

**The University of Melbourne
Semester 2 Assessment, 2006**

Faculty of Architecture, Building and Planning

Subject Number: 702-862

Subject Title: Construction Methods and Planning

Exam Duration:3 hours

Reading Time:15 mins

This paper has 5 pages

Authorised materials:

No lecture notes or other material may be brought into the examination.
Electronic calculators are not required. Drawing instruments may be used in the examination.

Instructions to Invigilators:

This exam paper may be removed from the examination room at the completion of the exam.

Instructions to Students:

Candidates should attempt 4 questions from Part A and 1 question from Part B.
Answer Part A and Part B in SEPARATE BOOKS

Lodging of paper with Baillieu library:

This exam paper can be lodged with the Baillieu Library after the completion of the examination period.

PART A – Construction Methods

Question 1. Concrete Pumps (Total 20 %)

- (a) Describe fully the main items that need to be considered when setting up the pump lines for a multi storey building with tall vertical heights and using a fixed pump. Sketches may be used to illustrate your answer. (8 %)
- (b) Describe the health and safety issues that relate to concrete pumping on a building site (12 %)

Question 2. Asbestos (Total 20 %)

- (a) Asbestos is one of the most hazardous materials contained in buildings. Describe fully the reasons why asbestos is such a hazardous material (10%)
- (b) Describe fully the measures that Australian contractors are required to take when dealing with asbestos removal from buildings. (10%)

Question 3. Alimak Vertical Hoists and Health and Site Safety (Total 20 %)

- (a) List the items that would need to be taken into consideration when selecting the hoist requirements for a particular construction project. Your answer should include notes on the following:
 - Hoist location
 - Capacity of hoist
 - Number of hoists including single or double cars (9 %)
- (b) What do the letters “JSA” stand for? (1 %)
- (c) What is the function of a “JSA”? (2 %)
- (d) What is a ‘no go zone’ (1 %)
- (e) What is meant in the Victorian building industry by the term “Red Card”? (1 %)
- (f) Identify one of the following terms that most accurately defines the term “Risk Assessment”:-
 - (a) Hazard identification, risk assessment and risk control
 - (b) Checking risks relating to mechanical Plant
 - (c) Possible risks of personal injury
 - (d) Identifying the type of safety signs to be used

- (g) Who can serve a Provisional Improvement Notice at a construction site? (1 %)
- (h) Describe briefly what is meant by a “designated work group”? (2 %)
- (i) Describe briefly the differences between a “Regulation” and a “Code of Practice”. (2 %)

Question 5. Demolition (20 %)

There are many options to consider when demolishing buildings. Using examples, evaluate the demolition methods available to building contractors and their respective advantages and disadvantages.

Question 6. Contaminated Soils (20%)

- (a) A large portion of the existing Docklands development precinct including areas around Port Melbourne has contaminated soils. The Environment Protection Authority has published an information bulletin classifying waste materials.

If the contaminated soil to be removed from a construction site is classified as “Low Level Contaminated Soil”, list in note form, six (6) of the items to be considered / taken into account before removal of the soil from the site. (5 %)
- (b) What are the key issues the investigation team need to understand with regards to development sites where contaminants are known to exist? (3 %)
- (c) Describe fully the steps an environmental consultant might take to assess the type of and extent of contamination on a development site prior to a site investigation. (12%)

Question 7. Formwork Design and Systems (Total 20 %)

- (a) Where formwork collapses during the pouring of a suspended concrete slab, it is a very expensive rectification exercise and causes considerably time delays to a project.
Describe possible reasons why the formwork and supporting scaffold false work may fail and cause collapse. (5 %)
- (c) Describe fully the three stage loading concept and principles used for the design of multi-level slab soffit formwork. (9 %)
- (e) Formwork for a 200mm thick reinforced concrete wall 3.6 metre high is to be constructed using timber components. The vertical studs have a maximum span

of 1.6 metres. It is expected that these formwork shutters will be re-used many times on the one project.

Draw a sketch through the wall showing a typical formwork arrangement. Clearly label all the necessary components. The wall section should appear in an "as built" condition, just prior to pouring of the concrete, however it is not necessary to draw in the wall reinforcement.

(5 %)

PART B – Construction Planning

Choose and answer ONE of the following questions.

Question 8. (Total 20 %)

Project planning is a critical process to the success of a construction project. However there are projects that failed despite a comprehensive program being planned at its initial start of the project. Explained with examples why this could have happened. The explanation should be based on the assumption of a project comprises two storey office building with a basement for car parking. The site is along busy Whitehorse Road, Boxhill with tram lines and HV power cables along the front of the site.

OR

Question 9. (Total 20 %)

The impact of IT on project management has significant influence in the planning function of today's construction projects. In what aspect can IT alleviate the planning and scheduling of a complex building construction project? Illustrate your arguments based on a twenty storey apartment building with two basement levels of car parking. The site of the project is situated in the central business district of Melbourne.

This is the end of the examination paper