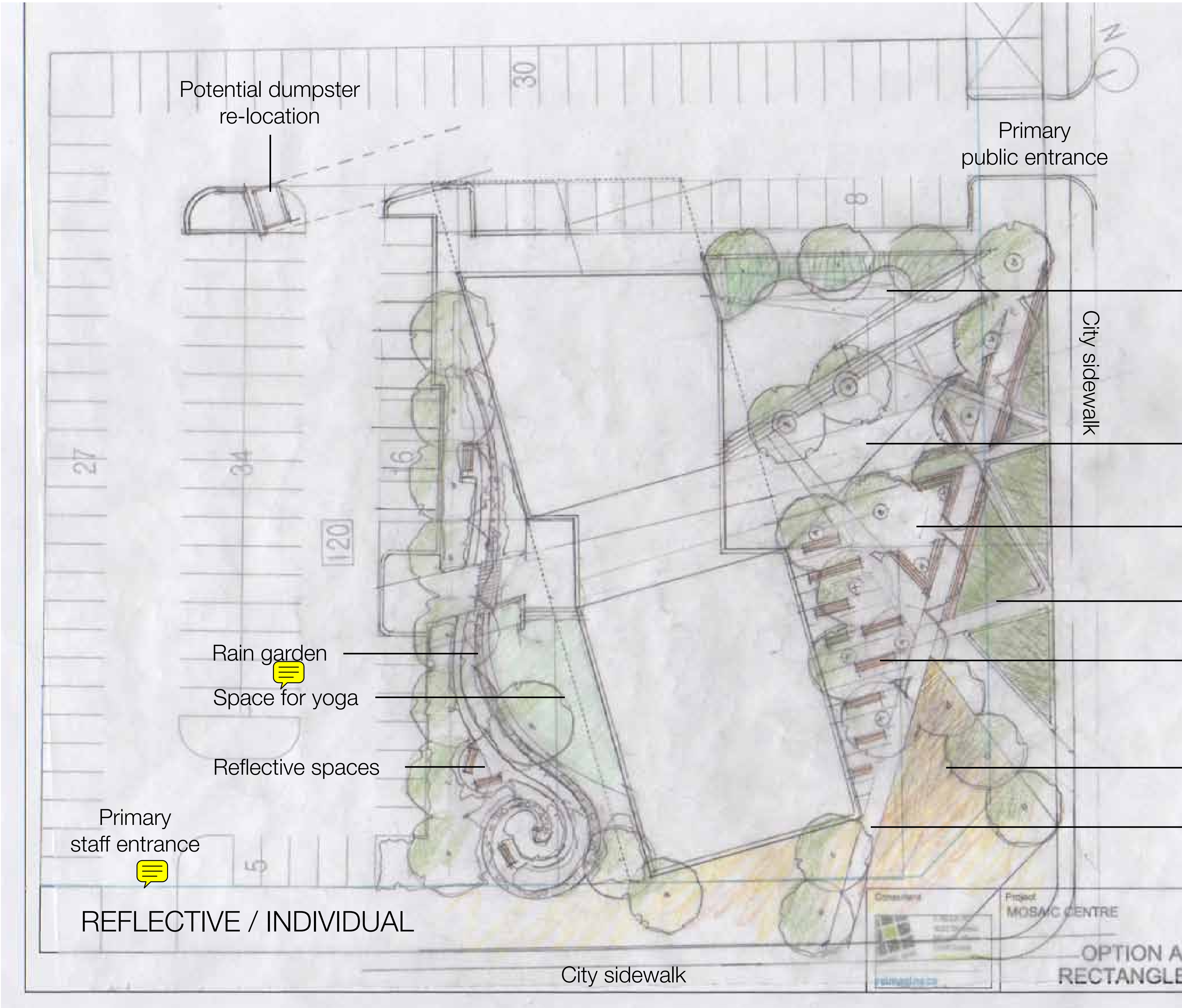
MANASC ISAAC T: 780.429.3977 10225 100 Avenue Edmonton, Alberta T5J 0A1 Canada manascisaac.com reimagine.ca	MOSAIC CENTRE	Schematic Design Drawing Info INTERIOR ATRIUM VIEW	26/06/13 Scale Project No 21-3180	



Outdoor Play Area / potential reconfiguration to create step seating for parents waiting to pick up children (fence at bottom of stairs and ramp - kids exit via ramp)

Entry plaza / large area for a range of corporate and public events. Oriented to maximize visual access from SE corner of site (imagined to be the main public entrance to Mosaic Centre)

Sheltered seating area / provides 'break out space' adjacent to plaza and building entrance for impromptu business meetings.

Edible landscape / with numerous connections to encourage the public to enter and experience these areas.

Outdoor cafe / elongated 'social tables' facilitate greater interaction and accommodate others 'dropping in' to conversations

Native prairie

Shortcut walkway / brings the public directly into the site and its various spaces and functions

ACTIVE / SOCIAL / GROUP

Mosaic Centre Landscape Concept Exercise

06.24.13

Item No.	Primary Program	Secondary Program	Units (QTY.)	Unit Area (m2)	Subtotal Area (m2)	Subtotal Area (sf)	End User	FTEs (QTY.)	Occupant Load (QTY.)	Preferred Location (1st, 2nd, 3rd)	Time Regime (h)	Ceiling Height (S, M , L , XL)	Acoustics (db)	Security Provision	Notes:
PHASE #1 - INTERIOR PROGRAMS															
1	Restaurant/Café	/	/	232	192	2,064	/	0	98	/	/	/	/	LOCALY SECURED	
1.1	/	Kitchen	1	40	40	430	MOSAIC + COMM.	0	6	1st	06:00 - 22:00	M	NONE	NON-LOCKABLE	Can the kitchen have a solar cooker/oven?
1.2	/	Serving Area	1	12	12	129	MOSAIC + COMM.	0	6	1st	06:00 - 22:00	M	NONE	NON-LOCKABLE	
1.3	/	Washrooms	2	15	30	322	MOSAIC + COMM.	0	per Code	1st	06:00 - 22:00	S	NONE	privacy set	(men, women, barrier-free) more than code requirement-can this be part of/use with core building to save space?
1.4	/	Dining Hall	1	90	90	967	MOSAIC + COMM.	0	80	1st	06:00 - 22:00	XL	allows easy conversation	NON-LOCKABLE	- non-fixed seats - gathering place - nutritious, locally sourced, primarily organic food
1.5	/	Juice/Smoothie Bar	1	10	10	107	MOSAIC + COMM.	0	6	1st	06:00 - 22:00	L	NONE	NON-LOCKABLE	- non-fixed seats - coffee / lunch pick up window opens to atrium space!
1.6	/	Dry Goods / Equipment Room	1	10	10	107	MOSAIC + COMM.	0	0	1st	06:00 - 22:00	S	NONE	LOCKABLE	
2	"Bee hive" Desks, Meeting Rooms and Business Centre	/	/	/	325	3,494	/	30	64	L	/	/	/	SECURED Private Office Spaces	for use by the businesses within the building and geared to nearby home-offices
2.1	/	Office Area/Desks	30	9	270	2,902	MOSAIC + COMM.	30	30	2nd	08:00 - 18:00	L	Quiet	Private offices will be lockable	Likely more secured, enclosed offices than open workstations.
~~2.2~~	~~/~~	~~Team Room (6-8 people)~~	~~0~~	~~15~~	0	0	~~MOSAIC + COMM.~~	~~0~~	8	~~2nd~~	~~08:00 - 18:00~~	~~L~~	45	~~NON-LOCKABLE~~	~~Technology (LED TV, camera, A/V required + phone)~~ MOVED TO SHARED SPACE.
~~2.3~~	~~/~~	~~Copy Centre~~	~~0~~	~~15~~	0	0	~~MOSAIC + COMM.~~	~~0~~	~~2~~	~~2nd~~	~~08:00 - 18:00~~	M	~~NONE~~	~~NON-LOCKABLE~~	~~- colour copier/multifunction printer - MOVED TO SHARED SPACE.~~
2.4	/	Washrooms (adjacent bee hive work area)	2	20	40	430	MOSAIC + COMM.	0	per Code	2nd or 3rd	08:00 - 18:00	S	NONE	NON-LOCKABLE	men, women, barrier-free- to be located in proximity to work areas.
2.5	/	Breakout Rooms (6 - 8 people)	1	15	15	161	MOSAIC + COMM.	0	24	2nd	06:00 - 18:00	M	45	NON-LOCKABLE (WITH SCHEDULING)	3 breakout rooms (for OCE), 1 breakout on 2nd floor (for Beehive). AV setup, whiteboard and phone. Maybe gettign creative with some different styes of seating.
3	Childcare Centre	/	/	/	220	2,365	/	8	81	/	/	/	/	LOCALY SECURED	rooted in Montessori, Waldorf or 100Voices principles of early childhood development
3.1	/	0 to 18 months	1	60	60	645	MOSAIC + COMM.	4	20	1st	07:00 - 18:00	XL	NONE	NON-LOCKABLE	3 m2 per child- not more than 12 kids, or 16 for toddlers maybe have dividable partition. Need plant space!
3.2	/	19 months to 6 year room	1	60	60	645	MOSAIC + COMM.	3	20	1st	07:00 - 18:00	XL	NONE	NON-LOCKABLE	3 m2 per child
~~3.3~~	~~/~~	~~Sleeping Area~~	0	~~90~~	0	0	~~MOSAIC + COMM.~~	~~0~~	~~40~~	~~1st~~	~~07:00 - 18:00~~	~~XL~~	~~40~~	~~NON-LOCKABLE~~	~~- joint-use with multipurpose/wellness room~~
3.4	/	Washrooms	3	15	45	484	MOSAIC + COMM.	0	per Code	1st	07:00 - 18:00	S	NONE	NON-LOCKABLE	(boys, girls, & separate staff) ** Can staff use core building washrooms to save space?
3.5	/	Staff Office/record keeping	1	15	15	161	MOSAIC + COMM.	1	1	1st	07:00 - 18:00	S	45	LOCKABLE	
3.6		Kitchen Area	1	20	20	215	MOSAIC + COMM.	0	0		07:00 - 18:00	M			- fridge, snack prep area, lockable medicine cabinet, etc
3.7	/	Storage / Equipment Room	1	20	20	215	MOSAIC + COMM.	0	0	1st	07:00 - 18:00	S	NONE	LOCKABLE	

Item No.	Primary Program	Secondary Program	Units (QTY.)	Unit Area (m2)	Subtotal Area (m2)	Subtotal Area (sf)	End User	FTEs (QTY.)	Occupant Load (QTY.)	Preferred Location (1st, 2nd, 3rd)	Time Regime (h)	Ceiling Height (S, M , L , XL)	Acoustics (db)	Security Provision	Notes:
4	**Wellness Centre**	/	/	/	264	2,838	/	0	79	/	/	/	/	LOCALY SECURED	focused on providing a variety of fitness classes before, during and after work hours, to assist in meeting the health goals
4.1	/	Multipurpose space	1	150	150	1,612	MOSAIC + COMM.	0	35	1st	06:00 - 22:00	XL	55	NON-LOCKABLE	Yoga to hold 35 people, TRX, fitness area, weights, etc. - may be joint-use with Child care
4.2	/	Equipment Cabinet (not a room)	1	30	20	215	MOSAIC + COMM.	0	0	1st	06:00 - 22:00	L	NONE	NON-LOCKABLE	Build as part of millwork/ storage nook in Wellness room.
4.3	/	Showers	7	2	14	150	MOSAIC + COMM.	0	4	1st	06:00 - 22:00	M	NONE	NON-LOCKABLE	3 men and 4 women stalls.
4.4	/	Lockers	2	20	40	430	MOSAIC + COMM.	0	40	1st	06:00 - 22:00	M	NONE	NON-LOCKABLE	(20 + 20 lockers)
4.5	/	Washrooms	2	20	40	430	MOSAIC + COMM.	0	per Code	1st	06:00 - 22:00	M	NONE	privacy set	(men, women, barrier-free) - they need to be way bigger than normal as per our discussions
5	**OCE Office Space**	/	/	/	571	6,133	/	63	135	/	/	/	/	SECURED	
5.1	/	Offices	50	6.25	313	3,359	OCE	50	50	3rd	06:00 - 18:00	L	55	CARD READER	Each space is 2.5m x 2.5m with mid-height partitions.
5.2	/	Offices (individual)	10	9	90	967	OCE	12	12	3rd	06:00 - 18:00	L	45	LOCKABLE	There was much discussion on what this looks like. I would plan for the full 62 workers on the 3rd
5.3	/	Quiet pods	4	4	16	516	OCE	0	10	3rd	06:00 - 18:00	M	45	NON-LOCKABLE	I don't think these need to be booked .... But they may be in demand to the point we want to. ** This is likely FURNITURE solution- and will fit into corridor spaces.
5.4	/	Reception area	1	15	15	161	OCE	1	1	2nd	06:00 - 18:00	M	NONE	NON-LOCKABLE	Desk, seating for up to 6 guests, "reclaimed brick" wall, it may make more sense to have this on the 2nd floor with adjacencies to the board rooms
5.5	/	Coffee station	2	5	10	107	OCE	0	4	3rd	06:00 - 18:00	S	NONE	NON-LOCKABLE	Counter / kitchenette- not necessarily an enclosed room/space. Could be open bar style/ galley.
5.6	/	Safety/ Site Visit room	1	20	20	215	OCE	0	12	Main/Basement	06:00 - 18:00	M	NONE	NON-LOCKABLE	[re-purposed Lockers for 30 people- holds safety boots, coveralls, hardhat], also has open shelving- 20 No. shelves, 4 levels high- relocate to main floor so that all of the toxic chemicals and drilling mud does not get draggged through the office.
	~~/~~	~~Staff Locker Room~~	~~0~~	~~20~~	0	0	~~OCE~~	~~0~~	~~20~~	~~3rd~~	~~06:00 - 18:00~~	S	~~NONE~~	~~NON-LOCKABLE~~	~~I don't think we will need this with the layout we converge on~~
5.7	/	Equipment Closets	4	3	12	258	OCE	0	0	2nd & 3rd	06:00 - 18:00	S	NONE	LOCKABLE	shredder bin in 1 closet, distribute equipment rooms around the 2nd & 3rd floors.
5.8	/	Data Centre/Server room	1	10	10	107	OCE	0	2	3rd	06:00 - 18:00	S	NONE	LOCKABLE	Locate where most appropriate for cooling needs
5.9	/	Washrooms	2	20	40	430	OCE	0	per Code	3rd	06:00 - 22:00	S	NONE	NON-LOCKABLE	(men, women, barrier-free) - they need to be way bigger than normal as per our discussions. Washrooms will be part of core building space and located adjacent to OCE spaces.

Item No.	Primary Program	Secondary Program	Units (QTY.)	Unit Area (m2)	Subtotal Area (m2)	Subtotal Area (sf)	End User	FTEs (QTY.)	Occupant Load (QTY.)	Preferred Location (1st, 2nd, 3rd)	Time Regime (h)	Ceiling Height (S, M , L , XL)	Acoustics (db)	Security Provision	Notes:
###	/	Breakout Rooms (6 - 8 people)	3	15	45	484	MOSAIC + COMM.	0	24	3rd	06:00 - 18:00	M	45	NON-LOCKABLE (WITH SCHEDULING)	3 breakout rooms (for OCE), 1 breakout on 2nd floor (for Beehive). AV setup, whiteboard and phone. Maybe gettign creative with some different styes of seating.
6	Shared Rooms	/	/	/	320	3,440	/	0	216	/	/	/	/	LOCALY SECURED	
6.1	/	Board Room (14 people)	2	26	52	559	MOSAIC + COMM.	0	28	2nd / 3rd	06:00 - 18:00	L	45	NON-LOCKABLE (WITH SCHEDULING)	tricked out for multimedia (LED TV, projector, cameras, sound, coat rack, credenzas, etc.)- has scheduling LED display on outside of door.
6.2	/	~~Breakout Rooms (10 people)~~	0	~~14~~	0	0	~~MOSAIC + COMM.~~	0	~~20~~	~~2nd / 3rd~~	~~06:00 - 18:00~~	M	~~45~~	~~NON-LOCKABLE~~	~~LED tvs, whiteboards, coat rack~~
6.2	/	~~Breakout Rooms (6 - 8 people)~~	0	~~15~~	0	0	~~MOSAIC + COMM.~~	0	~~24~~	~~2nd / 3rd~~	~~06:00 - 18:00~~	M	~~45~~	~~NON-LOCKABLE (WITH SCHEDULING)~~	MOVED TO OCE & B-HIVE !
6.3	/	~~Team Room (up to 8 people)~~		~~16~~	0	0	~~MOSAIC + COMM.~~	0	~~18~~	~~2nd / 3rd~~	~~06:00 - 18:00~~	M	~~45~~	~~NON-LOCKABLE (WITH SCHEDULING)~~	These are in open office areas using corridor space- informal meeting area! *** LIKELY a furniture solution, rather than enclosed room.
6.4	/	~~Quiet pods~~	0	~~4~~	0	0	~~OCE~~	~~0~~	~~10~~	~~2nd~~	~~06:00 - 18:00~~	S	~~45~~	~~NON-LOCKABLE~~	Furniture solution (high backed sofa/seats to create meeting area).
6.5		Shared "Kitchen Space"	1	150	150	1,612	MOSAIC + COMM.	0	80	2nd	06:00 - 18:00	XL	NONE	NON-LOCKABLE	- fridge, coffee machines, microwaves, sinks, dishwasher, toaster ovens - min.2 fridges, coffee machines, microwaves, sinks, dishwasher, toaster ovens. Adjacent to Lounge Space. Should hold 8- people at BENCHES.
6.6	/	Lounge Space	1	50	50	537	MOSAIC + COMM.	0	20	2nd	06:00 - 18:00	XL	NONE	NON-LOCKABLE	Fit 20 people (30 people SNUG) and adjacent to kitchen space.
6.7	/	Video game area	1	20	20	215	MOSAIC + COMM.	0	12	2nd	06:00 - 18:00	M	NONE	NON-LOCKABLE	- semi-enclosed to lounge space and closed to rest of offices for noise mitigation.
6.8	/	Printer /Copy room	4	12	48	516	MOSAIC + COMM.	0	4	2nd & 3rd	06:00 - 18:00	S	NONE	NON-LOCKABLE	- (4X) Copy, Scan, multifunction printers (1 in each room) - separate ventilation /- distribute across work areas (2 No in OCE, 2 in Beehive)
7	Base Building Requirements	/	/	/	922	9,911	/	0	80	/	/	/	/	LOCALY SECURED	
7.1	/	Atrium	1	200	200	2,150	MOSAIC + COMM.	0	40	1st	06:00 - 22:00	XL	NONE	NON-LOCKABLE	- green wall, slide, informal space for farmers market, café, etc. Open to light well above!
7.2	/	Elevator	1	10	10	107	MOSAIC + COMM.	0	8	1st + 2nd + 3rd	06:00 - 22:00	/	NONE	NON-LOCKABLE	LULA type elevator for infrequent use.
7.3	/	Convenience (feature) Stair	1	0	0	0	MOSAIC + COMM.	0	10	1st + 2nd + 3rd	06:00 - 22:00	/	NONE	NON-LOCKABLE	-Include as part of atriam area
7.4	/	Exit Stair	2	66	132	1,419	MOSAIC + COMM.	0	per Code	1st + 2nd + 3rd	06:00 - 22:00	/	NONE	CARD READER	- lockable from outside ONLY

Item No.	Primary Program	Secondary Program	Units (QTY.)	Unit Area (m2)	Subtotal Area (m2)	Subtotal Area (sf)	End User	FTEs (QTY.)	Occupant Load (QTY.)	Preferred Location (1st, 2nd, 3rd)	Time Regime (h)	Ceiling Height (S, M , L , XL)	Acoustics (db)	Security Provision	Notes:
7.5	/	Bike Storage	1	22	**20**	**215**	MOSAIC + COMM.	0	12	1st	06:00 - 22:00	L	NONE	LOCKABLE	- bikes & outdoor equipment. Storage for 10 to 15 bikes- confirm with LEED requirement!
7.6	/	Recycling Storage	1	12	**12**	**129**	MOSAIC + COMM.	0	2	1st	06:00 - 22:00	M	NONE	LOCKABLE	
7.7	/	Custodial Room	3	6	**18**	**193**	MOSAIC	0	3	1st + 2nd + 3rd	06:00 - 18:00	S	NONE	LOCKABLE	1 per floor
7.8	/	Telecomm Room	3	6	**18**	**193**	MOSAIC	0	3	1st + 2nd + 3rd	06:00 - 18:00	S	NONE	LOCKABLE	1 per floor
7.9	/	Electrical Room	1	20	**20**	**215**	MOSAIC	0	1	1st or basement	06:00 - 18:00	XL	NONE	LOCKABLE	SIZE TBD based on equipment required.
###	/	Mechanical Room	1	60	**60**	**645**	MOSAIC	0	1	1st or basement or roof	06:00 - 18:00	XL	NONE	LOCKABLE	SIZE TBD based on equipment required.
###	/	Corridors	0	250	**0**	**0**	MOSAIC	0	0	1st + 2nd + 3rd	06:00 - 22:00	S	NONE	NON-LOCKABLE	Hallways need to be wider than code
###	/	Interior / Exterior Wall Assemblies	0	250	**0**	**0**	MOSAIC	0	0	/	/	/	/	/	
###	/`	Gross Area (18% gross factor)	1	506	**432**	**4,644**									
PHASE #1 INTERIOR TOTAL:			/	/	**2,814**	**30,245**	/	**101**	**753**	/	/	/	/	/	/
EXTERIOR															
11	**Parking**	/	/	/	**3,245**	**34,883**	/	**0**	**0**	/	/	/	/	NON-SECURED	######################################
###	/	Staff Parking	100	25	**2,500**	**26,874**	MOSAIC + COMM.	/	/	/	0 - 24	/	/	NON-LOCKABLE	
###	/	Public Parking	21	25	**525**	**5,644**	COMM	/	/	/	0 - 24	/	/	NON-LOCKABLE	
###	/	Disabled Parking	4	30	**120**	**1,290**	MOSAIC + COMM.	/	/	/	0 - 24	/	/	NON-LOCKABLE	
###	/	Bicycle Parking	20	2	**40**	**430**	MOSAIC + COMM.	/	/	/	0 - 24	/	/	NON-LOCKABLE	
###	/	Loading Area	1	20	**20**	**215**	MOSAIC + COMM.	/	/	/	0 - 24	/	/	NON-LOCKABLE	
###	/	Daycare Drop-off/Pick-up	2	20	**40**	**430**	MOSAIC + COMM.	/	/	/	0 - 24	/	/	NON-LOCKABLE	
12	**Restaurant**	/	/	/	**240**	**2,580**	/	**0**	**80**	/	/	/	/	LOCALY SECURED	
###	/	Patio/Outside Eating	1	200	**200**	**2,150**	MOSAIC + COMM.	0	80	/	0 - 24	/	/	NON-LOCKABLE	
###	/	Composting/recycling	1	20	**20**	**215**	MOSAIC + COMM.	/	/	/	0 - 24	/	/	LOCKABLE	
###	/	Garbage Enclosure	1	20	**20**	**215**	MOSAIC + COMM.	/	/	/	0 - 24	/	/	LOCKABLE	
13	**Child Care**	/	/	/	**200**	**2,150**	/	**0**	**40**	/	/	/	/	NON-SECURED	
###	/	Outdoor Play Space	1	200	**200**	**2,150**	MOSAIC + COMM.	0	40	/	0 - 24	/	/	NON-LOCKABLE	include garden space! 2 m2 per child under 19 months, 4.5 m2 for 19 months+
14	**Hard Surfaces**	/	/	/	**0**	**0**	/	**0**	**0**	/	/	/	/	NON-SECURED	
###	/	Sidewalks	1		**0**	**0**	MOSAIC + COMM.	0	0	/	0 - 24	/	/	NON-LOCKABLE	
###	/	Entry Hardscaping	3		**0**	**0**	MOSAIC + COMM.	0	0	/	0 - 24	/	/	NON-LOCKABLE	

Item No.	Primary Program	Secondary Program	Units (QTY.)	Unit Area (m2)	Subtotal Area (m2)	Subtotal Area (sf)	End User	FTEs (QTY.)	Occupant Load (QTY.)	Preferred Location (1st, 2nd, 3rd)	Time Regime (h)	Ceiling Height (S, M , L , XL)	Acoustics (db)	Security Provision	Notes:
15	**Landscaping**	Public Park	/	/	0	0	/	0	0	/	/	/	/	NON-SECURED	Significant emphasis to be placed on greenery and vegetation throughout the exterior landscaping AND inside of the building. The idea would be to blur the feel of indoor vs. outdoor spaces & to create a garden, boulevard or promenade type of atmosphere.
###	/	Trees			0	0	MOSAIC + COMM.	0	0	/	0 - 24	/	/	NON-LOCKABLE	
###	/	Shrubs			0	0	MOSAIC + COMM.	0	0	/	0 - 24	/	/	NON-LOCKABLE	
EXTERIOR TOTAL:			/	/	3,685	39,613	/	0	120	/	/	/	/	/	/

General Notes:
The M4C will be a roughly 30,000 sq ft commercial space (over 3 stories) developed in the Summerside Community (Gateway Business Park) in South Edmonton.
The intent of the Mosaic Center is to achieve LEED Platinum or Passivehaus Commercial.
The p 929m2 (10,000sq ft) "Green Leased" Office Space
929m2 (10,000sq ft) Oil Country Engineering Offices
929m2 Mosaic Family of Companies including (Cafe/Restaurant, Business Conference Centre, Chidcare Centre and Wellness Centre)
TOTA 2787m2 (30,000sq ft)

Date:

Owner's signature: