Project Planning Report for the Expansion of the John H. Daniels Faculty of Architecture, Landscape and Design

March 24th for April 1st, 2009

I Executive Summary

The John H. Daniels Faculty of Architecture, Landscape, and Design offers three masters level programs in the allied design disciplines of architecture, landscape architecture and urban design. The Faculty also provides service teaching for the BA, Architectural Studies Program (BAAS) which is administered by the Faculty of Arts and Science. The faculty was recently renamed In recognition of the significant gift of $14 million in 2008. The curricula for all three Masters programs place an emphasis on design studio teaching, which is unique to the design disciplines, and are accommodated along with related enrichment activities, such as exhibitions and lectures, within the Faculty's building at 230 College Street on the St. George campus of the University of Toronto.

The existing building was purpose-built for the Royal College of Dental Surgeons and its Infirmary in 1909, by the architecture firm of Burke, Horwood & White. It was enlarged to its current size in 1920 by Molesworth, West and Secord. A number of deficiencies in the building have been identified, and include: inadequate heating and ventilation systems; a workshop that is poorly equipped to support design studio activities; and a security system for the building that needs to be improved. The studio spaces are organized vertically around a staircase, which limit the possibilities for a collaborative, open environment.

Space limitations of existing facilities also present challenges to anticipated program expansion. There is no capacity to accommodate either research offices or design studio space required to support the creation of a new Doctoral program that was identified as a goal of the Faculty's Plan 2000.

A space program has been developed using COU standards as the base guideline. The proposed space program requests approximately a total of 5730 nasm of existing and new space at 230 College Street. The faculty would like to remain in its existing facilities for the duration of construction. The project will require careful phasing in order to allow for the continuation of the academic program. Phase 1 will construct approximately 1250 nasm of space, with a gross area of 2023 sm. This will include 1100 nasm of studio space, critique space, a computer lab and a mock-up area. 118 nasm of office space will be added, with an additional 34 nasm provided for a library workroom and office.

Previous master plans have suggested the best way to expand the building on its current site is to infill the existing courtyard and construct additional floors on the roof. Consideration was also given to constructing an addition on the north side of the building that would be supported on columns on either side of the Bahen Centre ramp and perhaps cantilevered a short distance further north over the existing service court to 215 Huron. The Committee believes the first strategy is the most suitable, and the expansion plans have been described accordingly.

This project will allow the Faculty to fulfill its aspiration to have a home that is both an exemplar of what it strives to teach its students and an accommodating laboratory for leading edge research in the allied disciplines of architecture, landscape architecture and urban design.

Treating the existing building at 230 College as a material resource to be reused, rather than abandoning it for a new building, is consistent with first principles of sustainability and offers a great opportunity for design research and innovation that could potentially serve as a demonstration project for buildings of comparable age on campus and across the country. It is expected that this project will create a high performance building that is energy efficient, offers exemplary Environmental Quality (IEQ) and minimizes its effects on the wider natural environment. It is also important that the renewed facility demonstrate an integrated approach to landscape design and ecology in both its exterior and interior spaces. In this regard, the inclusion of innovative biological systems, such as breathing walls, is to be encouraged within the building.

This Report is being brought forward for approval in principle to allow for increased space for the John H. Daniels Faculty of Architecture, Landscape and Design at 230 College Street. Phase 1, estimated to be $20 million will be implemented when funding becomes available, and is being submitted under the federal infrastructure program. The balance of the work to the remaining portions of the unrenovated building will proceed with a phased approach as future funding becomes available.

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II Project Background

Membership

Barry Sampson, Professor, Faculty of Architecture, Landscape and Design (Chair)
Elizabeth Sisam, AVP. Campus and Facilities Planning
Pina Petricone, Professor, Faculty of Architecture, Landscape and Design
Holly Jordan, graduate student, Faculty of Architecture, Landscape and Design
Ted Kesik, Professor, Faculty of Architecture, Landscape and Design
Irene Puchalski, Librarian, Faculty of Architecture, Landscape and Design
Larry Richards, Professor, Faculty of Architecture, Landscape and Design
Larry Norris, Facilities Manager, Faculty of Architecture, Landscape and Design
Komala Prabhakar, Assistant Dean, Faculty of Architecture, Landscape and Design
Lisa Neidrauer, Office of the AVP. Campus and Facilities Planning
Julian Binks, Manager, Capital Projects Planning
Ron Swail, AVP, Facilities and Services

Terms of Reference

The Project Committee must address the following items:

1. Identify the demand for additional academic space necessitated by enrolment and program growth within the Faculty of Architecture, Landscape and Design.
2. Demonstrate that the proposed space program will be consistent with the Council of Ontario Universities' and the University's own space standards.
3. Identify all secondary effects, including space reallocations within the existing building, impact on the delivery of academic programs during construction and the possible required relocation as required to implement the plan of existing units.
4. Respond to the recommendations related to space identified in the Accreditation Reviews of the Master of Architecture, and of the Master of Landscape Architecture Program (2007) and the OCGS Periodic Appraisal of the Masters' Programs (2006).
5. Address campus-wide planning directives as set out in the campus master plan, open space plan, urban design criteria, and site conditions that respond to the broader University community.
6. Identify equipment and moveable furnishings necessary to the project and their estimated cost.
7. Identify all data and communication requirements and their related costs.
8. Identify all security, occupational health and safety and accessibility requirements and their related costs.
9. Determine a total project cost estimate for the capital project including identified costs of implementation in phases.
10. Identify a funding plan for capital and operating costs.
11. Complete report by May, 2008.

Background Information

The School of Architecture at the University of Toronto was established in 1890 and originally housed within the Faculty of Applied Science and Engineering. In 1961, it relocated to 230 College Street, which was purpose built in 1909 for the dentistry program. The building underwent renovations at this time to accommodate the relocation of the School.

Granted faculty status in 1967, the school then had three departments: Architecture, Landscape Architecture, and Urban and Regional Planning. In 1998, the Faculty shifted its professional programs to the graduate level, and the name of the division was changed to Faculty of Architecture, Landscape, and Design. In recognition of the significant gift of $14 million to the Faculty in 2008, it is now called the John H. Daniels Faculty of Architecture, Landscape and Design.

In 1997, a Users Committee for the School of Architecture and Landscape Architecture (now the Daniels Faculty of Architecture, Landscape, and Design) addressed the issue of facilities renewal and its role in supporting the academic program and vision of the Faculty. This resulted in a report that received approval by Governing Council in 1997.

Specifically, the Users Committee Report addressed the space requirements for the Academic Plan for 2000 and identified projected enrolment in the masters programs and

faculty and staff complements. The report also addressed facilities renewal and examined alternative strategies to renovate the existing building at 230 College Street.

The report proposed an ambitious multi-phased project valued at approximately $10 million (1997) which could be implemented as funding permitted. To date, a number of the phased renovations have occurred providing much needed improvements, including new library facilities and exhibition space. However, much remains to be done.

A project planning committee was reconstituted in 2008 to review the recommendations of the previous report and address the present requirements of the Daniels Faculty of Architecture, Landscape and Design. This project planning committee reviewed the recommendations of the previous report and sought to address the present requirements of the Faculty. A new Academic Plan has been prepared to address the future direction on the Faculty and its programs.

Statement of Academic Plan

The John H. Daniels Faculty of Architecture, Landscape, and Design offers three masters level programs in the allied design disciplines of architecture, landscape architecture and urban design. Both the Master of Architecture and the Master of Landscape Architecture programs are accredited—architecture by the Canadian Architectural Certification Board, and landscape architecture by the Canadian Society of Landscape Architects. The Faculty also provides service teaching for the BA, Architectural Studies Program (BAAS), which is administered by the Faculty of Arts and Science. The curricula for all three Masters' programs place an emphasis on design studio teaching, which is unique to the design disciplines, and are accommodated along with related enrichment activities, such as exhibitions and lectures, within the Faculty's building at 230 College Street on the St. George campus of the University of Toronto. Design studio teaching as well as a number of lecture courses for the BAAS program are also delivered from the Faculty's building.

The Eric Arthur Gallery is open to the university community as well as the general public and has coordinated exhibitions with other galleries in the University. The Faculty's very successful public lecture series also attracts members of the university community to the Faculty, and, when too popular to fit within the main lecture Hall at 230 College, takes advantage of other theater venues on campus. Members of the faculty have been involved with the formation of the new Cities Centre and it is hoped that interaction between the Centre and the Faculty will multiply in future years: through exhibitions, conferences and other events at the Faculty, and, possibly, through more direct physical ties that may be made possible by expansion to accommodate facilities supporting the Cities Centre itself.

Space limitations of existing facilities present challenges to anticipated program expansion. There is no capacity to accommodate either research offices or design studio space required to support the creation of a new Doctoral program that was identified as a goal of the Faculty's Plan 2000. Lack of space may also create long term limitations to initiatives currently underway to establish specialized interdisciplinary Masters' programs, such as the Health Care Design initiative that is currently under development using existing resources.

The inadequacy of environmental aspects of existing facilities is also a matter of concern to the Faculty. Although there have been a number of important upgrades to the heating and ventilation system for parts of the building, it remains rudimentary for many areas. In

comparison to newer facilities, in which other divisions are housed on campus, it consumes very little energy only because it does not have the systems to meet modern environmental control standards. The lack of a contemporary ventilation system and the absence of air conditioning for the majority of spaces, most notably the main lecture hall and the studio areas, contribute to poor indoor environmental quality on many days and preclude summer usage of these areas for teaching or outreach purposes. While the building's physical durability has been a great asset over the four decades the Faculty has been housed in it, its current state of poor environmental control is inconsistent with principles of sustainability taught in the Faculty's programs and advocated by professional associations in both Canada and the United States. In this regard, it is a priority of the Faculty to take advantage of the process of facilities expansion and renewal to transform its building and site into an exemplar of environmental performance, as well as a demonstration project for the transformation of buildings of comparable age and construction to meet societal objectives to reduce the contribution of buildings as a whole to climate change.

Master of Architecture
The Master of Architecture program at the University of Toronto is one of 11 accredited programs training architects in Canada. For 118 years, graduates of our school have spread across Canada and the world as innovators and leaders in the design professions. The M Arch is a 3 ½-year professional degree intended for individuals who have completed a 4-year bachelor's degree (in any discipline—BA, BSc, BASc, BES, BFA, BCom, etc.). The 2 ½-year Advanced Standing Master of Architecture option is intended for qualified candidates with a strong portfolio of architectural design work holding a bachelor's degree in architecture, architectural studies, or environmental design. The 1 ½-year Post-Professional Master of Architecture is an advanced design and research option for individuals already holding a professional degree in architecture. Admitted students enter the Master of Architecture stream in the fifth term. The combined enrollment of all three streams is currently at 259 and is projected to remain at 266 for the foreseeable future.

The program combines lecture and seminar based teaching within a variety of conventional classroom settings with studio based design instruction that is unique to architectural education. While the student/teacher ratio of the former can vary significantly, depending on course enrollment, the student/teacher ratio for effective studio based instruction typically conforms to a limited range of between 12 and 15 to one. Studio teaching also involves a significant amount of teacher contact time with official studio hours typically being 12 hours a week (3 sessions of fours hours). As with laboratory based teaching programs, a large portion of the space program is thus devoted to the studio component. The long established practice of making studios available for student use 24 hours a day also creates atypical issues of access control to ensure student security at night times. The recent installation of an electronic, fob based, door security system has largely addressed the latter issue.

Master of Landscape Architecture
The Master of Landscape Architecture (MLA) program at the University of Toronto is one of five accredited professional programs training landscape architects in Canada and is internationally recognized for its particular focus on urban landscape architecture. The MLA program at the University of Toronto has been responsible for educating approximately one-third of the landscape architects practicing in Canada today. It offers three degree streams in the Master of Landscape Architecture program: a 3-year first

professional program for holders of an undergraduate degree in any discipline; a 2-year first professional program (advanced standing) for holders of an undergraduate degree in architecture or comparable design discipline; and a 1-year post-professional option for holders of a professional degree in landscape architecture. The combined enrollment of all three streams is currently at 66 and is projected to remain at 67 for the foreseeable future.

As with its sister program in architecture, the MLA program combines lecture and seminar based teaching within a variety of conventional classroom and seminar formats with studio based design instruction that is fundamental to landscape architecture education. Similarly, the student/teacher ratio for studios falls within a limited range of between 12 and 15 to one. As a result, a significant portion of the teaching facilities required for the MLA program is devoted to the studio component. As with architecture, MLA studios are open 24/7.

Master of Urban Design
The Master of Urban Design (MUD) is a 2-year, post-professional master's-level program open to students with professional degrees in architecture or landscape architecture. It began at the University of Toronto in 2000 and is one of two such programs in Canada (University of Montreal's new Maitrise en Design Urban is the second such program, begun in fall 2007. McGill University is currently working on a proposed Master of Urban Design program. Other Canadian universities offer studies in the area of urban design within planning or architecture degree programs, but not as a dedicated master's-level degree). The program is relatively small with 12 students currently and projected to be not more than 14 in the future.

The MUD program at Daniels, alongside a handful of parallel MUD programs in the USA, is distinct from programs that place urban design under the umbrella of architecture or planning. The courses required by the MUD program involve seminar based teaching as well as design studio research. A great deal of beneficial circulation occurs between the MUD program and the Master of Landscape Architecture and the Master of Architecture programs, particularly through shared option studios. There is also interaction with the MUDS program of the Department of Geography, Program in Planning, which in the past has shared studio space with the MUD program at 230 College. Due to the small class sizes the teacher/student ratios are often lower than Architecture and Landscape Architecture, but otherwise the approach to studio teaching and, thus, studio space needs are comparable.

Bachelor of Arts, Architectural Major
Students apply to the BA, Architectural Major program upon completion of their first year in the Faculty of Arts and Science. Students wishing an intensive exposure to architectural design within a liberal arts education may apply for a concentration in design; students wishing a broad interdisciplinary education in architectural studies, but not wishing to pursue design, may apply for a concentration in history/theory/criticism. Students in both concentrations then take a series of courses in architectural design and representation; history, theory, and criticism; and technology and ecology. Enrollment in the BA Major in Architectural Design program is capped at 60 and the BA Major in Architectural History and Theory is capped at 12 per year.

The undergraduate BA Architectural Major program both brings students from Arts and Science to 230 College Street and takes teachers and graduate students from the Faculty out to interact with the Arts and Science community. With the exception of the very

successful entry year introductory course delivered to 400 students at Arts and Science, most lecture courses required for the major are delivered at the Faculty with classes varying in size from 80 to 100 students. The only venue at the Faculty suitable for classes of this size is the tiered lecture hall, Room 103.

In their second year, the first year of the major that is delivered by Faculty resources, students from both the design and history/ theory streams are required to take architectural design. In their third year, only students majoring in design are enrolled in design. From the program's inception, creative design has been taught via traditional tools and methods of representation as well as contemporary digital media typically used in studio instruction. Unfortunately, neither studio facilities nor adequate digital media facilities have been available to support creative design aspects of the program.

The absence of adequate technological and space resources undoubtedly represents the most significant obstacle to building on the program's current success and needs to be addressed, either with dedicated space located at 230 College Street or elsewhere on the St. George campus. To facilitate recruitment and smooth transition into the graduate programs within the Faculty, it would be desirable to provide a suite of spaces within the Faculty's building that is designed to meet the particular needs of BAAS studio instruction including: a large open studio/common space with non dedicated work stations that could be available for student use 24/7, a similarly sized room for critiques and other classroom usage, a room for small group meetings, and support space for computing and output resources as well as storage. If located within the Faculty, it would be desirable to arrange access to these facilities in a manner that would maintain the distinct identity and security of graduate studio spaces and, thus, not compromise the success of the graduate programs.

The Writing Program

In 1992, the School of Architecture and Landscape Architecture at the University of Toronto was among the first professional faculties to create a Writing Program designed to assist students with their writing and research needs. This assistance consisted of a Writing Lab available to all students in the faculty, a Writing Workshop dealing with all written assignments in the first year of the program, and a course for students with special language needs. With the introduction of graduate programs (Master of Architecture, Master of Landscape Architecture, Master of Urban Design) in 1998, a permanent coordinator of the Writing Program was appointed and initiatives begun in the undergraduate program were extended and modified to suit the needs of master's students, including those who speak English as a second language.

The writing program needs and utilizes small group, seminar and office space within the Faculty to support one on one and small group workshops, tutoring and counseling. Offered to first-year MArch and MLA students, the Writing Workshop is designed to assist students performing at all levels in advancing their writing and research skills. The workshop (which depending on the year and available resources has consisted of anywhere from three to ten sessions) provides a format for peer and tutor evaluation of written work students produce to satisfy course assignments. In the second term of their third year, master's students take a thesis research and preparation course in which they prepare a written document as preliminary to the studio work they will undertake in their final term.

ANTICIPATED PROGRAM EXPANSION

Proposed PhD in Architecture

The faculty's 2000 Plan envisioned the establishment of a small PhD program admitting two students per year. For a variety of reasons, it has not been possible, to date, to implement the program. Planning for the PhD program is expected to recommence in the near future. When rolled out, the program is expected to have a total of fourteen students enrolled in the program at any one time.

The nature of research activities that will characterize the program are likely to vary, particularly in respect of the eventual mix of traditional humanities or science based research as compared to design based research. The latter can be expected to require traditional studio based facilities, whereas the former would require more conventional research offices. To address such fluctuations in work station needs, a space of adaptable design will be fundamentally important to accommodating the future needs of this program.

Specialized Interdisciplinary Masters programs

At the prompting of health care professionals in government and the university, the Faculty is undertaking an exciting new interdisciplinary initiative focused on Health Care Design. This initiative brings together design researchers within the Faculty and health care researchers from the university, as well as the larger health sector, around questions of health care effectiveness and innovation. It is expected that this initiative will lead to a new graduate degree offered by the Faculty, which may be termed a Master of Design or a Master of Science in Architecture. At the present time, no additional program spaces are assumed to be required for this initiative.

ANTICIPATED STUDENT POPULATION BY ACADEMIC PROGRAM:

Graduate Programs:

M. Arch	*-- 266*
Lan. Arch	*-- 68*
Urban Des	*-- 14*
Subtotal	*348*
Future Doctoral	*-- 14*
Subtotal	*362*

Undergraduate Program:

BA Arch Studies	*120*
Total	*482*

PROGRAM OUTREACH AND ENRICHMENT SUPPORT

Lectures

The faculty mounts an annual *international guest lecture series*, in the fall term and in the spring term, presenting approximately 12 to 16 prominent architects, landscape architects, urbanists, designers, historians, and theorists from related fields. The faculty also hosts an

informal *Brown Bag Lecture Series*, guest speakers in courses, and special by-invitation seminars with prominent designers (approximately 50 such events each year).The lectures are typically offered in the tiered lecture hall with a limit of 170 seats. The addition of simulcasting technology has allowed the audience size at the Faculty to be expanded by adding seats in an adjacent classroom with approximately30 seats. Lectures drawing audiences larger than two hundred are relocated to other venues in the university. A large venue within the Faculty seating up to 200 seats is desirable and could be provided in existing space (room 066) with extensive renovation.

Panel Discussions and Symposia
The faculty has developed ongoing linkages and co-presentations of symposia, panel discussions, guest lectures**,** and other special events with other university divisions and other institutions including the Aga Khan Trust for Culture, the Department of Fine Art, the Royal Ontario Museum, the Design Exchange, the Interior Design Show, York University Art Gallery, the Japan Foundation, the Goethe Institute, and the Power Plant. Refitting of existing large event spaces, such as room 066 in the basement with a high level of digitally based audio visual technology and movable acoustical partitioning has been a priority for some years, both to support events not well suited to the tiered lecture hall as well as for day to day teaching. The addition of a suite of large seminar/critique spaces on the top floor of the building, in combination with a roof top terrace overlooking the downtown, has been proposed by the Dean to both improve classroom facilities for studio teaching and provide a conference centre that would appeal to a wide array of university users.

Exhibitions
Created during the Deanship of Larry Richards, The Eric Arthur Gallery presents approximately four major exhibitions annually and has made a huge contribution to the Faculty's outreach to the professions as well as raising its profile on campus, in Toronto and abroad. The gallery frequently collaborates with firms, institutions, and curators including participation in the CONTACT (annual Toronto Photography Festival) and Nuit Blanche (a city-wide all-night arts festival). The Eric Arthur Gallery is a member gallery of the University of Toronto Art Gallery Group. Named in recognition of the former dean's contribution to the Faculty, the Larry Wayne Richards Gallery compliments the Eric Arthur gallery by featuring external and in-house exhibitions of student and faculty work in the central space on the ground floor. It is a priority of the facility renewal project to maintain the prominence and quality of the Eric Arthur Gallery, while adding a storage and exhibition staging area adjacent to the gallery. It is also a priority to make further incremental improvements to lighting and finishes in the Larry Wayne Richards Gallery.

Space Requirements

Overview of Existing Space
The Faculty of Architecture, Landscape, and Design currently occupies approximately 4108nasm (6530gsm) within its building located at 230 College Street.

The existing building was purpose-built for the Royal College of Dental Surgeons and its Infirmary in 1909, by the architecture firm of Burke, Horwood & White. It was enlarged to its current size in 1920 by Molesworth, West and Secord. Significant improvements and modernization took place when the School of Architecture took possession of the building in 1961, including a reconfiguration of the front stairs, reduction of the lobby height and the construction of a library in the basement. Incremental changes that took place between

1961 and 1997 were minor in nature. During 1998- 2001, the first floor offices were renovated and the library was relocated to a new space on the second floor. In 2001, improvements to the exhibition spaces were completed.

A number of deficiencies in the building have been identified and include: inadequate heating and ventilation systems, a workshop that is poorly equipped to support design studio activities, and a security system for the building that needs to be improved. The studio spaces are organized vertically around a staircase, which limit the possibilities for a collaborative, open environment.

The current inventory is displayed in Appendix 1.

Design Studios
The School provides permanent studio space for each graduate student enrolled in its MArch, MLA and MUD programs. These design studios are currently located on the third and fourth floors, and are arranged in a flexible open plan manner. Students are provided with individual work stations and shared modeling tables that are arranged in conjunction with moveable partitioning to subdivide the space according to the needs of each studio class. As a result of overcrowding, there is a lack of “flex space” that could be used for group meetings, impromptu design critiques of large format projects.

Currently undergraduate students utilize a 5th floor room for their studio activities. This is a former drawing studio which has been minimally renovated. This is assigned to the undergraduate population as whole, and individual spaces are not assigned. Although provided with separate access from the graduate studios that is secure, it is not accessible by elevator, which only goes as high as the fourth floor.

Studio Support facilities
The existing workshop is adequate in size and has been recently upgraded with the addition of a modern dust collection system. It lacks a suitable shipping and receiving area for materials at grade and the existing freight elevator is too small to be of any use in moving materials to the basement.

Three laser cutters, a Computer Numeric Control (CNC) machine, a computer driven post forming machine and rapid prototyping machines have been installed in dedicated space adjacent to the woodshop. Two of the laser cutters are dedicated to student use and are located in their own room with access managed by the shop supervisor. The other equipment is located in a research lab next door and made available for student use. Each of these pieces of equipment require environmental control technologies that have space and operational implications.

Computing facilities include two teaching labs. One includes 12 high-end workstations with a full software complement and a dedicated ceiling-mounted LCD projector and screen. The second teaching lab includes a dedicated three-screen theatre. In addition to teaching labs, a secondary support lab includes 12 later-generation high-end workstations that are meant to complement the personal computing resources of students. A 3d modeling lab is located on the 3rd floor.

The IT staff includes three system administrators who oversee the needs of the faculty. They are located, along with the central server room, on the main floor, where they are

central to both classroom and administrative facilities. Although conveniently located, this facility is crowded and cannot be expanded without affecting adjacent classrooms.

The audio-visual resources of the Faculty include a photography lab with a full-time staff member. This lab, located Room 102, requires expansion.

Library
The library's renovated space on the second floor overlooks the Eric Arthur gallery. Enrollment growth in the graduate programs and the popularity of the BAAS program have placed significant pressure on its facilities. At present, the library seats 45 in a combination of lounge seating, carrels and tables. In addition to computer workstations for staff, the library has 10 workstations for users, 5 flatbed scanners, a digital copier, and wireless access.

The collection holds approximately 30,000 volumes. Space shortage is a major concern. This is a research collection focused on the needs of graduate students and faculty. With book shelves at 100% capacity, the library has had to relocate approximately 6300 items to the off-site book storage facility at Downsview.

Classrooms
The faculty currently has a sufficient supply of large to small classrooms for its lecture and seminar based courses. On the main level, the tiered lecture hall, room 103, seats approximately 170 and is fitted out with "smart classroom" technology. Otherwise, the seats, finishes and lighting are in need of renewal and the HVAC system lacks air conditioning as well as adequate environmental control. The arrangement of the room with entry at the front, next to the lectern, is a source of major disruption during lectures and precipitates many complaints. Next to it, Room 104 has been renovated and provides a suitable venue for seminar groups of up to 20 people. Next to it, Room 106 has also been renovated and accommodates up to 35 students. On the second floor, the recently renovated PCL seminar room provides an up to date and attractive large seminar room for groups of up to 25. In the basement, the former library space, now Room 066 North and South, has been converted into a flexible classroom with rolling partitions that allow it to be used as one large space or two normal sized classrooms.

Room 066 offers great potential to be a venue for teaching and major events. In its open configuration as a flat floor, multipurpose room, it has the capacity to seat approximately 200 people with compromised site lines. While adequately fitted out with digital technology and some new wall finishes, the otherwise dilapidated state of finishes, lighting and environmental control discourage such usage of the space in its large format. At the same time, the lack of acoustical control provided by the rolling partitions compromises the use of the divided space for effective classroom teaching. The highest and best use of this space is seen to be a combined flat floor and tiered space with an acoustical divider, allowing it to be divided into a flat floor classroom and a small tiered classroom, or used, undivided, as a major lecture hall to replace Room 066. Its location adjacent to the barrier-free Huron Street entry and opposite the student café are advantages, in addition to the potential for a superior entry arrangement as compared to Room 066.

Offices
There is an existing supply of 23 enclosed offices for core faculty. Those with administrative positions as well as the dean are located in the central administration area

on the main floor and northeast corner of the second floor, both of which are interconnected by an internal stair. These offices are somewhat larger than typical teaching faculty offices (14 sm vs. 12 sm).

Offices for core teaching faculty are located within the long suite of offices on the west side of the second floor or the smaller suite of offices on the third floor. All of the administrative offices and third floor offices were created through recent renovations and are up to date with respect to HVAC, lighting, power and data cabling. All of the offices on the second floor have been partially renovated, but most have still not been provided with air conditioning, with the exception of three at the south end.

There are currently 58 sessional lecturers teaching one, two or three courses per year. There is only one shared office provided for them, containing three work stations. Located on the second floor, this office is also used for a copy/printing machine that services all faculty on the floor. Sessional faculty who require space for private meetings with students currently use a utility room across the corridor for this purpose.

Administrative staff offices and work stations are located along with academic administrative offices in the Vanbots Administrative Area. On the ground floor, this area includes a central reception area, a Dean's reception area, an March program reception area as well as a Board Room, staff lounge, copy room, cloak room and staff washroom. On the second floor, it includes an MLA program reception area, in addition to three administrative offices. Renovated a decade ago, this area is up to date with respect to HVAC, digital technology, and finishes, although the carpet is showing signs of wear.

Growth in the number of academic programs at the graduate level, coupled with a planned increase in research endeavors within the school, will directly affect the number of faculty and administrative staff complements and ultimately increase the space needs in general. Figure 1 illustrates the existing and planned growth to Faculty, Staff, and Student complements.

Figure 1: Existing and Planned Growth Complement Plan

Faculty/Staff	**2008 FTE**	**Proposed Total FTE**
Faculty	25.35	31
Sessionals	7.33	5.75
Non-academic staff	15	15
	2008 Enrolment	**Proposed Total Enrolment**
Students		
MArch	259	266
MLA	67	68
MUD	12	14
PhD	0	14
BAAS	120	120

Space Allocation and COU Analysis

Analysis of space allocation based on Council of Ontario Universities (COU) standards suggests that to accommodate the Faculty of Architecture, Landscape and Design in its

current configuration would require a space allocation of 5202 nasm and that with all anticipated growth an additional allocation in the range of 431 nasm would be required. COU analyses are included in Appendix 2.

Figure 2: Space Allocation/COU Allocation Comparison

	ACTUAL		Generated-existing	Generated-expansion
Scheduled Teaching Labs	1601.92			
Unscheduled Teaching Labs	41.96			
Laboratory Support Space	188.73			
Research Labs	131.55			
Research Support Space	127.77			
		2091.93	**3487.8**	**3718.2**
Faculty Offices	373.16			
Non-Academic Offices	109.28			
Office Support Space	373.41			
		855.85	**759.69**	**840.94**
Library Collection Space	102.72			
Library Office Space	19.05			
Library Support Space	89.75			
Study Space	106.03			
		317.55	**427.5**	**515.25**
Tiered Classroom	136.05			
Flat Floor Classrooms	365.25			
Classroom Support	5.22			
		506.52	**307.62**	**324.18**
Student Club Offices	10.19			
Lounge space	128.1			
Exhibition space	198.65			
		336.94	**219.7**	**235.5**
TOTAL		**4108.79**	**5202.31**	**5633.87**

Design Studios
Generated design studio space has been calculated using a factor of 9.6 nasm per student. This calculation includes all support and critique space associated with the studio-based education.

Offices
Faculty offices are allocated within the plan for each full-time FTE faculty member. For the proposed academic complement of 31FTE, COU would allocate 403nasm. The Faculty has an unusually high number of courses taught by sessional faculty. The COU allocation of sessional offices normally falls within a .25 factor applied to FTE faculty. However in this case, office spaces for sessionals is being calculated by taking the total number of courses taught by them, and assigning 8 courses per office space. Sessional office space is assigned a total of 80 nasm.

Classrooms
While the COU allocates 324 nasm, according to scheduled class hours in both the graduate and undergraduate programs, the Faculty currently has 506 nasm of classroom

space. In addition to lecture and seminar based courses, the existing classrooms are used as critique spaces and for guest lectures, symposium and conference events. The Faculty's studio-based teaching includes collective review sessions, which in turn, require the use of classroom space with suitable wall surfaces for pinning up large quantities of material. Unlike the normal cycling of classroom teaching in one to three hours, review sessions typically require the use of rooms for half a day at minimum and often the whole day. This puts studio critiques in direct competition with classroom teaching for space. The proposed space plan will reduce the classroom space to 428 nasm, but will improve on the quality and flexibility of that space. Separate critique rooms are planned, which will alleviate pressure on the classroom availability.

III Project Description

The John H Daniels Faculty of Architecture, Landscape and Design was renamed recently to reflect a major gift directed at assisting the Faculty in renewing its facilities as well as providing financial support to its students. Combined with capital funds set aside by the University and additional private fund raising, the resources will be available to allow the Faculty to fulfill its aspiration to have a home that is both an exemplar of what it strives to teach its students and an accommodating laboratory for leading edge research in the allied disciplines of architecture, landscape architecture and urban design. A rare opportunity, it is incumbent on the current generation of faculty members and designers responsible for moving the facility renewal project forward to do so in a manner that builds upon the Faculty's long and distinguished history of professional design education in Canada and looks forward to creatively engaging the challenges of the future, positioning the Faculty at the forefront of professional design schools in this new century.

Architectural education has evolved with society since it formally began at the University of Toronto in 1890. In recent years noteworthy contemporary architectural projects have engaged the interest of societies all over the world. Although highly varied in form and materialization, they have played an instrumental role in urban renewal and the invigoration of design culture. It is the aspiration of the faculty that our renewed premises will make a noteworthy contribution to design culture in North America, but will also do so in a way that both demonstrates the best practices of the art and science of building, and is conducive to contemporary teaching modes.

Landscape architecture has been a sister program of architecture in the Faculty for over four decades and the current program has a strong emphasis on landscape urbanism. It is therefore an important mission of the renewed facility to demonstrate an integrated approach to landscape design and ecology in both its exterior and interior spaces. In this regard, the inclusion of innovative biological systems, such as breathing walls, is to be encouraged within the building. Similarly, exterior surfaces, including verges at grade, vertical walls, terraces and roofs should be understood as important places of demonstrable landscape design as well as potential contributors to the biomass of the city and the carbon sink they provide.

Urban Design is the newest of the Faculty's three programs, but is arguably the oldest of disciplines, concerned as it is with the formation of urban entities created over time and encompassing architecture and constructed as well as natural landscape ecologies. Described by Claude Levi Strauss as "the human artifice par excellence", cities are complex records of history and human culture. In this regard, it is fitting that the Faculty

has been housed for nearly half a century in a highly urban building that even before it was renovated for the newly formed Faculty in 1961 had already been in use for a half a century as a dental college. Vertically organized on a street corner and inspired by multi-storied Chicago Style brick buildings with ample windows, 230 College has proven to be a robust and adaptable home for the Faculty. The challenge of design of the current building renewal project is to transcend its limitations and find the capacity within its bones to create an inspiring new spirit of place for the Faculty. Not only should it be astutely designed to accommodate future as well as current program and technology needs, it should be designed to take advantage of its height and location in the city, incorporating roof top terraces and spaces to enjoy views of the surrounding cityscape and downtown water front.

In order to maximize efficiency of the existing envelope, this planning process has investigated strategies that will accommodate the program - to the greatest extent possible - within this space. Treating the existing building at 230 College as a material resource to be reused, rather than abandoning it for a new building, is consistent with first principles of sustainability and offers a great opportunity for design research and innovation that could potentially serve as a demonstration project for buildings of comparable age on campus and across the country. As well as positioning the Faculty at the forefront of design schools in North America concerned with pressing issues of climate change and sustainability, it would demonstrate in the design of the building how the three disciplines might "practice what they preach' in course work concerned with sustainability. In this regard, there is a keen desire to take advantage of the expansion and renovation project to create a high performance building that is energy efficient offering, offers exemplary Environmental Quality (IEQ) and minimizes its effects on the wider natural environment, notably climate change. In the best of all possible worlds it would be both "net zero" and "carbon neutral. As a minimum, the renewed facility should be expected to perform at the level of a LEED Gold.

Space Program and Functional Plan

A space program has been developed using COU standards as the base guideline. The proposed space program requests a total of 5727.95 nasm of existing and new space at 230 College Street. While other options have been considered, this particular space program has been developed in anticipation that expansion will occur upwards, with full 5th and partial 6th floors, and infilling the courtyard. Implementation of the space program is expected to occur in two phases. The priority of Phase 1 is to rectify deficiencies in space - primarily in the studio areas - through expansion and renovation of areas associated with the expansion. Renovations within the existing building will proceed to the extent that the budget allows and implemented as future phases.

SPACE PROGRAM	Total Rooms Proposed	New Units Proposed	NASM per unit	Existing NASM	Total Existing & Add. Proposed NASM
Faculty Offices and Support Space					
Faculty Offices					
Faculty Office Single	15	0	12.00	188.20	188.20
Other Faculty Offices/Shared or Hoteling Offices					
Faculty Office Multi	4	4.00	13.00	35.81	52.00
Sessional Faculty Office Multi	5	4.00	13.00	22.14	80.34
Photocopy/Print Room	1	1.00	6.00		6.00

Central Admin. Staff Offices and Support Space					
*Dean's Office	1	0		27.42	27.42
*Academic Admin. Office	1	0		14.06	14.06
*Academic Admin. Office	1	0		14.06	14.06
*Academic Admin. Office	1	0		14.01	14.01
*M. Arch Program Director	1	0		14.02	14.02
*MUD Program Director	1	0		14.99	14.99
*MLA Program Director	1	0		14.31	14.31
*BAAS Program Director	1	0		14.32	14.32
Dean's Assistant	1	0		7.87	7.87
Dean's Reception/Waiting	1	0		13.03	13.03
Supp Admin Office Single	1	0		13.03	13.03
Student Affairs Office	1	0		16.41	16.41
Supp Admin Office Single	1	0		13.96	13.96
Central Student Reception	1	0		14.53	14.53
Supp Admin Office Single	1	0		11.58	11.58
Supp Admin Office Single	1	0		10.34	10.34
Office Storage	1	0		3.80	3.80
Office Storage	1	0		19.80	19.80
Office Storage	1	0		19.41	19.41
Storage Room/Meeting Room	1	0		14.85	14.85
Staff Washroom	1	0		13.32	13.32
Closet	1	0		0.69	0.69
Closet	1	0		1.84	1.84
Photocopy Room	1	0		10.43	10.43
Kitchenette	1	0		11.24	11.24
Conference Room	1	0		28.79	28.79
Mail Room	1	0		8.09	8.09
Computer Support Reception	1	1.00	15.00		15.00
Computer Support Office	1	1.00	30.00		30.00
Studios-Laboratories and Support Space					
Program Studios-Laboratories					
March Studios-Laboratories		266	9.60	1174.43	2553.60
MLA Studios-Laboratories		68	9.60	270.00	652.80
MUD Studios-Laboratories		14	9.60	65.10	134.40
PhD Studios-Laboratories		14	9.60		134.40
Undergraduate (BAAS) Studios-Laboratories		60	4.05	103.96	243.00
Undergrad. Studios-Laboratories Support Space					
Undergrad. Studios–Laboratories Seminar/Crit. Rm	1	1	75.00		(75.00) Incl. in studio
Undergrad. Studios–Laboratories Meeting/Work Rm	1	1	20.00		(20.00) Incl. in studio
Undergrad. Studios–Laboratories Computer Room	1	1	20.00		(20.00) Incl. in studio
Grad. Studios-Laboratories Support Space					
Spray Room	1	0		10.51	(10.51) Incl. in studio
Grad. Studio-Laboratories Informal Crit Space	6	6	25.00		(150.00) Incl. in studio
Grad. Studio-Laboratories Workroom	3	3	18.00		(54.00) Incl. in studio
Grad. Studio-Laboratories Printroom	2	2	15.00		(30.00) Incl. in studio
Student Exhibition Area/ Critique Area	1	0		55.09	(55.09) Incl. in studio
Student Exhibition Area/ Critique Area	1	0		23.76	(23.76) Incl. in studio

Critique Area/Conference Space					
Critique/Event Rms	3	3.00	50.00		(150.00) Incl. in studio
Critique/Event Support Kitchenette	1	1.00	15.00		(15.00) Incl. in studio
Exterior Terrace					
Shared Program/Research Support Space					
Metal Shop	1	1.00	75.00		(75.00) Incl. in studio
Shop Storage	1	0		24.90	(24.90) Incl. in studio
Wood/Gen Shop	1	0		125.43	(125.43) Incl. in studio
Supervisor's Office Multi	1	0		15.49	(15.49) Incl. in studio
Office Storage	1	0		12.48	(12.48) Incl. in studio
Structure & Construction Lab	1	0		41.96	(41.96) Incl. in studio
Dust Collection Room	1	0		12.24	(12.24) Incl. in studio
Laser Cutter	1	0		20.68	(20.68) Incl. in studio
Darkroom	1	0		12.00	(12.00) Incl. in studio
Archway Storage/Mock Up Room	1	1.00	40.00		(40.00) Incl. in studio
Photo Lab Storage	1	0		7.80	(7.80) Incl. in studio
Photo Lab	1	0		37.69	(37.69) Incl in studio
Photo Lab Mezzanine	1	1.00	20.00		(20.00) Incl. in studio
Computer Lab	1	0		20.21	(20.21) Incl. in studio
Computer Lab	1	0		24.41	(20.41) Incl. in studio
Computer Lab	1	1.00	30.00		(30.00) Incl. in studio
Computer Lab	1	1.00	60.00		(60.00) Incl. in studio
Studio Storage/Archive Room	1	1.00	20.00		(20.00) Incl. in studio
Studio Storage/Archive Room	1	1.00	30.00		(30.00) Incl. in studio
Thermal Vacuum Room	1	0		16.82	(16.82) Incl. in studio
CNC Workshop	1	0		36.12	(36.12) Incl. in studio
Print Room	1			12.71	(12.71) Incl. in studio
Research Laboratories and Support Space					
Digital Fabrication Lab					
Clean Lab	1	0		35.94	35.94
Centre For Landscape Research					
Research Lab	1	0		25.88	25.88
Visualization Lab	1	0		25.11	25.11
Library Staff and Support Space					
Librarian's Office	1	1.00	13.00	19.05	13.00
Library Workroom	1	1.00	35.00	24.45	35.00
Library Terminals / Circ Desk		0		26.47	26.47
Photocopy Room	1	0		5.27	5.27
Collection Space		39000.00	0.01	85.01	195.00
Study Space		362.00	0.60	106.03	217.20
Shared Common, Exhibition & Support Space					
Student Lounge/Cafe	1	0		37.42	37.42
Student Lounge	1	0		90.68	90.68
Student Union Office	1	0		10.19	10.19
Exhibition Gallery/Critique Space	1	0		106.86	106.86
Exhibition Lobby	1	0		12.94	12.94
Exhibition Media Support Rm. & Storage	1	1.00	12.50		12.50

Classrooms					
Classroom Storage	1	0		1.66	1.66
Classroom - Flat Floor	1	0		66.39	66.39
Lect-Thea/Aud -Tiered Flr	1	1.00	225.00		225.00
Classroom - Flat Floor	1	1.00	90.00		90.00
20 Laptop Seminar Room	1	1.00	45.50		45.50
TOTAL					**5727.95**

Phase 1 will construct approximately 1250 nasm of space. This will include 1100 nasm of studio space, critique space, a computer lab and a mock-up area. 118 nasm of office space will be added, with an additional 34 nasm provided for a library workroom and office. The total expansion area in gross square metres to be accommodated in Phase 1 is:

Basement Level 33.4 m2
- new exit stair and elevator

Ground Floor 177.5 m2
- new exit stair and elevator
- storage mock-up area
- west-side viewing balcony

Main Floor 31.5 m2
- new exit stair and elevator

Second Floor 67.6. m2
- new exit stair and elevator
- Library workroom and office

Third Floor 253.1 m2
- new exit stair and elevator
- courtyard infill

Fourth Floor 253.1 m2
- new exit stair and elevator
- courtyard infill

Fifth Floor 959.1 m2
- new exit stair and elevator
- new floor

Sixth Floor 247.9 m2
- new exit stair and elevator
- new floor

TOTAL 2023.2 m2

Design Studios
Design studios for graduate and undergraduate programs are proposed on the upper floors 3 through 5. Studio space should be planned in an open and flexible manner that reflects the nature of the program. Generally speaking, graduate studio spaces should be clustered into groups accommodating 12 students each. Students will continue to be provided with individual work stations and shared modeling tables.

Studio critique space should be located close to or within the design studio spaces. Critique space should be separate, bookable areas, not part of the studios themselves.

It is anticipated that Landscape Architecture will use the studio space on the 5th floor, and have 6th floor access to an intensive green roof providing an area for outdoor experimentation.

Studio Support Space
The area of the existing archway under the lecture hall is the location for a new materials research and mock-up space, where full-scale models and experimental assemblies can be constructed. This location is also proposed for both a new exit stairwell, and a large-sed freight elevator that will connect all floors including the shop and relieve pressure on the main passenger elevator for moving models and other large objects.
A new metal working shop as well as a specialized materials casting area is located directly under the archway space. These areas will have better access and connections to the woodworking shop, which will remain in place.

The storage area below the west entrance (Room 070) is to be converted into a materials library. The existing adjacent darkroom is no longer in use and will be subdivided into storage and computer hub rooms.

The existing Photography lab (room 102) will be expanded with a mezzanine inserted into the two-storey space. This enlarged space will accommodate greater student access for documentary photography purposes.

Library Spaces
Currently both graduate and undergraduate students make use of the library and its services. There is a need for increased physical space to accommodate research, study and group work for an increased student body, and for the growing collection. Ideally this should be flexible space in order to meet changing needs over the long term. As formats change to digital over time, an adjustment between collection space and study space may occur to further accommodate student needs.

It is anticipated that library stack and floating study space will be expanded within a newly created second floor in what is currently Room 103. This existing double height space will be renovated to create 2 separate floors by removing the existing tiered theatre. The southern wall of this existing room will be opened up at the second floor level to the library to create an extension of the existing stack space. The main entry to the library will remain as is, other than currently planned alterations to accommodate a book drop. Individual study spaces should be interspersed throughout the library.

A multi-use meeting space with computer access and projection capability is required to facilitate: student group study; the writing instructor's meetings with students; and

workshops on library instruction and research. This can likely be accommodated within the PCL Seminar room.

Classroom Space
The building's current classrooms will be reconfigured to provide flexible, modern teaching spaces.

The current lecture theatre in room 103 will be removed, and two separate floor areas created within its double-height space. On the existing first floor, a new flat floor classroom is planned, with a capacity of 50 students. A second floor will be inserted above to become part of the expanded library on the second level. Both stack and study space will be incorporated onto the second floor, and open to the rest of the library along the southern wall.

The flat-floor classroom located in the basement (Rm 066) is the planned location for a new tiered lecture theatre. Entry to the upper portion of tiers at the north end of the room can be provided directly off the barrier free Huron Street entrance via a short ramp. Although the tiers will be fixed as built-in features of the room, seating will not be, allowing for a less-formal flexible use of space. A narrow gallery space wrapping the western edge of the room is planned for the area between the existing building face and a new second glass skin.

A new seminar room will be created on the first floor, where Visual Resources and its collection are currently located. Classroom 106 will remain as is.

Offices
Offices for faculty and administrative staff will be located on floors 1 through 5 of the building, primarily arranged along the west side. Existing offices will remain in place for the most part, particularly those which have been recently renovated on the 1st, 2nd and 3rd floors. Existing faculty offices on the second floor will require air conditioning. New faculty offices are planned for the 5th floor, and will have similar finishes, HVAC and lighting requirements as existing offices.

Building Considerations

Key Building Components, Systems, Standards
A number of scenarios have been considered for expansion and renovation to address current and future space needs that can be combined with a comprehensive strategy to upgrade the environmental performance of the existing building, most particularly its shell.

Previous master plans have suggested the best way to expand the building on its current site is to infill the existing courtyard and construct additional floors on the roof. In preparation of this report , consideration has also been given to constructing an addition on the north side of the building that would be supported on columns on either side of the Bahen Centre ramp and perhaps cantilevered a short distance further north over the existing service court to 215 Huron. The Committee believes the first strategy can be most effectively combined with a comprehensive re-skinning strategy and is, thus, the most suitable. The preferred expansion plans have been described accordingly.

Current program analysis suggests that the expansion project will require a one storey addition to the main roof area and a four storey courtyard infill addition that will be six stories in height overall. It would include the addition of at least one fire stair on the east side of the building. Although the existing passenger elevator piston has been sized to allow for vertical expansion to the fifth floor, for this scenario to be barrier free, an additional elevator would be a necessity, unless a compact ramp system could be devised to interconnect the fifth and sixth floors. A freight elevator would also facilitate the transport of materials and large models. Inclusion of a central atrium space is also seen to be desirable insofar as it would provide a greater sense of interconnection within the multi storey building by allowing views between floors. It could also play a significant role as part of a natural ventilation system using stack effect thermo dynamics. As noted in the structural report by Halcrow Yolles, this addition strategy would require some reinforcement of existing columns in the building to support added loads. Alternatively, the addition over the roof could potentially be carried by box trusses spanning to exterior columns, which could be incorporated into, and support the double skin. The latter approach is preferred as it could be part of an integrated, whole building, design approach that would expand space, transform the internal special organization of the existing building, maximize environmental and minimize internal effects on the building and facilitate its occupation during construction.

It is assumed that significant portions of new roof areas would be accessible for use and designed to support demonstration green roof landscaping. Insofar as the Faculty has a constrained site for open space uses, it is also anticipated that some portion of the roof area would be designed to allow temporary installation of small experimental materials assemblies.

The addition of contemporary HVAC systems is expected to include a comprehensive energy retrofit of the existing building in order to achieve environmental performance objectives. A standard approach would be to upgrade the windows and add insulation to the inside of the envelope. The effectiveness of this approach would be compromised by thermal bridging at each floor level, and by isolating the existing masonry structure, outside the thermal envelope, would put new thermal stresses on the structure that would likely compromise its continuing durability. An alternative standard approach would be upgrade the windows and over-clad the building shell with a new thermal envelope. This is commonly done with EIFS systems. While potentially effective from an energy perspective, such an approach would compromise the architectural integrity of the original Chicago Style building.

Professor Ted Kesik has analyzed options for energy upgrading and recommended consideration of a second skin wrapping much of the existing shell and tuned in design to respond to passive energy design opportunities and challenges of each of the different elevations. To the south and part of the east it would essentially be glass, on the west a combination of glass and opaque panels. This approach has been utilized for a number of projects in Europe and would have the advantage of exploiting the thermal mass of the existing structure for solar energy harvesting while maintaining the visibility of its architectural massing and detail. Furthermore, a light catwalk system between the new skin and existing shell could be used as an armature for a new “plug in” infrastructure system distributing new electrical power and digital cabling as well as access for environmental monitoring to support environmental performance research.

International expertise on energy efficient envelope and environmental system design, Trannssolar Klimat Engineering, has been retained by the Faculty to develop and evaluate options that could achieve an exemplary level of performance at reasonable cost. Their work will also extend into the design development phases of the project during which they will work with the selected architectural and engineering team responsible for the project.

Structural

The existing building at 230 College Street occupied by the Daniels Faculty of Architecture, Landscape, and Design is a solid masonry structure that was built in two phases to house the school of Dentistry. The first phase, designed by Burke, Horwood & White architects and built in 1909 forms an ”L” shaped, four storey, building with its short side running parallel to the north side of College Street and its long side running parallel to the east side of Huron Street. Within the solid masonry shell an interior steel frame structure, clad in clay tile, supports composite floor plates of reinforced clay tile with a concrete topping. A second phase of construction, designed by Molesworth, West and Secord Architects, fills in the crook of the “L” with a concrete frame and solid masonry structure made up of two distinct, but contiguous, volumes. A thin five storey addition, running east west transforms the original “L” into a “U” shaped volume within which a much lower two storey infill leaves an east facing roof top courtyard. In recent years, a portion of the roof of the infill structure was removed and covered with a one storey high, light steel frame, stucco clad structure, to provide daylight to the centre of the relocated library. Its construction anticipates future removal to create a central atrium in conjunction with additions infilling the remainder of the courtyard.

Given the constrained nature of the Faculty’s site, options for expansion are limited to two possible directions, upward and northward. The structural engineers for the Faculty have looked most closely at the preferred option of expanding upward onto the roof of the fourth floor and infilling the courtyard up to the same five storey level. Consideration has also been given to the possible need for expansion onto a sixth floor. The engineering analysis suggests that upward expansion requires reinforcement of the interior column structure of the building, including its foundations, or development of an “exoskeleton” that would place columns along the east and west flanks of the building and bridge over the roof with trusses designed to avoid loading the existing structure. Three factors favour the exoskeleton alternative: project budget constraints require that the Faculty be able to occupy the building for most, if not all, of the anticipated construction period; in addition to being disruptive, interior column reinforcement would precipitate interior renovations that would compete for funds with expanded space, which is the primary priority of phase one; and, finally, the columns for the exoskeleton could serve a double function to support a “double skin” to the existing building as part of a strategy to significantly upgrade its environmental performance, the second priority of the current facility renewal phase.

The option of northward expansion has also been considered, notwithstanding significant constraints to expansion in that direction. Most significant is the parking garage ramp that runs parallel to the entire north wall of 230 College, about a metre and a half away. It leads to the large underground garage and truck service bay of the Bahen Centre that is located kitty corner, north-east of the existing building. This ramp is bordered by two massive retaining walls and north of it is a service court to the existing building at 215 Huron Street which is actively used by Facilities and Services vehicles. The fact that 215 Huron is a future development site for the University also constrains opportunities to extend into this area for structure at grade or building in the air. The structural engineers for the Bahen Centre have examined the feasibility of building over the ramp and locating column

supports aligned with the retaining walls to the ramp. Notwithstanding some foundation complexities associated with removing portions of the ramp retaining walls to accommodate the columns, they have concluded that an addition in this area would be feasible and would otherwise lend itself to a straightforward, steel frame, loft type structure that would be economical to build. This type of structure would suit our priority need for studio expansion and would offer the advantage of being relatively independent of the existing building during construction. Otherwise, it would offer no secondary benefits of reorganizing the centre of the existing complex or providing support for the re-skinning project.

More detailed structural information related to the above described options is included in the appendices.

Sustainable Design and Energy Conservation
The existing building is a dynamic place that in many ways is responsive to the environmental change and varying rhythms of use and activity of its occupants. Although many of its building systems are rudimentary – including thermal resistance of the envelope and insufficient mechanical and electrical systems – its generous opening windows, ample daylighting and robust masonry mass have made the building a workable environment, and contributed to one of the lowest energy intensities on campus. Renewal and expansion offers a once in a generation opportunity to address the building's deficiencies, while taking advantage of its underlying qualities.

The Faculty seeks to take advantage of the expansion and renovation project to create a building with an exemplary standard of environmental performance. Specific issues to be addressed should include energy performance, Interior Environmental Quality (IEQ) and minimization of effects on the wider environment and climate change. In conjunction with the technological expectations of this project, the new facility should incorporate ecological functions as part of its sustainable design strategy. The integration of innovative landscapes, systems, and materials is seen as an important contribution to the overall building performance.

Ideally the new facility would be both "net zero" and "carbon neutral". It should be designed to be consistent with the commitment of the Canadian and American professions to address issues of the environmental performance of buildings by endorsing the 2030 Challenge. The overall environmental design performance of the renewed facility is expected to perform at the level of LEED Gold, at minimum.

Reducing the energy intensity of new construction to a significant degree will be relatively easy, but doing so with the existing structure is likely to be more challenging. A hybrid system approach is anticipated that combines passive natural ventilation, a predominant feature of the existing building, with passive solar harvesting and active systems for ventilation cooling and, solar energy collection. An integrated approach to environmental control is necessary to maintain and expand the role of passive ventilation in co-ordination with active systems and in response to daily and seasonal climate conditions in Toronto. The orientation of the building is ideal for passive solar design and the use of its heavy mass for thermal storage behind a south facing glazed double skin. Ample roof areas are well suited for the incorporation of solar thermal water collectors as well as photovoltaic collectors. Of particular interest from a pedagogical point of view is to design new systems to be operationally visible to students and contributory to an information feedback loop that would be accessible to faculty research.

Accessibility
The University of Toronto is committed to ensure that its buildings and services are accessible to persons with disabilities. The University's Barrier Free Design Standards can be found at:

http://www.fs.utoronto.ca/userfiles/page_attachments/library/10/8156_1161423_accessibility_8156_1560105.pdf

It is the intention of the University that, in new construction, these standards be implemented in full, that all requirements indicated as "should be met" will be understood as "shall be met". While this is also the University's intention for renovations to existing buildings, where a requirement indicated as "should be met" is impossible to meet given the constraints of the existing conditions, comparable alternative arrangements are to be explored.

The project's Total Project Cost (TPC) estimate includes a line item for a Universal Design Consultant. This consultant is intended to be brought into the design process in a timely manner that will easily permit the incorporation of the consultant's recommendations into the built project at its conceptual stages.

Vertical access within the building and general movement needs to be improved along with fire safety, with the addition of at least one new stair, the extension of the existing elevator to the fifth floor and an additional service elevator that is suited to the transport of materials and large models.

Personal Safety and Security
The diverse nature of activities at the Faculty of Architecture, Landscape and Design requires a design for the building that ensures appropriate levels of accessibility to the building as a whole. This building will be operational throughout the week, 24 hours a day. The building design must allow its students, faculty, staff and visitors' access as required and as allowed, safely and easily. At the same time, the design must be sensitive to the needs of those – primarily graduate students - whose activities require security after hours. A detailed security plan will need to be developed for each room, zone or floor, and factored into the design of the building to ensure functionality, accessibility and security objectives are all met simultaneously.

Computing and Communications
The Faculty of Architecture, Landscape and Design is progressive in the use of computer technology and has invested considerable resources to maintain up-to-date IT facilities. A variety of systems and resources support a seamless student experience, the scholarly success of faculty, and effective functionality of administrative staff. Details of the existing computer systems are listed in Appendix 7.

Elevators
As part of accessibility improvements completed in 2002, the existing hydraulic elevator was re-worked. Its hole and piston were made long enough to accommodate one additional floor if a stop is moved to allow this. Hydraulic elevators are limited to service a maximum of 6 floors with a preference for 5 levels.

A new 2.4m x 1.8m service elevator is planned for the building. It will be located on the eastern edge in conjunction with a new exit stair.

Facility Constraints
Enlarging the building to a size which would provide ideal working space is technically difficult. The building site is small and affords very few possibilities for expansion. The urban location and building type has resulted in a vertical organization of space and program. In general, architecture schools desire visual and actual contact, achieved through a horizontally-disposed building. The fixed configuration of the primary student spaces around a quasi-fire-escape stair is thus limiting for the purposes of the program. The space program seeks to impart a coherence to the studio floors by opening views between areas on various levels, primarily through an atrium planned for the centre of the building.

Deferred Maintenance Items
The roof of 230 College was replaced a few years ago. The brick façade is in relatively good shape with spalled bricks, mortar joints and a chimney in need of attention. There is evidence of water infiltration into the original basement of the building. Cracks in a structural concrete beam and a wall in the breezeway are monitored by a gauge and will require structural evaluation if there is further displacement. Wooden frame windows are to be replaced.

Building Systems Improvement
The building is not centrally ventilated or air conditioned. Partial areas on the first, second and third floors are air-conditioned via roof-top units. The areas that have no ventilation rely on opening of the windows for fresh air. It is the intent of this project to provide central air throughout the building.

While water supply and heating equipment is generally in good working order, much of it is original, and may require replacement in the near future. If additional floors are added the convertors will have to be sized to accommodate the loads.

One of the items that should be addressed in the new design is to make provisions to use the hot water heating system for re-heat purposes in summer mode to allow for uniform comfort conditions for occupants and computer server rooms.
The new design should also confirm the cooling tonnage requirements and what would be available from Bahen Chiller Plant in light of recent additions.

Additional floors will exceed the available spare electrical capacity. It will be necessary to upgrade the incoming feeder and breakers at both ends, as well as upgrade the distribution panel and metering at the Architecture Building. Emergency power may also have to be upgraded in this scenario.

Code Issues

In June 2006 the firm of Randal Brown & Associates reported on the potential building code requirements resulting from a proposed one-storey addition to 230 College Street. The proposal at that time was different in phasing to what is being proposed now, however many of the comments will still apply.

Following is a summary of the main points, the full report is available under separate cover as Appendix 9.

The main supply and fire pump should be upgraded and ideally the entire building should be sprinklered, although the minimum code requirement would be for any new space to be covered. Currently, the basement is only partially sprinklered, sharing a common 4" water main supply with the standpipe system and domestic water supply. Standpipe fire hose cabinets are installed throughout all floors, with an associated fire pump. The current fire protection water supply size will not be adequate to provide domestic and fire protection water throughout, as would be required by Code, and a new higher capacity fire pump will be needed. Also, ideally the existing partial sprinkler system serving the basement should be redesigned and upgraded to current standards, to be consistent with the new installation in the rest of the building.

There would need to be a 1 hour rating on the existing roof assembly if it is to serve as the floor of a new addition above.

In any major renovation work, attention would have to be given to the ratings of existing separations, doors, and door hardware.

The existing fire alarm should be replaced and upgraded. The existing fire alarm system is limited with respect to additional zones, and has no capacity for programmable outputs. Since ultimately, the entire building will need to be upgraded with sprinkler protection, and the associated additional fire alarm zones will exceed the expansion capacity of the current fire alarm system. Also, since automatic elevator recall will be required in the event of any fire alarm activation, this is a second requirement that cannot be met with the existing system.

Any new floor constructed above the existing (with the current footprint) will require the construction of a new, enclosed exit stair shaft to replace the current fire escape on the east side of the building. Due to the fact that the existing exit stairs in the building are non-conforming, it is recommended that a Life Safety Study be commissioned to properly assess these exits and provide direction. Also, the proposed building height will exceed 18m, thus a firefighter's elevator will be required, which could be provided by the new freight elevator required adjacent to this stair.

Where washrooms exist in renovated floors, then an accessible washroom must be provided also.

An emergency generator or equivalent service will be needed to supply the fire pump and firefighters elevator.

Project Boundaries
The project will be contained on its own site. A shared service lane running beside the building and the adjacent Fields Institute will be maintained. The consultant will need to pay attention to limiting distance issues with that building.

Hazardous Materials Disposal
An overview of the presence of asbestos-containing materials within the building is shown in Appendix 6. Detailed information can be obtained from the University's asbestos

inventory system. Asbestos has been removed in recently renovated areas. All areas of the building that will be renovated within the scope of this project will require asbestos abatement. Prior to any renovation or demolition work, a pre-construction survey must be carried out.

Impact on Existing Occupants
Design and phasing of expansion must anticipate occupation of the building for eitht full months and partial occupation by administrative staff for the remaining four. As the pedagogical mission of the Faculty's programmes is concerned with the art and science of building and landscaping within a built up urban context, the process of construction will be of inherent interest to the occupants. While greater than normal tolerance to disturbance can be anticipated as a result, measures will need to be taken to minimize negative impacts on building users over the duration of construction. This is expected to take two full calendar years. It would be ideal to begin construction at the end of the spring term and complete the project within a year and eight months prior to the fall.

Site Considerations

The Faculty's building is located within the University of Toronto Area on the north side of College Street, at Huron street, along the southern edge of campus.

The site is designated institutional with zoning permissions to build to a density of twice its area (Q T2.0), and to a height of 23.0 metres. The south side of College Street is designated Commercial-Residential (MCR T2.5, C1.0, R2.5) with a height limit of 23.0 metres. The property measures 36.5m by 45.6m (1664sm), with a ground floor footprint of 1424sm. With its five floors, the existing building is considered a legal non-conforming condition. The opportunities for expansion are limited by the constricted site.

The University anticipates that College Street will undergo redevelopment, in keeping with the City's vision of densification along main city streets and transportation corridors. Recent university development on College Street between University and Spadina include the Leslie Dan Pharmacy building at the corner of University Avenue and College Street; and the Terrence Donnelly Centre for Cellular and Biomolecular Research. These buildings reach heights of 56m and 64m respectively. In addition, the University has a pre-approved development site at 200 College Street, with an approved height envelope of 23m.

Immediately to the east of the Architecture building is the four-storey Fields Institute, at 222 College Street, constructed in 1995. An existing service access lane running between these two buildings must be maintained. Abutting the northern property line is an entrance to the underground parking lot of the Bahen Centre. Beyond this, sits 215 Huron, built in the 1960s and accommodating various faculties and administrative departments on 9 floors of space. This building will be considered for redevelopment in the long term. The Bahen Centre was built in 2002, knitting together the diverse existing elements within the block and creating a new urban environment encompassing 215 Huron, the Fields Institute and the Koffler Centre, with the Architecture building forming the southwest edge of this space. The Centre for Addition and Mental Health campus is located to the west of 230 College at the southwest corner of Huron and College streets.

230 College Street is not listed on the City's inventory of heritage buildings, nor has it been designated under the provincial Heritage Act. However, the building was designed by one

of Canada's most prominent architectural firms of its time. Burke, Horwood and White designed numerous commercial, institutional and religious buildings throughout the country, while making use of modern, technological innovations in design and construction. In 1896, the firm designed the Robert Simpson store in Toronto, which became the country's first building to employ a curtain wall system. Thus while the architecture building is not officially designated, the expansion plan should respect and respond appropriately to the building's existing elements and character.

As a campus gateway, the site is muted in comparison to King's College Road and St. George Street. This is in part due to the independent and self-contained Centre for Addiction and Mental Health complex on the northwest side of Huron. Any opportunities for this project to create a more prominent university entrance at this location would be beneficial to this district of the campus. The opportunity for ground-level landscaping is minimal due to the small site, although a patio is planned for the western edge, outside the student café. However, opportunities for landscape features on rooftops and upper floor exterior spaces should be capitalized.

Campus Infrastructure Considerations

The expansion project will not affect existing roadways and pedestrian pathways. It will have some impact on the shared service lane between the Architecture building and the Fields Institute, as a new exit stair, elevator and library addition are being constructed here. However, full access will be required and maintained throughout construction.

Sewer and stormwater systems will not be negatively affected by the project. A green roof is planned, which will alleviate the amount of stormwater entering the system.

Secondary Effects

The faculty would like to remain it its existing facilities for the duration of construction. The project will require careful phasing in order to allow for the continuation of the academic program.

Schedule

The committee has expressed an interest in a two-step architect selection process that would involve short-listing 3 teams to explore detailed feasibility and to provide concept drawings and models. This approach will enable detailed consideration of options with respect to the structural limitation of the existing building. The team that is selected will be engaged to complete the project once funding becomes available.

The University intends to issue an Expression of Interest on April 2, 2009, and schedule interviews based on received submissions within a month's time. Following this process, selected teams will engage in a design exercise, culminating in a second round of presentations, and preparation of a model and renderings for the end of June.

IV Resource Implications

Total Project Cost Estimate

The building is conceived as having a similar level of architectural cladding, finishes, and articulation as the recent renovations at 230 College Street.

The assumption made with respect to escalation is that the project would be tendered in several phases with new construction comprising the first phase, and renovations to the remaining areas of the existing building occurring as funding becomes available.

The program implies a certain amount of reorganization of functions within the existing building, particularly on the ground and second levels.

There is an allowance for significant green initiatives and enhancements that is expected to cover LEED Certification for the new building.

The total project cost for Phase 1 has been estimated to be $20 million. Phase 1 of the project is being submitted under the federal infrastructure program. The balance of the work to the remaining unrenovated portions of the building will proceed with a phased approach as future funding becomes available.

Cash flow analysis is provided in Appendix 8. Interest charges are included as part of the overall project budget.

Operating Costs

2007 Operating Costs for the John H. Daniels Faculty of Architecture, Landscape and Design have been calculated at $136/nasm. Because the building at 230 College Street requires a much higher level of environmental control than currently exists, once the renovation and addition is complete the operating cost of the space will increase. It is expected that even with an approach that targets significant sustainable design and energy conservation measures, the new costs are likely to approximate $143/nasm.

New construction and renovations to 230 College Street as recommended in the project planning report will create approximately, 5730 nasm , or 8800 gsm in total. It is anticipated that the operating costs of the enlarged facilities for the Faculty will be approximately $835,857 per year.

Funding Sources and Cash Flow Analysis

The total projected cost range of the first phase of the project for the John H. Daniels Faculty of Architecture, Landscape and Design is $20 million. The funding for this project will be assembled primarily from external sources. All funding sources and cash flow analysis will be identified in the final report.

V Recommendations

This Project Planning Report is being brought forward for approval in principle to allow for increased space for the John H. Daniels Faculty of Architecture, Landscape and Design at 230 College Street.

It is recommended that the Planning and Budget Committee recommend to the Academic Board:

1. THAT the Project Planning Report for the John H. Daniels Faculty of Architecture, Landscape and Design be approved in principle to accommodate the activities and functions described for the expansion of the Faculty's programs at its present location, 230 College Street.

2. That the project scope for Phase 1, comprising an addition of approximately 1250 net assignable square metres or 2023 gross square metres be approved at a total project cost of $20,000,000.

3. That the project scope for subsequent phases be approved and implemented according to the University of Toronto Policy for Capital Planning and Capital Projects.

Appendices:

Appendix 1. Space Inventory
Appendix 2. Utilization Analyses (COU)
Appendix 3. Site Map
Appendix 4. Capital Cost Estimate
Appendix 5. Environmental Protection Policies
Appendix 6. Overview of Asbestos Containing Material
Appendix 7. Existing Computer Facilities
Appendix 8. Summary Report on Infrastructure
Appendix 9. Building Code report (available under separate cover)
Appendix 10. Cash flow Analysis (available under separate cover)
Appendix 11. Room Data Sheets (available under separate cover)

Appendix 1. Space Inventory

300 College Street Space Inventory as of December 2007

Daniels Faculty of Architecture, Landscape & Design	Ctgy	Total sm
Tiered Classroom	1.1	136.05
Flat Floor Classrooms	1.2	365.25
Classroom Support	1.3	5.22
Scheduled Teaching Labs	2.1	1601.92
Unscheduled Teaching Labs	2.2	41.96
Laboratory Support Space	2.3	188.73
Research Labs	3.1	131.55
Research Support Space	3.2	127.77
Faculty Offices	4.1	373.16
Non-Academic Offices	4.4	109.28
Office Support Space	4.5	373.41
Library Collection Space	5.1	102.72
Library Office Space	5.2	19.05
Library Support Space	5.3	89.75
Study Space	5.4	106.03
Student Club Offices	14.1	10.19
Lounge space	14.3	128.1
Exhibition space	15.2	198.65
Faculty Total (nasm)		**4108.79**
Bldgs & Grounds	9.1	20.82
Bldgs & Grounds Total		20.82
Non Assignable	16.2	1279.82
	16.3	71.36
Non Assignable Total		1351.18
Grand Total		**5480.79**

Appendix 2. Utilization Analyses (COU)

	FTE Existing	FTE Projected	Space factor	NASM Generated space -existing	NASM Generated space - proposed
Laboratories (Studios)					
GRADUATE - March	259	266	9.6	2486.4	2553.6
GRADUATE - MLA	67	68	9.6	643.2	652.8
GRADUATE - MUD	12	14	9.6	115.2	134.4
GRADUATE - PhD	0	14	9.6	0	134.4
subtotal - GRADUATE	338	362		3244.8	3475.2
UNDERGRAD - BA	60	60	4.05	243	243
subtotal - UNDERGRAD	60	60		243	243
TOTAL				**3487.8**	**3718.2**

Note: The 9.6 space factor for graduate studios includes corridor, crit, all workshop and support space
Total # of students x 12h/wk sched. studio time = 362x12 = 4344 hrs multiplied by a new factor of 0.8 (engineering, vs. 0.6 old factor) = 3475nasm (or 9.6 nasm per student)

Departmental offices					
FTE Faculty	26	31	13	338	403
Non-Academic staff	15	15	13	195	195
subtotal				533	598
Sessionals	5.75	5.75	13	74.75	74.75
subtotal				607.75	672.75
Office Support space (25%)	607.75	672.75	0.25	154.94	168.19
TOTAL				**759.69**	**840.94**

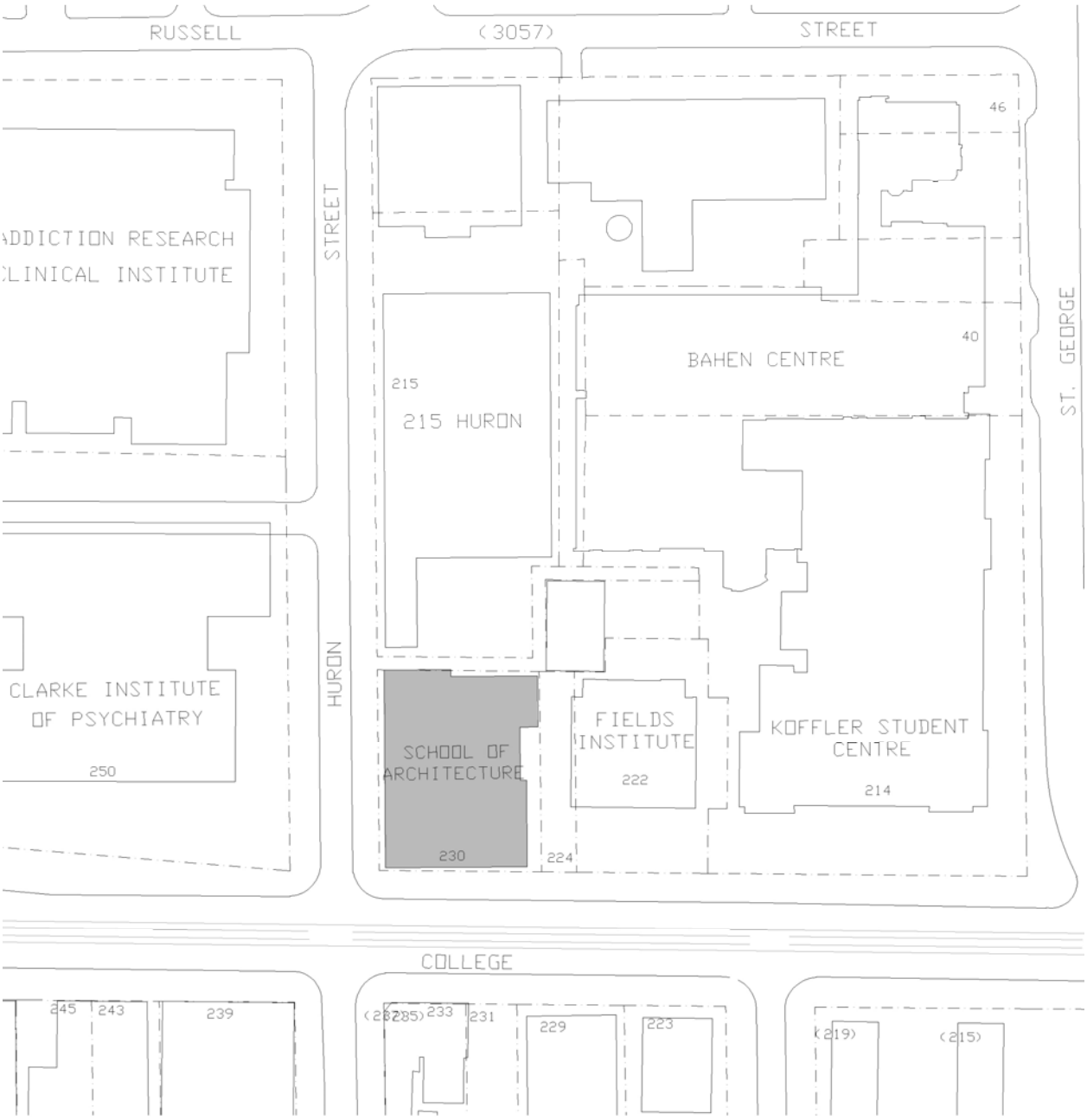
Note: Sessional space is calculated by taking the number of courses taught by sessionals and assigning 8 courses/per office space = 5.75 offices (46 courses including studio)

Classroom					
Graduate Students	338	362	0.69	233.22	249.78
Undergraduate Students	120	120	0.62	74.4	74.4
TOTAL				**307.62**	**324.18**

Library

Volumes	30000	39000	0.005	150	195
Study space	320	362	0.6	192	217.2
Library support space	342	412.2	0.25	85.5	103.05
TOTAL				**427.5**	**515.25**
Exhibition space	338	362	0.4	135.2	144.8
Student common space	338	362	0.25	84.5	90.5
TOTAL				**219.7**	**235.3**
BUILDING TOTAL				**5202.31**	**5633.87**

Appendix 3. Site Map



Appendix 4. Capital Cost Estimate

Project Title: Daniels FALD

pro-forma total project costs - interim draft

Items	Phase 1 work
GSM (new space)	2,023
Construction amount Mar 2009	$13,440,000
escalation to spring 2010	$672,000
Construction Contingency	$987,840
Applicable GST	$249,147
Total, including GST	**$15,348,987**
Infrastructure Upgrades in Sector	$250,000
Demolition	$200,000
Landscaping (included in constr)	$0
Permits & Insurance	$136,971
Professional Fees	$2,270,053
Computing Infrastructure	$100,000
Telephone set & install	$5,000
Audio/Visual	$100,000
Moving	$25,000
Staging	$0
Furnishings: Department	$250,000
Equipment	$50,000
Security & access systems	$150,000
Signage: Interior & Exterior	$20,000
Signage: Donor Recognition	$20,000
Events	$10,000
Miscellaneous	$100,000
Project Contingency	$571,832
Finance Costs , allow	$392,157
Total Project Cost Estimate	**$20,000,000**

prepared jcb Mar 17 2009

Appendix 5 Environmental Protection Policies

Preamble

The University of Toronto is committed to being a positive and creative force in the protection and enhancement of the local and global environment, through its teaching, research and administrative operations. Recognizing that some of its activities, because of their scale and scope, have significant effects on the environment, the University as an institution, and all members of the University community, have a responsibility to society to act in ways consistent with the following principles and objectives:

Fundamental Principles

- Minimization of negative impacts on the environment
- Conservation and wise use of natural resources
- Respect for biodiversity

Specific Objectives

In adopting these fundamental principles, the University will be guided by ethical attitudes towards natural spaces and will take all reasonable steps to meet the following objectives:

- Minimize the use of energy and water, through efficient management and practice
- Minimize waste generation and actively manage the impact of waste, emissions, & effluents generated by University activities
- Minimize noise and odour pollution from University activities
- Minimize and where possible eliminate the use of chemicals or toxic substances
- Include biodiversity and environmental concerns in planning and landscape decisions and minimize negative impacts of university activities on biodiversity and natural spaces
- Meet and where possible exceed environmental standards, regulations and guidelines

Appendix 6: Overview of Asbestos Containing Materials

SUMMARY OF ASBESTOS-CONTAINING MATERIALS - ARCHITECTURAL BUILDING - BUILDING # 028

Level	BUILDING MATERIAL							
	Texture Coat	Drywall Joint Compound	Thermal Mechanical Insulation	Vinyl Floor Tile/Sheeting	Ceiling Tile	Transite	Plaster	Fireproofing
5	Not Present	N for Minor Jobs S for Major Jobs	Not Present	N	N	Not Present	N for Minor Jobs S for Major Jobs	C* (only at perimeter between exterior wall & plaster wall N
4	Not Present	N for Minor Jobs S for Major Jobs	N	S* N	N	Not Present	N for Minor Jobs S for Major Jobs	N
3	Not Present	N for Minor Jobs S for Major Jobs	N	N	N	Not Present	N for Minor Jobs S for Major Jobs	N
2	Not Present	N for Minor Jobs S for Major Jobs	N	S* N	N	Not Present	N for Minor Jobs S for Major Jobs	N
1	Not Present	N for Minor Jobs S for Major Jobs	N	N	N	Not Present	N for Minor Jobs S for Major Jobs	N
B	Not Present	N for Minor Jobs S for Major Jobs	C**	N	Not Present	Not Present	N for Minor Jobs S for Major Jobs	Not Present

C - Confirmed Asbestos-containing * **Minor Quantity**
S - Suspected to Contain Asbestos ** **Major Quantity**
N - Non-Asbestos

This summary provides an elementary information of presence/absence of asbestos-containing materials within the building. Prior to planning any renovation or demolition project a pre-construction survey should be carried out.

Appendix 7: Existing Computer Facilities

Current facilities include a fiber optic backbone, a fast Ethernet switched network, a wireless network, two computer labs, dedicated computers for 2d and 3d scanning, and specialized facilities for real-time visualization, digital fabrication prototyping, and large-scale format printing.

Essential network services for faculty members, administrative staff, students, research groups and courses include:

- User authentication and accounting via Windows 2003 Server Active Directory
- File storage services supported by two clustered servers and three shared storage arrays of approximately 6 terabytes 9with a significant expansion up to 16TB scheduled for Summer 2008)
- Wireless network access supported by two controllers and User authentication services
- Remote network access via FTP, WebDAV, VPN, and WebPLOT servers
- Web and application hosting
- Printing services supported by three ONYX_RIP servers and one accounting server
- Software licensing including distribution and delivery supported by FlexLM and Keyserver
- Network distributed rendering supporting 3dsMax and Maya via 10 blade servers
- Corporate main, calendaring and room booking supported by one Exchange server

The Daniels network allows its community to access user profiles and data remotely through an extensive system of 25 a/b/g access points distributed throughout the building. File sharing and collaboration are facilitated through FTP, WebDAV and VPN protocols. Each faculty member, student, course and research group is assigned a user account with requisite privileges and storage quotas. The course and research directories in particular, provide the primary collaborative network vehicles.

Teaching software includes AutoCad, LandDesktop, Rhino, Maya, 3dStudio Max, catia, Digital project, Generative Components, Thinkdesign, Sketchup, ARCGIS, Photoshop, InDesign, Illustrator, Premiere, Dreamweaver, Flash and Microsoft Office.

The printing and plotting environment includes 4 high-end, large format plotters and 4 tabloid-size laser printers, including one multi-function printer capable of high-speed scanning. These resources are accessible through a custom Web-based submission portal that provides 24-hour access and real-time account information and print-queue feedback. The automated and unattended nature of the printing and plotting environment supports the extraordinary demands of over 300 students seeking to output printed matter after normal working hours and on extremely tight deadlines.

The Faculty has a growing complement of digital fabrication and prototyping resources including 3 Universal X2 Superseed laser Cutters, a Stratasys Prodigy Plus FDM-Based 3d-printer, a Z-Corp 310 Plus Plaster-based 3d-printer, an AXYZ 4008 CNC Router, a NextEngine Desktop 3d-scanner, and a Microscribe 3d-digitizing arm. The fabrication infrastructure is overseen by staff, work-study students and research assistants who provide support and training. As with the printing and plotting resources, use of the digital fabrication infrastructure is accompanied by fees commensurate to the expense of consumables, support and maintenance.

Appendix 8: Summary Report on Infrastructure

FACILITIES and SERVICES

UNIVERSITY OF TORONTO 255 McCaul Street, 4th Level, Toronto, Ontario M5T 1W7
(416) 978-2319 Facsimile: (416) 978-6650

November 21, 2008 **DRAFT**

Summary Report on the Existing Physical Infrastructure and Requirement for Enhancement to Accommodate the Planned Renovation and Enlargement Project at 230 College Street for the Faculty of Architecture and Landscape Design

The FALD is planning a project which will encompass renovation of existing spaces as well as the addition of two floors to the building. This report will summarize renewal needs that should be undertaken in conjunction with the main project in order to provide the occupants of the finished building services that will meet reasonable expectations after a project of this type. It will also address the limitations of the existing services and infrastructure and the enhancements that are required in order to properly supply the enlarged building. The information provided has been collected from consultants' audit reports as well as the experience and knowledge of our own staff. No detailed engineering has been done – this is left to the design team during the implementation of the project.

Hazardous Materials

Appendix A includes an overview of the presence of asbestos-containing materials within the building. Detailed information can be obtained from the University's asbestos inventory system upon request. **Prior to planning any renovation or demolition project a pre-construction survey must be carried out.**

Elevators

When the existing hydraulic elevator was re-worked a number of years ago, the hole and piston were made long enough to accommodate one additional floor if a stop is moved to allow this. Hydraulic elevators are limited to service a maximum of 6 floors with a preference for 5 levels.

Electrical Power

Additional floors will exceed the available spare capacity. It will be necessary to upgrade the incoming feeder and breakers at both ends, as well as upgrade the distribution panel and metering at the Architecture Building. The project will have to include the upgrading of the energy meter, providing an extra 600V, 3-pole breaker in the distribution panel, running cable to the new areas, providing local transfer, panel and branch wiring, and providing space for an electrical room on the 5th floor. The existing motor control centre and feeder will obviously have to be relocated. Dependant upon additional mechanical loads, the existing breaker and cable supplying the MCC may have to be upgraded.

Emergency Power

Currently, emergency power is available in the building from the generator at the Central Steam Plant for life safety purposes. The existing emergency distribution is via a small 15kVA transformer with limited capacity feeding a few 120/208Vcircuits of exit and emergency lights. Depending on the additional emergency power requirements for the

two new floors, a new 600V emergency cable and transformer may have to be installed in the new electrical room

Heating, Ventilation and Air Conditioning

The building is not centrally ventilated or air conditioned. There are two original heating/ ventilation units that provide ventilation for the basement, mezzanine floor and a small area of first floor. The partial areas of the first floor, second floor, third floor and fourth floor are air-conditioned via the two roof top A/C Units sized at 30 tons each (1999) with VAV boxes. There is an art gallery located on the first floor and is air-conditioned via a stand alone A/C Unit installed in 2001. There is also a stand alone ventilation fan located on the roof that serves the paint shop in Room 403 and is heated by natural gas fired burner. The building sanitary exhaust fan and other exhaust fans are located on the roof. (Obviously, any equipment currently located on the roof will have to be re-located.) The areas that have no ventilation rely on opening of the windows for fresh air.

The building is heated via a central Hot Water Heating System using the high temperature hot water from the Central Power Plant as the primary source. This hot water system is controlled via an ambient type pneumatic control and provides hot water heating to the perimeter radiators through out the building. The radiators have individual pneumatic controls valves activated by local stats.

The domestic hot water for the building is served from a storage tank located in the basement and is heated via a stand alone hot water heat exchanger with electric back. The tank and the heat exchanger were replaced in 2007.

There are 6” chilled water supply and return pipes from the Bahen Chiller plant terminated in the parking garage to provide for future cooling needs of Architecture building. Please note that excavation will be needed to route these lines into Architecture. Isolating heat exchangers must be provided in Architecture. As well, the long-term plan for the chilled water supply in this sector of the campus is to sub-feed the Fields Institute from the Architecture Building and so, connection points and valves must be provided in the Architecture basement to allow this when the Fields chiller is retired sometime in the future.

Generally, all of the above mentioned equipment is in good working order but the two main hot water heating system converters are original and may need replacement along with the pumps in the near future. Certainly, if two new floors are added the convertors will have to be sized to accommodate the loads. The other items that would need attention are the local thermostats, controls valves and manual shut off valves for the heating radiators and the two original heating/ventilation units. The stand alone A/C units and exhaust fans are in good shape

One of the items that should be addressed in the new design is to make provisions to use the hot water heating system for re-heat purposes in summer mode to allow for uniform comfort conditions for occupants and computer server rooms.
The new design should also confirm the cooling tonnage requirements and what would be available from Bahen Chiller Plant in light of recent additions.

Building Envelope

The roof was replaced a few years ago. The brick façade is in relatively good shape with spalled bricks, mortar joints and a chimney in need of attention. There is evidence of water infiltration into the original basement of the building. Cracks in a structural concrete beam and a wall in the breezeway are monitored by a gauge and will require structural evaluation if there is further displacement. Wooden frame windows will require repair and repainting.

Fire Protection

Sprinkler & Standpipe – upgrade main supply and fire pump, sprinkler entire building

Currently, the basement is only partially sprinklered, sharing a common 4" water main supply with the standpipe system and domestic water supply. Standpipe fire hose cabinets are installed throughout all floors, with an associated fire pump. The current fire protection water supply size will not likely be adequate to provide domestic and fire protection water throughout, as would be required by Code (the building would be required to be fully sprinklered), and a new higher capacity fire pump will be needed. Also, the existing partial sprinkler system serving the basement should be redesigned and upgraded to current standards, to be consistent with the new installation in the rest of the building.

Fire Alarm – replace and upgrade

The existing fire alarm system is limited with respect to additional zones, and has no capacity for programmable outputs. The entire building will need to be upgraded with sprinkler protection, and the associated additional fire alarm zones will exceed the expansion capacity of the current fire alarm system. Also, since automatic elevator recall will be required in the event of any fire alarm activation, this is a second requirement that cannot be met with the existing system.

Exits – Construct exit enclosure to serve NE quadrant of building, & conduct Life Safety Study of existing exits

New floors constructed above the existing (with the current footprint) will require the construction of a new, enclosed exit stair shaft to replace the current fire escape. Due to the fact that the existing exit stairs in the building are non-conforming, it is recommended that a Life Safety Study be commissioned to properly assess these exits and provide direction.

Firefighter's Elevator – now required

Due to the fact that the proposed building height will exceed 18m, a firefighter's elevator will be required.

Prepared by: B. Dodds

Appendix 9: Building Code report

Available under separate cover

Appendix 10: Cash flow Analysis

Available under separate cover

Appendix 11: Room Data Sheets

Available under separate cover