Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

PROPOSED UPGRADING & FITWORK WORKS TO 7TH & 8TH STOREY
KIM CHUAN TELECOMMUNICATIONS COMPLEX

For

M/S SINGAPORE TELECOMMUNICATIONS LIMITED

Copy No.	

Prepared By: Chong Lai Meng

Authorised By: Richard Teo

Date: 13 September 2006

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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	6013-PQP File	13 September 2006
2	Chong Lai Meng	13 September 2006

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	13 September 2006	1 to 10	26	+ 1 pg (Sect 4.1 – Overall Programme

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Telecommunication Complex

Statistics of Development	
Site Area, m²	14,182.4
Nett Floor Area, m²	27,671
Gross Floor Area, m²	35,456
7th & 8th Floor Area, m²	7,878
No. of Covered Carpark Lots	189
No. of Apartments/Houses	-
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	1/10
No. of Phases	-

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)

Services	EI	ACVI	FFAI	Chiller	Generator	UPS	Transformer	HT Switchgears
Estimate	10.6	8.1	1.35	0.9	7.2	0.95	0.9	0.55
Awarded								

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Builder's Work
Estimate	NA	NA	10.0
Awarded	NA	NA	

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		UPS	✓
SECURITY		BST CARPARK EXH		DRY RISER		LPG GAS		GENERATOR	✓
TELELIFT		HEATING				MEDICAL GAS			
DATA COMM.	✓								
FLUSHFLOOR TRUNKING									

(✓*where applicable*)

2.3.3 Submission to Relevant Authorities by Others

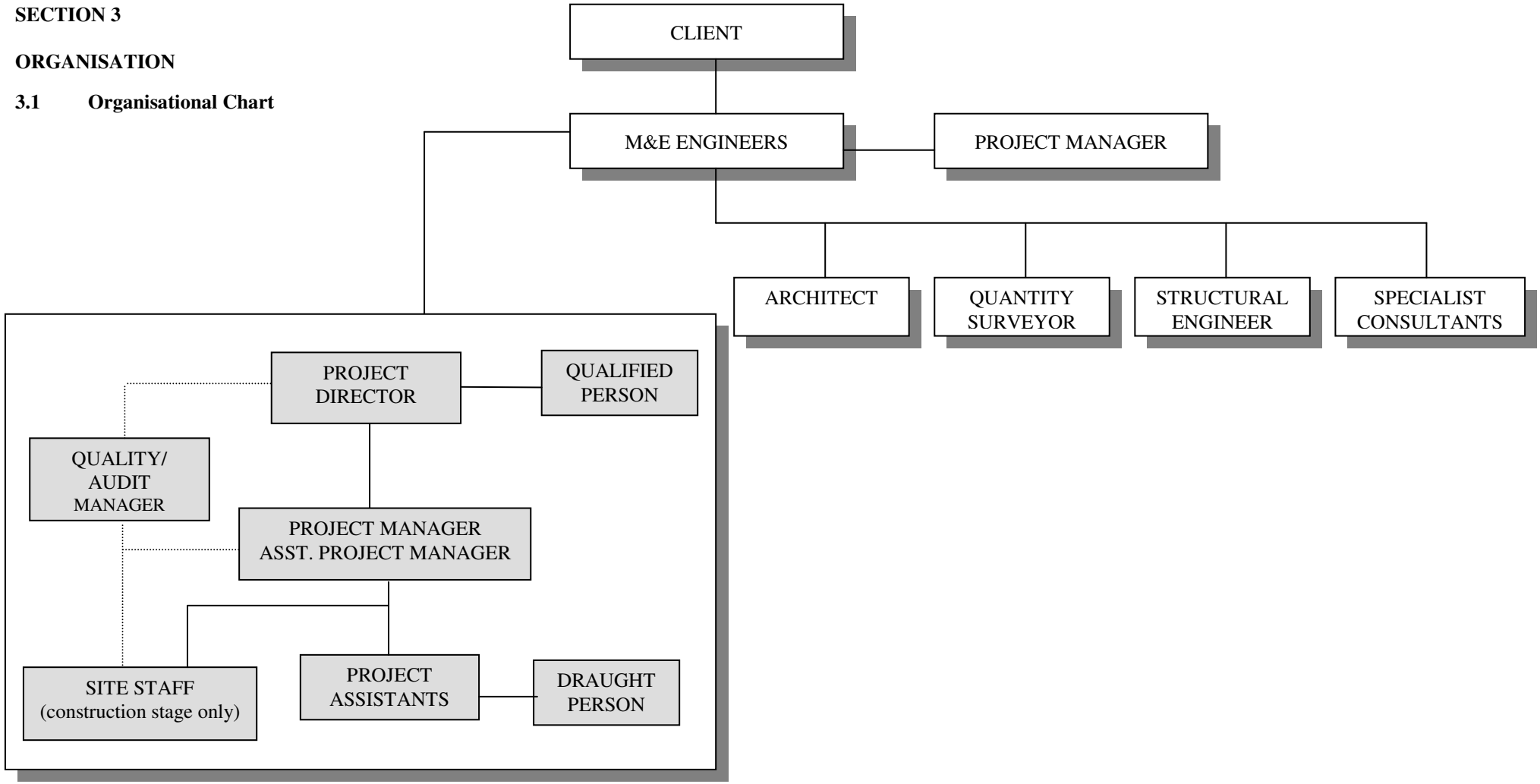
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK	✓	LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Richard Teo (RT)
Qualified Person	Mechanical	Andrew Loh (LCT)
	Electrical	Richard Teo (RT)
Project Manager		Chong Lai Meng (CLM)
Assistant Project Manager		Goh Soon Huat (GSH)
Project Assistant (Mech)		Ang Wee Loong (AWL)
Project Assistant (Elect)		Winston Chee (WC)
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client:- Singapore Telecommunications Ltd

Address:- 375 Tanjong Katong Road #08-00
Katong Telecommunications Complex
Singapore 437132

Tel:- 6346 3770

Fax:- 6447 4552

Client's Representatives:-

Name of Company	Contact Person	Contact
Singapore Telecommunications Ltd	Name: Mr Edward Lee Position: Senior Manager – Project	Tel: 6346 3770 Fax: 6447 4552 Handphone: 9661 6216 Email: edwardlee@singtel.com
	Name: Mr Lew Yew Meow Position: Senior Manager – M&E Projects	Tel: 6346 3768 Fax: 6447 4552 Handphone: - Email: lymw@singtel.com
	Name: Mr Lim Hock Seng Michael Position: Manager - Facilities	Tel: - Fax: - Handphone: 9837 6948 Email: limmichael@singtel.com
	Name: Position:	Tel: Fax: Handphone: Email:
	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Local)

Function / Name of Company	Contact Person	Contact
Architect ADDP Architects	Name: Mr Lim Meng Hwa Position: Partner	Tel: 6221 8816 Fax: 6325 4918 Handphone: 9387 2911 Email: lmh2@addp.com.sg
Quantity Surveyor PCG Consultants	Name: Mr Pui Cheng Giap Position: Principal	Tel: 6285 1302 Fax: 6285 1307 Handphone: 9781 0723 Email: cgpui3@yahoo.com
Structural Engineer Meinhardt (S) Pte Ltd	Name: Mr Ng Chee Lam Position: Principal Structural Engineer	Tel: 6377 9291 Fax: 6274 0788 Handphone: - Email: ncl@meinhardt.com.sg
Interior Designer NA	Name: Position:	Tel: Fax: Handphone: Email:
Lighting Consultant NA	Name: Position:	Tel: Fax: Handphone: Email:
Acoustic Consultant CCW Associates Pte Ltd	Name: Mr Cheah Beng Kin Position: Director	Tel: 6278 4918 Fax: 6275 7206 Handphone: 9818 2289 Email: ccw@ccwagroup.com
Project Manager PSG Asia Pte Ltd	Name: Mr Larry Yeap Position: Project Director	Tel: 6226 1380 Fax: 6226 0577 Handphone: 9795 9986 Email: larry.yeap@psgasia.com.sg
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Overseas) – **NOT USED**

Function / Name of Company	Contact Person	Contact
Architect	Name: Position:	Tel: Fax: Handphone: Email:
M&E Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Quantity Surveyor	Name: Position:	Tel: Fax: Handphone: Email:
Structural Engineer	Name: Position:	Tel: Fax: Handphone: Email:
Interior Designer	Name: Position:	Tel: Fax: Handphone: Email:
Lighting Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Acoustic Consultant	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.5 Contractors/Sub-Contractors – NOT USED

Function / Name of Company	Contract *	Contact Person	Contact
Main Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Air Conditioning & Ventilation Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Plumbing & Sanitary Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Electrical Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Lift & Escalator Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Fire Fighting & Alarm Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Carpark System Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
_____		Name: Position:	Tel: Fax: Handphone: Email:

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

3.6 Authorities – NOT USED

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
SP PowerGrid:		
(a) Sub-Station		
(b) Diversion		
SP Services:		
(a) Customer Supply		
(b) Installation		
(c) Meter Section		
(d) Road Lighting		
TFCC:		
(a) SCV		
(b) SingTel		
(c) IDA		
BCA:		
(a) Building Plan		
FSSD:		
(a) Building Plan		
(b) M&E Plan		
PUB (Water Supply) Network Dept:		
(a) Water Conservation		
(b) Plumbing Plan		
(c) Diversion		
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU		
(b) M&E Plan		
(c) Diversion		
City Gas Pte Ltd:		
(a) Planning/Submission		
(b) Installation/Inspection		
PowerGas Pte Ltd		
(a) Diversion		
NEA (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

SECTION 4

PROGRAMME

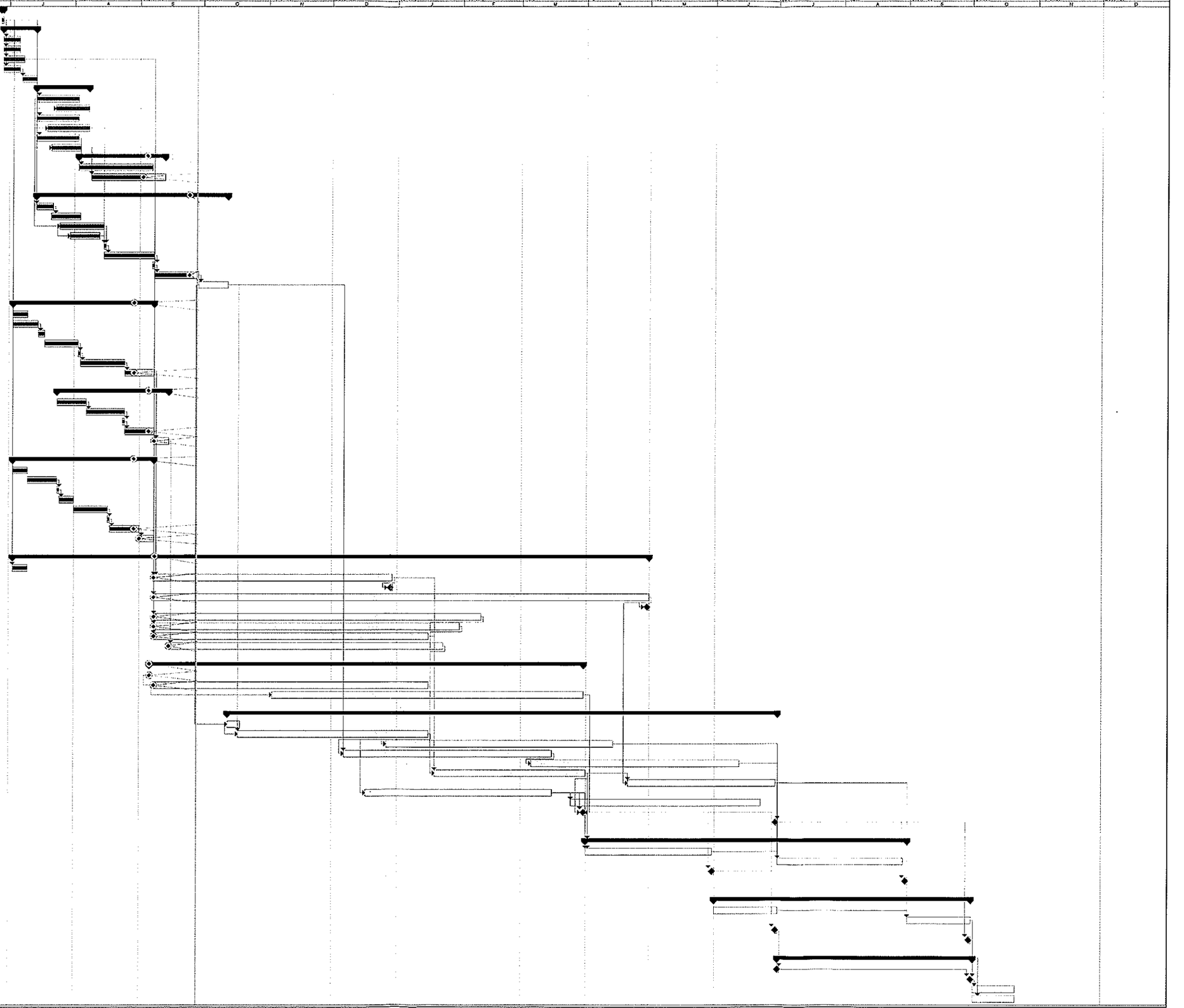
4.1 Overall Programme – refer to attached programme

ID	TASK NAME	MONTHS	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1.	Preliminary Planning																									
2.	Planning Submission																									
3.	Detail Design																									
4.	BP Submission																									
5.	BP Submission (Amendments)																									
6.	Tender Period for Piling																									
7.	Tender Period for Sub-Structure																									
8.	Tender Period for Super-Structure																									
9.	Piling Period																									
10.	Sub-Structure Construction Period																									
11.	Super-Structure Construction Period																									
12.	TOP																									
13.	CSC																									

SingTel

SINGTEL - KIM CHUAN TELECOMMUNICATIONS COMPLEX PROGRAM
Revised Program Inclusive of Tenancy Works & Respective Milestone Dates Updated on 13/08/06
Progress Tracking 28/09/06

ID	Task Name	Duration	Start	Finish
1	**APPOINTMENT**	1 day	Tue 27/06/06	Tue 27/06/06
2	Apoint team member & Kick- Off Meeting	1 day	Tue 27/06/06	Tue 27/06/06
3	**CONCEPT DESIGN**	16 days	Wed 28/06/06	Thu 13/07/06
4	Preferred Design Solution Review	8 days	Wed 28/06/06	Tue 05/07/06
5	Structural Review	8 days	Wed 28/06/06	Wed 05/07/06
6	Confirm Major Eqpt Size/Capacity	10 days	Wed 28/06/06	Fri 07/07/06
7	GFA related checks	8 days	Wed 28/06/06	Wed 05/07/06
8	Agree Preferred Concept Design	7 days	Fri 07/07/06	Thu 13/07/06
9	**DESIGN DEVELOPMENT**	26 days	Fri 14/07/06	Mon 07/08/06
10	M&E Design L1,2,7 & Roof	20 days	Fri 14/07/06	Wed 02/08/06
11	M&E Design L8,10	16 days	Sun 23/07/06	Mon 07/08/06
12	Architectural Design L1,2,7 & Roof	20 days	Fri 14/07/06	Wed 02/08/06
13	Architectural Design L8,10	20 days	Wed 19/07/06	Mon 07/08/06
14	Structural Design L1,2,7 & Roof	20 days	Fri 14/07/06	Wed 02/08/06
15	Structural Design L8,10	14 days	Fri 21/07/06	Thu 03/08/06
16	**AUTHORITY SUBMISSION**	41 days	Thu 03/08/06	Tue 12/09/06
17	Submission & Approval of Design - Architectural	35 days	Thu 03/08/06	Wed 06/09/06
18	Submission & Approval of Design -Structural	35 days	Wed 09/08/06	Tue 12/09/06
19				
20	**MAIN CONTRACTOR TENDER**	61 days?	Fri 14/07/06	Thu 12/10/06
21	Pre-Qualification Document (5 No preferred)	8 days	Fri 14/07/06	Fri 21/07/06
22	Pre-Qualification Period and Shortlisting	14 days	Fri 21/07/06	Thu 03/08/06
23	Tender Document Compilation	21 days?	Tue 25/07/06	Mon 14/08/06
24	Client Review & Approval	14 days	Sun 30/07/06	Sat 12/08/06
25	Tender Calling	1 day	Tue 15/08/06	Tue 15/08/06
26	Site Showround & Tender Period	24 days	Tue 15/08/06	Thu 07/09/06
27	Tender Return	1 day	Thu 07/09/06	Thu 07/09/06
28	Tender Interview,Evaluation & Recommendation	21 days	Fri 08/09/06	Thu 28/09/06
29	Client Processing and Award	14 days	Fri 29/09/06	Thu 12/10/06
30				
31	**CONTRACT (M&C - SUPPLY & INSTALL) FOR GENSETS**	97 days	Mon 03/07/06	Thu 07/09/06
32	Pre-Qualification Document (5 No Preferred)	7 days	Mon 03/07/06	Sun 09/07/06
33	Contract Preperation & Compilation	12 days	Mon 03/07/06	Fri 14/07/06
34	Contract First Draft To client	3 days	Sat 15/07/06	Mon 17/07/06
35	Calling Tender	16 days	Tue 18/07/06	Wed 02/08/06
36	Tender Return	1 day	Thu 03/08/06	Thu 03/08/06
37	Client Review & Approval	21 days	Fri 04/08/06	Thu 24/08/06
38	Client Processing And Award	14 days	Fri 25/08/06	Thu 07/09/06
39				
40	**CONTRACT (M&C - SUPPLY & INSTALL) FOR UPS**	83 days	Mon 24/07/06	Thu 14/09/06
41	Contract Preperation & Compilation	14 days	Mon 24/07/06	Sun 06/08/06
42	Calling Tender	16 days	Mon 07/08/06	Thu 24/08/06
43	Tender Return	1 day	Thu 24/08/06	Thu 24/08/06
44	Client Review & Approval	14 days	Fri 25/08/06	Thu 07/09/06
45	Client Processing And Award	7 days	Fri 08/09/06	Thu 14/09/06
46				
47	**CONTRACT (SUPPLY ONLY) FOR CHILLER, T/F, HT S/GEAR, ETC.**	97 days	Mon 03/07/06	Thu 07/09/06
48	Pre-Qualification Document (3 No Preferred)	7 days	Mon 03/07/06	Sun 09/07/06
49	Contract Preperation & Compilation	14 days	Mon 10/07/06	Sun 23/07/06
50	Contract First Draft To client	1 day	Mon 24/07/06	Mon 24/07/06
51	Client Review & Approval	7 days	Tue 25/07/06	Mon 31/07/06
52	Calling Tender	16 days	Tue 01/08/06	Wed 16/08/06
53	Tender Return	1 day	Thu 17/08/06	Thu 17/08/06
54	Client Review & Approval	14 days	Fri 18/08/06	Thu 31/08/06
55	Client Processing And Award	7 days	Fri 01/09/06	Thu 07/09/06
56				
57	**LONG LEAD EQUIPMENTS PROCUREMENT & DELIVERY**	284 days	Mon 03/07/06	Mon 30/04/07
58	Pre-Qualification Document (3 No Preferred)	7 days	Mon 03/07/06	Sun 09/07/06
59	Confirm order for Gensets (4 No Available for L7)	113 days	Fri 08/09/06	Fri 29/12/06
60	Fully completed and progressively deliver to site	1 day	Fri 29/12/06	Fri 29/12/06
61	Confirm order for Gensets (5 No Available for L8)	217 days	Fri 08/09/06	Mon 30/04/07
62	Fully completed and progressively deliver to site	1 day	Mon 30/04/07	Mon 30/04/07
63	Chillers	155 days	Fri 08/09/06	Fri 09/02/07
64	Transformer	145 days	Fri 08/09/06	Tue 30/01/07
65	HT Switchgear	130 days	Fri 08/09/06	Mon 15/01/07
66	UPS	130 days	Fri 15/09/06	Mon 22/01/07
67				
68	**TENANCY WORKS**	188 days	Wed 06/09/06	Fri 30/03/07
69	Confirmation By Tenant	1 day	Wed 06/09/06	Wed 06/09/06
70	Design & Equipment Procurement	130 days	Fri 08/09/06	Mon 15/01/07
71	Tenancy Works Scope	130 days	Fri 03/11/06	Fri 30/03/07
72				
73	**CONSTRUCTION**	243 days	Fri 13/10/06	Sat 30/06/07
74	Site Mobilization & Preperation	6 days	Fri 13/10/06	Wed 18/10/06
75	Structural Works L1,2,7 & Roof	90 days	Wed 18/10/06	Mon 15/01/07
76	Structural Works L8,10	90 days	Wed 27/12/06	Fri 13/04/07
77	M&E Works L1,2,7 & Roof	90 days	Thu 07/12/06	Thu 15/03/07
78	M&E Works L8,10	90 days	Tue 06/03/07	Tue 12/06/07
79	Long Lead Equipment Installation L7	54 days	Fri 19/01/07	Sat 31/03/07
80	Long Lead Equipment Installation L8	70 days	Sat 21/04/07	Fri 29/06/07
81	Architectural Works L1,2, 7 & Roof	90 days	Sun 17/12/06	Thu 15/03/07
82	Architectural Works L8,10	90 days	Sun 25/03/07	Fri 22/06/07
83	**Phase 1 - All Physical Works Complete**	1 day	Sat 31/03/07	Sat 31/03/07
84	**Phase 2 - All Physical Works Complete**	1 day	Sat 30/06/07	Sat 30/06/07
85				
86	**TESTING & COMMISSIONING**	153 days	Sun 01/04/07	Fri 31/08/07
87	Levels 1,2, 7 & Roof	60 days	Sun 01/04/07	Wed 30/05/07
88	Levels 8,10	60 days	Sun 01/07/07	Wed 29/08/07
89	**Phase 1 - Integrated T&C Complete**	1 day	Thu 31/05/07	Thu 31/05/07
90	**Phase 2 - Integrated T&C Complete**	1 day	Fri 31/08/07	Fri 31/08/07
91				
92	**USER ACCEPTANCE TESTS**	122 days	Fri 01/06/07	Sun 30/09/07
93	Levels 1,2,7 & Roof	30 days	Fri 01/06/07	Sat 30/06/07
94	Levels 8,10	30 days	Sat 01/09/07	Sun 30/09/07
95	**Phase 1- UAT Complete**	1 day	Sat 30/06/07	Sat 30/06/07
96	**Phase 2 - UAT Complete**	1 day	Sun 30/09/07	Sun 30/09/07
97				
98	**HANDOVER**	93 days	Sun 01/07/07	Mon 01/10/07
99	Levels 1,2, 7 & Roof	1 day	Sun 01/07/07	Sun 01/07/07
100	Levels 8,10	1 day	Mon 01/10/07	Mon 01/10/07
101	**AS-BUILT / EQPT MANUALS DOCUMENTATIONS**	20 days	Tue 02/10/07	Sun 21/10/07
102	**WARRANTY DOCUMENTATIONS**	20 days	Tue 02/10/07	Sun 21/10/07



Project: Preliminary Project Schedule
Date: Thu 28/09/06

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

SECTION 4

PROGRAMME

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

Service	Authority	Original Submission		Comments/Resubmission						Approval/
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	Clearance
Application for Electricity Supply	SP Services Ltd	NA								
Power Supply Substation	SP PowerGrid Ltd	NA								
Metering Layout	SP Services Ltd	NA								
Sanitary Installation	PUB Water Reclamation (Network) Dept	NA								
Domestic Water Supply	PUB (Water Supply) Network Dept	NA								
Gas Supply Installation	City Gas Pte Ltd	NA								
Air Conditioning & Ventilation Inst.	FSSD	9/10/06								
Fire Fighting & Alarm Installation	FSSD	16/10/06								
Telephone Installation	TFCC	NA								
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision	NA								
Fuel Storage	FSSD	NA								
	NEA (Pollution Control)	NA								

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) - 2nd Submission – NOT USED

Service	Authority	Original Submission		Comments/Resubmission						Approval/
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	Clearance
Application for Electricity Supply	SP Services Ltd									
Power Supply Substation	SP PowerGrid Ltd									
Metering Layout	SP Services Ltd									
Sanitary Installation	PUB Water Reclamation (Network) Dept									
Domestic Water Supply	PUB (Water Supply) Network Dept									
Gas Supply Installation	City Gas Pte Ltd									
Air Conditioning & Ventilation Inst.	FSSD									
Fire Fighting & Alarm Installation	FSSD									
Telephone Installation	TFCC									
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision									
Fuel Storage	FSSD									
	NEA (Pollution Control)									

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

File Ref:		File Ref:	
- Owner	✓	- Architect	✓
- Authorities	✓	- Other Consultants	✓
- Contractors	✓	- CC/CF	✓
- CF		- PQP/QSP	✓

Project Files to be initiated by PM as and when required

File Ref:		File Ref:		File Ref:	

(✓*where applicable*)

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 (latest set)	CLM/GSH/NHS/ARR (All project drawings in soft copy to be saved in server)
Incoming Architectural Sketches/Details (latest set)	
Incoming Structural Drawings (latest set)	
M&E Drawings - Electrical Installation - Air Conditioning & Ventilation Installation - Fire Fighting & Alarm Installation	
- Lift & Escalator Installation	-
- Plumbing & Sanitary Installation	-
- Swimming Pool & Filtration Installation	-
Other Drawings	

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 (chillers, cooling tower, pumps, etc) power requirement	CLM	GSH	-	Completed
2.	UPS Heat Load	GSH	CLM	-	Completed

** 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	I	I	
b.	Project Administration	A		I	I	I	
c.	Project Cost Estimate/Contract Cost	A		I	I	I	
2.	**Drawings**						
a.	Outline Design Drgs.	A		C	C	I	
b.	Sketch Design Drgs.	A		C	C	I	
c.	Final Design Drgs.	A		C	I	I	
d.	Shop Drawings	C		C	C	I	
e.	As Built Drgs.	I		I	I	I	
3.	**Other Document**						
a.	Specification	A		I	I	I	
b.	Tender Document	A		I	I	I	
c.	Tender Evaluation Report	A		I	I	I	
d.	Design Report	A		C	I	I	
e.	Progress Report	I		I	I	I	
f.	Financial Report	A		I	I	I	
g.	Minutes of Meeting	I		I	I	I	
h.	Inspection Report	I		I	I	I	
i.	Testing & Comm. Report	I		I	I	I	
j.	O & M Manual	I		I	I	I	

SECTION 7

WORK AUTHORISATION

Authorised Signatories / Activity	PD	QP	PM	AE	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 Questionnaires			✓		
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
AE : Assistant Engineer
SS : ACEPL Site Staff

SECTION 8

DESIGN INPUT & METHODOLOGY

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

ITEM	KEPT BY
Singtel's requirement dated 26 June 2006	Project file & GSH's email dated 27 June 2006 (in soft copy)

8.2 List of Applicable Code of Practice and Regulations

Electrical Wiring	~~BS~~	SS	IEE	~~NFPA~~	
Lightning Protection System	~~BS~~	SS			
Emergency Voice Communication System	~~BS~~	SS	~~NFPA~~		
Air Conditioning & Ventilation Installation	BS	~~AS~~	~~NFPA~~	SS	~~MS~~
~~Lift & Escalator Installation~~	~~BS~~	~~SS~~			
Sprinkler System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~LPC~~
~~Wet Riser System~~	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	~~MS~~
Automatic Fire Alarm System	~~BS~~	SS	NFPA	~~AS~~	~~MS~~
Sanitary System	BS	SS	~~NFPA~~	~~AS~~	~~MS~~
Plumbing System	BS	SS	~~NFPA~~	~~AS~~	MS
~~Town Gas/LPG Supply System~~	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	
~~Boiler and Steam Supply System~~	~~ASME~~	~~BS~~	~~AS~~		
~~Mechanical Smoke Control System~~	~~BS~~	~~NFPA~~	~~AS~~		

(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 Consulting Engineers Pte Ltd's Quality Management System Procedures

Section	Title	✓ where applicable
M1	Preparation of Consultancy Offer	✓
M2	Project Commissioning and Service Agreement	✓
M3	Design Control	✓
M4	Design Change Control	✓
M5	Tender Process and Evaluation	✓
M6	Authority Submission	✓
M7	Construction Process Control	✓
M8	Testing and Commissioning	✓
S1	Document Control	✓
S2	Documentation of Quality Management System Procedure	✓
S3	Documentation of Project Quality Plan	✓
S4	Specification Control	✓
S5	Library Control	✓
S6	Archive Control	✓
S7	Filing Control	✓
S8	Drawing Control	✓
S9	Administration Control	✓
S10	Purchasing Control	✓
S11	Training Control	✓
S12	Computer Control	✓
Q1	Quality System Audit	✓
Q2	Feedback Reporting	✓
Q3	Clients Feedback	✓
Q4	Management Review	✓

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 Consulting Engineers	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 Consulting Engineers	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
M&E Cost Estimate Report	A
Pre-Qualification of Tenderers	A
Tender Documents	A
Tender Report	A
Payment Valuation for QS	I
Certificates of Supervision for TOP/CSC	Re

* *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)*

9.2.1 Prequalification of tenderers.

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers

Sub Job No	Description	Allocation Details
601	Kim Chuan Additional Work for #07-01B	CLM/GSH
	Spaces for UBS	