BUILDING STATISTICS

Part 1

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GENERAL BUILDING INFORMATION

BUILDING NAME - University Sciences Building

LOCATION - Northeastern United States

BUILDING OCCUPANTS - This is a mixed use facility that will house both students and faculty of the university. Some retail space will exist on ground floor.

BUILDING USES - Within the building are 39 research and teaching laboratories for bio-medical engineering, biology, chemistry, and fossil preparation. The facility will also house 8 classrooms and a small auditorium seating 240 students for educational lectures and presentations. Each level of this building contains a section of administrative and faculty office space.

Approximately 770 square feet of retail space is planned on the ground floor level.

GROSS BUILDING AREA - 138,000 SF

NUMBER OF STORIES - There is 5 levels with a basement below and a mechanical penthouse level above.

DURATION OF CONSTRUCTION - Notice to Proceed was given in September of 2009, and the planned completion of this project is set for July of 2011.

ESTIMATED BUILDING VALUE - $70 Million

PROJECT DELIVERY METHOD - Design-Bid-Build w/ CM @ Risk.

CONTRACT TYPE - Lump Sum Contract

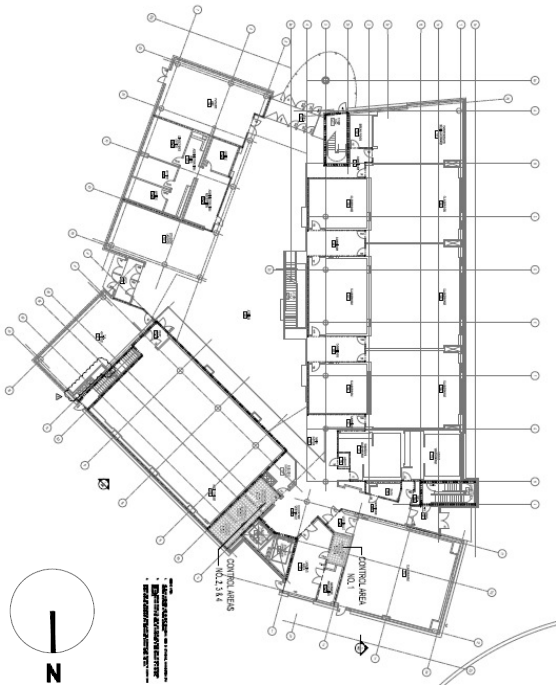
PROJECT TEAM DIRECTORY

OWNER	*Publishing Restrictions*	*Publishing Restrictions*
GENERAL CONTRACTOR	Turner Construction Company	*www.turnerconstruction.com*
ARCHITECT	Diamond and Schmitt Architects	*www.dsai.ca*
ASSOCIATE ARCHITECT	H2L2 Architecture Planning Interior Design	*www.h2l2.com*
LANDSCAPE ARCHITECT	Stantec Consulting Services Inc.	*www.stantec.com*
CIVIL ENGINEER	Stantec Consulting Services Inc.	*www.stantec.com*
STRUCTURAL ENGINEER	Halcrow Yolles	*www.halcrow.com*
MECHANICAL ENGINEER	CEL International Inc.	*www.cel-international.com*
ELECTRICAL ENGINEER	CEL International Inc.	*www.cel-international.com*
GEOTECHNICAL CONSULT.	Geosystems Consultants Inc.	*www.geosystems.com*
SUSTAINABLE DESIGN	Enermodal Engineering Ltd	*www.enermodal.com*

ARCHITECTURE

DESIGN AND FUNCTIONAL COMPONENTS

BUILDING INTERIOR / FOOTPRINT



The building footprint has a trapezoidal shape because of limited space within the city block. When referencing the plan on the right, the classroom and lab spaces are on the right-most side, with office space on the upper left, and an auditorium on the lower left (bottom floor only). Two major streets run parallel on the right and top portions of the building plan.

The existing path on the building exterior also influences the shape and angle of the bottom-most portion of the building.

A plenum space exists underneath the auditorium seating for HVAC air flow. This supplies air at a larger volume and a lower speed, directly reducing the noise levels within the space. A quieter space ensures that the speaker can be better heard in all parts of the auditorium.

Classrooms are located on the bottom level only. These rooms will occupy the most people and the most traffic flow within the building. Also, the floors of these classrooms will be slightly sloped for better lines of sight. This would be harder to achieve at an elevated level. This also means that all of the labs and research space will fill the remaining parts of the upper floors.

Seating areas have been incorporated into the building's layout to provide spaces of study and relaxation. Images to the right show the view and shape that these spaces will have.

The two images on the bottom portion of the page are interior renders of what the space will look like, as well as a progress photo taken on 8/18/2010 for comparison.

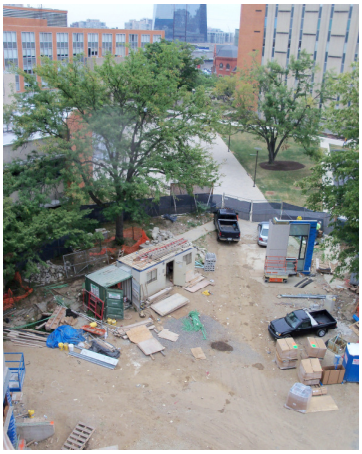
BUILDING EXTERIOR

Masonry walls and concrete piers were chosen over a steel framed and thin skinned exterior so that the building exterior could act as a barrier to the outside elements. Thicker and denser walls can better block the sounds of a major city. As a result, the space within the building becomes a more private and intimate space for its occupants.

From an aesthetic standpoint, the scattered arrangement of windows and multiple building faces gives this building its character and functionality.

BUILDING SITE

One important feature to mention about the site is the existing pathway that currently cuts through the heart of the school's campus (see photo on the right). This is a heavily used means of travel that can also be used to help accent the features of this building. The planting of various shrubs and trees along with new pathways will help create a more relaxing environment for the students and faculty of the university.



MAJOR NATIONAL MODEL CODES

Building Code:	2006 International Building Code with local amendments (IBC)
Mechanical Code:	2006 International Mechanical Code with local amendments
Fuel Gas Code:	2006 International Fuel Gas Code with local amendments
Fire Code:	Local Fire Code based on 2006 International Fire Code with local amendments
Electrical Code:	2006 ICC Electrical Code with local amendments (ICC adopts and amends NFPA 70-2005)

ZONING REQUIREMENTS

CONSTRUCTION CLASSIFICATION

Construction Type: IB Protected Noncombustible Construction

Automatic Sprinklers: Yes

Building Area (*includes increase for automatic sprinklers*):

Total Footprint Allowable (SF) = 144,000

Total Footprint Proposed (SF) = 26,874

Total Building Allowable (SF) = 432,000

Total Building Proposed (SF) = 151,590

Building Height (*includes increase for automatic sprinklers*):

Max. Stories Allowable = 6

Max. Stories Proposed = 6

Max. Building Height Allowed (FT) = 180

Max. Building Height Proposed (FT) = 91

TRAVEL DISTANCE (1016.1)

Occupancy Type:

B (Business - Labs, Offices)	Exit Access Travel Distance < 300 FT
S-2 (Noncombustible Storage), F-2 (Industrial)	Exit Access Travel Distance < 400 FT
A-3 (Assembly), S-1 (Hazard Storage)	Exit Access Travel Distance < 250 FT
Atriums	Exit Access Travel Distance < 200 FT

FIRE RATING (TYPE IB)

Exterior nonbearing walls:	
Separation distance < 5 FT	2 Hours
Separation distance > 5 FT to 30 FT	1 Hour
Separation distance > 30 FT	0 Hours
Interior bearing walls, columns, girders, trusses:	2 Hours
Exit stair enclosures:	2 Hours
Floor construction:	2 Hours
Roof construction:	1 Hour
Elevator hoistways:	2 Hours
Other shafts:	2 Hours

HISTORICAL REQUIREMENTS

Must abide by the local historical preservation ordinance.

BUILDING ENCLOSURE

BUILDING FAÇADE

The rendered image to the right best displays what the façade of the building will look like. It is a composition of masonry non-load bearing walls with vertical glazing strips and a thin aluminum facing on all sides of the exterior.

Types of Glazing:

GL1: Outer and inner layers of 1/4" clear tempered glass filled with argon gas and coated with Low-E coating.
GL2: 1/8" Clear Cricursa Curved Glass with argon gas.
GL3: Acoustic outer and inner layers of 1/4" clear tempered glass filled with argon gas and coated with Low-E coating.
GL4: Translucent, acoustical, and tinted tempered 1/4" glass with dot ceramic frit pattern. Filled with argon gas and coated with Low-E coating.
GL5: Translucent, fire-rated, and tinted tempered 1/4" glass with dot ceramic frit pattern. Filled with argon gas and coated with Low-E coating.

Types of Masonry:

Size: Standard manufactured units with nominal face dimensions of 16"x8".
Color: Manufacturer's standard gray.

The materials of the façade can also been seen in the on-site mock-up below. One thing to point out on the mock-up panel is the thickness of the aluminum cladding. The egg-crate like material allows for the facing to be lighter, which helps the overall size and strength needed for the structure of the building.

ROOFING

Roofing for this building consists of two different but similar assembly types.

Types R1 and R3:

1. Concrete deck
2. Air/vapor barrier, self-adhered
3. Rigid insulation, fully adhered
4. Thermoplastic-Polyolefin (TPO) Roofing membrane, fully adhered

Type R2:

1. Metal deck
2. Sheathing board, mechanically fastened
3. Air/vapor barrier, self-adhered
4. Rigid insulation, mechanically fastened
5. Thermoplastic-Polyolefin (TPO) Roofing membrane, mechanically fastened

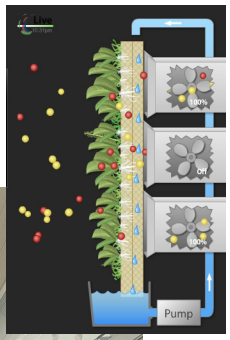
SUSTAINABILITY FEATURES

BIOWALL

The five story biowall located in the atrium of the building will act as a natural air filter to help remove harmful VOCs and CO_2 levels from the air. As air is passed through the wall, impurities are removed by the natural photosynthesis process of the plants. A render of the biowall is shown to the right of the page.

To feed the plants, water is pumped down the face of the wall and then collected in a basin at the bottom to be pumped back to the top of the biowall for recirculation (shown on the right). Nutrients will be added periodically, but this system of ventilation and air purifying requires very little amounts of maintenance.

The building was designed to feed the biowall with plenty of natural daylight. Skylights from above and windows on the south face of the building allow for healthy growth of the plants that will be used.



The biowall allows for air within the building to be constantly recycled. This is better in many ways when compared with the conventional systems used today. The quality of the air is better because it will be cleaner then the city air that would typically be introduced into the "clean" air supply. You also no longer need to re-heat or re-cool the air within the space. With the air being cleaner and more comfortable, its occupants will feel healthier and possibly be more productive. The aesthetics of the space alone contribute to the comfort of the occupants.

FILIGREE PRECAST SLABS

A filigree slab is a really thin concrete precast panel with the needed reinforcement for the lower portion of the deck. It also acts as the formwork for the cast-in-place concrete on site. These slabs are first made off-site and then shipped to the jobsite for assembly and shoring. Once secured, the second layer of concrete with reinforcing is placed on top of the precast panels. This process can effectively and efficiently accelerate the construction of structures with improved physical and aesthetic properties.

These slabs can be considered a sustainable feature because there is no need to waste material that would typically be used in forming concrete slabs.

LEED CERTIFICATION = *GOLD (planned)*