University of Toronto

Office of the Assistant Vice-President, Campus and Facilities Planning

TO: Planning and Budget Committee

SPONSOR: Elizabeth Sisam, Assistant Vice-President, Campus and Facilities Planning

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DATE: May 2, 2008 for May 14, 2008

AGENDA ITEM: 6

ITEM IDENTIFICATION:

Report of the Project Committee for the Interdisciplinary Design Studios and Graduate Student Expansion Within the Department of Civil Engineering and the Lassonde Institute

JURISDICTIONAL INFORMATION:

Under the Policy on Capital Planning and Capital Projects, the Planning & Budget Committee reviews Project Planning Reports prepared for a capital project and recommends to the Academic Board approval in principle of the project.

BACKGROUND

Located at the main gates of the University of Toronto St. George campus, the Mining Building is one of the original buildings of the University of Toronto's Faculty of Applied Science and Engineering and in 2005 celebrated its 100th anniversary. Today, the Mining Building hosts the Undergraduate Lassonde Mineral Engineering Program and the Lassonde Institute for graduate research in Engineering Geoscience as well as the Department of Mechanical and Industrial Engineering and the Institute for Biomaterial and Biomedical Engineering (IBBME).

The attic of the Mining Building, currently unusable space, has been identified as a potential location for the Faculty's proposed Interdisciplinary Design Studios within the Department of Civil Engineering, the Lassonde Mineral Engineering Program and the Lassonde Institute. These design studios are to address the pressing needs for additional facilities in support of undergraduate and graduate expansion programs, be used to promote interdisciplinary activities in engineering geoscience and urban engineering design and to enhance the student learning experience.

Recent accreditation visits and an External Review of the department supported the need for greater space to conduct the teaching and research functions of the department and to meet the needs of planned expansion in undergraduate and graduate enrolment. The renovation of the attic space will not only accommodate the design studios but also provide much needed graduate student offices, a seminar room and administrative space. The proposed renovation of the Mining Building will give Canada's mining business capitol a new education and research hub and foster growth toward providing solutions to the industry's pressing needs.

A Project Planning Committee was established in December 2004 and in May 2007 the Faculty submitted an Interim Report to the Accommodation and Facilities Directorate and sought approval for the allocation, in principle, of the attic space in the Mining Building to the Department of Civil Engineering as the location for the department's Interdisciplinary Design Studio. Approval was also given at that time to engage a consultant to further investigate the structural, building code, and other feasibility aspects of the proposed attic renovation, the creation of an accessible entrance off King's College Road coupled with an elevator servicing every floor, to improve the accessibility to the Mining Building and to produce a conceptual design. The team included a heritage consultant to report on the condition of this designated building and construction cost estimates were also prepared for the basic project plus required restoration/repair work.

In January 2008 the consultants submitted a feasibility study and concept plan to locate the Interdisciplinary Design Studios within the unfinished attic space of the Mining Building. Their work has informed the conclusions and recommendations of this Project Planning Report.

HIGHLIGHTS

The Interdisciplinary Design Studios will be recognized with a clearly defined physical presence and provide an innovative and dynamic space for undergraduate student learning and graduate student research. It is envisioned as a vibrant space aimed to be an architectural icon in a historic building with an exciting juxtaposition of modern and historic.

The proposed space program is comprised of a series of rooms intended to provide the best opportunities for teaching and learning design engineering, promoting interdisciplinary research and innovation convergence. The facility will create an environment which supports full implementation of the studio method of design education. The foundations of this method, which is practiced in schools of architecture and the great European schools of engineering, are learning through doing, constant informal interaction with peers, and frequent critique of work in progress by teaching staff.

Based on an initial assessment of the attic area, the plan is to develop the space for approximately one hundred students. This would allow the studio to be dedicated to the fourth-year design project, and would enable each of the fourth-year students to use the studio as their "home base" for the entire year. In addition the space will provide graduate student offices to accommodate graduate student expansion and a convergence area for researchers and industry to collaborate on joint projects.

The renovation of the attic space in the Mining Building presents an opportunity to put the Department's commitment to the development and maintenance of environmental strategies aimed at enhancing university property, as well as the global environment, into practice. The principles of environmental sustainability are to form an integral part of the design and implementation of this renovation. The total project cost estimate allows for environmentally sustainable choices in construction methods, materials, furniture and furnishings.

The proposed project will improve accessibility in the building by making the building fully accessible. It is proposed that an interior elevator shaft be created immediately to the North of the West stair with no impact to the exterior appearance of the building.

The project will result in the temporary relocation of several occupants during portions of the construction period (735 nasm) and the permanent relocation of others to allow for the creation of the elevator shaft (140 nasm). Discussions will be conducted with the Dean, Chair of Civil Engineering, Director of the IBBME and the Chair of Mechanical and Industrial Engineering to determine a suitable schedule and relocation options. It should be noted that the temporary relocation will be of significant benefit to the occupants as the spaces will receive new lighting and sprinkler system and will be cleared of existing asbestos.

The Mining Building is currently a designated building in the Inventory of Heritage Properties on architectural grounds for its importance as a major work of Edwardian Classicism. As a designated building any changes to the exterior of the structure will be reviewed by the Heritage Preservation Services of the City of Toronto. A heritage consultant was engaged as part of the feasibility study to ensure that any changes would be handled with sensitivity. It is likely that as part of the permit process, the City will require a heritage easement agreement.

FINANCIAL AND PLANNING IMPLICATIONS

The estimated total cost of the attic renovation, elevator installation and all associated work is $10,065,000 if tendered as a lump sum in the spring of 2009. Currently this amount includes allowances for asbestos abatement and an allowance for relocation costs for building occupants who will be either permanently or temporarily displaced by the work, for which a plan is being developed.

As part of the feasibility study a review and assessment of the condition of the building envelope was undertaken to identify items of restoration and maintenance and their related costs. The west half of the roof was identified by the consultants, reviewed by Facilities and Services and classified as “high priority” requiring immediate attention. It is in need of replacement and the associated soffits and eaves troughs in need of repair. This should be done in conjunction with the attic work and the installation of glazing. The estimated total cost for this work is $2,085,000 if done at the same time as the other construction. The total estimated cost is therefore $12,150,000.

FUNDING SOURCES

A commitment of $4 million has been secured, and discussions are advanced for the balance that is required. The funding arrangements will be finalized before Business Board approvals for commencement of the work.

SCHEDULE

The project will proceed with implementation once funding commitments are in place. It is expected that occupancy can be achieved 24 months after consultants are retained.

RECOMMENDATIONS

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

1. THAT the Project Planning Report for the Civil Engineering Interdisciplinary Design Studios be approved in principle

2. THAT the project scope, comprising renovations to approximately 632 net assignable square meters and 1,129 gross square meters be approved with a total project cost of $10,065,000 and high priority repairs to the exterior of the Mining Building estimated to cost approximately $2,085,000, for a total project cost of up to $12,150,000 be approved.

REPORT

OF THE PROJECT PLANNING COMMITTEE

FOR THE

INTERDISCIPLINARY DESIGN STUDIOS AND GRADUATE STUDENT EXPANSION

WITHIN THE DEPARTMENT OF CIVIL ENGINEERING

AND THE LASSONDE INSTITUTE

APRIL 29, 2008

I. MEMBERSHIP

Paul Young	(Chair), Professor and Chair of the Department of Civil Engineering (2004-2007) and Director, Lassonde Institute
Will Bawden	Professor (Civil Engineering) Director of the Lassonde Mineral Engineering Program
Julian Binks	Manager, Project Planning, Capital Projects
Paul Gauvreau	Professor (Civil Engineering), and NSERC Chair in Design Engineering
Gail Milgrom	Managing Director, Campus and Facilities Planning
Elizabeth Sisam	Assistant Vice-President, Campus & Facilities Planning
Ron Swail	Assistant Vice-President, Facilities and Services
Georgette Zinaty	Director (Civil Engineering), Advancement, Research and Student Services
Adam Coulson	Graduate Student to May 2007
Lisa Barbosa	Graduate Student
Josh Clelland	Undergraduate Student to May 2007
Andrew Kearns	Undergraduate Student

II. TERMS OF REFERENCE

1. Make recommendations and provide a space program for the Interdisciplinary Design Studios and graduate student expansion *(a part to be known as the Goldcorp Innovation Suite)* within the Department of Civil Engineering and Lassonde Institute for Engineering Geoscience.
2. Demonstrate that the proposed space program will take into account the Council of Ontario Universities and the University's own space standards.
3. Provide a layout for the area to be renovated.
4. Assess the complete technical feasibility to fully use the available attic space, including addressing fire safety and accessibility.
5. Consider all relevant fire codes that include extensive use of the attic.
6. Identify all communications requirements, equipment and furnishings.
7. Identify all security and safety requirements and their related costs.
8. Identify the municipal approvals that will be required for the modification of the room.
9. Provide an estimate of total project costs including construction, data, communication, equipment and furnishings for the project.
10. Identity all sources of funding for the completion of the project.
11. Report by April 30, 2005 or as soon as possible.

III. BACKGROUND

Located at the main gates of the University of Toronto St. George campus, at the corner of College Street and King's College Road, the Mining Building is one of the original buildings of the University of Toronto's Faculty of Applied Science and Engineering and in 2005 celebrated its 100th anniversary.

Today, the Mining Building hosts the Undergraduate Lassonde Mineral Engineering Program and the Lassonde Institute for graduate research in Engineering Geoscience as

well as the Department of Mechanical and Industrial Engineering and the Institute for Biomaterial and Biomedical Engineering. It is home to one of the original lecture theaters at the University. Notably, the building is also the original home to the Canadian Mining Hall of Fame, which recognizes and honours legendary explorationists and miners who contributed to the growth and development of this great Canadian industry.

The attic of the Mining Building, currently unusable space, has been identified as a potential location for the Faculty's proposed Interdisciplinary Design Studios within the Department of Civil Engineering, the Lassonde Mineral Engineering Program and the Lassonde Institute. These design studios are to address the pressing needs for additional facilities in support of undergraduate and graduate expansion programs, be used to promote interdisciplinary activities in engineering geoscience and urban engineering design and to enhance the student learning experience.

Recent accreditation visits and an External Review of the department supported the need for greater space to conduct the teaching and research functions of the department and to meet the needs of planned expansion in undergraduate and graduate enrolment. The renovation of the attic space will not only accommodate the design studios but also provide much needed graduate student offices, a seminar room and administrative space.

The proposed renovation of the Mining Building will give Canada's mining business capitol a new education and research hub.

A Project Planning Committee was established in December 2004 and in May 2007 the Faculty submitted an Interim Report to the Accommodation and Facilities Directorate and sought approval for the allocation, in principle, of the attic space in the Mining Building to the Department of Civil Engineering as the location for the department's Interdisciplinary Design Studio. Approval was also given at that time to engage a consultant to further investigate the structural, building code, and other feasibility aspects of the proposed attic renovation, the creation of an accessible entrance off King's College Road coupled with an elevator servicing every floor, to improve the accessibility to the Mining Building and to produce a conceptual design. The team was to include a heritage consultant to report on the condition of this designated building and construction cost estimates were to be prepared for the basic project plus any other restoration/repair work.

In January 2008 the consultants submitted a feasibility study and concept plan for locating the Lassonde Institute's Gold Corp Innovation Suite within the unfinished attic space of the Mining Building. Their work has informed the conclusions and recommendations of this Project Planning Report.

IV. ACADEMIC PLAN

The Department of Civil Engineering, University of Toronto is one of the oldest and largest Civil Engineering schools in Canada. Its origins date back to the founding of the School of Practical Science in 1873. In July 2004, the Department of Civil Engineering completed an extensive and inclusive strategic planning process and academic plan that spanned 2004-2010 and focused on providing urban solutions (building cities that work for people) and innovation in engineering geoscience.

The Civil Engineering profession is concerned with virtually all aspects of the built environment and with the natural environment in which infrastructure systems are built. This includes but is not limited to buildings of all types, transportation systems, municipal service systems, dams, mines and other specialized structures such as offshore oil drilling platforms. Fundamental to civil engineering practice, therefore, is the need to account for interactions between the built, natural and human environments in all aspects of its' work.

While the academic plan focuses on strengthening and broadening outreach and performance in key areas such as undergraduate studies, graduate studies, research, and resources that encompass faculty, staff, space and revenue, it is recognized that growth in these areas is undermined by the lack of physical space to accommodate this growth and direction in innovative teaching and learning. Therefore, one major goal within the plan has been to transform the attic of the Mining Building into an innovation convergence suite; in so doing, creating a facility where undergraduate and graduate students learn, study, and become Canada's top graduates, thereby enhancing the student experience at the University of Toronto and fostering growth toward providing solutions to the industry's pressing needs. The revitalized attic would become a vibrant space aimed to be an architectural icon in a historic building. The juxtaposition of modern and historic would be spectacular.

The vision for Civil Engineering at the University of Toronto is simply defined: *to be the best teaching and research Department of Civil Engineering in Canada and one of the top 20 in the world by 2010*. But academic excellence transcends statistics. More qualitatively, the vision for the Department of Civil Engineering is that it must be:

- An exciting place to be. It will be a place that the best undergraduate and graduate students (national and international) want to attend. New ideas and new methods for addressing cutting-edge issues, combined with excellence in teaching will make the University of Toronto the place to study Civil and Mineral Engineering. This new facility will create one giant step in this regard.

- A unique place to be. To distinguish ourselves nationally and internationally, we must clearly be seen as innovative leaders in both our teaching and our research. This new space will allow us to address integrative learning in both content and delivery that defines the education required for engineers in the 21st century.

- A centre for interdisciplinary, collaborative research. Civil Engineering is itself a broad discipline with a number of major sub-disciplines. The action space for Civil Engineering is so large that Civil Engineering necessarily intersects with a very wide variety of other academic disciplines, both within engineering (chemical, mechanical, electrical, industrial) and within the University (e.g. geography, urban planning, economics, computer science, statistics, sociology, psychology, health sciences, chemistry, physics, geology, architecture). In Mineral Engineering and Engineering Geoscience the collaborations are also extensive from Earth Science, Physics, Chemistry and all branches of engineering working together to study the impact of resource exploration and extraction on the environment. Our students must appreciate the interdisciplinary professional environment (science, technology, business and finance), and as researchers we must be leaders in crossing

disciplinary boundaries. The design studios will provide the physical forum and centre for collaborative convergence work and learning.

Above all else, however, the vision for the department is that it must be a place that matters, that has impact. The renovation of the attic will allow the Department to be indeed a place that matters, that has impact and reinforces the commitment to educate students in an innovative way and enhance their student experience.

V. SPACE PROGRAM

A Overview of Existing Space

The Department of Civil Engineering occupies approx 7,378 net assignable square meters, in the Galbraith, Sandford Fleming, Mining and Haultain buildings. The table below shows a breakdown of the department's existing space by category of use and building.

Table 1
Existing Space Inventory - Department of Civil Engineering

Space Category	Galbraith	Haultain	Mining	Sandford Flm	Total Nasm
Classrooms	277		108		385
Teaching Labs	845		31		875
Research Labs	2,055	49	124	1,235	3,463
Academic Offices	459		103	86	648
Research Offices	109		47		156
Grad Student Offices	697		110	122	929
Non-Acad Offices	206		14		220
Depart Support Space	326		53	114	493
Student Offices	96				96
Student Lounges	29		44	40	113
Grand Total	5,099	49	634	1,597	7,378

B. Nominal Space Requirements

The Council of Ontario Universities guidelines were used to calculate a benchmark space requirement for the Department of Civil Engineering. The calculations were based on the current profile of the department and reflect the existing academic and non-academic complements, programs and student numbers. Accommodation for increases in these numbers as approved in the current academic plan and proposed in the department's strategic plan to the year 2010 would result in additional requirements.

Table 2
Departmental Profile – COU Space Guidelines Input Measures

Department of Civil Engineering	Current 07/08	
FTE Academics	34.5	
# Postdoctoral Fellows	6	
# Research Associates	2	
FTE Non-Academics – Research Support	3	
FTE Non-Academics – Admin and Technical	21	
FTE Graduate Students - PhD	68	
FTE Graduate Students – MSci	58	
FTE Graduate Students – Masters of Eng	57.3	
FTE Non-Degree	.9	
Total FTE Graduate Students	184.2	
# scheduled weekly student lab contact hours	1,657	

Table 3
Comparison of Existing Nasm, Proposed Additional Nasm and COU Generated Nasm

Category of Space	Existing Nasm	Proposed Additional Nasm	Total Nasm	COU Space Guidelines Nasm
Teaching Labs	875	373	1,248	1,326
Research Facilities	3,463		3,463	3,918
Faculty Offices	648		648	516
Research Offices	156		156	143
Graduate Student Spaces	929	128	1,057	736
Non-Academic Staff Offices	220	15	235	273
Departmental Support	493	40	533	417
Subtotal – Departmental	**6,784**	**556**	**7,340**	**7,329**
Classrooms	385	75	460	
Student Offices	96		96	
Student Lounges	113		113	
Subtotal - Campus	**594**	**75**	**669**	
Totals	**7,378**	**632**	**8,009**	

The additional facilities to be provided with the renovation of the Mining Building attic fall within the requirements for the Department of Civil Engineering as generated by the COU space guidelines.

C. Proposed Space Program for the Mining Building Attic

The proposed space program is comprised of a series of rooms intended to provide the best opportunities for teaching and learning design engineering, promoting interdisciplinary research and innovation convergence. The facility will create an environment which supports full implementation of the studio method of design education. The foundations of this method, which is practiced in schools of architecture and the great European schools of engineering, are learning through doing, constant informal interaction with peers, and frequent critique of work in progress by teaching staff.

Space requirements for the method are simple. Each student must have a dedicated workspace (deck and lockable storage) that is theirs for the duration of the term or academic year. The workspaces must be configurable into groups (individual studios) of about ten students, all of whom will be working on the same design project and all of whom will be supervised by the same instructor. Movable partitions can be used to create these smaller studio spaces within the overall space. Common areas should be provided for exhibition of student projects and for more formal group critiques. A lounge area with vending machines and coffee should be provided.

Based on an initial assessment of the attic area, it is realistic to plan on developing this space for approximately one hundred students. This would allow the studio to be dedicated to the fourth-year design project, and would enable each of the fourth-year students to use the studio as their “home base” for the entire year. In addition the space will provide graduate student offices to accommodate our graduate student expansion and a convergence area for researchers and industry to collaborate on joint projects.

Table 4
Proposed Space Program
Department of Civil Engineering
Interdisciplinary Design Studios

Space Use	# Stns	Nasm Per	Total Nasm
9 Graduate Student Research Offices	27	4.3	116.9
1 Graduate Student Print Facility	1	11.4	11.4
1 Interdisciplinary Design Studio	100	3.6	357.2
Studio Storage Space			15.8
Seminar / Misc Storage			25.4
1 Seminar Room	18	2.8	49.7
Lounge			31.2
1 Administrative Staff Office	1	15	15
1 Administrative Storage			9
Total			631.6
Gross to Nasm Ratio – 1.79			
Gross – approximately 1,129 sq.m.			

D. The Site

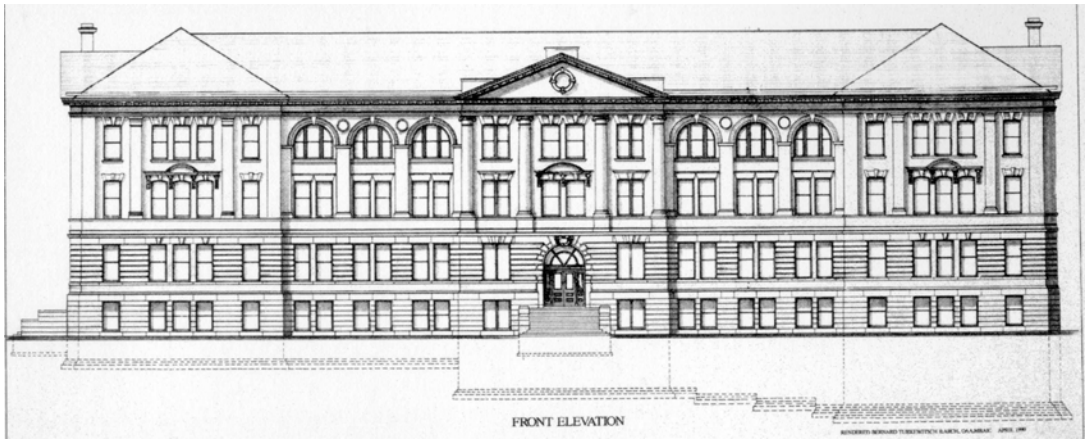
The envisioned suite is to be located in the west wing of the attic level of the Mining Building, within the area of Rooms 401 to 408. The gross area of this space is approximately1,230 square meters and the amount of “assignable” space available, taking into consideration the roof slopes, the placement of equipment, amount of circulation space required for exiting is approximately 632 nasm.

VISION AND FUNCTIONAL PLAN

The vision is to create an innovative and dynamic space for undergraduate student learning and graduate student research in the design studios recognized with a clearly defined physical presence.

To create a facility where undergraduate and graduate students learn, study, and become Canada’s top mining and civil engineering graduates, thereby enhancing the student experience at the University of Toronto and fostering growth toward providing solutions to the industry’s pressing needs.

To enhance our research infrastructure, we would like to acquire the most advanced equipment in the world. This would be a vibrant space aimed to be an architectural icon in a historic building. The juxtaposition of modern and historic would be spectacular.



ABOVE: An artist’s rendering of the current Mining Building

The function of the space should be to provide:

- Opportunity to innovate in renovation of a historical building in the Discovery District of Toronto. Facility to be as green as possible with inclusion of photovoltaics and innovative low energy air circulation techniques
- an identifiable ‘address’ at street level for the Lassonde Institute, geoscience and engineering

- provide a legible route that extends vertically from Kings College Road to the renovated attic level
- Create a consolidated “arrival” zone at the attic level that addresses students and visitors arriving by stair and elevator which provides access to adjoining program areas
- Establish a critical mass of activity with the studio through effective and complementary programming, facilities and amenities
- Studio as a site for project based research and learning
- Accessible studio support facilities and amenities
- Graduate office as mentoring resource for studio programme
- Seminar room as events site for students staff and outside partnerships
- Lounge as breakout space for studio program and seminar room
- Gallery as a site for the display of academic achievement
- Maximize flexibility of the studio environment through the use and adoption of
- An open concept plan capable of ongoing reconfiguration
- Modular working frumps that accommodate up to 10 students each as the organizing increment of the studio that permit both individual and collective work
- Mobile partioning and furniture systems throughout
- Dispersed storage
- Adaptable and accessible in floor power / wiring systems
- Upgrade floor structure to enable on going reconfiguration of the space
- Optimize conditions for learning using
- Effective delighting
- Enhanced indoor air quality
- Adaptable power data infrastructure
- Suitable provisions for collective and individual work
- Building to the fabric of the project initiatives that extend integrated engineering an sustainability opportunities that enhance the project as a magnet for funding and service to reinforce its identity as a place of excellence

VII. ENVIRONMENTAL AND SUSTAINABILITY ISSUES

The Department of Civil Engineering is committed to sustainability in mining; its researchers strive to provide cleaner operations that are more efficient, have lower costs and that are overall less damaging to the environment endeavor thereby providing a better future for the mining industry as well as mining communities. By enhancing the department’s infrastructure and enabling growth in the Lassonde Institute this important goal will be supported.

The Department of Civil Engineering supports the University of Toronto’s commitment to the development and maintenance of environmental strategies aimed at enhancing university property, as well as the global environment.

The renovation of the attic space in the Mining Building presents an opportunity to put this commitment into practice and the principles of environmental sustainability is to form an integral part of the design and implementation of this renovation. The total project cost estimate allows for environmentally sustainable choices in construction methods, materials, furniture and furnishings.

The chosen design team is to be cognizant of the University's commitment to buildings that are environmentally sustainable. In particular, innovative and alternative choices, should be considered when decisions are made about designs, processes and products that influence resource use (e.g., energy, water, materials) and other environmental impacts (e.g., indoor air quality, lighting, waste management). The Committee encourages the design team to measure the environmental impact of these choices, and to recognize that impacts in one area must be assessed relative to other areas, so that the "system" as a whole can be effective.

VIII. SPECIAL CONSIDERATIONS

A. Accessibility

The building currently has an accessible entrance located off College Street that is only accessed by way of a broken and steep wheelchair path. Accessible washrooms on floors one and two require auto-openers, emergency strips and "Emergency Assistance" lights. There is an elevator that is accessed by a lift which requires a key for operation.

The proposed project will improve accessibility in the building by making the building fully accessible. It is proposed that an interior elevator shaft be created immediately to the North of the West stair with no impact to the exterior appearance of the building.

B. Campus Planning

The Mining Building is currently a designated building in the Inventory of Heritage Properties on architectural grounds for its importance as a major work of Edwardian Classicism by one of the most important firms of Canadian architects, Darling and Pearson. It is also significant in terms of streetscape. As a designated building any changes to the exterior of the structure will be reviewed by the Heritage Preservation Services of the City of Toronto. A heritage consultant was engaged as part of the feasibility study to ensure that any changes would be handled with sensitivity. It is likely that as part of the permit process, the City will require a heritage easement agreement.

C. Computing and Communications

The space should be fully networked and wireless to allow students to move and work seamlessly through the space.

D. Security Issues

There are no significant security issues. The space is located above a very busy floor and it is anticipated that the space itself will be a vibrant space abuzz with graduate and undergraduate students. There will be a senior administrator during normal working hours.

E. Secondary Effects

The project will result in the temporary relocation of several occupants during portions of the construction period (in ~ 735 nasm) and the permanent relocation of others to allow for the creation of the elevator shaft (~ 140 nasm). Consultations will be conducted with the Dean, Chair of Civil Engineering, Director of the IBBME and the Chair of Mechanical and Industrial Engineering to determine a suitable schedule and relocation options. It should be noted that the temporary relocation will be of significant benefit to the occupants as the spaces will receiving new lighting, sprinkler system and will be cleared of existing asbestos.

Table 5 - Impact on Current Occupants

Room #	Department	Usetype	Nasm	Duration
318	IBBME	Research Lab	39.69	Temporary
319	IBBME	Kitchenette	14.30	Temporary
319A	IBBME	Lunch Room	22.75	Temporary
320	IBBME	Staff Office	9.48	Temporary
320A	IBBME	Faculty Office	15.48	Temporary
321	IBBME	Faculty Office	29.58	Temporary
322	IBBME	Teaching Lab	88.85	Temporary
322A, B,C, D, F	IBBME	Lab Support	58.73	Temporary
322E	IBBME	Faculty Office	30.74	Temporary
325	IBBME	Research Lab	47.46	Temporary
326	IBBME	Research Lab Support	85.19	Temporary
326A	IBBME	Grad Office	123.40	Temporary
327	IBBME	Staff Office	11.16	Temporary
327A	IBBME	Research Lab Support	6.87	Temporary
328	IBBME	Research Lab Support	14.35	Temporary
328A	IBBME	Darkroom	3.38	Temporary
329	IBBME	Faculty Office	19.48	Temporary
329A	IBBME	Office Storage	4.18	Temporary
329B	IBBME	Staff Office	7.26	Temporary
330	IBBME	Staff Office	9.59	Temporary
330A	IBBME	Faculty Office	20.23	Temporary
331	IBBME	Faculty/Staff Office	20.30	Temporary
332	IBBME	Lab Office	31.55	Temporary
332A	IBBME	Lab Office	21.14	Temporary
69	Mech Eng	Research Lab (part only)	53.66	Permanent
124	Mech Eng	Faculty Office	31.83	Permanent
222	Mech Eng	Faculty Office	26.16	Permanent
324	IBBME	Faculty Office	16.19	Permanent
325A	IBBME	Faculty Office	12.31	Permanent

The floor plans can be accessed at: http://www.osm.utoronto.ca/dload/pdf_files/007-MB/

IX. RESOURCE IMPLICATIONS

A complete feasibility study, with preliminary concept design, including an assessment of the building conditions was prepared. This work has informed a capital cost estimate. (Refer to Appendix A)

Scope of Work

The current proposal is to renovate and occupy the West end of the attic, specifically areas 401, 402 and 405, and to make a connection to the central stair 406 and the west stair. In 2005 and again in 2006 and 2007, the areas of 401 and 402 were separately reviewed by two structural engineers who came to the same conclusion, that some reinforcing of the existing main structure as well as the joists in specific areas need to be done, and that some of the work has to be done from the floor below. This will involve removal of the ceilings throughout the third floor area below in order to gain access to the structure.

The following is a summary of the work that would have to be undertaken in order to comply with Building Code, Structural and Hazardous Materials issues that have been raised as part of the study.

The scope of work to address these issues is as follows:

1. Occupied third floor areas under the renovated attic spaces would have to be temporarily vacated to permit the removal of asbestos paper in the ceiling. To do this all the existing ceilings, lighting, pipework etc would have to be either removed or have any asbestos removed.

2. With the ceilings removed, the existing attic floor joists would be reinforced to bring the structural capacity of the floor up to minimal requirements for occupancy. New structure will be introduced in the attic in order to create usable interior space.

3. A new drywall ceiling would be installed in the 3rd floor space below the occupied attic to provide a 1Hr fire rating. The third floor and attic will have to be sprinklered – they are not at present. Lighting etc, would be replaced in the 3rd floor at the same time.

4. The West and Centre stairs would be extended up to the attic in order to provide two means of exiting.

5. Provide a 1Hr fire rating for the existing roof assembly and any load-bearing members.

6. Extend (or replace) the existing fire alarm system for the building.

Secondly there is the issue of an elevator and improvements to accessibility in the building in general. The proposal is to create an interior elevator shaft immediately to the North of the West stair. This would impact rooms 69,124,222,324, and extend to the attic with little or no impact to the exterior appearance of the building. The entrance would be at grade through what is now room 69. The window could be converted into a

new entrance at grade leading to a vestibule into a double-sided elevator which could then serve every floor.

As part of the feasibility study a review and assessment of the condition of the building envelope was undertaken to identify items of restoration and maintenance and their related costs. The west half of the roof was identified by the consultants, reviewed by Facilities and Services and classified as “high priority” requiring immediate attention. It is in need of replacement and the associated soffits and eaves troughs in need of repair. This should be done in conjunction with the attic work and the installation of glazing.

Total Project Cost

The estimated total cost of the attic renovation, elevator installation and all associated work is $10,065,000 if tendered as a lump sum in the spring of 2009. Currently this amount includes allowances for asbestos abatement and an allowance for relocation costs for building occupants who will be either permanently or temporarily displaced by the work, for which a plan is being developed.

The estimated total cost for the high priority repair work is $2,085,000 if done at the same time as the other construction. It is recommended that all work be completed

The total project cost is estimated to be $12,150,000.

Operating Costs

Renovations to the attic of the Mining Building will increase the usable area of the building by 632 nasm. The annual operating costs will increase by approximately $126,400.

X. FUNDING SOURCES AND CASH FLOW

A commitment of $4 million has been secured, and discussions are advanced for the balance that is required. The project will proceed with implementation once funding commitments are in place.

The estimated total cost for high priority deferred maintenance of $2,085,000 will be funded through deferred maintenance programs.

XI. SCHEDULE

The project will proceed with implementation once funding commitments are in place. It is expected that occupancy can be achieved 24 months after consultants are retained.

XII. RECOMMENDATIONS

That the Planning and Budget Committee recommend to the Academic Board:

1. THAT the Project Planning Report for the Civil Engineering Interdisciplinary Design Studios be approved in principle

2. THAT the project scope, comprising renovations to approximately 632 net assignable square meters and 1,129 gross square meters be approved with a total project cost of $10,065,000 and high priority repairs to the exterior of the Mining Building estimated to cost approximately $2,0850,000, for a total project cost of up to $12,250,000 be approved.

Appendix A
Total Project Cost

Mining building, estimated total costs	Attic reno & elevator	roof and associated renovation, high priority	Total attic project	Future exterior renovation,
Gross floor area - M2	*1,225*	*na*	*na*	*na*
Net Assignable	*632*	*na*	*na*	*na*
Preliminary Construction Cost per CM2R 1 Nov 07	4,626,000	1,500,000	6,126,000	3,688,000
extra to reinforce floor throughout to 100#	73,000	0	73,000	0
demo and hazmat abatement on third floor & attic	370,000		370,000	
3rd floor work excluding demolition	616,000	0	616,000	0
allow for PV array 20 KW	330,000	0	330,000	0
Base construction tender amount	**6,015,000**	**1,500,000**	**7,515,000**	**3,688,000**
Construction Contingency 15%	902,250	225,000	1,127,250	553,200
Applicable GST	114,135	28,463	142,597	69,980
Total Construction Costs, including taxes	**$7,031,385**	**$1,753,463**	**$8,784,847**	**$4,311,180**
Infrastructure Upgrades in Sector - Hydro, Steam	0	0	0	0
Secondary Effects	0	0	0	0
Site services - water, gas, drainage - city charges	0	0	0	0
Landscaping & site repair	incl in constr	0	0	0
Permits & Insurance	79,355	0	79,355	0
Professional Fees	1,521,058	237,767	1,758,825	583,059
Computing Infrastructure	10,000	0	10,000	0
Telephone Terminations	10,000	0	10,000	0
Audio/Visual	10,000	0	10,000	0
Moving & Staging stage 3rd floor, allowance only.	500,000 1	0	500,000	0
Furnishings	350,000	0	350,000	0
Equipment	25,000	0	25,000	0
Security & access systems	50,000	0	50,000	0
Signage: Interior & Exterior	10,000	0	10,000	0
Signage: Donor Recognition	25,000	25,000	50,000	25,000
Groundbreaking & Building opening	10,000	0	10,000	0
Miscellaneous	25,000	5,000	30,000	5,000
Project Contingency @ 3%	288,203	63,770	351,973	150,761
escalation to spring 2009 included	0	0	0	tbd 3
Estimated total project cost before finance charges	**$9,945,000**	**$2,085,000**	**$12,030,000**	**$5,075,000**
Finance Costs tbd - allow 3%	120,000 2	0	120,000	0
Total Project Cost Estimate, finance allowance included	**$10,065,000**	**$2,085,000**	**$12,150,000**	**$5,075,000**

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notes:
1 allowance only, to be planned.
2 see cashflow estimate
3 allow additional 8% pa to date of tender(s).

Mining attic, project cashflow estimate.

Cash flow by quarter

Quarter	may-jul	aug-oct	nov-jan	feb-apr	may-jul	aug-oct	nov-jan	feb-apr	may-jul	aug-oct
	2008	2008	2008/9	2009	2009	2009	2009/10	2010	2010	2010
Approval & Cons. Select Oct 07										
Design										
Tender & Construction										
										occupy
										LT finance
Funding:										
Donor A	$2,040			$1,000				$1,000		$0
Donor B				$0			$0			
long term financing	$0	$0	$0	$0	$0	$0	$0	$0	$0	$7,908
subtotal	$2,040	$0	$0	$1,000	$0	$0	$0	$1,000	$0	$7,908
Expenditure:										
proff fees & permits. Ph 1	$406	$306	$306	$384	$68	$68	$68	$68	$68	$68
construction	$0	$260	$0	$0	$1,258	$1,258	$1,258	$1,258	$1,258	$2,095
staging, furn, equip, misc.	$0	$0	$250	$250	$0	$0	$0	$0	$451	$451
subtotal, not including interest	**$406**	**$566**	**$556**	**$634**	**$1,326**	**$1,326**	**$1,326**	**$1,326**	**$1,777**	**$2,614**
net cash flow	**$1,634**	**($566)**	**($556)**	**$366**	**($1,326)**	**($1,326)**	**($1,326)**	**($326)**	**($1,777)**	**$5,294**
1 interest rate payable	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
2 interest rate earned	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
open bal	$0	$1,640	$1,084	$534	$906	($418)	($1,754)	($3,101)	($3,456)	($5,271)
net cashflow before interest	$1,634	($566)	($556)	$366	($1,326)	($1,326)	($1,326)	($326)	($1,777)	$5,294
int exp	**$0**	**$0**	**$0**	**$0**	**$0**	**($9)**	**($21)**	**($29)**	**($38)**	**($23)**
int earned	**$6**	**$10**	**$6**	**$5**	**$2**	**$0**	**$0**	**$0**	**$0**	**$0**
close bal	$1,640	$1,084	$534	$906	($418)	($1,754)	($3,101)	($3,456)	($5,271)	$0

Notes:

1 90 Day T-Bill rate plus 0.25% for short term financing.
2 90 Day T-Bill rate less 0.25% for short term interest income.

prepared jcb 29th April 2008

Floor Plan of Mining Building Attic