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## **Design Specification for Project A: Extending the Facilities of the School of Engineering**

### **Summary**

The lack of space in the School of Engineering has led to a lot of congestion in the School showing that more space is required to maintain high standards of teaching and research within the School.

The creation of a modern and an attractive environment reflecting the role of the School as one of the leading institutes in the country is another requirement.

A detailed needs assessment has been carried out for the extension of the main Foyer at Level 4 and the street frontage and entry points to the school from Symonds Street. Aspects considered for the Foyer area are sitting areas, lighting, safety, accessibility, ventilation, sound proof lecture rooms, maintenance and interior. Better accessibility to the school and shelter between the underpass and the School have been considered with regard to the façade of the School.

### **Background**

The Engineering School with its four building blocks 401 – 404 accommodates 2000 students and staff currently. The current intake of 470 Part 1 students per year is expected to grow up to 800 new students per year within the next eight years.

Lack of space in the School has not only led to congestion in the Foyer area, corridors and lecture theatres but has also put more pressure on the existing resources of the School. Therefore more space is required to provide adequate facilities to students and staff in order to maintain high standards of teaching and research within the School.

The present façade and the environment of the School do not reflect the role of the School as one of the leading institutes in the country, whilst making the creation of a modern and an attractive environment within the existing facilities to reflect the proper role of the School, another requirement.

This report consists of a detailed needs assessment for the above requirements and is in par with the design concept presented by the architects a few weeks ago.

Main areas of concern are:

1. Extension of the main Foyer at Level 4
2. Street frontage and entry points to the school from Symonds Street.

## **Part 1:**

### **Extension of the main Foyer at Level 4**

An Atrium structure is to be constructed in the courtyard between the building 401 and 403 connecting the two buildings at Level 3 (we are not concerned about the Atrium structure in this Level) and Level 4 improving traffic between the Foyer area and the main lecture theatres. This also provides access to the new lecture theatre in the Conference Centre.

The main requirements for the Atrium structure at Level 4 (or the extended Foyer area) and the present Foyer area can be listed and explained as follows.

a. **Sitting areas**

Currently the Foyer area has only 12 tables and 60 chairs for students to relax, meet and have a quick break between lectures. There are lots of students who go elsewhere or stand to get that relaxation due to the lack of tables and chairs in this area.

It has been found that an average of 30% of the students remain in the Foyer area after a lecture. With the new lecture hall being constructed there will be a maximum of 524 (262 in each lecture hall \* 2) students in the two lecture halls thus the new Foyer area should have 158 (up to 170 would be acceptable) sitting places and there should be a table for each 6 of the sitting places.

b. **Lighting**

The present and the extended Foyer areas should be well lit and there should be a brighter reading light for each table with a student operational means of control for each of them so that the students can read and study in this area if they wish to even where there is less or no natural light. Glass windows will also be a requirement and the placement and size should comply with the New Zealand Building Code Handbook and Approved Documents 1993. (Volume 4. Subsection – G.7 Natural Light)

c. **Safety**

All standard safety precautions against fire, smoke, rain, wind and earthquakes would be required and should satisfy the standards set out in the New Zealand Building Code Handbook and Approved Documents 1993. (Volume 2. Subsection – Health and Safety Issues). Also a suitable level of temperature has to be maintained within the School.

For example the Building Code Handbook shows that “A minimum of 3 escape routes protected by fire and smoke with at least 1 having features to enable people with disabilities are required”. These constraints should be followed exactly as stated.

d. **Accessibility**

Access, especially to people with disabilities to all lecture rooms, laboratories, toilets and all other areas used by normal students should be considered.

- e. An easier means of getting food and drinks is required to provide the students with a quick snack or a drink. Two drinking fountains would also be required in the Atrium structure.
- f. Ventilation  
Proper ventilation should be considered. A minimum of 10% of the volume of the air should consist of natural air and the methods used should comply with the New Zealand Building Code Handbook and Approved Documents 1993. (Volume 3. Subsection – Ventilation)
- g. Paintings and/or artwork and/or other special engineering creations should be displayed in the Atrium and the interior should be painted with a very light colour.
- h. Sound proof lecture rooms  
The lecture rooms should be sound proof to ensure that the lectures do not get disturbed by the expected high noise in the Atrium.
- g. Maintenance  
A methodical setup of garbage bins would be necessary. Staff should be assigned to mop the floors, clean the garbage bins and toilets on a daily basis. Checking and replacing the bulbs and fittings and maintaining proper standards in the lecture rooms (boards, chairs, tables etc) will also be necessary.

### **Constrains for the extension of the Foyer area**

- a. Lecture rooms, elevators and present staircases should not be disturbed by the new construction.
- b. The total floor area available in the courtyard is 1300 square metres.
- c. The existing Foyer area and the new space should be considered as the basis for all the functions and should be used as the central traffic hub and the meeting point in the school.
- d. The Atrium should not go beyond the left wall of the 4400C8 corridor.
- e. Present entry points to the school shouldn't be completely changed but slight modifications would be permitted.
- f. The present main method of ventilation cannot be changed but can be upgraded and modified.
- g. Basic structure of all areas of the School other than the present Foyer area, main entrances to the School from Symonds Street at Levels 3 (underpass) and 4 and the courtyard between buildings 401 and 403 should not be altered.

## **Part 2.**

### **Street frontage and entry points to the school from Symonds Street**

The main issues covered in this section are the main entry at Level 4, access to Levels 3 and 4 from the underpass and from street level, and the general appearance of the School as a modern and dynamic teaching and research institute.

The façade suggested in the architects' design concept for this area is accepted but the following issues should be considered and suitable solutions would be required.

a. Entry points

Data collection shows that an average of 110 students enters the building and around 80 students leave the building every 10 minutes during rush hours through the main entrance and the Level 3 entrance. This rough approximation would definitely increase by a considerable number within the next few years. It has also been revealed that the main entrance at Level 4 is quite congested mainly before a lecture starts and as soon as a lecture finishes and that the sizes of the entrances do not satisfy the requirements of the number of people using them at the same time. Therefore it is necessary to get a greater number of students (around 400 students in and out of the building in 10 minutes) in and out of the building at the same time and a solution for this would be required.

b. Shelter between the underpass and the entrance at Level 3

There is no protection from rain in this part of the School. Students coming through the underpass on a rainy day get wet due to this reason and proper shelter in this area would be required.

**Constraints for the Street frontage and entry points**

- a. The external and the internal staircases joining levels 3 and 4 cannot be disturbed by the new constructions.
- b. The location of the underpass cannot be changed.
- c. The front view of Level 4 (glass windows) can be changed to satisfy the needs of the new design concept, but the outer boundary of this front glass wall should be maintained. (i.e. The distance from the main road to this wall shouldn't be changed)
- d. The locations of the main entry points from Levels 3 and 4 cannot be altered but size, shape, appearance and other dimensions can be changed to suit the new design concept.
- e. All design solutions should abide by all the rules and regulations (distance from the road etc.) set out in the New Zealand Building Code Handbook and Approved Documents 1993. (Volume 1.)

However it should be taken into account that the School is open throughout the year and the implementation of the design concept should be planned ensuring that no major changes occur in the normal schedule of the School. If this cannot be achieved, appropriate arrangements should be made with proper authorities and the students should be informed beforehand.

I will be very happy to assist you if you need any additional information regarding this needs assessment to implement the suggested specifications.

Yours truly

Thusitha Mabotuwana