

# Planning of the Pre-Concept Architectural Design For the McGill University Health Centre, Montreal

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## 1. OBJECTIVES

Lemay Bobrow Architects in collaboration with NBBJ worked in close collaboration with the MUHC to develop an architectural pre-concept design, which would:

- Create a World Class Centre for Health Care, Teaching and Research
- Create a Patient Focused, Healing Environment
- Respond to requirements of a 3.8 million sq.ft. Functional Program
- Reflect the Functional, Human and Philosophical Values of the MUHC
- Integrate the Architectural Design with the Urban Context and Community Life

## 2. METHODOLOGY

The architectural team set up a working studio within the MUHC Planning Offices, and colla-

borated closely with the MUHC and a multi-disciplinary team of consultants. The process included review of a three volume functional program for the new MUHC, surveys of the site and surrounding areas, assessment of urban planning principles and guidelines, and establishment of criteria which would guide the design team. The process moved from an innovative program of functional needs, towards an architectural solution embodying both the ideals of a true healing environment, and a dynamic relationship to an evolving city and community.

## 3. RESULTS

The “Campus Concept” emerged as a strategy to create individual pavilions with an abundance of natural light and direct and simple paths of circulation, while creating the sense of “place” which could act as a centre of community life and interaction, with landscaped campus areas linking the new campus to existing urban neighbourhoods. The design concept provides planning and technology which is “high tech”, and creates a welcoming healing environment which is “high touch”. An innovative diagnostics and treatment zone bridges clinical and research areas, while creating multi-level landscaped court areas with clear circulation, natural day lighting, and open campus areas defining scale and a sense of place. Modular planning arrangements respond to the requirements of the functional program, and reduce the cost and stress normally associated with future growth and change.

## INTRODUCTION

The goal of the Pre-Concept Architectural Design is to generate a Site Development Plan which represents the application of the 3.8 million square foot detailed functional program for the MUHC,

and responds to the mission of the MUHC to establish a centre for health care, teaching and research which is patient centred, world class, and responsive to the needs of the 21st century.

***Application of the Detailed Functional Program***

The MUHC developed a detailed functional program describing the requirements of the nine master program groups and 73 functional program groups comprising the MUHC. These functions, services and activities are to be brought together on the Glen site to create a centre for health care, teaching and research of international stature and importance. The MUHC on the Glen site will be a setting for new efficiencies and innovation, a dynamic centre of community life, and will attract and retain a critical mass of the highest calibre health care and research professionals.

Principle components of the 3.8 million square foot functional program include inpatient units totalling over 900 inpatient beds, as well as major research and teaching facilities, in close connection with a full range of clinical services.

***The Site Development Plan for the MUHC has been conceived to:***

- Respond to comprehensive functional requirements of the functional program, that have been generated by planning and consultations involving hundreds of health care professionals, patients, researchers and network partners.
- Reflect the vision and values of the MUHC, including:
  - A health care centre which is Patient Centred
  - Creation of a caring and healing environment
  - Planning which supports efficient operations, and optimal sharing of resources
  - Creation of a centre of innovation, adaptive to emerging modes of treatment, and to leading directions in research

- Creation of a centre which is open and dynamic, accessible, and of service to the communities which make up the MUHC and the larger public
- Creation of a centre of excellence on the world stage

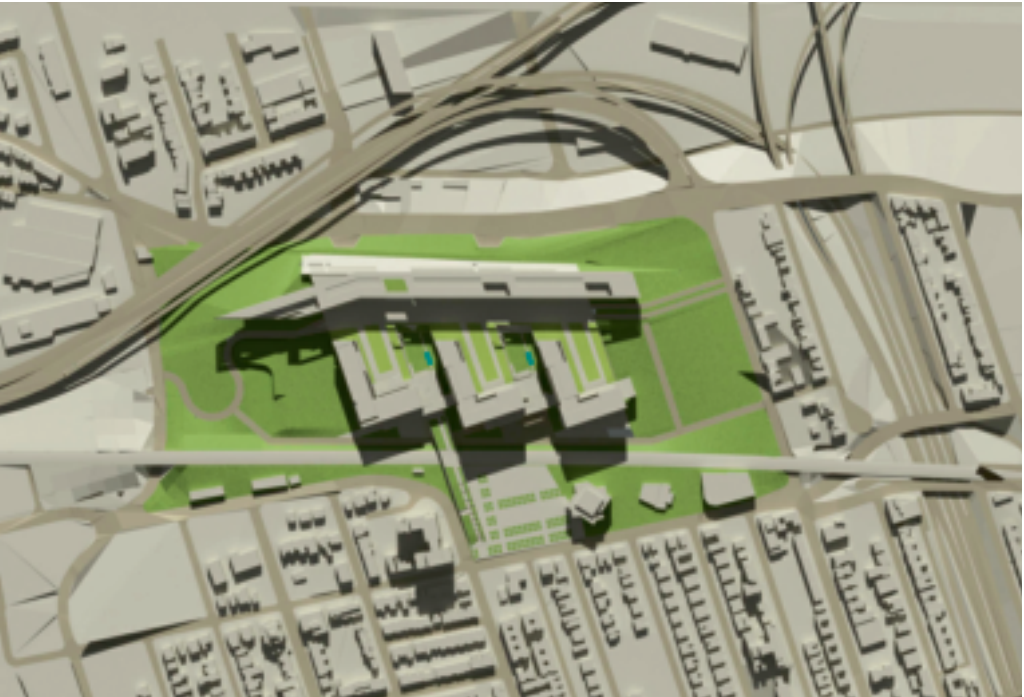
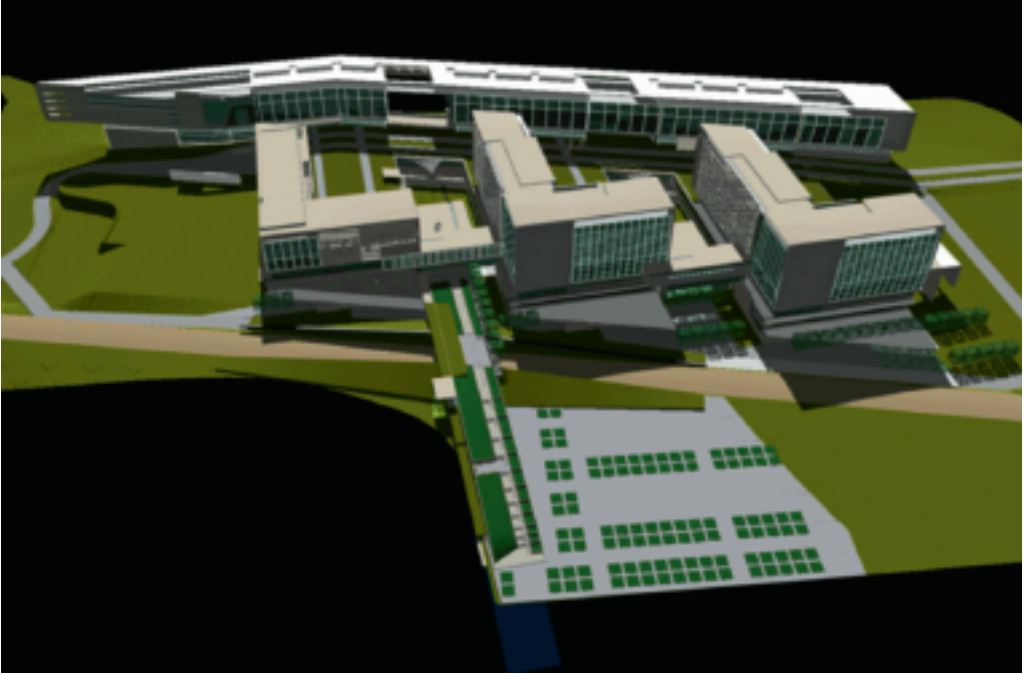
- ***Integrate respectfully into the urban fabric,*** by recognizing the patterns of neighbouring communities, and creating opportunities to connect with, heal and develop the surrounding urban areas.

- ***Create a unique campus setting,*** forging a clear identity for the MUHC, a welcoming place of life and activity, with an important presence in the city and within the communities it serves.

***Physical Description of the Site***

The Glen site of the MUHC consists of 43 acres or 186,000 square feet of largely flat terrain, located in the west-central area of the City of Montreal. The site is approximately 2,400 feet (730 meters) in length east to west, and varies in width between 1,000 feet (305 meters) at its west end, and 500 feet (153 meters) at its east extremity. Located near the intersection of two major urban arteries, the Decarie expressway and highway 720, the MUHC Glen site is immediately adjacent to bus, subway, and commuter rail transportation located at the Vendome metro station.

The neighbourhoods adjoining the MUHC Glen site are diverse in character, including a mixture of residential, commercial, institutional and mixed use areas. The Glen site is a physical extension of the flat urban and residential areas of Montreal's Notre Dame de Grace (NDG) and lower Westmount, which extend south from below the slopes of Mount Royal. The south border of the site is defined by the sloping St. Jacques escarpment and the neighbouring South-West borough (St. Henri).



## GUIDING PRINCIPLES

While responding to the requirements of the functional program as developed by the MUHC, the project planning and massing concept gives shape to the new MUHC facilities with special consideration for the following principles:

### • *Creation of a Healing Environment*

The positive benefits of quality of patient environment in improving clinical outcomes have been amply documented. Functional planning and architectural design promote a “healing environment” by employing the following principles:

- Abundant access to natural light
- Direct physical and visual access to natural settings
- Reduction of stress-causing noise
- Offering patients the potential to control their environment
- Access to areas for social interaction
- Respect for privacy

- Promotion of a feeling of security and well being
- Clear and simple wayfinding

### • *Concept of Community*

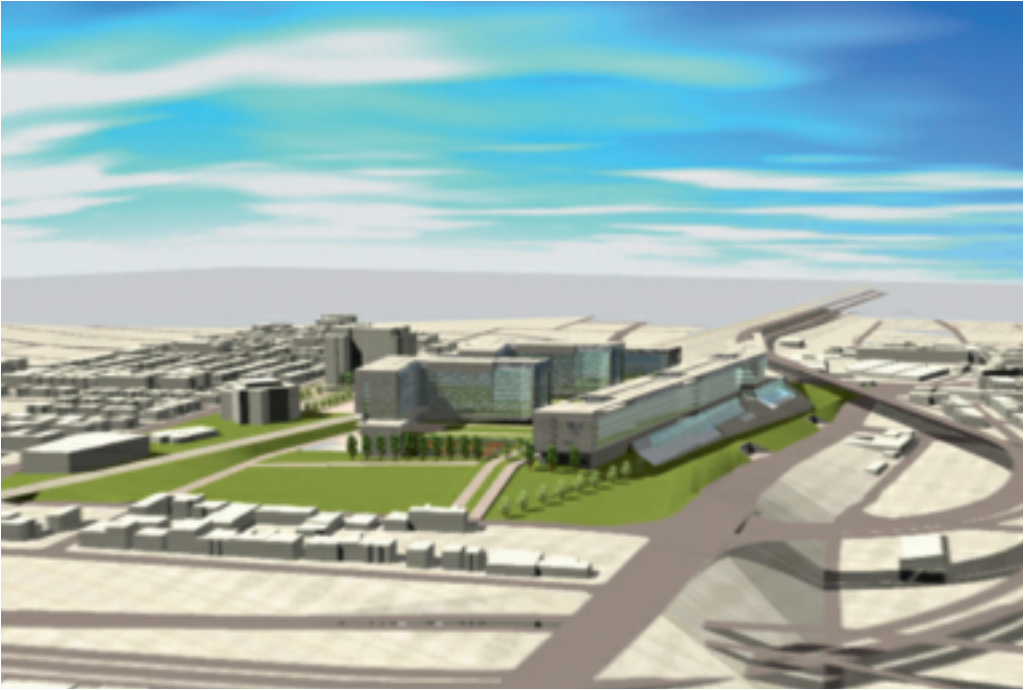
A health care, teaching and research centre of the scale and diversity of the new MUHC offers the opportunity to create a meaningful setting for a wide range of services, activities and experiences. More than simply a “healing environment” or “workplace”, the MUHC facilities at the Glen site will be a place of energy and interaction; a place for important life events, training, growth, teaching, and public forums-- a centre of life and activity with all the characteristics of a vital community.

### • *Connections with Surrounding Neighbourhoods*

The project must be developed with a clear recognition of its relationship with surrounding neighbourhoods. The pre-concept design seeks a respectful and dynamic integration with the surrounding city fabric, and to identify ways the new MUHC facilities can contribute positively to the urban setting.







• ***Sustainable Development and Energy Efficiency***

The project identifies a range of strategies to optimize capacity for future flexibility, growth and change, to incorporate the principles of sustainable design, and to optimize energy efficiency.

**PRE-CONCEPT DESIGN**

The guiding principles, in combination with the functional program requirements, emphasize the importance of a creating a human environment, an appropriate sense of scale in built forms, and the establishment of a dialogue with the existing surroundings.

***The Campus Concept***

The architectural pre-concept addresses these needs by fragmenting the overall program areas into smaller volumes expressed in the form of a campus concept. This approach allows a clear identification of the building components, integration with the landscape design, and the establishment of a comfortable scale, while

accommodating the space requirements and adjacencies of a large functional program.

***An Experiential Approach to Design***

The architectural pre-concept design on the Glen site achieves the clear organization and efficiencies required of the functional program, while emphasizing an experiential approach to design which is welcoming, open and human scaled. The pre-concept design:

- Creates a quality of environment which is natural and engaging, by articulating the site development with a number of pavilions, interspersed with courtyards and gardens of major importance to the overall design approach.
- Maximizes access to natural light and views throughout the facilities.
- Ensures clear wayfinding, via frequent views to the outdoors, the use of exterior courtyards as visual “anchors” or points of reference; and by the creation of a simple and direct circulation for visitors, staff and services.

- Creates long views and vistas, as well as intimate courtyard views to identifiable places, allowing for variety, discovery and interest.
- Creates naturally lit interior streets, arranged in components of reasonable length and scale, articulated by a sequence of identifiable places and experiences—the atria, and exterior garden courtyards.

**SITE ORGANIZATION PRINCIPLES**

The pre-concept design employs clear circulation principles that support efficient operations, allow ease of wayfinding, and minimize travel distances. Distinct circulation concepts are developed for pedestrian, bicycle, public transport, vehicular, visitor, staff, emergency, and service movement.

*A Clear Circulation Network*

The campus concept creates distinct pavilions with atrium entrance areas, linked by a clear

network of interior “streets”. People in vehicles and pedestrians can easily identify entry areas, and can enter the buildings near their intended destination. In many instances, the groupings of departments reduce the need for travel or movement, by creating local neighbourhoods of related functions. Distinct circulation networks serve visitors, inpatients, staff and services.

For pedestrians arriving via public transit, three points of entry correspond with the three inpatient pavilions on the site. The most major of these pedestrian entries, aligned with the Claremont Street axis, arrives at the “centre of gravity” of the site, thereby reducing length of travel to most destinations in the MUHC campus.

For those desiring assistance, systems would be made available to assist in east-west movement within the site, within the inpatient pavilions.



### *Pedestrian Site Access Via a Landscaped Walkway*

A pedestrian link in the form of a landscaped walkway creates surface access to the site from the neighbourhoods to the north. This gesture creates a soft link of pedestrian nature to the commercial street on de Maisonneuve, while also addressing the visual axis east west along St. Catherine Street. The pedestrian link, with a width of 70 feet, passes above the commuter rail tracks, arriving at an entrance atrium at the main entry level of the project. A new surface level access point to the Vendome metro station is planned near the new pedestrian link.

Beneath the pedestrian link is one of three metro links below grade, with space available for commercial development, and leading to the central garden courtyard between the Children's and Adult pavilions.

Thus, a visitor arriving by commuter train, bus or metro will be able to enter the site in either at metro level (below ground), or at ground level, into the heart of the MUHC facilities. In both cases, a generous garden courtyard serves as the primary entry experience and organizing element-- providing orientation, ample views and natural light.

### *Pedestrian link towards St. Henri*

On the southeast corner of the MUHC site, the similar concept of pedestrian oriented integration with adjacent neighbourhoods is achieved. Landscaped pedestrian and bicycle paths traverse the west portions of the site, creating a green, pedestrian link towards the South-West borough (St. Henri).

### *North-South Functional links*

Functional links in the north-south direction are maximized by virtue of six principle circulation links traversing the narrower width dimension of the site, providing a strong connection between research and clinical areas, as well as clear and direct access to the Conference Centre, Library and Administration zones. These north-south links are located along the sides of the garden court areas.

### *East-West Functional Links*

In the east-west axis, walkways between pavilions form part of an interior "street" articulated into three components of reasonable scale and length of travel, and punctuated by alternating views of courtyard gardens and atria.

### *Vehicular Entry Via Decarie Street*

The Decarie entry constitutes the principle public vehicular access to the MUHC site. A generous landscaped area gently inclines from the Decarie entry to the principle access level of the site, above the existing natural grade.

### *A Central Boulevard*

From the Decarie site entry, an east west boulevard along the interior of the new MUHC campus provides vehicular access to all pavilion entrances, and to underground parking entries at each pavilion. Visitors exit the parking and the site via the Decarie entrance, at the same point as their arrival at the MUHC.

### *Emergency*

Emergency vehicles, and private vehicles accessing the emergency department, will enter the MUHC site via a dedicated roadway from Decarie Street. Safety is optimized, and emergency traffic though residential zones is minimized. As with all types of circulation, a secondary route is incorporated into the site concept plan, in case an emergency condition should temporarily block the primary access.

### *Staff Cars*

Staff cars enter primarily by the staff parking entry below the escarpment, at the intersection of St. Jacques Street and St. Remi. This approach reduces surface vehicular traffic on the site, and allows direct access to parking, parking lobbies, and the MUHC pavilions

### *Service Vehicles*

Service access is provided from St. Jacques Street, below the St. Jacques escarpment. Redundancy is provided via an alternate entry and egress route.

**Glen Access**

A secondary vehicular access/egress point is located on the southern portion of the Glen Road.

**FUNCTIONAL ORGANIZATION**

***A common Diagnostics and Treatment Base***

The pavilions of the new MUHC are located on top of a common base, two storeys in height, which houses the principle diagnostics and treatment functions. This approach ensures optimization of numerous important adjacencies in the diagnostics and treatment areas, while providing the means for clear north-south circulation connections within the campus design. The diagnostics and treatment base is punctuated by large landscaped courtyards, bringing daylight and views into clinical and treatment areas and giving clear orientation to the interior circulation.

***Inpatient Pavilions***

Three distinct inpatient pavilions are located above the common diagnostics and treatment base, along the north side of the MUHC site. These are the

Children’s and Adolescent’s Pavilion, the Adult’s 1 Pavilion, and the Adult’s 2 Pavilion, including Neurological Hospital functions.

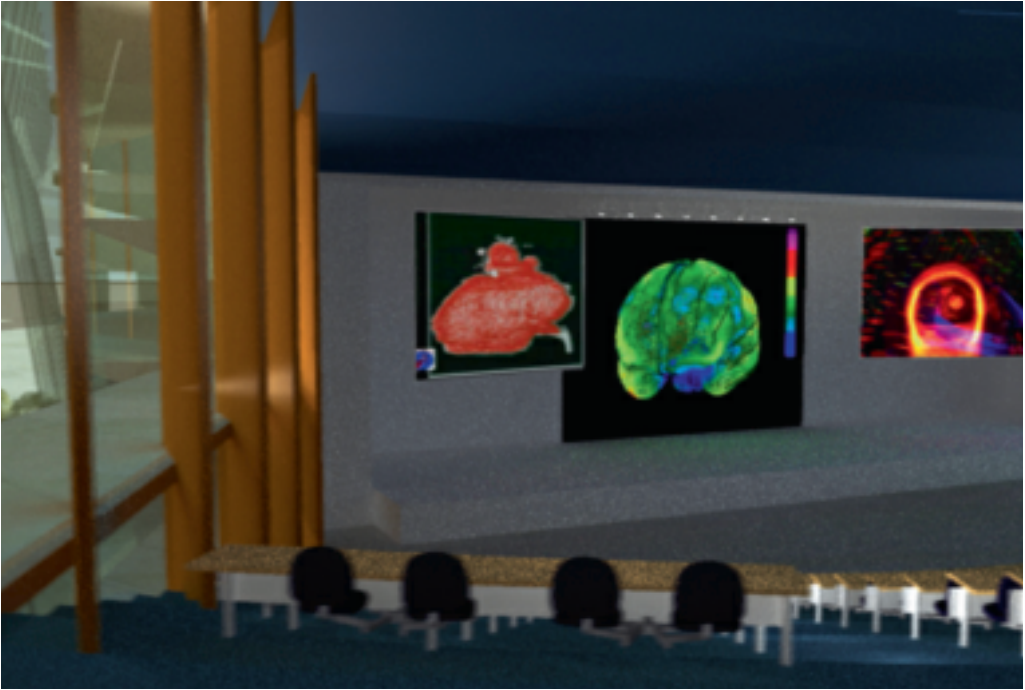
***Research***

The Research pavilion is linear building with an east west orientation, situated along the south portion of the site, and also accommodating the conference centre, library and administration. The pavilion’s location on top of the common diagnostics and treatment base creates a strong integration between clinical and research functions, with clear circulation links to the inpatient and ambulatory areas. The corridor links traversing the campus, linking research, technical and clinical areas, are located along the sides of the large landscaped courtyards, providing relaxing views to natural settings.

This configuration of the campus design, with its direct circulation links, ensures the important synergy between research, teaching and clinical care functions.







### *Children's and Adolescent's Pavilion*

The MUHC Children's and Adolescent's Pavilion, as well as the Shriner's Hospital and three daycare centres, are located in the central-east sector of the site. This arrangement allows:

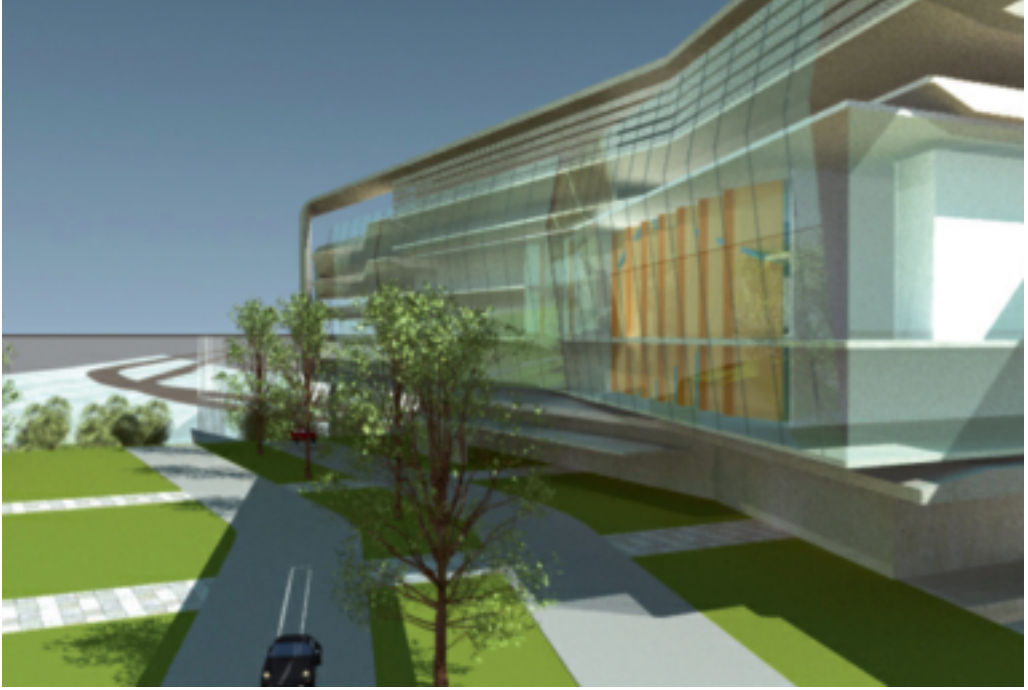
- The potential for efficient sharing of services and professional resources between the MUHC Children's and Adolescent's Pavilion and the Shriner's Hospital.
- The creation of a landscaped sector of the site, with a secure and welcoming character for the children's facilities, including outdoor play areas.
- Prominent visibility of the MUHC Children's and Adolescent's Pavilion and Shriner's Hospital.
- Clear access from public transport to the Children's services.
- Lower building massing in the east portions of the site, responding to urban planning objectives.
- Optimal adjacency of the Adult and Children's and Adolescent's emergency departments.

### *Emergency Departments*

The project includes two contiguous emergency departments; one dedicated to children and the other for adult emergencies. The two emergency departments are distinct, but can share resources if required. Located in a sheltered area (beneath the landscaped pedestrian entry), the emergency areas are easily accessed via public transport and by a dedicated road on the site, and respond clearly to internal adjacency requirements, such as to surgery and intensive care areas.

### *Operating Rooms and Intensive Care*

The 42 Operating Rooms are arranged in a "T" configuration. The centre section of the "T" houses the principle adult surgery areas. A lateral extension towards the east contains the children's operating rooms, near the children's diagnostic and treatment areas. A lateral extension of the "T" towards the west contains the operating rooms related to neurology. This arrangement accords distinct zones to various surgical departments, while ensuring flexibility



and efficient use of resources, since overflow use of one area can expand into an adjacent zone. Dedicated elevators provide immediate access from surgery to the intensive care areas, located in the three inpatient pavilions.

### *Ambulatory Services*

Ambulatory services and clinics are immediately accessible upon arrival into the hospital areas on the main entry level. For easy and direct access, ambulatory areas are located on three levels: the main entry level, plus one level above, and one level below.

## **ARCHITECTURAL MASSING AND LANDSCAPE**

### *Adult and Children's Pavilions*

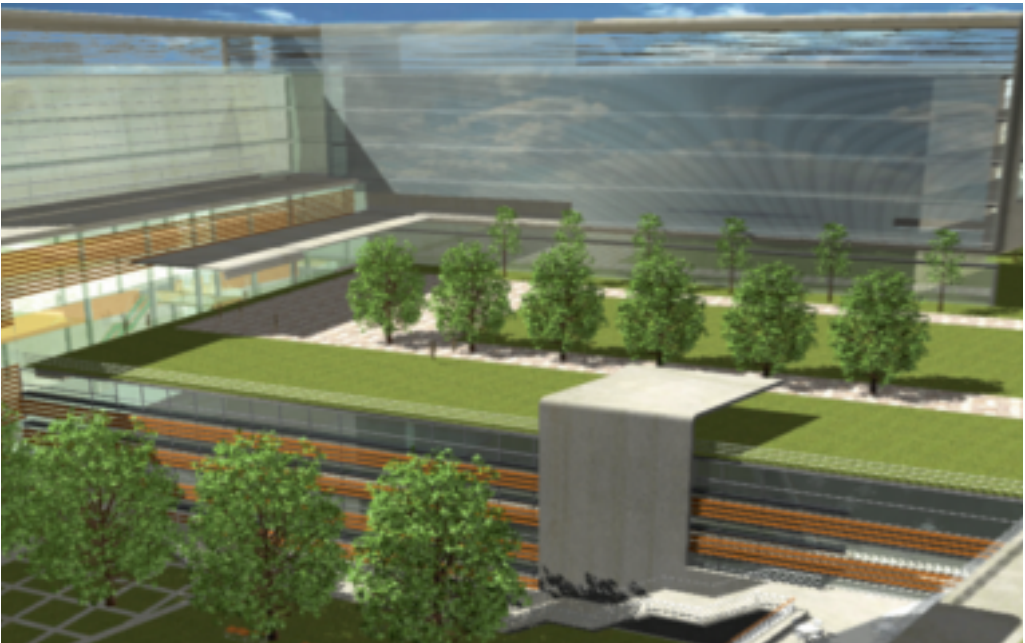
The project massing is modulated, decreasing in height from west to east. The Adult's 2 Pavilion, at the west end of the site, is the higher of the inpatient pavilions. At the centre-east end of the site, the Children's and Adolescent's Pavilion has a height of six storeys. All inpatient pavilions benefit from views towards Mount Royal, as well as south and east panoramic views towards the St. Lawrence River and beyond.

The "L" configuration of the inpatient pavilions accommodates two inpatient clusters per floor, combining efficient functional planning with generous access to natural light and views. The "L" configuration also contributes to the definition of identifiable "neighbourhoods" within the MUHC campus design, by defining landscaped courtyard areas and entrances which create an animated setting for the new MUHC pavilions.

### *Research Pavilion Configuration*

Research areas -- including dry and wet labs, support areas, offices and other functions -- are optimally laid out for efficiency in a modular, linear arrangement east to west on the site. The perimeter corridor arrangement employs an energy saving "double wall system", while also permitting a compositional approach to massing and transparency in the building envelope, to create a striking architectural presence.

The research pavilion and the inpatient pavilions frame the central boulevard of the new MUHC campus, highlighting the view towards the Montreal City Skyline.



### Principle Pedestrian Entry, and Claremont Axis

The Claremont Street axis, aligned with the heart of the MUHC campus, serves as an organizing element for important public spaces and functions at the core of the MUHC campus design. The landscaped pedestrian link, adjacent to Claremont Street, creates a soft connection to the commercial areas of de Maisonneuve, and creates an elegant pedestrian entry into the “centre of gravity” of the site. The MUHC visitor arrives at an atrium entrance, with ease of access to hospital functions and to the Resource Centre, which provides visitor orientation and information. Continuing southeast along the Claremont axis are expansive views into a generous landscaped courtyard, with greenery and water elements, animated by terrace cafes. Continuing along this axis across the central boulevard is a large scale opening, several storeys high within the research pavilion. This opening frames views towards the south of the city and region, allows the movement and play of sunlight in the campus centre, and creates a distinctive plateau area serving as an important entry into the research and Conference Centre pavilions.

This organizing axis complements the central boulevard of the MUHC campus, and clearly communicates the site organization, its range and hierarchies of scale, its patterns of community and context within the city, its variety of views, generous natural light, and green, landscaped character.

