PROJECT QUALITY PLAN

PROPOSED ADDITION OF A 3-STOREY RADIOTHERAPY CENTRE ON LOT 1888 & 2080 MK3 AT LOWER KENT RIDGE RD FOR NATIONAL UNIVERSITY HOSPITAL

For

M/S NATIONAL UNIVERSITY HOSPITAL

Copy No.	

Prepared By: Fok Yin Chwee

Authorised By: Richard Teo

Date: 8 January 1999

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SECTION 1

QUALITY PLAN CONTROL AND DISTRIBUTION

1.1 List of Copy Holders

Copy No.	Copy Holder	Date of Issue
1	1147-PQP File	23 June 1997
2	Fok Y C	23 June 1997

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
1/0	23 June 1997	1 to 9	25	-
2	8 January 1999	1 to 10	29	-

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Hospital (without stay-in wards)

Statistics of Development	
Site Area, m²	1,593
Nett Floor Area, m²	-
Gross Floor Area, m²	1682.405
Covered Carpark, m²	-
No. of Covered Carpark Lots	-
No. of Apartments/Houses	-
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	3-Storeys
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1000)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI	MQ			
Estimate	740	350	150	100	150	-	60			
Awarded	699	388	145.7	123.4	190	-	34.9			

Total Project Construction Cost (S$ x1000)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	2,305	7,245
Awarded	-	2,144.903	6,898.231

Site Clearance shall include earth work, soil improvement, service diversion and termination.

2.3 Scope of Works

2.3.1 Scope of Consultancy Services

Conceptual/Schematic Design	✓
Detailed Design	✓
Tender Documentation	✓
Tender Evaluation	✓
Contract Supervision	✓
M&E Costing	✓
Submissions to Authority	✓

(✓ *where applicable*)

2.3.2 Scope of M&E Services

ELECTRICAL	✓	AIR CONDITIONING	✓	SPRINKLER		SANITARY	✓	SWIMMING POOL	
LIFT	✓	MECHANICAL VENTILATION	✓	FIRE ALARM	✓	COLD WATER	✓	STEAM BOILER	
ESCALATOR		MECHANICAL SMOKE EXTRACT		HOSEREEL	✓	HOT WATER		FUEL STORAGE	
PABX		COMPUTER A/C		WET RISER		TOWN GAS			
SECURITY	✓	BST CARPARK EXH		DRY RISER		LPG GAS			
TELELIFT		HEATING				MEDICAL GAS	✓		
DATA COMM.									
FLUSHFLOOR TRUNKING									

(✓ *where applicable*)

2.3.3 Submission to Relevant Authorities by Others

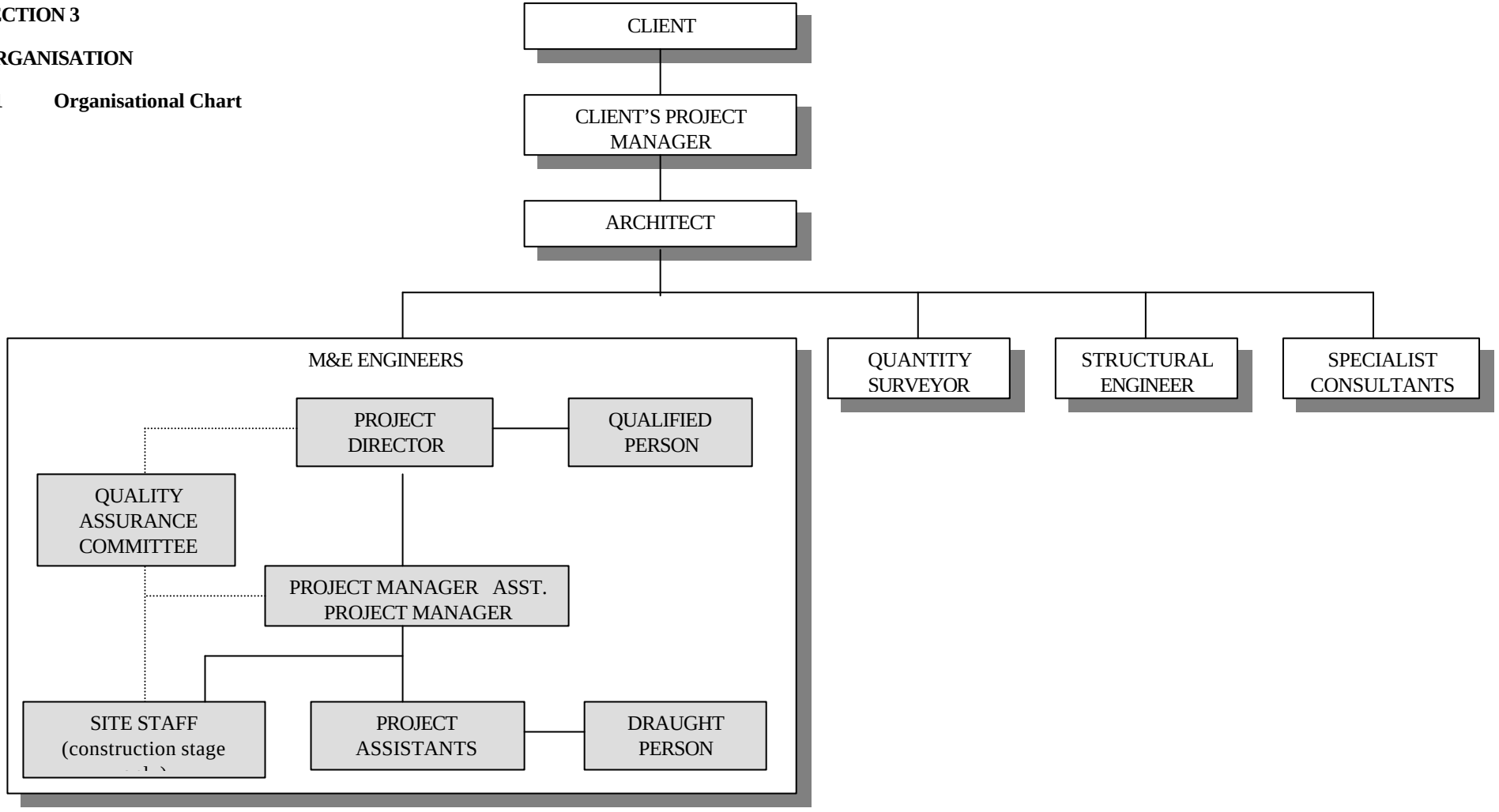
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOA M	

(✓ *where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 AEC's Project Team Member

TITLE		NAME
Project Director		Richard Teo
Qualified Person	Mechanical	Andrew Loh
	Electrical	Richard Teo
Project Manager		Fok Y C
Assistant Project Manager		Choong C G
Project Assistant (Mech)		Heng C H
Project Assistant (Elect)		Gui C S
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client:- National University Hospital

Address:- 5 Lower Kent Ridge Road
Kent Ridge Wing
Singapore 119074

Tel:- 772 5200

Fax:- 779 5678

Client's Representatives:-

Name of Firm	Contact Person	Contact
National University Hospital	Name: Mr Tyrone Goh Position: Deputy Director (Clinic Support Services)	Tel: 772 5200 Fax: 779 5678 Pager: - Handphone: - Email: Tyroneg@nuh.com.sg
National University Hospital	Name: Ms Lim Soh Har Position: Senior Executive	Tel: 772 5199 Fax: 779 5678 Pager: 9524 4673 Handphone: - Email: -
National University Hospital	Name: Ms Mabel Ong Position: OSS	Tel: 772 4427 Fax: 779 578 Pager: 9310 1509 Handphone: - Email: -
Indeco Engineers Pte Ltd	Name: Mr Ng Aik Ti Position: Manager (Institutional Facilities Division)	Tel: 772 5227 Fax: 778 6646 Pager: 9575 1112 Handphone: 9634 8929 Email: -
Indeco Engineers Pte Ltd	Name: Mr Ng Boon Chew Position: Senior Engineer (Facilities Maintenance)	Tel: 772 5225 Fax: 778 6646 Pager: 9595 4653 Handphone: - Email: -

3.4 Other Consultants (Local)

Function / Name of Firm	Contact Person	Contact
Architect Consultants Incorporated Architects & Planners	Name: Mr Sim Choon Gek Position:	Tel: 336 3900 Fax: 339 6258 Pager: - Handphone: - Email: -
Quantity Surveyor Davis Langdon & Seah (S) Pte Ltd	Name: Wong Sin Ming Position:	Tel: 222 3888 Fax: 224 7089 Pager: - Handphone: - Email: -
Structural Engineer Hainal-Konyi Consulting Engineers/Hainal-Konyi (S) Pte Ltd	Name: Mr Michael Teo Position:	Tel: 224 6678 Fax: 227 9095 Pager: - Handphone: - Email: HKSPL@SINGNET.com.sg
Interior Designer TID Associates Pte Ltd	Name: Mr Jaes Ho Position:	Tel: 225 7747 Fax: 225 7727 Pager: - Handphone: - Email: -
Lighting Consultant -	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
Acoustic Consultant -	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
Landscape Forest Rain Pte Ltd	Name: Mr Steven Chai Position:	Tel: 382 9590 Fax: 280 4068 Pager: - Handphone: - Email: -

3.4 Other Consultants (Overseas)

NOT USED

3.5 Contractors/Sub-Contractors

Function / Name of Firm	Contract *	Contact Person	Contact
Main Contractor Kim Seng Heng Engineering Construction Pte Ltd	MAIN	Name: Mr Fung Shiu Hong Position: Project Manager	Tel: 758 0225 Fax: 758 2532/759 5649 Pager: - Handphone: 9686 9707 Email: kshengrg@singnet.com.sg
Air Conditioning & Ventilation Installation Sub-Contractor Sanyo Air-Conditioners (S) Pte Ltd	NSC	Name: Mr Foo Vin Ngee Position: Senior Manager	Tel: 336 0066 Fax: 338 0518 Pager: 9401 1936 Handphone: - Email: -
Plumbing & Sanitary Installation Sub-Contractor Johnny Engineering & Trading Company	DSC	Name: Mr Johnny Loh Position: Managing Director (Licensed Plumber)	Tel: 482 6228/482 7213 Fax: 482 3885 Pager: 9400 8694 Handphone: Email:
Electrical Installation Sub-Contractor Sanyo Air-Conditioners (S) Pte Ltd	NSC	Name: Mr Foo Vin Ngee Position: Senior Manager	Tel: 336 0066 Fax: 338 0518 Pager: 9401 1936 Handphone: - Email: -
Lift & Escalator Installation Sub-Contractor Fujitec Singapore Corporation Ltd	NSC	Name: Mr Chan Mun Kin Position: Higher Project Executive	Tel: 241 6222 Fax: 444 7626 Pager: 9314 9841 Handphone: - Email: -
Fire Fighting & Alarm Installation Sub-Contractor Sanyo Air-Conditioners (S) Pte Ltd	NSC	Name: Mr Foo Vin Ngee Position: Senior Manager	Tel: 336 0066 Fax: 338 0518 Pager: 9401 1936 Handphone: - Email: -
Swimming Pool Filtration Plant Installation Sub-Contractor Siemens Advanced Engineering	DC	Name: Mr Ho K W Position: Sales Manager	Tel:740 7304 Fax: 740 7313 Pager: 9516 7659 Handphone: 9672 1931 Email: -
Medical Gas Singapore Oxygen Air Liquide Pte Ltd	NSC	Name: Mr Roger Tan Position:	Tel: 265 3788 Fax: 268 8403 Pager: 9218 8254 Handphone: - Email: -

** Type of Contract* - *NSC (Nominated Sub-Contract)*
- *DSC (Domesticated Sub-Contract)*
- *DC (Direct Contract)*
- *NS (Nominated Supplier)*

3.6 Authorities

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
PowerGrid/Power Supply:		
(a) Customer Supply	-	-
(b) Sub-Station	-	-
(c) Installation	-	-
(d) Meter Section	-	-
(e) Road Lighting	-	-
(f) Diversion	-	-
Telecom:		
(a) Planning/Line Plant	-	-
(b) Installation	-	-
(c) Diversion	-	-
BCD:		
(a) Building Plan	-	-
FSB:		
(a) Building Plan	-	-
(b) M&E Section	Mr Ng Ah Hiap	838 6390
PUB (Water)		
(a) Water Conservation	-	-
(b) Plumbing Plan	-	-
(c) Diversion	-	-
PowerGas:		
(a) Planning/Submission	-	-
(b) Installation/Inspection	-	-
(c) Diversion	-	-
ENV (Sewerage):		
(a) Building Plan (b) M&E Section	Mr Lui Kean Hoong	732 7733
(c) Diversion	-	-
ENV (Pollution Control)		
(a) Planning/Submission	Mr Lui Kean Hoong	732 7733
(b) Inspection	-	-

SECTION 4

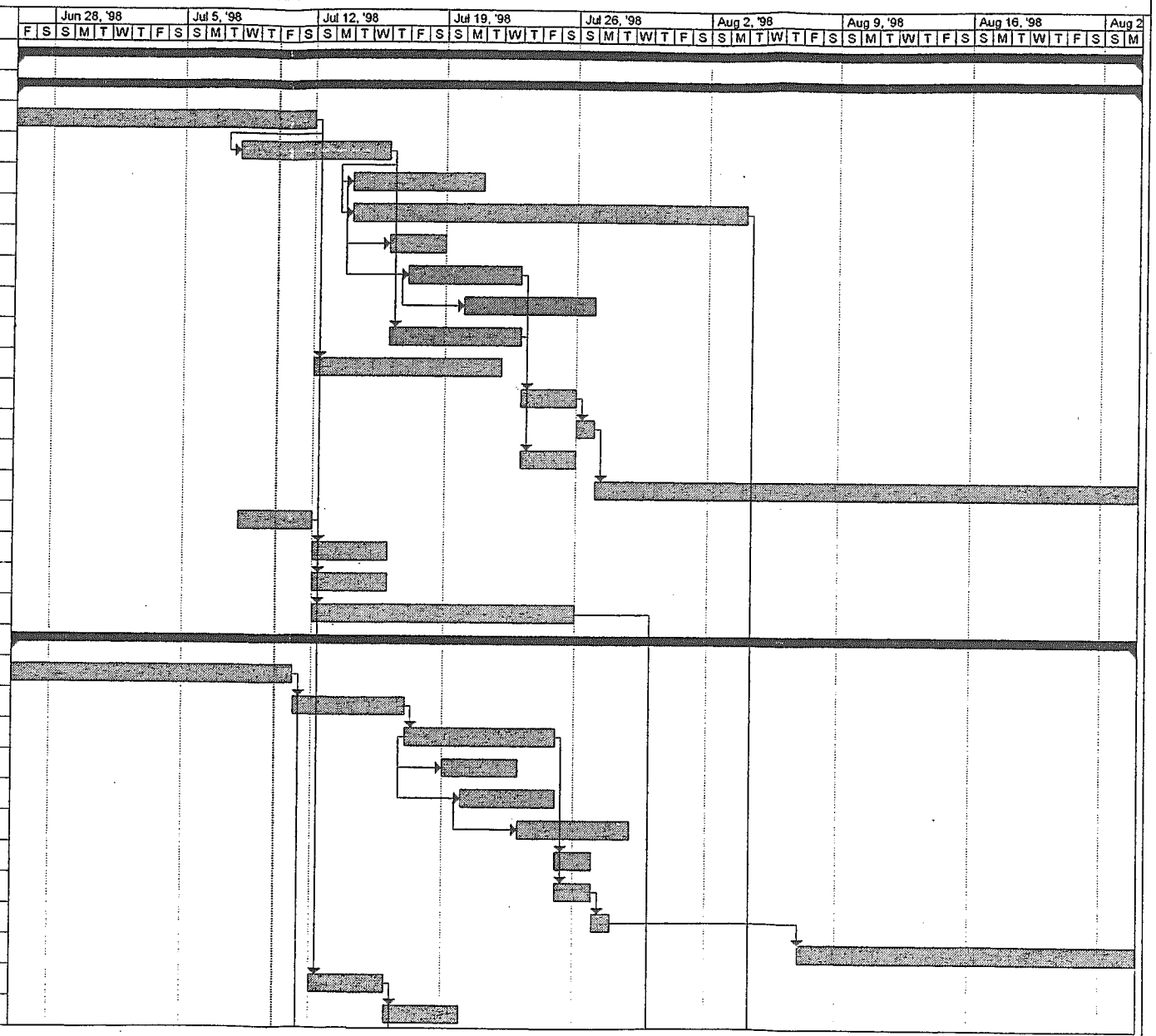
PROGRAMME

4.1 Overall Programme – see attached (3 pages)

Received from KSH on 10/4/98

NUH RADIOTHERPY CENTRE

ID	Task Name	Duration	Start	Finish	Predecessors
1	**NUH Project**	**60 days**	**Fri 6/26/98**	**Mon 8/24/98**	
2	**2nd sty**	**60 days**	**Fri 6/26/98**	**Mon 8/24/98**	
3	int. wall plaster	16 days	Fri 6/26/98	Sat 7/11/98	
4	floor screed	8 days	Wed 7/8/98	Wed 7/15/98	3FS-4 days
5	partition	7 days	Tue 7/14/98	Mon 7/20/98	4FS-2 days
6	lead partition	21 days	Tue 7/14/98	Mon 8/3/98	4FS-2 days
7	M&E works 1st fix	3 days	Thu 7/16/98	Sat 7/18/98	5SS+2 days
8	ceiling	6 days	Fri 7/17/98	Wed 7/22/98	5SS+3 days
9	M&E 2nd fix	7 days	Mon 7/20/98	Sun 7/26/98	8SS+3 days
10	wall paint	7 days	Thu 7/16/98	Wed 7/22/98	4
11	floor granite	10 days	Sun 7/12/98	Tue 7/21/98	3
12	wall paper	3 days	Thu 7/23/98	Sat 7/25/98	8
13	carpet	1 day	Sun 7/26/98	Sun 7/26/98	12
14	vinyl floor	3 days	Thu 7/23/98	Sat 7/25/98	10
15	ID fitting out	29 days	Mon 7/27/98	Mon 8/24/98	13
16	tiles at toilet	4 days	Wed 7/8/98	Sat 7/11/98	
17	stair tiles	4 days	Sun 7/12/98	Wed 7/15/98	3
18	sanitary fitting	4 days	Sun 7/12/98	Wed 7/15/98	16
19	toilet partition	14 days	Sun 7/12/98	Sat 7/25/98	16
20	**3rd sty**	**60 days**	**Fri 6/26/98**	**Mon 8/24/98**	
21	intl wall plaster	15 days	Fri 6/26/98	Fri 7/10/98	
22	floor screed	6 days	Sat 7/11/98	Thu 7/16/98	21
23	partition	8 days	Fri 7/17/98	Fri 7/24/98	22
24	M&E 1st fix	4 days	Sun 7/19/98	Wed 7/22/98	23SS+2 days
25	ceiling	5 days	Mon 7/20/98	Fri 7/24/98	23SS+3 days
26	M&E 2nd fix	6 days	Thu 7/23/98	Tue 7/28/98	25SS+3 days
27	wall paint	2 days	Sat 7/25/98	Sun 7/26/98	23
28	wall paper	2 days	Sat 7/25/98	Sun 7/26/98	23
29	carpet	1 day	Mon 7/27/98	Mon 7/27/98	28
30	ID fitting out	18 days	Fri 8/7/98	Mon 8/24/98	29
31	tiles at toilet	4 days	Sun 7/12/98	Wed 7/15/98	16
32	sanitary fitting	4 days	Thu 7/16/98	Sun 7/19/98	31

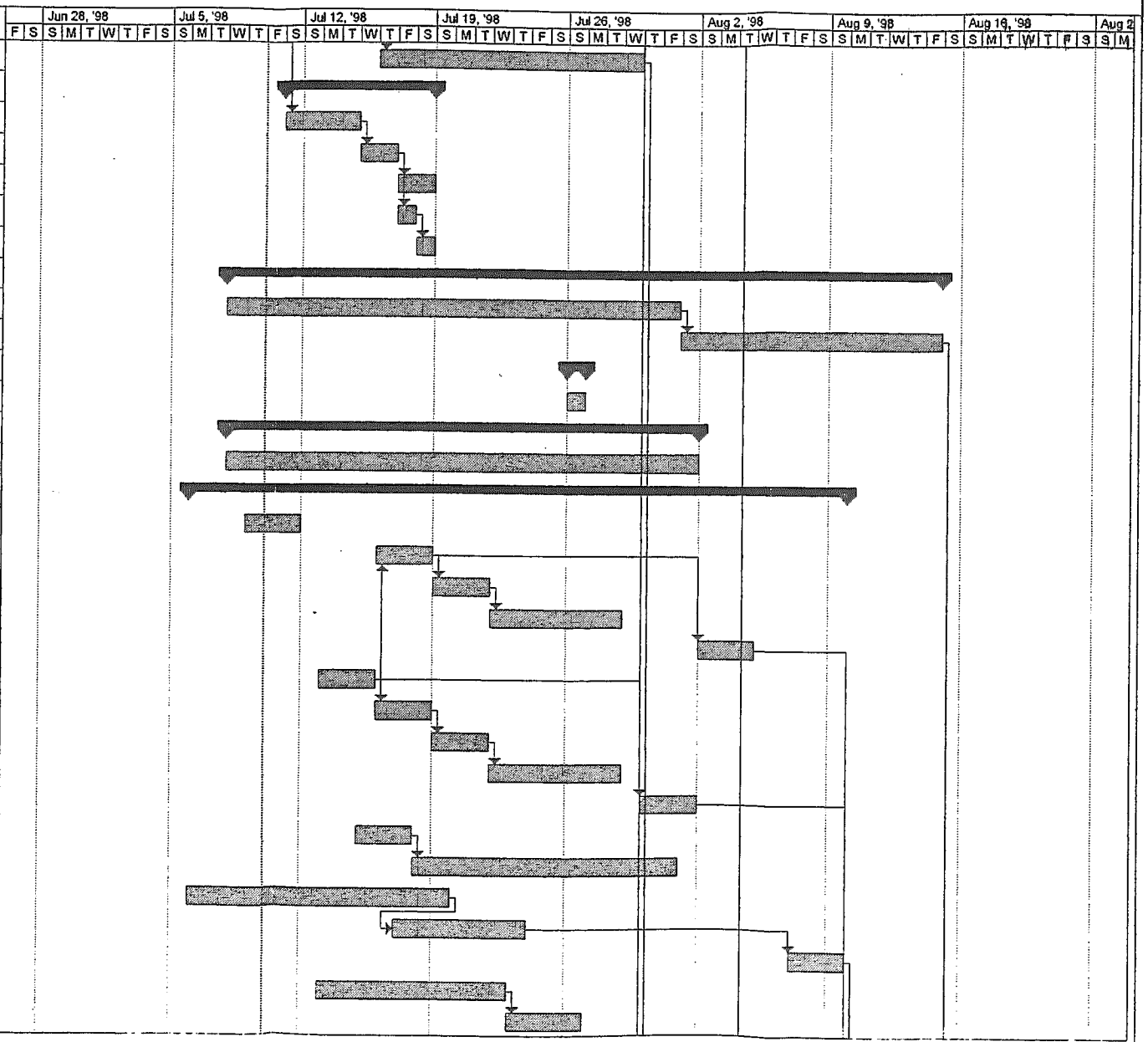


Project: nuhweek
Date: Fri 7/10/98

Task | Progress | Summary | Rolled Up Split | Rolled Up Progress | Project Summary
Split | Milestone | Rolled Up Task | Rolled Up Milestone | External Tasks

NUH RADIOTHERPY CENTRE

ID	Task Name	Duration	Start	Finish	Predecessors
33	toilet partition	14 days	Thu 7/16/98	Wed 7/29/98	31
34	**4th sty**	**8 days**	**Sat 7/11/98**	**Sat 7/18/98**	
35	intl wall plaster	4 days	Sat 7/11/98	Tue 7/14/98	21
36	floor screed	2 days	Wed 7/15/98	Thu 7/16/98	35
37	ceiling	2 days	Fri 7/17/98	Sat 7/18/98	36
38	wall paint	1 day	Fri 7/17/98	Fri 7/17/98	36
39	vinyl floor	1 day	Sat 7/18/98	Sat 7/18/98	38
40	**Lift Installation Works**	**38 days**	**Wed 7/8/98**	**Fri 8/14/98**	
41	Lift installation	24 days	Wed 7/8/98	Fri 7/31/98	
42	testing and commissioning	14 days	Sat 8/1/98	Fri 8/14/98	41
43	**Gas Installation Works**	**1 day**	**Sun 7/26/98**	**Sun 7/26/98**	
44	Gas installation	1 day	Sun 7/26/98	Sun 7/26/98	
45	**Window Installation Works**	**25 days**	**Wed 7/8/98**	**Sat 8/1/98**	
46	window installation	25 days	Wed 7/8/98	Sat 8/1/98	
47	**External Works**	**35 days**	**Mon 7/6/98**	**Sun 8/9/98**	
48	roof waterproofing	3 days	Thu 7/9/98	Sat 7/11/98	
49	4th sty extl wall plaster	3 days	Thu 7/16/98	Sat 7/18/98	53
50	4th sty waterproofing	3 days	Sun 7/19/98	Tue 7/21/98	49
51	4th sty slate tiles	7 days	Wed 7/22/98	Tue 7/28/98	50
52	4th sty extl wall paint	3 days	Sun 8/2/98	Tue 8/4/98	49FS+14 days
53	3rd sty extl wall plaster	3 days	Mon 7/13/98	Wed 7/15/98	
54	3rd sty extl wall paint	3 days	Thu 7/16/98	Sat 7/18/98	53
55	3rd sty waterproofing	3 days	Sun 7/19/98	Tue 7/21/98	54
56	3rd sty slate tiles	7 days	Wed 7/22/98	Tue 7/28/98	55
57	3rd sty extl wall paint	3 days	Thu 7/30/98	Sat 8/1/98	53FS+14 days
58	roof garden waterproofing	3 days	Wed 7/15/98	Fri 7/17/98	
59	landscape works	14 days	Sat 7/18/98	Fri 7/31/98	58
60	drivway	14 days	Mon 7/6/98	Sun 7/19/98	
61	external wall plaster	7 days	Fri 7/17/98	Thu 7/23/98	60FS-3 days
62	external wall paint	3 days	Fri 8/7/98	Sun 8/9/98	61FS+14 days
63	linkway	10 days	Mon 7/13/98	Wed 7/22/98	
64	linkway tiles	4 days	Thu 7/23/98	Sun 7/26/98	63

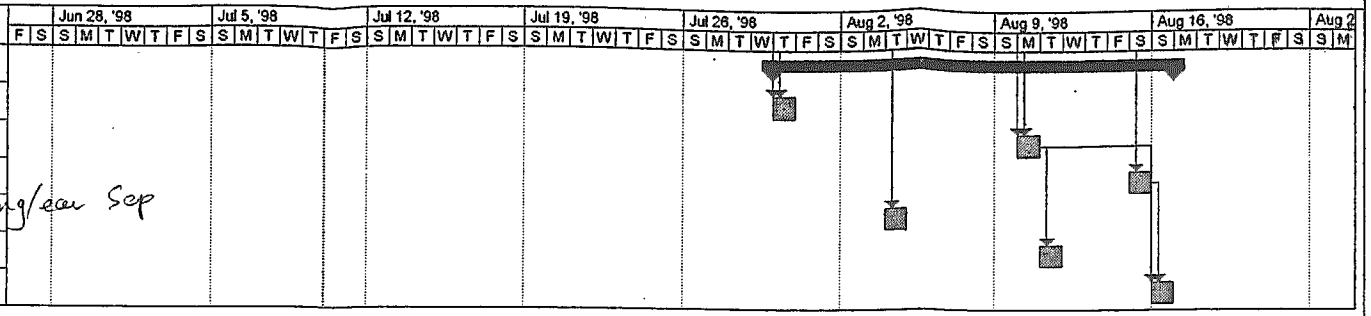


Project: nuhweek
Date: Fri 7/10/98

Task | Progress | Summary | Rolled Up Split | Rolled Up Progress | Project Summary
Split | Milestone | Rolled Up Task | Rolled Up Milestone | External Tasks

NUH RADIOTHERPY CENTRE

ID	Task Name	Duration	Start	Finish	Predecessors
65	**TOP Inspection**	**18 days**	**Thu 7/30/98**	**Sun 8/16/98**	
66	MOE	1 day	Thu 7/30/98	Thu 7/30/98	19,33
67	Building RI	1 day	Mon 8/10/98	Mon 8/10/98	52,57,62
68	M & E RI	1 day	Sat 8/15/98	Sat 8/15/98	42
69	RPI	1 day	Tue 8/4/98	Tue 8/4/98	6 end Aug/ear Sep
70	PCD	1 day	Tue 8/11/98	Tue 8/11/98	67
71	FSB	1 day	Sun 8/16/98	Sun 8/16/98	67,68



PUB(water)

BLD

oject: nuhweek
te: Fri 7/10/98

Task | Progress | Summary | Rolled Up Split | Rolled Up Progress | Project Summary

Split | Milestone | Rolled Up Task | Rolled Up Milestone | External Tasks

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services - 1st Submission

Service	Authority	Original Submission		Comments/Resubmission						Approval/ Clearance
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	
Application for Electricity Supply	Power Supply Pte Ltd	-								
Power Supply Substation	PowerGrid Pte Ltd	-								
Main Single Line Diagram	Power Supply Pte Ltd	-								
Consumer Switchroom Layout	PowerGrid Pte Ltd	-								
Metering Layout	PowerGrid Pte Ltd	-								
Sanitary Installation	ENV (Sewerage)	-	31/10/97	4/11/97	19/11/98					13/1/98
Domestic Water Supply	PUB (Water)	-								
Gas Supply Installation	PowerGas Pte Ltd	-								
Air Conditioning & Ventilation Inst.	Fire Safety Bureau	-	28/4/98							12/5/98
Fire Fighting & Alarm Installation	Fire Safety Bureau	-	28/4/98							8/5/98
Telephone Installation	Telecom (Broadband)	-								
	Telecom (TDCS)	-								
	Telecom (Domestic Operation)	-								
Fuel Storage	Fire Safety Bureau	-								
	Pollution Control Department	-								

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) - 2nd Submission

Service	Authority	Original Submission		Comments/Resubmission						Approval/ Clearance
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	
Application for Electricity Supply	Power Supply Pte Ltd	-								
Power Supply Substation	PowerGrid Pte Ltd	-								
Main Single Line Diagram	Power Supply Pte Ltd	-								
Consumer Switchroom Layout	PowerGrid Pte Ltd	-								
Metering Layout	PowerGrid Pte Ltd	-								
Sanitary Installation	ENV (Sewerage)	-								
Domestic Water Supply	PUB (Water)	-								
Gas Supply Installation	PowerGas Pte Ltd	-								
Air Conditioning & Ventilation Inst.	Building Control Division	-								
	Fire Safety Bureau	-								
Fire Fighting & Alarm Installation	Fire Safety Bureau	-	25/8/98							1/9/98
	Telecom (Broadband)	-								
Telephone Installation	Telecom (TDCS)	-								
	Telecom (Domestic Operation)	-								
Fuel Storage	Fire Safety Bureau	-								
	Pollution Control Department	-								

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

File Ref:		File Ref:	
-CM/SM	✓	-QSP	
-PC/BD	✓	-BD	
-AE/AM/AA	✓	-CC	✓
-AM		-CF	✓
-AA		-GC	✓
-PQP	✓		

Project Files to be initiated by PM as and when required

File Ref:		File Ref:		File Ref:	
-SM		-SR		-ET	
-SC	✓	-QM		-MT	
-AI/AD	✓	-EC/MC	✓	-DF	✓
-SQ/SR	✓	-MC		-EOT	✓
-CO	✓	-PP	✓	-VO	✓

Service Files to be initiated by PM as and when required

	Service										
File Ref:	ACVI	FFAI	PSI	EI	LI	SPFP					
-G	✓	✓	✓	✓	✓						
-Q											
-VO											
-PP											
-AI											
-AD											
-CF											

SECTION 5

PROJECT RECORDS

5.2 Filing of Drawings

The following team members shall take charge of filing of drawings, stamping "SUPERSEDED" drawings, etc.

Description	Team Member
Incoming Architectural Floor Plans	Heng C H
Incoming Architectural Sketches/Details	Heng C H
Incoming Structural Drawings	Heng C H
M&E Drawings	
- Electrical Installation	Gui C S
- Lift & Escalator Installation	Gui C S
- Air Conditioning & Ventilation Installation	Heng C H
- Fire Fighting & Alarm Installation	Heng C H
- Plumbing & Sanitary Installation	Heng C H
- Swimming Pool & Filtration Installation	-
Other Drawings	
Interior Designer	Gui C S

SECTION 6

INTERFACING

6.1 Method of Interface

Description	Method of Interface	
Client's Review & Approval	M&E Design Report	✓
	Pre-planned meeting at fixed intervals	✓
	Telefax, letter and telephone	✓
	Email	
Interface With External Design Teams	M&E Design Report	✓
	Pre-planned meeting at fixed intervals	✓
	Telefax, letter and telephone	✓
	Email	
Interface Between Internal Design Teams	Telephone	✓
	Email	✓
	Internal Project Team Meeting	
	Circulation of Information	✓

(✓ *where applicable*)

SECTION 6

INTERFACING

6.2 Internal Design Interface

Item No.	Description*	Required From	Required By	Date Required	Remarks
1.	Mechanical equipment power requirement	CCG	FYC	Sept. 97	Completed
2.	Ventilation air for genset	FYC	CCG	Aug. 97	
3.	LMR heat load	FYC	CCG	Aug 97	
4.	Elec. Switchroom heat load	FYC	CCG	Aug 97	

** Information required by INTERNAL DESIGN TEAM MEMBERS*

SECTION 6

INTERFACING

6.3 Circulation of Documents to External Parties

	Code: A - Approval Required C - For Comments I - For Information Only	Client/ Client Rep.	Client's Project Manager	Architect	Structural Engineer	Quantity Surveyor	
1.	**Letters/Fax:**						
a.	Project Design	A,C	-	C	-	-	
b.	Project Administration	A,C	-	C,I	I	C,I	
c.	Project Cost Estimate/Contract Cost	A,C	-	C,I	-	C,I	
2.	**Drawings**						
a.	Outline Design Drgs.	A,C,I	-	A,C,I	I	-	
b.	Sketch Design Drgs.	A,C,I	-	A,C,I	C,I	-	
c.	Final Design Drgs.	I	-	C,I	I	-	
d.	Shop Drawings	I	-	C,I	C,I	-	
e.	As Built Drgs.	I	-	-	-	-	
3.	**Other Document**						
a.	Specification	C,I	-	C,I	-	C,I	
b.	Tender Document	C,I	-	C,I	-	C,I	
c.	Tender Evaluation Report	A,C	-	C,I	-	I	
d.	Design Report	A,C	-	C,I	-	-	
e.	Progress Report	I	-	I	-	-	
f.	Financial Report	A,C	-	C,I	-	C,I	
g.	Minutes of Meeting	I	-	I	-	-	
h.	Inspection Report	I	-	I	-	-	
i.	Testing & Comm. Report	I	-	I	-	-	
j.	O & M Manual	I	-	-	-	-	

SECTION 7

WORK AUTHORISATION

Activity \ Authorised Signatories	PD	QP	PM	SS
General Correspondences with Client	✓	✓	✓	
General Correspondences with Other Consultants	✓	✓	✓	
M&E Cost Estimate Report	✓	✓		
M&E Design Report	✓	✓		
Check Prints	✓	✓	✓	
Tender Drawing Approval	✓	✓	✓	
Tender Specification Approval	✓	✓	✓	
List of Tenderers	✓	✓		
Tender Questionaires	✓	✓	✓	
Tender Reports	✓	✓		
Draft Letter of Award	✓	✓	✓	
Review of Contractor's Shop Drawing	✓	✓	✓	✓
Review of Contractor's Technical Submittal	✓	✓	✓	
Review of Contractor’s Sample Submittal	✓	✓	✓	✓
Contractor’s Request for Deviation	✓	✓	✓	
Progress Payment Valuation Form	✓	✓		
Final Account Valuation	✓	✓		
Draft Variation Order	✓	✓	✓	
Engineer/Architect’s Instruction/Direction	✓	✓	✓	
Site Instruction/Direction	✓			✓
Correspondence/Submission to Authorities	✓	✓		

(✓ *where authorised*)

Key to abbreviations:-

PD : Project Director
QP : Qualified Person
PM : Project Manager/Assistant Project Manager
SS : AEC Site Staff

SECTION 8

DESIGN INPUT & METHODOLOGY

8.1 List of Client's Standards, Reference Documents or Brief

ITEM	KEPT BY
-	-

8.2 List of Applicable Code of Practice and Regulations

Electrical Wiring	BS	SS	IEE	~~NFPA~~	
Lightning Protection System	~~BS~~	SS			
Air Conditioning & Ventilation Installation	BS	AS	~~NFPA~~	~~SS~~	~~MS~~
Lift & Escalator Installation	~~BS~~	SS			
Automatic Fire Alarm System	BS	SS	~~NFPA~~	~~AS~~	~~MS~~
Sanitary System	BS	SS	~~NFPA~~	~~AS~~	~~MS~~
Plumbing System	BS	SS	~~NFPA~~	~~AS~~	~~MS~~

(Delete where necessary)

SECTION 8

DESIGN INPUT & METHODOLOGY

8.3 List of Design Guide or Handbook Used

Carrier's Handbook of Air Conditioning System Design

ASHRAE Handbooks

Institute of Plumbing's Plumbing Services Design Guide

8.4 List of Applicable Quality System Procedures

Alpha Engineering Consultant's Quality System Procedures

Section	Title
A1	Documentation of Quality System Procedure
A2	Documentation of Project Quality Plan
A3	Administration Control
A4	Document Control
A6	Archive Control
A9	Feedback Reporting
A10	Computer Control
B1	Preparation of Consultancy Offer
B2	Project Commission and Service Agreement
B3	Design Control
B4	Design Change Control
B5	Drawing Control
B6	Specification Control
B7	Tender Process and Evaluation
C1	Construction Process Control
C2	Testing and Commissioning
D1	Quality System Audit

8.5 List of Software Used For Design/Analysis

DESCRIPTION/ PACKAGE NAME	VERSION	SUPPLIER/ SOURCE	PURPOSE	
Calculux	2.30	Philips	Lighting design	✓
Cophos	3.31	Zumtobel	Lighting design	
Carrier E20-II	3.21	Carrier	Programme for determination of heat load, duct size and its losses, etc.	
Gensize 2	2.1	Onan	Generator sizing	
Lift Traffic	-	Alpha Engineering	Lift traffic calculation	
Econdial	2.5	Merlin Gerlin	Design for low voltage network	
Hyena	4.00.1	ACADS-BSG	Fire Sprinkler & Hydrant Analysis	
Fault Level Calculation	-	Alpha Engineering	Calculation of voltage drop and fault level	✓

(✓ *where applicable*)

SECTION 9

CLIENT'S REQUIREMENTS

9.1 List of Output Required by Client:-

Item	* Remarks
M&E Design Report	A,C
M&E Cost Estimate Report	A,C
Pre-Qualification of Tenderers	-
Tender Documents	I
Tender Report	A,C
Payment Valuation for QS	C,I
Certificates of Supervision for TOP/CSC	I

** Remarks*

A: for approval *C: for comment* *I: for Information* *Re: for record*

Other purposes and for action: please specify.

9.2 Specific Procedures Required By Client *(If applicable)*

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers

NOT USED