PROJECT QUALITY PLAN

HAZEL PARK CONDOMINIUM AT UPPER BUKIT TIMAH ROAD

For

M/S HONG LEONG HOLDINGS LTD

Copy No.	

Prepared By: Chong T T

Authorised By: Andrew Loh

Date: 16 December 1998

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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	1083-PQP File	16 December 1998
2	Chong Tze Tai	16 December 1998

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	16 December 1998	Section 1 to Section 10	28	1st Issue of PQP

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Condominium Development

Statistics of Development	
Site Area, m²	45,707.70 m²
Nett Floor Area, m² *	87,309.39 m²
Gross Floor Area, m²	95,983.39 m²
Covered Carpark, m²	8,674
No. of Covered Carpark Lots	753
No. of Apartments/Houses	696
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	Blk 1, 2 & 3 - 5th Storey/Blk 4, 5 & 6 -19th Storey
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	12.00	7.50	6.00	0.80	13.00	1.40				
Awarded	11.04	5.90	3.50	0.72	9.14	0.64				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	-	6.9	168

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 (ACMV, Sanitary, Lift & Building Security)	✓
Tender Documentation	✓
Tender Evaluation	✓
Contract Supervision (Compliance to authorities requirements)	
M&E Costing	✓
Submissions to Authority (Sanitary Installation Only)	✓

(✓ *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 DATA COMM.		HEATING							
FLUSHFLOOR TRUNKING									

(✓ *where applicable*)

2.3.3 Submission to Relevant Authorities by Others

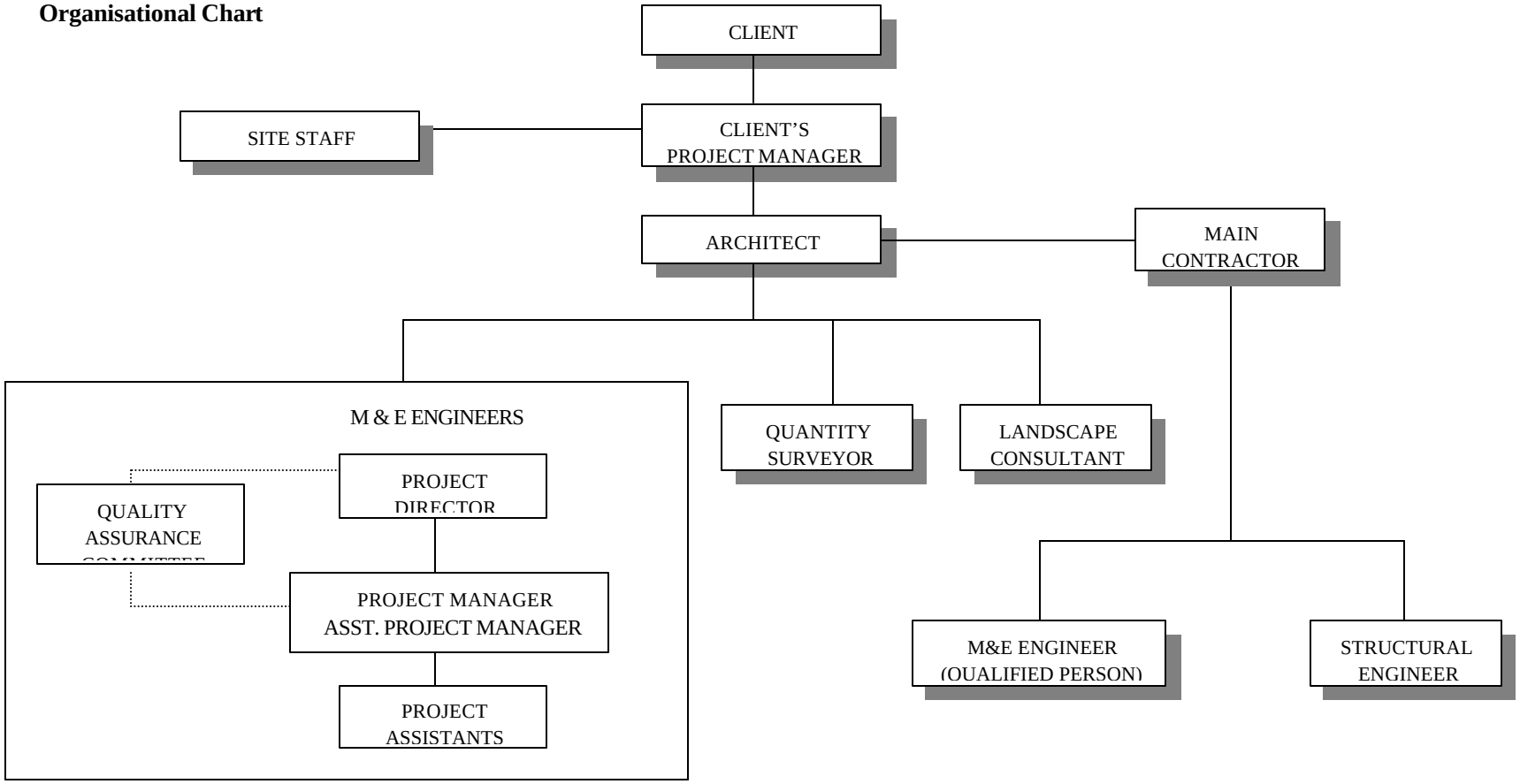
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOAM	

(✓ *where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 AEC's Project Team Member

TITLE		NAME
Project Director		Tan Lai Siong
Qualified Person	Mechanical	-
	Electrical	-
Project Manager		Chong Tze Tai
Assistant Project Manager		Goh Soon Huat
Project Assistant (Mech)		-
Project Assistant (Elect)		Wong Tack Chow
Draughtsperson		-
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client:- Hong Leong Holdings Ltd

Address:- 16 Raffles Quay
#25-00 Hong Leong Building
Singapore 048581

Tel:- 220 9911

Fax:- 225 0929

Client's Representatives:-

Name of Firm	Contact Person	Contact
Hong Leong Holdings Ltd	Name: Mr Thomas Hing Position: Project Manager	Tel: 290 9911 Fax: 225 0929 Pager: - Handphone: - E-mail: -
Hong Leong Holdings Ltd	Name: Mr Goh Chye Teck Position: Resident Engineer	Tel: 892 4479 Fax: 764 8386 Pager: - Handphone: 966 04160 E-mail: -
Hong Leong Holdings Ltd	Name: Mr Victor Wong Position: M&E COW	Tel: 892 4478 Fax: 764 8386 Pager: - Handphone: - E-Mail: -

3.4 Other Consultants (Local)

Function / Name of Firm	Contact Person	Contact
Architect Apco Architects & Town Planners Collaborative	Name: Mr Tan Shee Tiong Position: Qualified Person Name: Mr Paul Appasamy Position: Architect Name: Mr Huang Wei Position: Architect	Tel: 225 0322 Fax: 225 0366 Pager: - Handphone: - E-Mail: -
Architect DP Architects Pte Ltd Quantity Surveyor Davis Langdon & Seah (S) Pte Ltd	Name: Mr Wu Tzu Chiang Position: Director Name: Mr Dadi Surya Position Architect Name: Mr Tan Joo Tong Position: Associates Name: Mr David Yeoh Position: Quantity Surveyor	Tel : 338 3988 Fax : 337 9989 Pager: Handphone: Email: dpa@dparchitects.com Tel: 222 3888 Fax: 224 7089 Pager: - Handphone: - Email: dlssp2@pacific.net.sg
Structural Engineer Meinhardt (Singapore) Pte Ltd	Name: Mr Riddhi Karmacharya Position: Director	Tel: 273 5255 Fax: 274 0788 Pager: - Handphone: - Email: -
Interior Designer -	Name: Position	Tel: Fax: Pager: Handphone: Email: -
Lighting Consultant -	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Acoustic Consultant -	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Client's Project Manager Hong Leong Holdings Ltd	Name: Mr Thomas Hing Position: Project Manger	Tel: 220 9911 Fax: 252 2988 Pager: - Handphone: - Email: -
Other Specialist Ecoplan Landscape Architects & Planners	Name: Ms Renee Cheng Position: Director	Tel: 252 2188 Fax: 252 2988 Pager: - Handphone: - Email: ecoplan@pacific.net.sg

3.4 Other Consultants (Overseas)

NOT USED

3.5 Contractors/Sub-Contractors

Function / Name of Firm	Contract *	Contact Person	Contact
Main Contractor Dragages et Travaux Publics (S) Pte Ltd	D&B	Name: Mr Jean Claude Aoustin Position: Project Manager Name: Mr Vincent Goh Position: M&E Engineer	Tel: 764 0156 Fax: 764 8386 Pager: - Handphone: - E-mail: -
Air Conditioning & Ventilation Installation Sub-Contractor O.Y. L. Sales & Services (Singapore) Pte Ltd	NSC	Name: Mr Amirtham Alexander Position: Project Engineer	Tel: 250 2966 Fax: 250 1807 Pager: 959 36231 Handphone: - E-mail: -
Plumbing & Sanitary Installation Sub-Contractor Prolian M&E Services Pte Ltd	DSC	Name: Mr Lian Yin Keat Position: Director	Tel: 295 8611 Fax: 295 8622 Pager: - Handphone: - E-mail: -
Electrical Installation Sub-Contractor Ngee Cheong Contractors Pte Ltd	DSC	Name: Mr Rahu Position: Project Manager	Tel: 293 6830 Fax: 293 9095 Pager: - Handphone: - E-mail: -
Lift & Escalator Installation Sub-Contractor Chevalier Singapore Holdings Limited	NSC	Name: Mr Mak Siew Choy Position: Project Engineer	Tel: 273 2266 Fax: 747 2988 Pager: - Handphone: - E-mail: -
Fire Fighting & Alarm Installation Sub-Contractor Sprinkler Engineering Pte Ltd	DSC	Name: Mr Stanley Liew Position: Director	Tel: 453 1488 Fax: 453 7656 Pager: - Handphone: - E-mail: -
Swimming Pool Filtration Plant Installation Sub-Contractor Aqua Works & Engineering Pte Ltd	DSC	Name: Mr Terry Chang Position: Project Engineer Name: Mr Alvin Yeo Position: Project Engineer	Tel: 481 9119 Fax: 481 9261 Pager: - Handphone: - E-mail: -
Carpark System Installation Sub-Contractor -	-	Name: Position:	Tel: Fax: Pager: Handphone: Email:

** Type of Contract*
- *NSC (Named 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 Lee Chi Meng	Tel: 831 8281 Fax: 831 8239
(b) Sub-Station	Mr Chin Yoke Fah	Tel: 831 8556 Fax: 831 8564
(c) Installation	-	-
(d) Meter Section	-	-
(e) Road Lighting	-	-
(f) Diversion	-	-
Telecom:		
(a) Planning/Line Plant	Mr Lui Kwong Hing	Tel: 838 2853 Fax: 733 9895
(b) Installation	-	-
(c) Diversion	-	-
BCD:		
(a) Building Plan	-	-
FSB:		
(a) Building Plan	-	-
(b) M&E Section	-	-
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 Chow Yew Meng	Tel: 731 9630
(c) Diversion	-	-
ENV (Pollution Control)		
(a) Planning/Submission	-	-
(b) Inspection	-	-

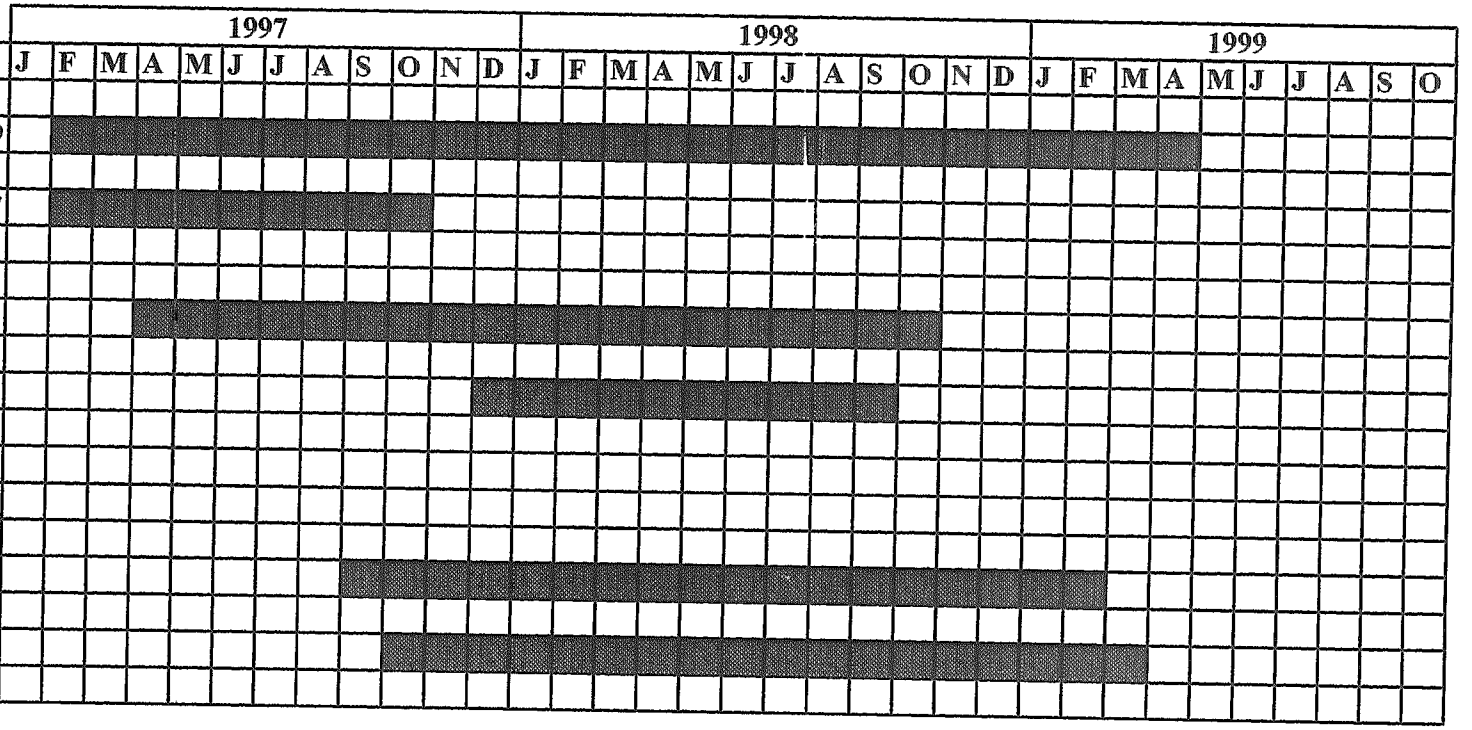
SECTION 4

PROGRAMME

4.1 Overall Programme - Refer to attached schedule (1 page)

HAZEL PARK CONDOMINIUM
OVERALL CONSTRUCTION PROGRAMME

	START	START
OVERALL	27-Jan-97	23-Apr-99
SITE PREP	1-Feb-97	1-Oct-97
BASEMENT STRUCTURE	1-Apr-97	1-Oct-98
M&E	1-Dec-97	1-Sep-98
SUPER STRUCTURE		
STRUCTURE	1-Sep-97	1-Feb-99
M&E	1-Oct-97	1-Mar-99



SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services - (By Contractor's Consultant)

- Refer to attached programme (1 page)

17/12 '98 THU 10:30 FAX 65 2250366 APCO +++ ALPHA 004

17/12 '98 THU 10:33 [TX/RX NO 807

HAZEL PARK CONDOMINIUM PROJECT

STATUS OF AUTHORITIES SUBMISSION / CLEARANCES FOR M & E SERVICES

ITEM	DESCRIPTION	TARGET	1ST SUB	1ST W.D.	2ND SUB	2ND W.D.	3RD SUB	3RD W.D.	APPROVAL / REMARK
1	Application for Electricity Supply								29-07-97
2	PUB Substation								21-11-97
3	Single Line Diagram								15-01-98
4	Telecom - outside Plant Planning								09-12-97
5	Telecom - Domestic Telephone Operations								19-01-98
6	Singapore Cable Vision		02-12-97						Client signed the SCV agreement on 25.6.98 and returned to SCV on 1.7.98
7	CBPU (ENV) Sanitary System								17-02-97 (Submitted by Architect)
8	PUB Water	15-04-98	18-03-98	07-05-98	24-06-98				Approved on 12-11-98
9	FSB (ACMV)	15-04-98	21-04-98						Approved on 27-4-98
10	FSB (Fire Protection)	15-04-98	21-04-98	02-05-98	02-07-98				Approved on 6-7-98
11	Power Gas	15-04-98	16-03-98	20-03-98	29-04-98				Approved on 8-6-98
12	Ejector System (ENV)	22-04-98							To be done by plumbing contractor / plumbing supplier
13	Swimming Pool (EHD) Licensing Only	Early Feb'99							To be done by swimming pool contractor
14	Sump Pump (ENV) Car Park Only	22-04-98							To be done by plumbing contractor / plumbing supplier

SECTION 4

PROGRAMME

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

NOT USED

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

File Ref: 1083		File Ref: 1083	
-CM	✓	-QSP	✓
-PC	✓	-BD	✓
-AE	✓	-CC	✓
-AM	✓	-GC	✓
-AA	✓	-SF	✓
-PQP	✓	-CF	✓

Project Files to be initiated by PM as and when required

File Ref: 1083		File Ref: 1083		File Ref: 1083	
-SM	✓	-SR	✓	-ET	-
-SC	-	-QM	-	-MT	-
-AI/AD	✓	-EC	✓	-DF	✓
-SQ	✓	-MC	-	-EOT	-
-CO	-	-PP	✓	-VO	✓

Service Files to be initiated by PM as and when required

	Service										
File Ref: 1083	ACVI	FFAI	PSI	EI	LI	SPFP	BS				
-G	✓	-	✓	✓	✓	✓	✓				
-Q	-	-	-	-	-	-	-				
-VO	-	-	-	-	-	-	-				
-P	-	-	-	-	-	-	-				
-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	Chong Tze Tai
Incoming Architectural Sketches/Details	Chong Tze Tai
Incoming Structural Drawings	Chong Tze Tai
M&E Drawings	
- Electrical Installation	Goh Soon Huat
- Lift & Escalator Installation	Goh Soon Huat
- Air Conditioning & Ventilation Installation	Chong Tze Tai
- Fire Fighting & Alarm Installation	Chong Tze Tai
- Plumbing & Sanitary Installation	Chong Tze Tai
- Swimming Pool & Filtration Installation	Chong Tze Tai
Other Drawings	Chong Tze Tai

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	I	I	C	-	I	
b.	Project Administration	I	I	C	-	C	
c.	Project Cost Estimate/Contract Cost	I	I	C	-	C	
2.	**Drawings**						
a.	Outline Design Drgs.	-	-	-	-	-	
b.	Sketch Design Drgs.	-	-	-	-	-	
c.	Final Design Drgs.	-	-	-	-	-	
d.	Shop Drawings	I	I	C/A	-	-	
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	I	I	C	-	C	
g.	Minutes of Meeting	-	-	-	-	I	
h.	Inspection Report	-	-	-	-	-	
i.	Testing & Comm. Report	-	-	-	-	-	
j.	O & M Manual	-	-	-	-	-	

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
NIL	NIL

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			
Dry 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~~	

(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
A5	Library Control
A6	Archive Control
A7	Purchasing Control
A8	Training Control
A9	Feedback Reporting
A10	Computer Control
C1	Contruction 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 Fault Level Calculation	4.00.1 -	ACADS-BSG Alpha Engineering	Fire Sprinkler & Hydrant Analysis 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	-
Tender Report	-
Payment Valuation for QS	4th day of the month
Certificates of Supervision for TOP/CSC	NA

** 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)*

(a) Employer Agent's Instruction (EAI) shall be issued instead of EI/AI under JCT form of Contract.

(b) EAI shall be issued by Architects only (Employer Agent). List of EAI on M&E items are tabulated in the Register of Employer Agent's Instruction.

(c) AEC shall correspond with the Architects only and no direct correspondence with the Main Contractor will be allowed.

(d) Approval on Contractor's submission (shop drawing/technical submission/samples) shall be the responsibility of the Contractor's M&E Consultant. AEC shall review these submission to ensure Contractor's compliance with the design intent.

(e) AEC's comments on the non-compliance are highlighted in the Consultants' meeting and via fax to the Architect, M/s APCO. The list of deviations are tabulated in the Register of Deviation.