Alpha
Engineering Consultant

PROJECT QUALITY PLAN

PROPOSED CONDOMINIUM DEVELOPMENT ON LOTS 693V TS 29 AT BALESTIER ROAD (SCENIC HEIGHTS CONDOMINIUM)

For

M/S BALESTIER REALTY PTE LTD

Copy No.	1

Prepared By: Chong Lai Meng

Authorised By: Richard Teo

Date: 22 September 2003

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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	1355-PQP File	17 March 2003
2	Chong Lai Meng	17 March 2003

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	17 March 2003	1 to 10	26	
1	22 September 2003	1 to 10	27	

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Condominium development

Statistics of Development	
Site Area, m²	1993.5
Nett Floor Area, m²	-
Gross Floor Area, m²	5581.8
Covered Carpark, m²	-
No. of Covered Carpark Lots	50
No. of Apartments/Houses	50
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	1 Blocks of 19 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										
Awarded	0.54	0.35	0.2068	0.100	0.500	0.062				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	INCL	INCL	8.97

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

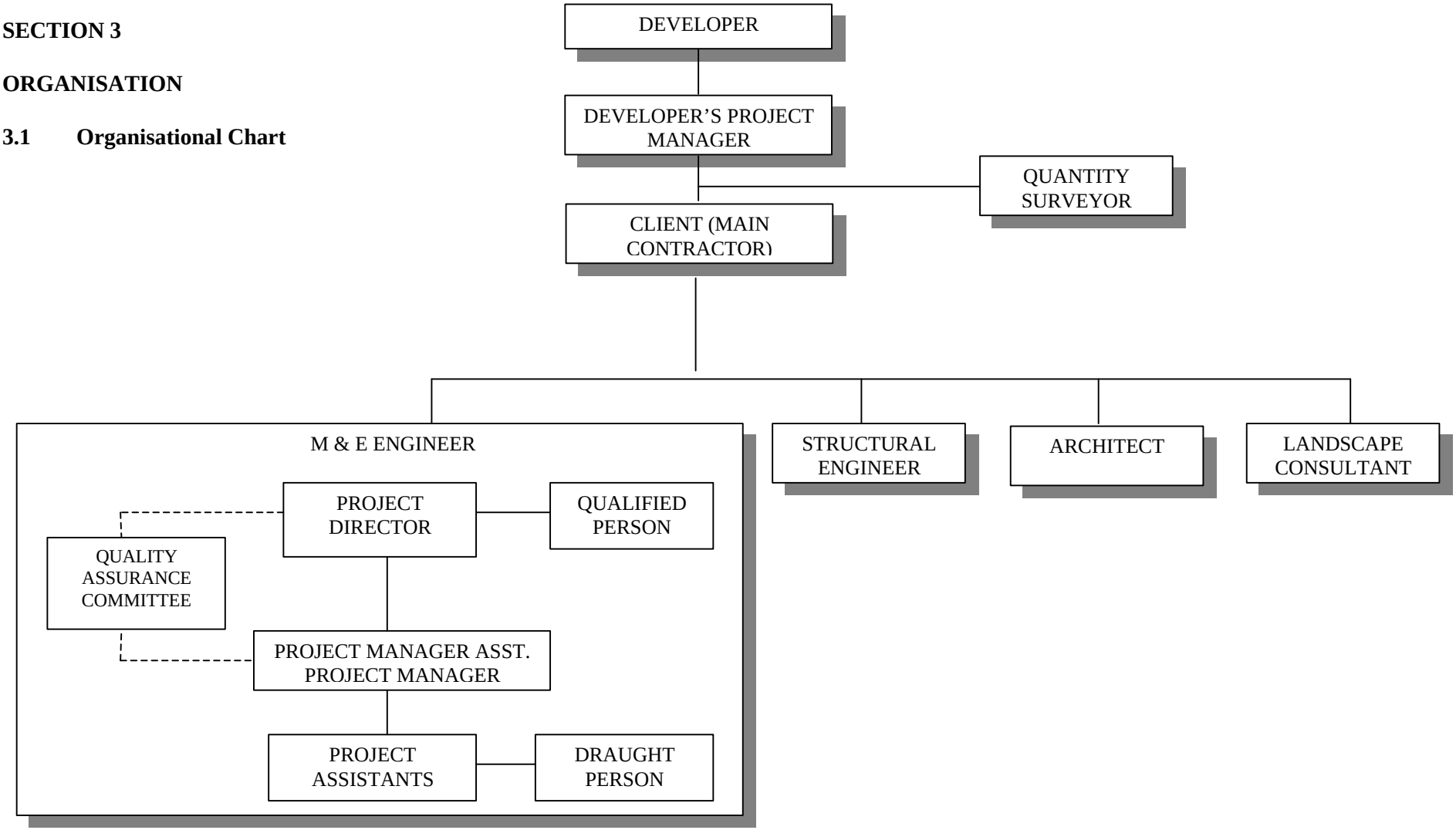
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓ *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 (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)		Sam Chong (SC)
Project Assistant (Elect)		Alvin Ong (AO)
Draughtsperson		-
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Developer

Developer:- Balestier Realty Pte Ltd

Address:- 123A Telok Ayer Street
Singapore 068602

Tel:- 62228580

Fax:- 62257303

Developer's Representatives:-

Name of Firm	Contact Person	Contact
Balestier Realty Pte Ltd	Name: Mr Jimmy Koh Position: Project & Property Development manager	Tel: 62228580 Fax: 62257303 Pager: - Handphone: 96231230 Email: -
KPK Quantity Surveyors	Name: Ms Chang Yen Lin Position: Associate Director	Tel: 6536 3303 Fax: 6536 2633 Pager: - Handphone: - Email: kpkqs@singnet.com.sg

3.4 Other Consultants (Local)

Function / Name of Firm	Contact Person	Contact
Architect P & T Consultants Pte Ltd	Name: Mr Leong Chee Wai Position: Architect in charge	Tel: 64399033(DID) Fax: 65351283 Pager: - Handphone: - Email: cwleong@ptcon.com.sg
Structural Engineer P & T Consultants Pte Ltd	Name: Mr Tan Chee Hean Position: Associate	Tel: 64399073 Fax: 65345496 Pager: - Handphone: - Email: chtan@ptcon.com.sg
Landscape Consultant Peridian Landscape Architects	Name: Position: Landscape Architect	Tel: 6227 7998 Fax: 6227 0509 Pager: - Handphone: - Email: -
Interior Designer N.A.	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
Lighting Consultant N.A.	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
Acoustic Consultant N.A.	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
Landscape Architect N.A.	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -

3.4 **Other Consultants** (Overseas) – **Not Used**

Function / Name of Firm	Contact Person	Contact
Architect	Name: Position:	Tel: Fax: Pager: Handphone: Email:
M&E Consultant	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Quantity Surveyor	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Structural Engineer	Name: Position:	Tel: Fax: 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:
_____	Name: Position:	Tel: Fax: Pager: Handphone: Email:

3.5 Contractors/Sub-Contractors

Main Contractor (D & B) Nakano Singapore Pte Ltd	D & B	Name: Mr Tay Hui Chua Position: Project Manager	Tel: 63334933 Fax: 63388568 Pager: - Handphone: 90682264 Email: nakano@cyberway.com.sg
Air Conditioning & Ventilation Installation Sub-Contractor Design Aire Engineering Pte Ltd	D & B	Name: - Mr William Liew Position: -Director	Tel: 67469611 Fax: 67474922 Pager: - Handphone: 96726277 Email: deaire@mbox3.singnet.com.sg
Plumbing & Sanitary Installation Sub-Contractor WTC Engineering Pte Ltd	D & B	Name: - Mr Wang T C Position: -Director	Tel: 67459733 Fax: 67456806 Pager: - Handphone: 90671144 Email: wtc97@mbox2.singnet.com.sg
Electrical Installation Sub-Contractor Bond Electrical Pte Ltd	D & B	Name: - Mr Vincent Chin Position: -Project Manager	Tel: 67411968 Fax: 67416763 Pager: - Handphone: 91458782 Email: bepl@bondgrp.net
Lift Installation Sub-Contractor Ryoden Singapore Pte Ltd	D & B	Name: - Mr Martin Goh Position: -Sales Executive	Tel: 68425678 Fax: 67482292 Pager: - Handphone: - Email: martin.goh@rs.meap.com
Fire Fighting & Alarm Installation Sub-Contractor Chubb Singapore Pte Ltd	D & B	Name: -Mr Tan Kiam Peng Position: - Senior Project Engineer	Tel: 62928421 Fax: 62987310 Pager: - Handphone: 98465959 Email: -
Swimming Pool Filtration Plant Installation Sub-Contractor Men'spool Pte Ltd	D & B	Name: - Mr Daren Lim Position: - Manager	Tel: 62661211 ext 15 Fax: 62614414 Pager: - Handphone: - Email: project@menspool.com.sg

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

3.6 Authorities

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
PowerGrid/Power Supply:		
(a) Customer Supply	Mr Ricky Lim Teck Heng	68238008/68238289
(b) Sub-Station	Mr Francis Chang See Tong	6823 8564
(c) Installation		
(d) Meter Section		
(e) Road Lighting		
(f) Diversion		
Telecom:		
(a) Planning/Line Plant	Mr Lim Kwee Peng	68485705/68484110
(b) Installation		
(c) Diversion		
BCD:		
(a) Building Plan		
FSSD:		
(a) Building Plan		
(b) M&E Section	Mr Kwan Lian Sian	68481455/62842048
PUB (Water)		
(a) Water Conservation		
(b) Plumbing Plan	Mr Lim Chee Leong	67313695/67313023
(c) Diversion		
PowerGas:		
(a) Planning/Submission	Mr Tan Kah Hock/Mr Ivan Lim	65868854/65868899
(b) Installation/Inspection	Mr Lim Teck Seng	65868872/65868899
(c) Diversion		
ENV (Sewerage):		
(a) Building Plan		
(b) M&E Section	Mr David Lim/Ms Koh Mei Leng	67319681/67319725
(c) Diversion		
ENV (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

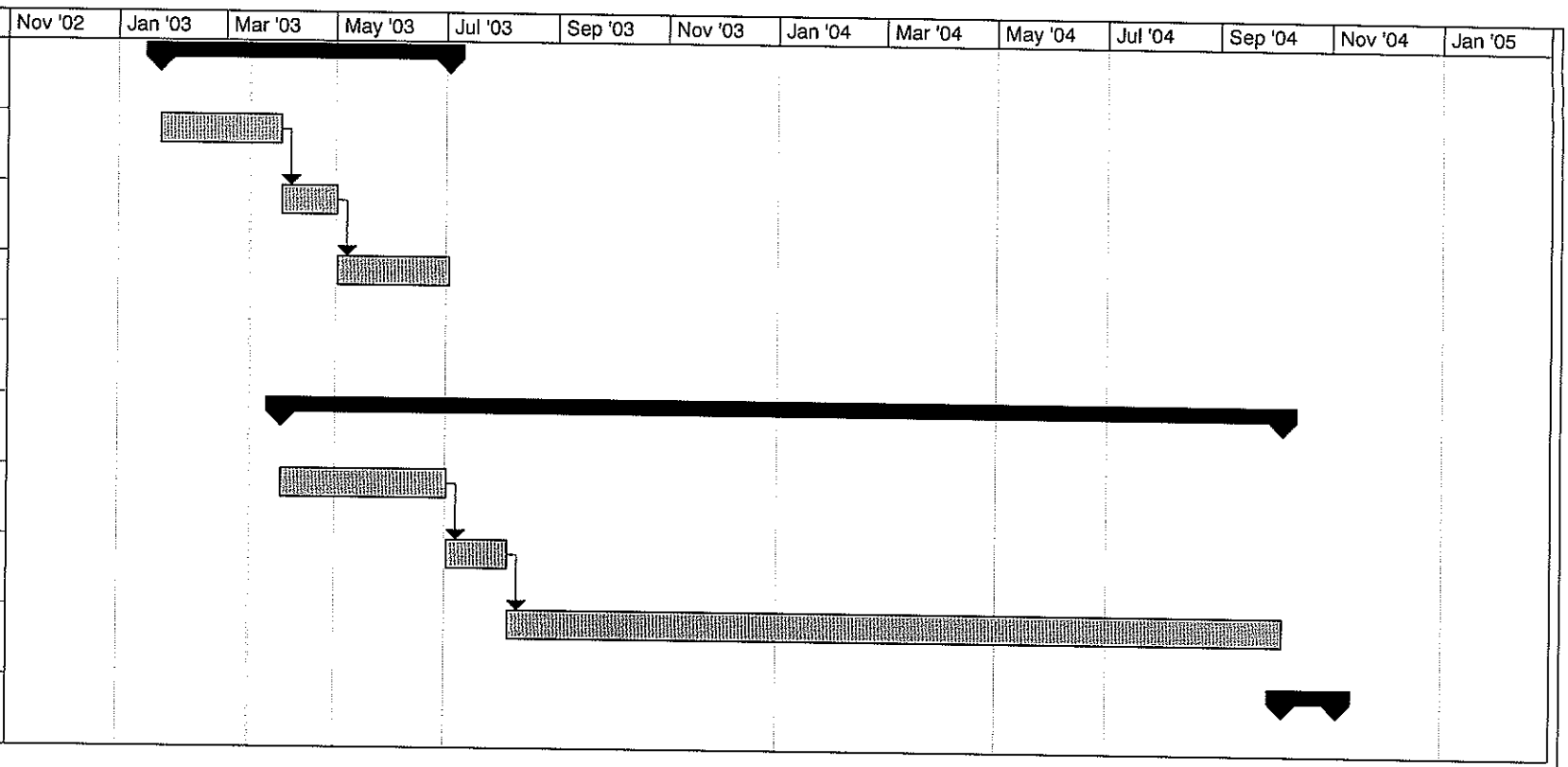
SECTION 4

PROGRAMME

4.1 Overall Programme

SEE ATTACHED MASTER PROGRAMME

ID	Task Name
1	**DESIGN**
2	DESIGN AND PLANNING
3	WP SUBMISSION
4	BP SUBMISSION
5	
6	**CONSTRUCTION**
7	PILING
8	SUBSTRUCTURE
9	SUPERSTRUCTURE
10	**TOP**



Project: BALESTIER ROAD CONDOMINIUM
Date: 17 MARCH 2003

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

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services

Service	To	Targeted Submission Date		Actual Submission Date	Advice Received			Actual Resubmission Date			Approval			Remark
											Expected		Actual	
		Original	Revised		1st	2nd	3rd	1st	2nd	3rd	1st	2nd		
Fire Protection	FSB	28/8/03	12/9/03	11/9/03							18/9/03		12/9/03	
AC & M/V	FSB	21/8/03	12/9/03	11/9/03							18/9/03		12/9/03	
Electrical	Power Supply	17/2/03		18/2/03							17/3/03		21/2/03	
Sub-station	Power Grid	30/3/03		27/3/03	3/4/03	6/5/03	4/6/03	29/4/03	26/5/03	27/6/03	15/6/03		4/7/03	
Water Service	PUB	7/5/03	12/6/03	13/6/03	3/7/03			18/8/03			18/9/03		5/9/03	
MDF Layout	Telecom	28/4/03		8/4/03	21/4/03			18/6/03			28/6/03		30/6/03	
Sewer - Sanitary	CBPU	28/4/03	6/6/03	6/6/03	21/8/03	28/8/03		22/8/03	3/9/03		5/9/03		9/9/03	
Gas	Power Gas	14/7/03		9/7/03							29/8/03		25/7/03	
SCV	IDA	30/9/03		21/8/03							21/10/03			

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) - Not Used

Service	To	Targeted Submission Date		Actual Submission Date	Advice Received			Actual Resubmission Date			Approval			Remark
											Expected		Actual	
		Original	Revised		1st	2nd	3rd	1st	2nd	3rd	1st	2nd		
Fire Protection	FSB													
AC & M/V	FSB													
Electrical	Power Supply													
Sub-station	Power Grid													
Water Service	PUB													
MDF Layout	Telecom													
Sewer - Sanitary	CBPU													
Gas	Power Gas													
SCV	IDA													

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	✓		

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/MC	✓	-DF	
-SQ		-MC		-EOT	
-CO	✓	-PP			

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	CLM
Incoming Architectural Sketches/Details	CLM
Incoming Structural Drawings	CLM
M&E Drawings	
- Electrical Installation	AO
- Lift & Escalator Installation	AO
- Air Conditioning & Ventilation Installation	SC
- Fire Fighting & Alarm Installation	SC
- Plumbing & Sanitary Installation	SC
- Swimming Pool & Filtration Installation	SC
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 - Not Used

Item No.	Description*	Required From	Required By	Date Required	Remarks

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

* Denotes activities which could be authorised by Project Assistants (M&E)

SECTION 8

DESIGN INPUT & METHODOLOGY

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

ITEM	KEPT BY
NA	NA

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			
Wet Riser System/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 Management System Procedures

Section	Title
M1	Preparation of Consultancy Offer
M2	Project Commissioning and Service Agreement
M3	Design Control
M4	Design Change Control
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
Q1	Quality System Audit
Q2	Feedback Reporting
Q3	Clients Feedback

8.5 List of Software Used For Design/Analysis – Not Used

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	-
Pre-Qualification of Tenderers	-
Tender Documents	-
Tender Report	-
Payment Valuation for QS	-
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)*- **Not Used**

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers – Not Used

Sub Job No	Description	Allocation Details