U OF T DEPARTMENT OF CIVIL ENGINEERING
CIV 513S COLLABORATIVE DESIGN STUDIO

FEBRUARY 9, 2005

PROJECT 2.0

The objective of Project 3.0, which will get underway on February 21, 2005, is to develop the space in the Galbraith Building courtyard. The attached handout from Professor van Elslander explains the primary features of the architectural program. As engineers working collaboratively with your architecture partners, you are expected to contribute equally to the design effort, bringing to the partnership your unique knowledge, experience, and outlook as structural engineers.

Whenever engineers do work on existing structures, they must quickly develop a sound understanding of the primary characteristics of the existing structure and the main features of structural behaviour. You will need to understand the existing Galbraith Building because it is possible that you will be transferring significant load from the new structure within the courtyard to the existing structural system. This knowledge will inform the decisions within your partnership as you develop design concepts to address the program.

Project 2.0 focuses on understanding the structural characteristics of the existing Galbraith Building. You are required to submit a report, no more than ten pages in length, describing the primary structural systems of the building and the primary aspects of structural behaviour. You must use the available drawings of the building, given to you on CD, as the primary source of information for this activity. It is common for changes to be made to buildings during their life. You are therefore encouraged to confirm the knowledge you obtain from the drawings with visual observations of your own.

The report must include the following information:

1. Definition of the applicable loadings, both vertical and lateral, that the existing building must carry
2. Description of the subsurface conditions and type of foundations used
3. Simple sketches (drawn to scale) of the primary structural systems in the building, with text describing the primary materials, members, and connections used.
4. Description of how the systems you have described in the previous point carry vertical and lateral load. You should include schematic force diagrams (e.g. moment diagrams) showing qualitatively how the systems respond to typical vertical and lateral load conditions (calculations are not required).
5. Identification and discussion of any features you consider to be unusual or particularly relevant to the anticipated activities of Project 3.0.

Your sketches may be drawn by hand or by computer. The sketches must be neat, must clearly convey the message you are trying to communicate, and must be well integrated into the text.

This report shall be no more than ten pages in length, and shall be handed in on February 21, 2005.

REFERENCE TEXT

There are several textbooks available in the library that describe common structural systems in buildings and their behaviour under load. You are strongly encouraged to consult these works to acquire knowledge and vocabulary that will assist you in preparing your report.

One such work, *Structures* by Daniel L Schodek, has been placed on short-term loan in the Engineering Library.

Master of Architecture
Faculty of Architecture Landscape and Design

Yolles Competition Studio

P R O J E C T 3.0 **Galbraith Engineering Studio Competition**

Brief

The Faculty of Engineering wishes to construct 1,200 sq.m. of design studio space in the courtyard of the Galbraith Building. The new studios should be planned and built in such a way as to minimize impact on the existing building and occupants. Existing offices and classrooms as well as, and especially, the new studios will require natural light and prospect. Each studio floor area will require two means of egress, which may be incorporated into the existing building's egress system. Provision should be made within the new studio for a flexible seminar/ presentation space. As well as providing studios the new work should create a public space for the Engineering Faculty to allow displays, faculty assembly and informal student contact.
The winning project will:
1 maximize the architectural potential of structure,
2 be innovative,
3 be aware of logistical and construction issues,
4 will improve the function and life of the existing building.
5 create an inspirational design setting.

Presentation Requirements

The judging will take place anonymously and with out presentation to the jurors. No names or identifying marks should be on the face of the drawings. The presentation must be self-explanatory.
Floor plans at all levels including roof plan @ 1:200
Reflected ceiling plans of studio @ 1:200
2 building sections@ 1:200
1 interior perspective
1 physical model @ 1:200
detail study in model or drawing @ 1:10
Analytical and descriptive diagrams explaining the project and incorporating engineering analysis
text of no more than 200 words explaining the project
All work should be mounted on identical vertical boards (size tbd)

Due:

Friday April 8, 2005 Studio

Judging/ Award

Jury and date of judging will be announced. The winning team will be awarded a $5,000.00 cash prize.

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PROJECT 3.0

For Project 3.0, students are required to submit the following deliverables:

1. A set of structural drawings that includes:
   (a) Foundation plan (if applicable)
   (b) Floor plans at all levels
   (c) Sections, elevations, and details as required to describe the structural system
2. A report that includes:
   (a) Design criteria
   (b) Description of the proposed structural system
   (c) Description of the anticipated construction method
   (d) In an appendix, structural calculations

All drawings shall be mounted on foam-core boards (size to be determined).

Structural calculations shall be organized with a separate table of contents and explanatory comments are appropriate.

The level of detail required for this submission shall be consistent with what is generally expected for a "preliminary design". It should be possible, on the basis of your drawings and calculations, to ascertain that the structural concept you propose is feasible and to develop a reasonable cost estimate. (You are not required, however, to submit a cost estimate as one of the deliverables.) All primary dimensions shall be defined, all structural systems shall be determined, critical details shall be identified and developed. Any impact of the new structure on the existing structure shall be identified and shown to be acceptable. You are not expected to have all of the reinforcing steel dimensioned, but you should demonstrate that all primary components can be made to work with reasonable amounts of reinforcement.

Project 3.0 shall be submitted at 1:00 PM on April 8, 2005.