

UNIVERSITI SAINS MALAYSIA

Second Semester Examination
Academic Session 2004/2005

March 2005

RMT 558 – Construction and Facilities Management
(Pengurusan Pembinaan dan Fasiliti)

Duration: 3 hours
(Masa: 3 jam)

Please check that this examination paper consists of **EIGHT** pages of printed material before you begin the examination.

*Sila pastikan bahawa kertas peperiksaan ini mengandungi **LAPAN** muka surat yang tercetak sebelum anda memulakan peperiksaan ini.)*

Instructions: Answer **FOUR** questions only. **THREE** questions from **Section A** and **ONE** question from **Section B**.

Arahan: Jawab **EMPAT** soalan sahaja. **TIGA** soalan dari **Bahagian A** dan **SATU** soalan dari **Bahagian B**.

...2/-

Section A: Answer THREE questions only
Bahagian A: Jawab TIGA soalan sahaja

1. Case Study: Students are required to read thoroughly and understand the case study presented in **Appendix A**. The information on the project reflected a typical project audit report. An independent project audit consultant prepared the report for the client. You are the director of operation in the client's organization in charge of the project but was appointed to the job only in September 2004.
- (a) Prepare your responses on the report and state whether you agree or otherwise with the audit report. State the areas and reasons of your agreement and disagreement.
- (b) The client plans to embark on the same project in Penang, but on a smaller scale. As a new director of operations, state your strategy to avoid the problems that were encountered before.

*Kajian Kes: Pelajar hendaklah membaca kajian kes yang disertakan di **Lampiran A**. Makluman projek menunjukkan laporan audit projek disediakan. Perunding bebas audit projek menyediakan laporan tersebut. Anda adalah pengarah operasi organisasi klien dan bertanggung jawab kepada projek tersebut dan baharu sahaja dilantik kejawatan itu pada September 2004.*

- (a) *Sediakan maklumbalas anda tentang laporan audit tersebut dan nyatakan persetujuan atau sebaliknya kepada laporan tersebut dan bahagian manakah yang dipersetujui dan bahagian mana yang tidak dan sebab-sebabnya.*
- (b) *Klien bercadang untuk melaksanakan projek yang serupa di Pulau Pinang tetapi bersaiz lebih kecil. Nyatakan strategi anda sebagai pengarah operasi yang baru untuk mengelakkan masalah yang berlaku sebelum ini berulang.*

(25 marks/markah)

- 3 -

2. The management of construction project is also dependent upon the efficient management of resources for construction, including manpower, plants, materials, financial and the environment.

Choose one of the resources and explain how would you manage the resource efficiently and discuss two problems associated with its management.

Pengurusan projek pembinaan bergantung juga kepada kecekapan pengurusan menguruskan sumber pembinaan iaitu gunatenaga, loji, bahan, kewangan dan persekitaran.

Pilih salah satu sumber pembinaan dan jelaskan bagaimana anda menguruskan sumber tersebut dengan cekap dan bincangkan dua masalah yang berkaitan dengan pengurusan sumber tersebut.

(25 marks/markah)

3. "In the management of construction, the pre-construction phase is important and critical. The management of pre-construction phase is also associated with the contracting firm's policy during tender, time available to prepare for tender and pre-construction planning as well as the uncertainty associated with the tendering process and information available."

Discuss the above statement in relation to your experience and/or knowledge in managing the pre-construction phase.

"Dalam menguruskan pembinaan, fasa pra-pembinaan adalah penting dan kritikal. Pengurusan fasa pra-pembinaan juga berhubung rapat dengan polisi firma binaan semasa tender, masa yang diperuntukkan untuk menyediakan tender dan perancangan pra-pembinaan serta ketidakpastian berkenaan dengan proses tender dengan maklumat yang boleh diperolehi."

Bincangkan kenyataan di atas dengan membandingkan pengalaman dan atau pengetahuan anda dalam menguruskan fasa pra-pembinaan.

(25 marks/markah)

4. Write short notes on **TWO (2)** of the following:-
- (a) Factors affecting project performance
 - (b) Measures of project performance
 - (c) Construction Forensic
 - (d) The process of managing construction (forecasting, planning, scheduling, monitoring and controlling);
 - (e) Roles of construction manager in a contracting organization;

Jelaskan secara ringkas DUA (2) daripada perkara berikut:-

- (a) *Faktor-faktor yang mempengaruhi prestasi projek;*
- (b) *Pengukuran Prestasi Projek;*
- (c) *Forensik Pembinaan;*
- (d) *Proses menguruskan pembinaan (meramal, merancang, menjadual, mengawas dan mengawal);*
- (e) *Fungsi pengurus pembinaan dalam organisasi kontraktor;*

(25 marks/markah)

Section B: Answer ONE question only.

Bahagian B: Jawab SATU soalan sahaja.

5. State some key differences between Facility Management and Project Management practices according to your understanding of the subjects.

Nyatakan beberapa perbezaan yang penting antara amalan pengurusan kemudahan berbanding dengan pengurusan projek mengikut kefahaman anda.

(25 marks/markah)

6. Identify clearly the process toward developing a Facility Management Strategy that you know of.

Kenalpasti dengan jelas proses untuk membangun satu contoh Strategi Kemudahan yang anda tahu.

(25 marks/markah)

APPENDIX A (LAMPIRAN A)

CASE STUDY OF PROPOSED PRIVATE HOSPITAL

[The data herein are hypothetical]

GENERAL INFORMATION

1	Building Name:	Proposed Private Hospital
2	Building Location: City:	Kuala Lumpur
3	State:	Kuala Lumpur
4	Country:	Malaysia
5	Project Size (ft ² , m ²):	30,000 m ²
6	Building Type(s):	Social and Health Buildings
7	Project Type:	High Rise and Compact
8.	Delivery Method:	Traditional Procurement with Nominated Sub-contractors [NSC] and Nominated Suppliers [NS] for Specialists Work
	Total Building Costs:	RM 100,000,000
	Owner:	Government Linked Company Subsidiary [ABC Construction Sdn. Bhd. A Subsidiary of BCD Berhad]
	Building Architect/Project Team:	Foreign Architect with Local Partner as leading Consultants
	Main Contractor	Awarded through selective tendering
	Date of Contract awarded	January 2000
	Date of Contract Completion	December 2001 [CPC]

Description

Brief Summary: The proposed private hospital is located on the fringes of Kuala Lumpur, on a site of approximately 2.5 hectares. The complex consists of main tower building of seven story high housing the wards, operation theatres, specialists clinics, administrative section and patients support services such as cafeteria, shops and pharmacy. There are two more buildings connected to the main tower buildings, both three story high housing the laboratories, dietary preparation sections, and the mortuary. The second adjacent building consists of lecture theatres, apartment units for doctors on call and a special ward for the VVIP.

- 6 -

Overall Project Goal/Philosophy:

The Client targeted that the proposed private hospital will be operational in the year 2002, six month after the practical completion in December 2001. This means that six months were provided for the operationalization period including getting the necessary certificate of fitness [CF] from the Local Authority.

However the project were only issued with CPC on 31 December 2002, a year after the contract completion period. The Contractor was given six month extension of time and were charged liquidated and ascertained damages for another six months.

The hospital is only operational on the 1st of January of 2005, two years after issuance of CPC.

MAIN PROJECT PROBLEMS**a. Time line Target**

- (i) *The project experience delay right from the start because load tests on piles failed to meet the requirements. Subsequently, the piling was re-design, and this contributed to a delay of three months.*
- (ii) *A further delay were experienced because of the exodus of illegal foreign workers when the government launch a major crackdown on them and many of the sub-contractors working for the main contractor were affected. This was further aggravated by the government's programme of amnesty to the illegal foreign workers. This worked out to cause a three-month delay.*
- (iii) *In addition the appointments of several NSC's were delayed because of the problems of integrating services design by the consultants and cause a month delay.*
- (iv) *A further delay were caused by the problems of steel supply but were only solved two months later when the government again step in to revised the price of the controlled material.*
- (v) *The contractor also faced cash flow problems when many of the domestic sub-contractors and suppliers were not paid. This is because the main shareholder of the company, i.e. the GLC [BCD Berhad] was on the restructuring exercise and a decision was made to handle all financial and procurement transactions by BCD Berhad and not by ABC Construction Sdn. Bhd. This caused a further two months delay.*

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b. Cost Target

- (i) Cost control was tightly monitored and an initial increase was detected due to re-design of piling causing a 2% increase in total project cost.
- (ii) The delay in the appointment of NSC resulted in an increase price of mechanical and electrical components of nearly 15% of the total project cost due to the rising Yen and Euro prices as compared to the US Dollar. The client disputed this; it is now taking necessary steps to sue the consultant for negligently failing to provide adequate contingencies to cover such risks.
- (iii) The Client further instructed changes to fitting-out components of the hospitals especially fabrics, furniture and other materials, originally scheduled to be sourced overseas but were substituted with local comparable materials and products to offset some of the cost increase. This does not result in delaying the project further but resulted in a 2 % reduction on the cost of the project.

c. Quality Targets

Substantial non conformance of quality were detected with amount of re-work amounting to 15% of work and only 50% of the Non Conformance Requirement [NCR] orders issued were made good by the contractor.

Another contractor were engaged to carry out the NCR work and the main contractor readily agreed to the arrangement.

d. CF Target

The CF target was not met. The client provided for an original six-month period, and this dragged on for a further one and half year. Initially the client provide a reserve in the RM 100 million contract for the extra work that were expected for compliance with the requirements but this was not enough.

Two major problems were detected.

- (i) Firstly, parking spaces were not adequately provided for. The consultant provided parking spaces only on the number of hospital beds, but this were later revised to include a provision of 100% extra spaces for staff and outpatient. The client has no choice but a construct a multi-story car park for this purpose and cost them an extra RM 6.5 million and a year of construction time.

- (ii) Secondly, the provision of power supply to the hospital were approved and calculated on the basis of an initial understanding with the authority that no back-up power supply were needed except for emergency purposes only. However, decision was later made to provide for uninterrupted power supply for operating theatres, a further provision were necessary. This cost an additional RM3.5 million.

e. Project Delivery and Procurement

The study found that the project delivery and procurement were not undertaken in a systematic and coordinated manner. One of the reasons was the refusal of the client to use the turnkey or the design and build procurement method and employing a professional project management company. This was proposed in an internal memorandum by its own project department, because of the experience of a key personnel working with the local architect partner.

f. External factors

External factors identified includes supply and price problems of materials and foreign workers problems.

COMMENTS

The project has been successfully completed with a delay of one year in the CPC period and one-half year in the CF period. A total of two and half year causing a price escalation of 25% of the total cost of the project and a considerable amount of losses in future income and expenditure of another 25% of the total cost of the project.