



School	<b>NBE</b>	Subject Area & Catalogue number	<b>BUIL 4019</b>
Course Name	<b>Building Surveying 2</b>		

Student ID	<input type="text"/>				<input type="text"/>				<input type="text"/>			
Given Name/s	<input type="text"/>				Surname				<input type="text"/>			
If you are required to use a calculator, please note the make and model here	Make:	<input type="text"/>				Model	<input type="text"/>					

Official Reading Time: 10 Minutes  
 Writing Time:

Parts	Questions	Time	Marks
A	Answer all questions	108 mins (recommended)	60 Marks
B	Answer all questions	72 mins (recommended)	<u>40 Marks</u>
			100 Total

**Instructions to Candidates:**

Answer Part A and B in different books  
 Show all calculations and assumptions in answer book

**Permitted Materials**

Calculator  
 Lecture notes

# Part A

Professional Practice Project component

DO NOT COMMENCE WRITING UNTIL INSTRUCTED TO DO SO

**Question 1**

**(20 marks)**

A 396 mm x 96 mm jarrah beam carries a limit state dead and live load of 3.0 kN/m over a simply supported span of 5.1m. For working load, the allowable bending stress in the beam is 7.0 MPa.

If the top of the beam is protected, and only the sides and bottom of the beam are exposed to fire, determine whether the beam can achieve a structural adequacy of 30 minutes.

For jarrah, the specific weight is 800 kg/m<sup>3</sup>

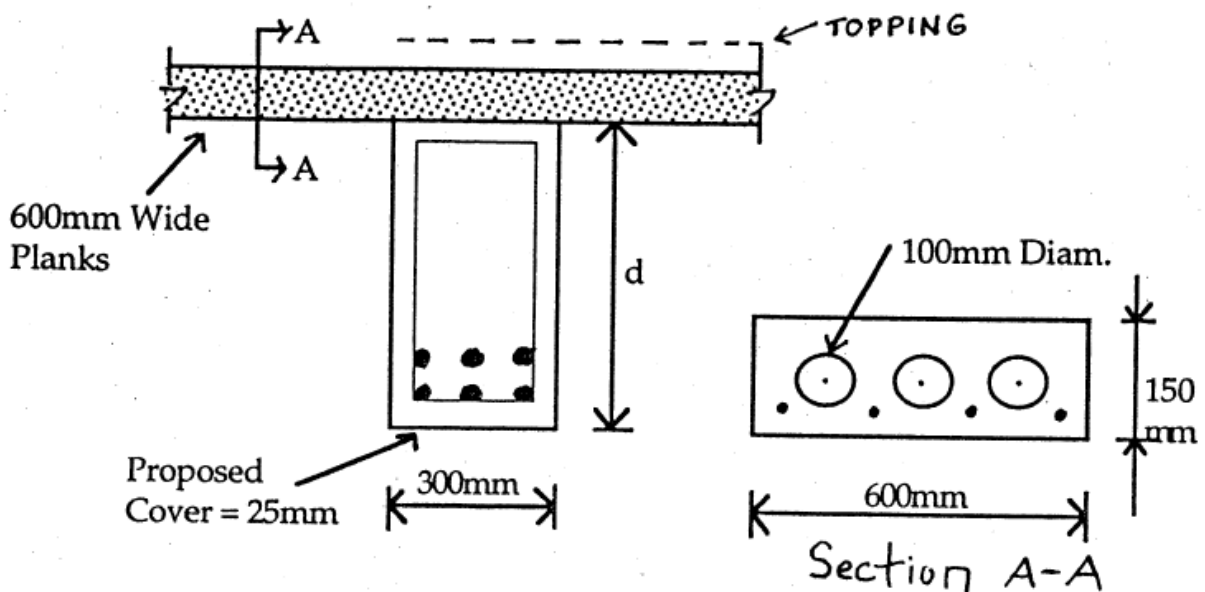
**Question 2**

**(20 marks)**

A concrete floor is to be constructed of precast prestressed beams and slabs. Both the slabs and beams are continuous over at least two spans. A section through a typical floor unit is shown. The floor is to be finished with a topping of lightweight concrete. The beams are exposed to fire on the two sides and bottom.

If the floor system is to achieve an FRL of 240/240/240, determine:

- a. The minimum thickness of topping required on the floor panels to achieve the required insulation
- b. The minimum cover to tendons in the prestressed slabs to achieve the required structural adequacy
- c. Whether the cover to the tendons in the beam is adequate to achieve the required structural adequacy, and if not the minimum cover required
- d. The minimum required depth of the beam to achieve the required structural adequacy.

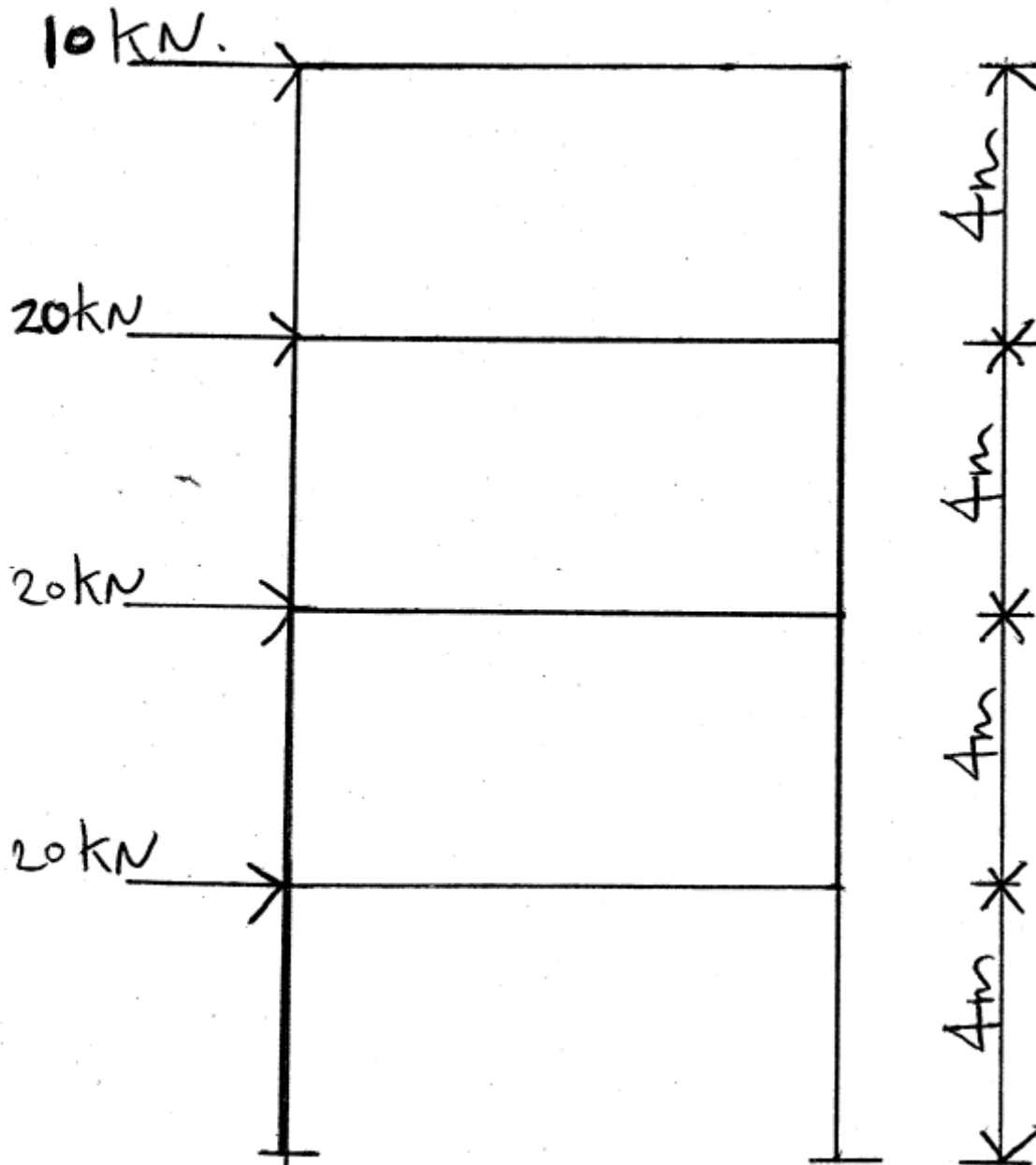


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Question 3

(20 marks)

Determine the approximate axial forces, shears and bending moments in the frame shown due to the lateral wind loads:



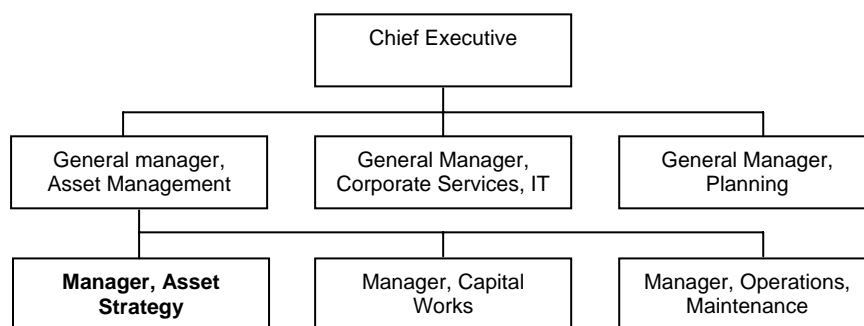
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# Part B

Facilities and Asset Management component

The Local Government Organization within which you work has recently created a specialised Division to take responsibility for the Strategic and Operational elements of Asset Management. The General Manager (GM) - your new boss- reports directly to the Chief Executive Officer (CEO), and has been given the responsibility of establishing the Division with equal representative at the Executive, and establishing the management protocols within the Council.

The underlying organisational chart is representative of the reporting responsibilities of each part of the organization.



The assets for which you will be responsible are as follows:

Land, Buildings, Infrastructure, Fleet and ‘Other’ assets such as office fitout and IT.

**Question 1 Asset Strategy.....15 marks**

The quality of the on-going management planning of the Council’s assets is being questioned by the Elected Members, and you have been asked to prepare a strategy for the management of the portfolio. This strategy must clearly describe the key asset management issues.

1. Describe what constitutes an Asset Strategy. You should include at least 4 major aspects of asset management in the strategy.
2. Under a heading for each aspect, give a brief summary of each part of the Asset Strategy.

**Question 2 Risk Management and the Asset Strategy.....15 marks**

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The General Manager is interested in Risk Management as a key technique to use in managing the asset portfolio. He has made it an imperative that you demonstrate your knowledge of the Australian Standard for Risk, and that you can establish a plan that will assure him that you are well in control of any issues that will arise. Therefore:

1. Outline the top 4 risk management issues (in priority order) that you expect to have to deal with (ignore the people issues). Hint – use the experience that you have gained during your Assignment to describe the hazards/issues.
2. Demonstrate how you would analyse these issues in terms of the risks that they pose to your organization. Hint: Do not try to solve the issues in your response.
3. Describe how you would implement the Risk management Plan.

**Question 3 Asset Operations.....10 marks**

It is one of the General Manager's goals to make the building assets operate much more efficiently on a daily basis, whilst taking into consideration the impact of the users. This means that all aspects of the portfolio must be looked at with a view to improving their operational efficiency. Consideration should be given to both internal management techniques as well as the management of the contractors.

1. What are the 4 major operational issues that you must be deal with?
2. Under each heading, use dot-points to briefly describe your approach to managing these issues using external, contract resources (assume that you have no in-house operations staff).