PROJECT QUALITY PLAN

BUKIT BATOK PROJECT

For

M/S ALPROP PTE LTD

Copy No.	

Prepared By: Fok Y C

Authorised By: Richard Teo

Date: 14 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	1001-PQP File	17 June 1997
2	Fok Y C	17 June 1997

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
1/0	17 June 1997	1 to10	27	-
2/0	2 October 1998	1 to 10	27	-
3	14 January 1999	1 to 10	26	-

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Commercial

Statistics of Development	
Site Area, m²	9,889.5
Nett Floor Area, m²	17,613
Gross Floor Area, m²	26,255
Covered Carpark, m²	11,746
No. of Covered Carpark Lots	339
No. of Apartments/Houses	-
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	9 Storeys (B3 to Lower Roof)
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI	AC	VWI		
Estimate	-	-	-	-	-	-	0.3	-		
Awarded	3.755	6.53	3.910	1,303.5	1.674	-	208.478	204.390		

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	-	-	63.1

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.		CARPARKING SYSTEM INSTALLATION	✓						
FLUSHFLOOR TRUNKING		VIDEO WALL INSTALLATION	✓						

(✓ *where applicable*)

2.3.3 Submission to Relevant Authorities by Others

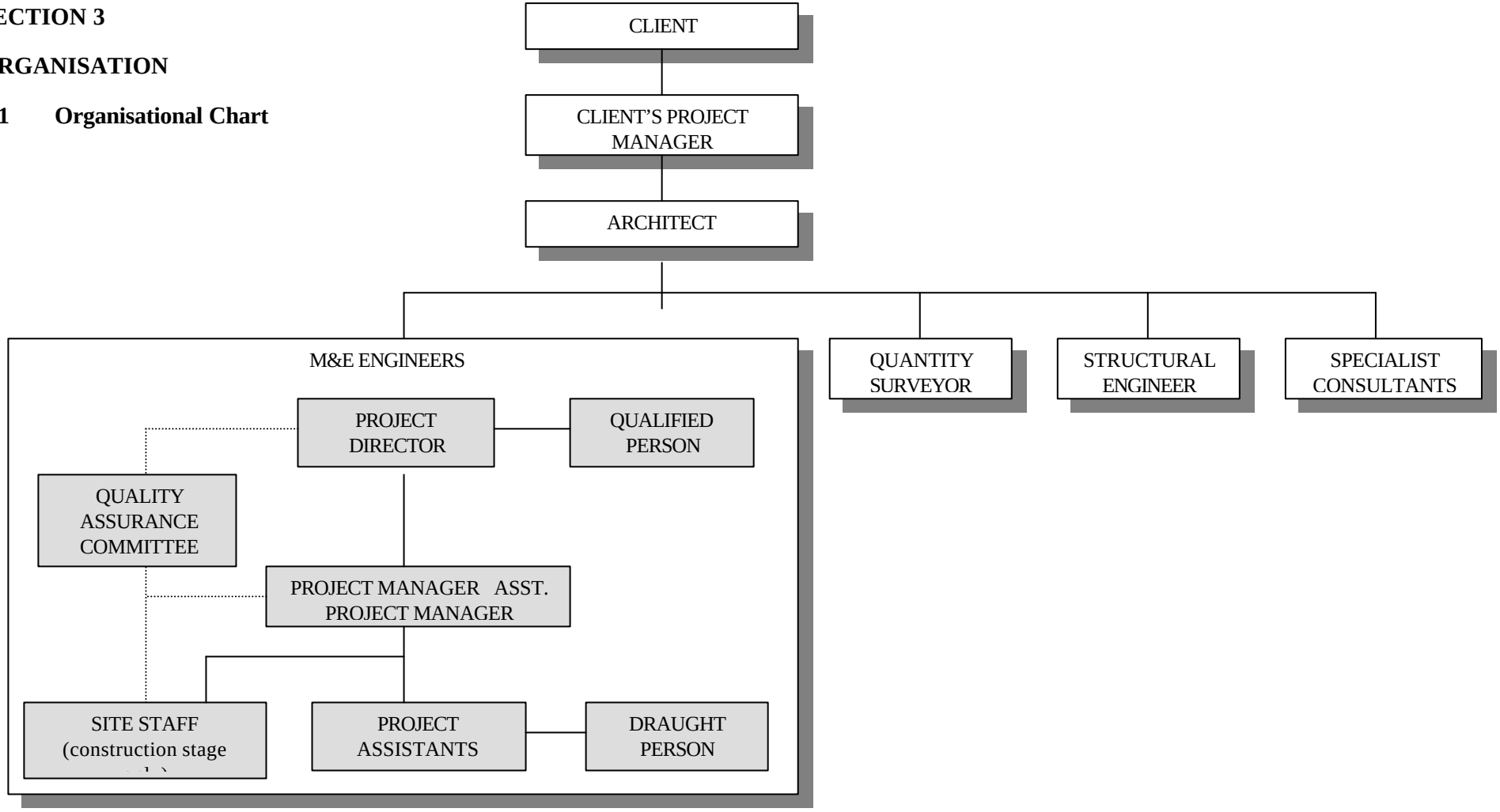
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK	✓	LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOAM	

(✓ *where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 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		Chong L M
Project Assistant (Mech)		Aw G 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:- Alprop Pte Ltd

Address:- #02-14 UIC Building
5 Shenton Way
Singapore 068808

Tel:- 222 9312

Fax:- 225 1004

Client's Representatives:-

Name of Firm	Contact Person	Contact
Alprop Pte Ltd	Name: Mr David Lim Position: General Manager – Development	Tel: 222 9312 Fax: 225 1004 Pager: - Handphone: 9787 1023 Email: -
-	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
-	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
-	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
-	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -

3.4 Other Consultants (Local)

Function / Name of Firm	Contact Person	Contact
Architect P&T Architects	Name: Mr Kingsley Ng Position: Project Manager	Tel: 535 2011 Fax: 535 1283 Pager: - Handphone: - Email: -
Quantity Surveyor W T Partnership	Name: Mr Yuen C C Position: Project Manager	Tel: 533 0822 Fax: 533 2833 Pager: - Handphone: - Email: -
Structural Engineer P&T Consultant Pte Ltd	Name: Mr Leung Wai Mun Position: Project Manager	Tel: 532 5529 Fax: 534 5496 Pager: - Handphone: - Email: -
Interior Designer Imagimax	Name: Mr Andrew Moore Position: Director	Tel: 467 5797 Fax: 467 1045 Pager: - Handphone: - Email: -
Lighting Consultant Project Lighting Design	Name: Mr Stephen Gouph Position: Manager	Tel: 235 5880 Fax: 235 5980 Pager: - Handphone: - Email: -
Acoustic Consultant CCW Acoustics Pte Ltd	Name: Mr Cheah B K Position: Project Director	Tel: 468 3766 Fax: 468 1940 Pager: - Handphone: - Email: -
Client's Project Manager Realty Management Services Pte Ltd	Name: Mr David Lim Position: General Manager – Development	Tel: 222 9312 Fax: 225 1004 Pager: - Handphone: 9787 1023 Email: -
Other Specialist ABL Lim (FPC) Pte Ltd	Name: Ms Auw Yong H K Position: Project Manager	Tel: 323 0136 Fax: 323 0139 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 Kumagai Gumi Co Ltd	DC	Name: Mr K Akabane Position: Project Manager	Tel: 569 5230 Fax: 567 2410 Pager: - Handphone: - Email: -
Air Conditioning & Ventilation Installation Sub-Contractor Fettle Engineering Co (S) Pte Ltd	DSC	Name: Mr Anthony Yen Position: Managing Director	Tel: 278 7666 Fax: 278 7555 Pager: - Handphone: - Email: fettle@pacific.net.sg
Plumbing & Sanitary Installation Sub-Contractor Wan Lee Lai Plumbing Co Pte Ltd	DSC	Name: Mr Lee Lian Yit Position: Project Manager	Tel: 752 0707 Fax: 752 8879 Pager: - Handphone: - Email: -
Electrical Installation Sub-Contractor United Engineers (S) Pte Ltd	NSC	Name: Mr Edgardo Position: Project Manager	Tel: 266 0988 Fax: 268 6993 Pager: - Handphone: - Email: -
Lift & Escalator Installation Sub-Contractor Ryoden (S) Pte Ltd	NSC	Name: Mr Chang L S Position: Project Manager	Tel: 842 5678 Fax: 748 2292 Pager: - Handphone: - Email: -
Fire Fighting & Alarm Installation Sub-Contractor Chubb Singapore Pte Ltd	NSC	Name: Mr Jeffrey Ng Position: Project Manager	Tel: 292 8421 Fax: 298 7310 Pager: - Handphone: - Email: -
Carpark System Installation Sub-Contractor Norva (SEA) Pte Ltd	DSC	Name: Mr K K Loh Position: Project Manager	Tel: 744 3811 Fax: 744 9131 Pager: - Handphone: - Email: -
Video Wall Installation Sub-Contractor O'Connors (S) Pte Ltd	DC	Name: Mr Vincent Soh Position: Project Executive	Tel: 473 7944 Fax: 472 4508 Pager: - 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	Mr Yusup Ab Rahman	831 8285
(b) Sub-Station	Mr Law Jam Peng	279 9543 Fax: 279 9532
(c) Installation	Mr Cheng Mun Sen	277 7946 Fax: 277 7044
(d) Meter Section	Mr Kok Ah Man	277 7002
(e) Road Lighting	-	-
(f) Diversion	-	-
Telecom:		
(a) Planning/Line Plant	Mr Wong Yin Hong	838 3388
(b) Installation	Mr Khoo Kay Hean	458 0041 Pg: 92066149
(c) Diversion	-	-
BCD:		
(a) Building Plan	-	-
FSB:		
(a) Building Plan	-	-
(b) M&E Section	Mr Rashid/Mr Vijay	838 6436 / 838 6456
PUB (Water)		
(a) Water Conservation	-	-
(b) Plumbing Plan	Mr Lau Kam Kok	731 3552
(c) Diversion	-	-
PowerGas:		
(a) Planning/Submission	-	-
(b) Installation/Inspection	Mr Wong Bon Fah	831 8682
(c) Diversion	-	-
ENV (Sewerage):		
(a) Building Plan	-	-
(b) M&E Section	Mr Lui Kean Hoong	731 9629
(c) Diversion	-	-
ENV (Pollution Control)		
(a) Planning/Submission	-	-
(b) Inspection	-	-

SECTION 4

PROGRAMME

4.1 Overall Programme

NOT USED

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	-								17.4.95
Power Supply Substation	PowerGrid Pte Ltd	-								26.12.96
Main Single Line Diagram	Power Supply Pte Ltd	-								22.7.96
Consumer Switchroom Layout	PowerGrid Pte Ltd									
Metering Layout	PowerGrid Pte Ltd	-								7.6.96
Sanitary Installation	ENV (Sewerage)	-								20.5.97
Domestic Water Supply	PUB (Water)	-	17.10.95	28.11.95	18.4.96					23.5.96
Gas Supply Installation	PowerGas Pte Ltd	-	22.5.98							3.6.98
Air Conditioning & Ventilation Inst.	Fire Safety Bureau	-	25.4.97	22.5.97	14.7.97	5.8.97	19.8.97			3.9.97
Fire Fighting & Alarm Installation	Fire Safety Bureau	-	2.4.97	2.6.97	28.7.98					6.8.97
Telephone Installation	Telecom (Broadband)									21.6.96
	Telecom (TDCS)									
	Telecom (Domestic Operation)	-	15.7.96							-
Fuel Storage	Fire Safety Bureau	July 97								-
	Pollution Control Department									
Smoke Control System	Fire Safety Bureau	-	9.4.97	20.5.97	10.6.97					28.6.97

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	-	17/8/98							15/9/98
Fire Fighting & Alarm Installation	Fire Safety Bureau	-	21/10/98							28/10/98
	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	✓	-QSP	
-PC	✓	-BD	✓
-AE	✓	-CC	✓
-AM	✓	-CF	✓
-AA	✓	-GC	✓
-PQP	✓	-Q/VO	✓

Project Files to be initiated by PM as and when required

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

Service Files to be initiated by PM as and when required

	Service										
File Ref:	ACVI	FFAI	PSI	EI	LI	SPFP	AC	VG			
-G	✓	✓	✓	✓	✓	-	✓	✓			
-Q/VO	✓	✓	✓	✓	✓						
-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	Gui C S
Incoming Architectural Sketches/Details	Gui C S
Incoming Structural Drawings	Gui C S
M&E Drawings	
- Electrical Installation	Gui C S
- Lift & Escalator Installation	Gui C S
- Air Conditioning & Ventilation Installation	Chong L M
- Fire Fighting & Alarm Installation	Chong L M
- Plumbing & Sanitary Installation	Chong L M
- Swimming Pool & Filtration Installation	-
Other Drawings	
Landscape Consultant	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

NOT USED

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	-	A,C,I	C,I	C,I	
b.	Project Administration	A,C,I	-	A,C,I	I	I	
c.	Project Cost Estimate/Contract Cost	A,C,I	-	C,I	-	C,I	
2.	**Drawings**						
a.	Outline Design Drgs.	-	-	-	-	-	
b.	Sketch Design Drgs.	-	-	-	-	-	
c.	Final Design Drgs.	-	-	-	-	-	
d.	Shop Drawings	-	-	A,C,I	A,C	-	
e.	As Built Drgs.	I	-	-	-	-	
3.	**Other Document**						
a.	Specification	-	-	-	-	-	
b.	Tender Document	-	-	-	-	-	
c.	Tender Evaluation Report	-	-	-	-	-	
d.	Design Report	-	-	-	-	-	
e.	Progress Report	-	-	-	-	-	
f.	Financial Report	A	-	I	I	I	
g.	Minutes of Meeting	I	-	I	I	I	
h.	Inspection Report	-	-	-	-	-	
i.	Testing & Comm. Report	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
M&E Facilities & Brief Building Data and Proposed	File, PD, PM, APM, PA (M&E)
Degree of Completion to Tenants Premises	

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~~	BR186	BR258

(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
A4	Document Control
A9	Feedback Reporting
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	-
M&E Cost Estimate Report	-
Pre-Qualification of Tenderers	-
Tender Documents	A,C
Tender Report	A,C
Payment Valuation for QS	C
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)*

Financial status report every three months Jan/April/July/Oct.

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers

Sub Job No	Description	Allocation Details
1001-101	Extension of B2 & B3 Wall for Carparking	
1001-102	Additional Escalators at B2 & B3	
1001-103	Revision to ACMV System as requested by APL	
1001-104	Revision due to individual tenancy requirement as requested by APL	
1001-105	Revision due to Architectural Changes	
1001-106	Revision to public area & landscape lighting due to lighting consultant design	
1001-107	Video Wall System	
1001-108	Raised Linkway to MRT	
1001-109	Provision for Sing Tel Mobile System	
1001-110	Power Factor Correction on all Main Switchboards	
1001-111	Improvement to landscape area	