PROJECT QUALITY PLAN

COMMERCIAL & RESIDENTIAL DEVELOPMENT AT BENCOOLEN STREET/MIDDLE ROAD

For

M/S CITY HYUNDAI DEVELOPMENT PTE LTD

Copy No.	

Prepared By: Chim Heng Leong

Authorised By: Richard Teo

Date: 28 December 1998

TABLE OF CONTENTS

SECTION	DESCRIPTION
-	**TITLE PAGE**
-	**TABLE OF CONTENTS**
1	**QUALITY PLAN CONTROL AND DISTRIBUTION**
1.1	List of Copy Holders
1.2	Revision Record
2	**PROJECT INFORMATION**
2.1	Project Description
2.2	Project Cost
2.3	Scope of Works
3	**ORGANISATION**
3.1	Organisation Chart
3.2	AEC's Project Team Member
3.3	Client/Client's Representative
3.4	Other Consultants
3.5	Contractor/Sub-Contractors
3.6	Authorities
4	**PROGRAMME**
4.1	Overall Programme
4.2	Authority Submission Status for M&E Services – 1st Submission
4.3	Authority Submission Status for M&E Services (Amendment) – 2nd Submission

TABLE OF CONTENTS

SECTION	DESCRIPTION
5	**PROJECT RECORDS**
5.1	List of Internal File
5.2	Filing of Drawings
6	**INTERFACING**
6.1	Method of Interface
6.2	Internal Design Interface
6.3	Circulation of Documents to External Parties
7	**WORK AUTHORISATION**
8	**DESIGN INPUT AND METHODOLOGY**
8.1	List of Client's Standards, Reference Documents or Brief
8.2	List of Applicable Code of Practice and Regulations
8.3	List of Design Guide or Handbook Used
8.4	List of Applicable Quality System Procedures
8.5	List of Software Used for Design/Analysis
9	**CLIENT'S REQUIREMENTS**
9.1	List of Output Required by Client
9.2	Specific Procedures Required by Client
10	**LIST OF SUB-JOB**
10.1	List of Sub-Job Numbers

SECTION 1

QUALITY PLAN CONTROL AND DISTRIBUTION

1.1 List of Copy Holders

Copy No.	Copy Holder	Date of Issue
1	1131-PQP File	5 June 1997
2	Chim Heng Leong	5 June 1997

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
1/0	5 June 1997	Section 1 to 9	23	1st Issue
2/0	2 June 1997	Section 1 to 9	25	2nd Issue
3	28 December 1998	Section 1 to 10	26	3rd Issue

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Commercial & Residential Development

Statistics of Development	
Site Area, m²	6,283
Nett Floor Area, m²	Residential: 15,292 Retail: 4,030 Office: 5,525 Total: 24,847
Gross Floor Area, m²	Residential: 15,833 Retail: 4,054 Office: 6,332 Total: 26,219
Covered Carpark, m²	14,626
No. of Covered Carpark Lots	-
No. of Apartments/Houses	518
No. of Beds (for Hospitals)	160
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	5-Storey Podium & Carpark & 3 Apartment Blocks & 1 Office Block Each of 12-Storey High
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	4.1	4.1	2.4	1.5	3.0	0.15				
Awarded	4.082	4.213	1.51	1.165	3.082	0.187				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	55
Awarded	-	-	62.062

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

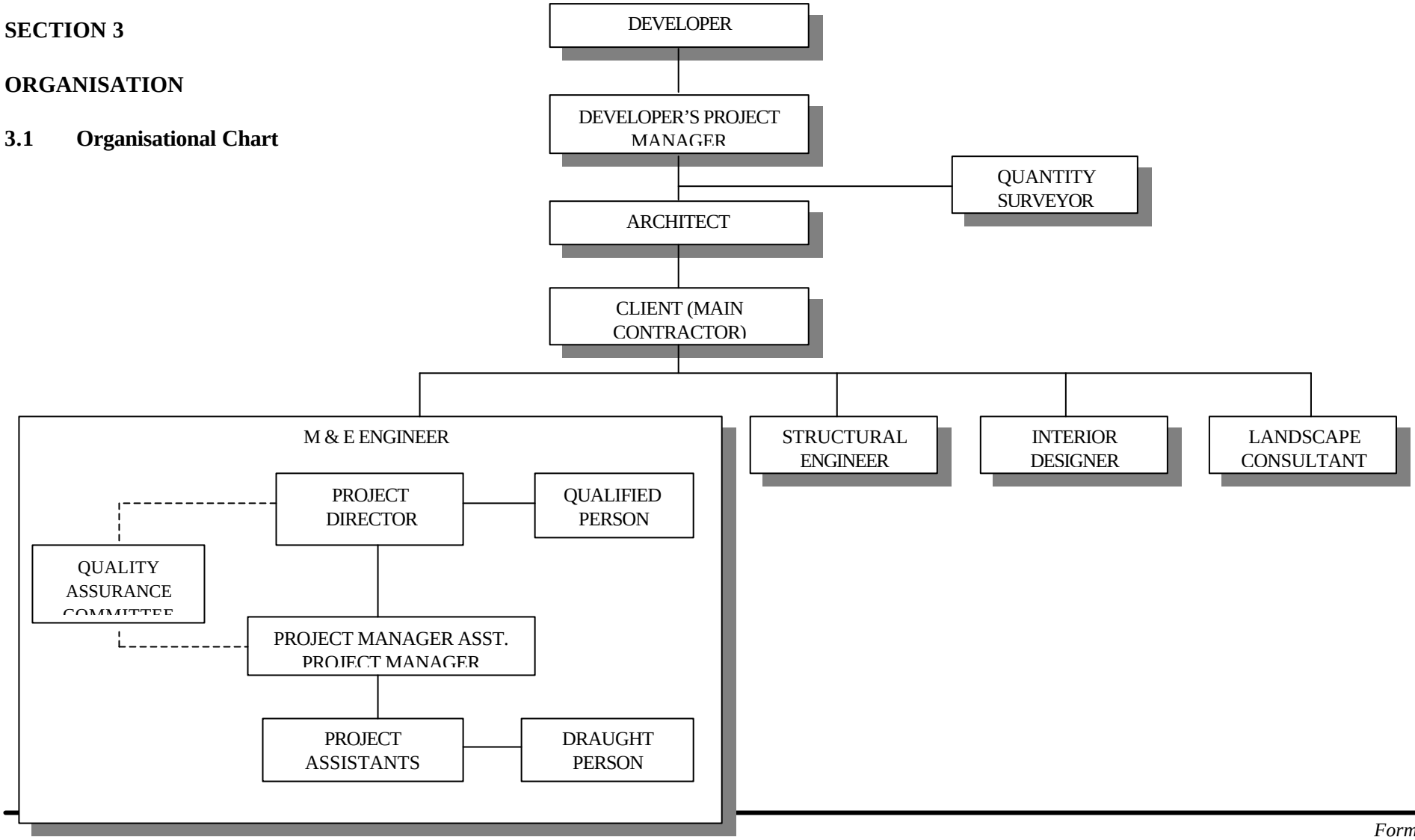
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓ *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		Chim Heng Leong (CHL)
Assistant Project Manager		Lee Kok Sweet (LKS)
Project Assistant (Mech)		Karen Wong (KW)
Project Assistant (Elect)		-
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Developer's/Client's Representatives

Developer:-	City Hyundai Development Pte Ltd	Client:-	Hyundai Engineering & Construction Co Ltd
Address:-	36 Robinson Road #04-01 City House Singapore 068877	Address:-	Newton Post Office P O Box 83 Singapore 912203
Tel:-	221 2266	Tel:-	339 9169
Fax:-	222 2933	Fax:-	339 1415

Client's Representatives:-

Name of Firm	Contact Person	Contact
City Hyundai Development Pte Ltd	Name: Mr Kelly Tan Position: Senior Project Manager	Tel: 221 2266 ext 293 Fax: 222 2993 Pager: Handphone: Email:
Hyundai Engineering & Construction Co Ltd	Name: Mr E S Park Position: Project Manager	Tel: 339 9169 Fax: 339 1415 Pager: Handphone: Email:

3.4 Other Consultants (Local)

Function / Name of Firm	Contact Person	Contact
Architect ADDP Architects	Name: Mr Wong Toon Jin/ Mr Tong Cherng Yaw Position: Partner/Architect	Tel: 220 1088 Fax: 224 0280 Pager: Handphone: Email:
Quantity Surveyor KPK Quantity Surveyors	Name: Mr Stephen Wong/ Ms Nancy Leong Position: Director/Senior Q.S.	Tel: 220 2573 Fax: 225 4353 Pager: Handphone: Email:
Structural Engineer Tan Ee Ping & Partners	Name: Mr James K W Ng/ Mr David Law Position: Associate/Project Engineer	Tel: 339 7277 Fax: 338 8362 Pager: Handphone: Email:
Interior Designer Whyte by Design Pte Ltd	Name: Ms Polly Hamilton Position: Director	Tel: 553 7200 Fax: 533 5340 Pager: Handphone: Email:
Landscape Consultant Site Concepts International Pte Ltd	Name: Mr Mark S Mahan Position: General Manager	Tel: 221 8826 Fax: 221 8937 Pager: Handphone: Email:
Developer's Project Manager City Project Management Pte Ltd	Name: Mr Kelly Tan/ Mr Philip Tan Position: Senior Project Manager/ Senior Project Officer	Tel: 221 2266 Fax: 222 2933 Pager: Handphone: Email:

3.4 Other Consultants (Overseas) – Not Applicable

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

Function / Name of Firm	Contract *	Contact Person	Contact
Main Contractor Hyundai Engineering & Construction Co Ltd	DC	Name: Mr E S Park Position: Project Manager	Tel: 339 9169 Fax: 329 1415 Pager: Handphone: Email:
Air Conditioning & Ventilation Installation Sub-Contractor Harnbart Pte Ltd	DSC	Name: Mr Wong L C Position: Project Manager	Tel: 287 7500 Fax: 287 7600 Pager: Handphone: 9650 6998 Email:
Plumbing & Sanitary Installation Sub-Contractor Industrial Plumbing Co Pte Ltd	DSC	Name: Mr Richard Ng/ Mr Chiew Weng Luen Position: Senior Project Manager	Tel: 382 1322 Fax: 382 1300 Pager: Handphone: 9607 3461/ 9700 7211 Email:
Electrical Installation Sub-Contractor Hibuilder Denki Pte Ltd	DSC	Name: Mr Teh Yew Kwang Position: Project Manager	Tel: 281 2232 Fax: 281 6220 Pager: Handphone: Email:
Lift & Escalator Installation Sub-Contractor Hitachi Asia Pte Ltd	DSC	Name: Mr Alvin Tan Position: Project Manager	Tel: 295 3711 Fax: 295 3678 Pager: Handphone: Email:
Fire Fighting & Alarm Installation Sub-Contractor Deluge Fire Protection and Safety Technology	DSC	Name: Mr Albert Lam Position: Project Manager	Tel: 862 3688 Fax: 862 3600 Pager: Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor Men'spool (Pte) Ltd	DSC	Name: Mr Daren Lim Position: Project Manager	Tel: 452 9555 Fax: 452 1098 Pager: 9494 2215 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 Lee Chi Ming	Tel: 831 8281/831 8239
(b) Sub-Station	Mr Chin Yoke Fah	Tel: 831 8556
(c) Installation		
(d) Meter Section		
(e) Road Lighting	Mr S K Bala	Tel: 3594912/2536223
(f) Diversion	Mr Seah How Puay	Tel: 2909103
Telecom:		
(a) Planning/Line Plant	Mr Gilbert Ho	Tel: 8382867
(b) Installation		
(c) Diversion		
BCD:		
(a) Building Plan		
FSB:		
(a) Building Plan		
(b) M&E Section	Mr Vijayarathnam	Tel: 8386393/8386427
PUB (Water)		
(a) Water Conservation	Mr David Loh/Mr Lee Kee Seng	Tel: 7313518/7313558 Fax: 7313023
(b) Plumbing Plan	Mr Kuang Kim Yaw/Mr Ng Guan Chai	Tel: 7313544/7313598 Fax: 731 3023
(c) Diversion		
PowerGas:		
(a) Planning/Submission	Mr Lim Soon Huat	Tel: 8318687
(b) Installation/Inspection		
(c) Diversion		
ENV (Sewerage):		
(a) Building Plan		
(b) M&E Section	Mr Chow Y M	Tel: 7319630/7319725
(c) Diversion		
ENV (Pollution Control)		
(a) Planning/Submission	Mr Yip Kwok Hoong	Tel: 731 9783/731 9725
(b) Inspection		

SECTION 4

PROGRAMME

4.1 Overall Programme

		1997												1998											
ID	TASK NAME	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																								

		1999												2000											
ID	TASK NAME	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
11.	Super-Structure Construction Period																								
12.	TOP																								

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	21/4/97	5/5/97	-	-	-	-	-	-	16/5/97
Power Supply Substation	PowerGrid Pte Ltd	9/6/97	17/6/97	24/6/97	8/7/97	-	-	-	-	16/7/97
Main Single Line Diagram	Power Supply Pte Ltd	31/10/97	16/3/98	-	-	-	-	-	-	23/3/98
Metering Layout	PowerGrid Pte Ltd	20/4/98	20/4/98	-	-	-	-	-	-	28/4/98
Sanitary Installation	ENV (Sewerage)	9/6/97	18/6/97	21/7/97	29/8/97	-	-	-	-	5/12/97
Domestic Water Supply	PUB (Water)	30/9/97	13/10/97	29/4/97	5/1/98	-	-	-	-	23/2/98
Gas Supply Installation	PowerGas Pte Ltd	30/9/97	3/10/97	21/10/97	18/11/97	-	-	-	-	20/2/98
Air Conditioning & Ventilation Inst.	Building Control Division	N.A.								
	Fire Safety Bureau	15/9/97	2/12/97	9/12/97	31/12/97	-	-	-	-	20/2/98
Fire Fighting & Alarm Installation	Fire Safety Bureau	15/9/97	20/11/97	9/12/97	31/12/97	-	-	-	-	18/12/97
Telephone Installation	Telecom (Broadband)	1/6/97	18/6/97	18/8/97	8/9/97	-	-	-	-	31/10/97

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)	-	13/11/98	-	-	-	-	-	-	14/11/98
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									
Telephone Installation	Telecom (Broadband)									

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

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

Project Files to be initiated by PM as and when required

File Ref:		File Ref:		File Ref:	
-SM	✓	-SR		-VO	✓
-SC	✓	-QM		-MT	
-AI/AD	✓	-EC	✓	-DF	
-SQ/RFI	✓	-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											

*** EI – Employer's Instruction**

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	Karen Wong
Incoming Architectural Sketches/Details	Karen Wong
Incoming Structural Drawings	Karen Wong
M&E Drawings	
- Electrical Installation	Lee Kok Sweet
- Lift & Escalator Installation	Lee Kok Sweet
- Air Conditioning & Ventilation Installation	Chim Heng Leong
- Fire Fighting & Alarm Installation	Chim Heng Leong
- Plumbing & Sanitary Installation	Chim Heng Leong
- Swimming Pool & Filtration Installation	
Other Drawings	
- Interior Design Drawings	Chim Heng Leong
- Landscape Drawings	Karen Wong

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 Applicable

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	I	I	I	I	
b.	Project Administration	I	I	I	I	I	
c.	Project Cost Estimate/Contract Cost	A	I	I	-	C	
2.	**Drawings**						
a.	Outline Design Drgs.	C	I	C	C	-	
b.	Sketch Design Drgs.	I	I	C	C	-	
c.	Final Design Drgs.	A	I	I	I	I	
d.	Shop Drawings	-	-	A/C	C	-	
e.	As Built Drgs.	I	-	-	-	-	
3.	**Other Document**						
a.	Specification	I	I	I	-	-	
b.	Tender Document	I	I	I	-	I	
c.	Tender Evaluation Report	A	I	I	-	I	
d.	Design Report	A/C	I	C	-	-	
e.	Progress Report	-	-	-	-	-	
f.	Financial Report	-	-	-	-	-	
g.	Minutes of Meeting	I	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 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
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			
Sprinkler System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~LPC~~
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~~	
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

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
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 – Not Applicable
C1	Construction Process Control – Not Applicable except Section C1 Clause 3, 8 & 9
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
M&E Cost Estimate Report	A
Pre-Qualification of Tenderers	-
Tender Documents	I
Tender Report	A
Payment Valuation for QS	-
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)*

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers – Not Applicable

Sub Job No	Description	Allocation Details