PROJECT QUALITY PLAN

PROPOSED CONDOMINIUM HOUSING DEVELOPMENT INVOLVING ERECTION OF ONE BLOCK OF 10 STOREY FLATS (TOTAL 120 UNITS) WITH A BASEMENT CARPARK COMMUNAL FACILITIES AND SWIMMING POOL ON LOT 240-1 MK 10 AT 80/82 HILLVIEW AVENUE (CHANTILLY RISE)

For

M/S CITY DEVELOPMENTS LTD

Copy No.	

Prepared By: Lee Kok Sweet

Authorised By: Richard Teo

Date: 6 January 1999

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	Not Used
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	Not 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	Not Used

SECTION 1

QUALITY PLAN CONTROL AND DISTRIBUTION

1.1 List of Copy Holders

Copy No.	Copy Holder	Date of Issue
1	1041-PQP File	5 June 1997
2	Lee K S	5 June 1997

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
1/0	5 June 1997	1 to 9	23	1st Issue
1/1	1 June 1998	1.0, 2.1, 2.2, 2.3, 3.2, 3.6, 4.1, 4.5, 5.2, 6.1, 6.3, 7.0, 10.0	12	-
2	6 January 1999	1 to 10	39	-

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Residential

Statistics of Development	
Site Area, m²	8,557
Nett Floor Area, m²	14,634
Gross Floor Area, m²	16,425
Covered Carpark, m²	4,655
No. of Covered Carpark Lots	132
No. of Apartments/Houses	120
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	3 Blocks of 10-Storey
No. of Phases	-

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	-	-	-	-	-	-				
Awarded	1.55	1.37	0.853	0.198	1.93	0.109				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	TPCC = 34.3		

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

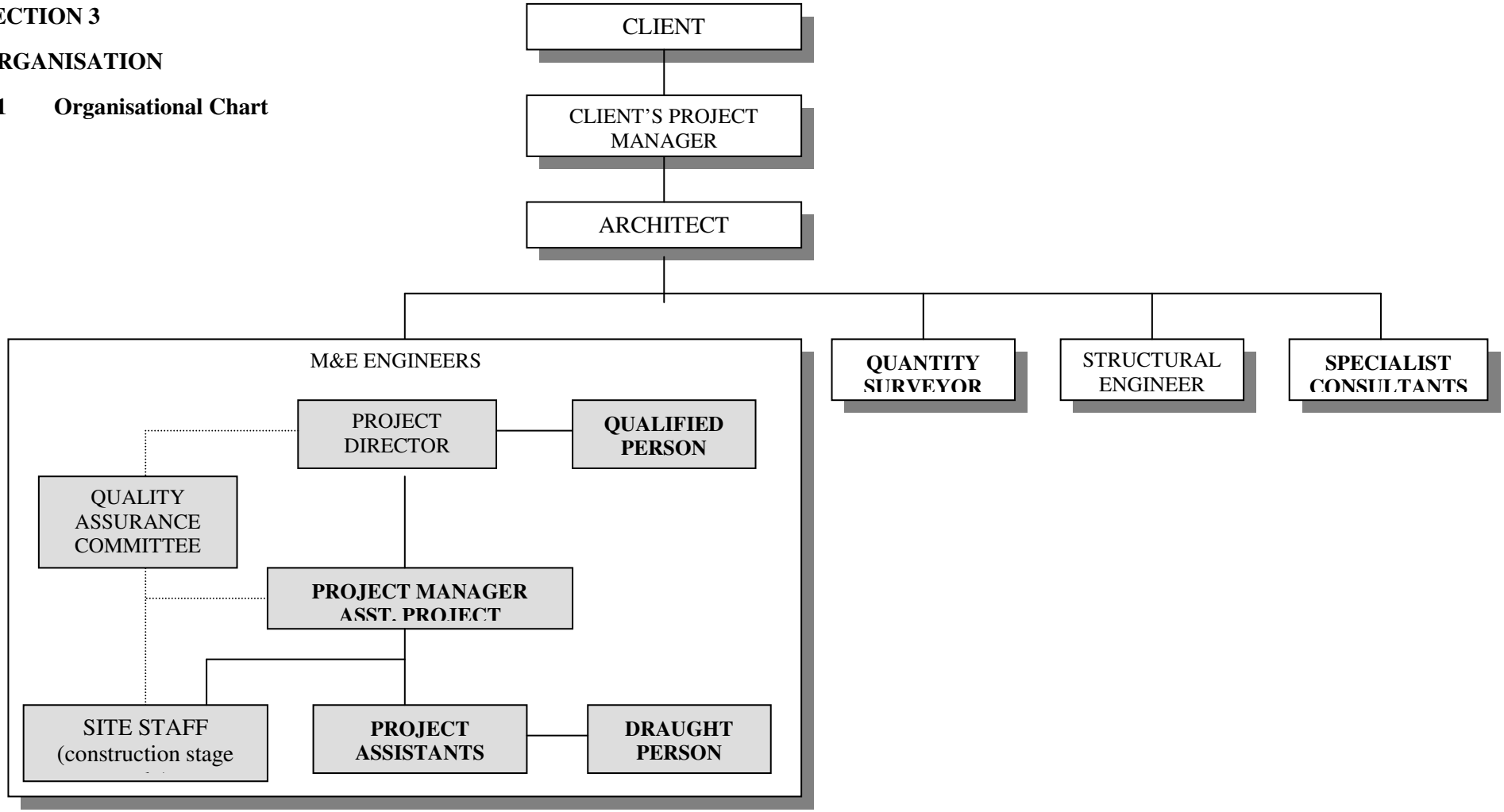
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*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
Qualified Person	Mechanical	Andrew Loh
	Electrical	Richard Teo
Project Manager		Lee K S
Assistant Project Manager		Chim H L
Project Assistant (Mech)		-
Project Assistant (Elect)		-
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client:- City Developments Limited

Address:- 36 Robinson Road
#20-01 City House
Singapore 068877

Tel:- 221 2266

Fax:- 223 2746

Client's Representatives:-

Name of Firm	Contact Person	Contact
City Developments Limited	Name: Mr Allan Goh Position: Project Manager	Tel: 221 2266 Fax: 223 2746 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 Akitek Regional	Name: Mr Tan Lye Woo Position: Architect	Tel: 278 3933 Fax: 273 7360 Pager: - Handphone: - Email: -
Quantity Surveyor Davis Langdon & Seah	Name: Mr K Raman/Mr Teo B T Position: Quantity Surveyor	Tel: 222 3888 Fax: 224 7089 Pager: - Handphone: - Email: -
Structural Engineer Richard K C Lim & Partners	Name: Mr Richard Lim/Mr Dennis Low Position: Structural Engineer	Tel: 292 9771 Fax: 293 2349 Pager: - Handphone: - Email: -
Interior Designer J C Will & Associates Pte Ltd	Name: Ms June Chua Position: Principle	Tel: 227 7198 Fax: 227 7192 Pager: - Handphone: - Email: -
Lighting Consultant -	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
Acoustic Consultant -	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
Design Architect Smallwood, Reynolds, Stewart & Associates Pte Ltd	Name: Mr Gary Greene Position: Architect	Tel: 835 4355 Fax: 835 4322 Pager: - Handphone: - Email: -
Landscape Consultant Ecoplan Landscape Architects & Planners	Name: Ms Renee Cheng Position: Principle	Tel: 252 2188 Fax: 252 2988 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 Sysma Construction Pte Ltd		Name: Mr Koh Gim San Position: Project Manager	Tel: 256 2288 Fax: 252 4156 Pager: - Handphone: - Email: -
Air Conditioning & Ventilation Installation Sub-Contractor Shin Nippon Air Technologies Co Ltd		Name: Mr Jack Lui Position: Project Manager	Tel: 227 2230 Fax: 227 3122 Pager: - Handphone: - Email: -
Plumbing & Sanitary Installation Sub-Contractor Sysma Construction Pte Ltd		Name: Mr Koh Gim San Position: Project Manager	Tel: 256 2288 Fax: 252 4156 Pager: - Handphone: - Email: -
Electrical Installation Sub-Contractor Wah Yuen Electrical Engineering Pte Ltd		Name: Mr Stanley Lee/ Mr K P Wong Position: Managing Director/ Project Manager	Tel: 783 2106 Fax: 783 2024 Pager: - Handphone: - Email: -
Lift & Escalator Installation Sub-Contractor Chevalier Singapore Holdings Ltd		Name: Mr Tan Swee Choon Position: Project Manager	Tel: 273 2266 Fax: 747 2988 Pager: - Handphone: - Email: -
Fire Fighting & Alarm Installation Sub-Contractor Mark Grow Engineering Pte Ltd		Name: Mr Paul Zhang Position: Project Manager	Tel: 265 8911 Fax: 265 0004 Pager: - Handphone: - Email: -
Swimming Pool Filtration Plant Installation Sub-Contractor Aquatech Products & Service Pte Ltd		Name: Mr Lai Heng Tong Position: Project Manager	Tel: 862 0378 Fax: 862 0017 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 Lee Chi Ming	Tel: 831 8281/Fax: 831 8239
(b) Sub-Station	Mr Chin Yoke Fah	Tel: 831 8556/Fax: 831 8564
(c) Installation	Mr Wang Hee Weng	Tel: 277 7043
(d) Meter Section	Mr Kok Ah Man	Tel: 277 7002/Fax: 277 7008
(e) Road Lighting	-	
(f) Diversion	-	
Telecom:		
(a) Planning/Line Plant	Mr Lui Kwong Hing	Tel: 838 2853/Fax: 733 9895
(b) Installation	Mr Lee Khee Man	Tel: 283 9748
(c) Diversion	-	
BCD:		
(a) Building Plan	-	
FSB:		
(a) Building Plan	-	
(b) M&E Section	Mr Yong Yit Lee	Tel: 838 6421/838 6427
PUB (Water)	Mr Kuang Kim Yaw/Mr Lau Kam Kok	Tel: 731 3544/731 3552
(a) Water Conservation	Mr David Loh/Mr Basheer	Tel: 731 3518/731 3558
(b) Plumbing Plan	-	
(c) Diversion	-	
PowerGas:		
(a) Planning/Submission	Mr Tan Kah Hock/Mr Ivan Lim	Tel: 831 8687/Fax: 831 8699
(b) Installation/Inspection	Mr Lim Teck Seng	Tel: 831 8693/Fax: 831 8699
(c) Diversion	-	
ENV (Sewerage):		
(a) Building Plan	-	
(b) M&E Section	Mr Lui Kean Hoong	Tel: 731 9629/731 9725
(c) Diversion	-	
ENV (Pollution Control)		
(a) Planning/Submission	-	
(b) Inspection	-	

SECTION 4

PROGRAMME

4.1 Overall Programme (see attached master programme prepared by the Main Contractor – 13 pages)

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	-	5/12/95							18/12/95
Power Supply Substation	PowerGrid Pte Ltd	-	8/12/95							29/3/96
Main Single Line Diagram	Power Supply Pte Ltd	-	20/6/96							20/11/96
Consumer Switchroom Layout	PowerGrid Pte Ltd	-	-							-
Metering Layout	PowerGrid Pte Ltd	-	7/8/97							6/10/97
Sanitary Installation	ENV (Sewerage)	-	16/12/95							26/4/96
Domestic Water Supply	PUB (Water)	-	3/5/96							26/9/96
Gas Supply Installation	PowerGas Pte Ltd	-	22/4/96							13/5/96
Air Conditioning & Ventilation Inst.	Fire Safety Bureau	-	20/5/96							20/7/96
Fire Fighting & Alarm Installation	Fire Safety Bureau	-	20/5/96							20/7/96
Telephone Installation	Telecom (Broadband)	-	8/3/96							9/5/96
	Telecom (TDCS)									
	Telecom (Domestic Operation)									
Fuel Storage	Fire Safety Bureau									
	Pollution Control Department									

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)	5/2/98								13/3/98
Domestic Water Supply	PUB (Water)	22/6/98								15/7/98
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)									
	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	✓		

Project Files to be initiated by PM as and when required

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

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	Chim H L
Incoming Architectural Sketches/Details	Service File
Incoming Structural Drawings	Chim H L
M&E Drawings	
- Electrical Installation	Lee K S
- Lift & Escalator Installation	Lee K S
- Air Conditioning & Ventilation Installation	Chim H L
- Fire Fighting & Alarm Installation	Chim H L
- Plumbing & Sanitary Installation	Chim H L
Other Drawings	
- Swimming Pool & Filtration Installation	Chim H L

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 – Tender called before 1 July 1997).

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	-	A/C	C/I	I	
b.	Project Administration	A/C/I	-	A/C/I	C/I	C/I	
c.	Project Cost Estimate/Contract Cost	A/C	-	I	I	C/I	
2.	**Drawings**						
a.	Outline Design Drgs.	C/I	-	C/I	C/I	-	
b.	Sketch Design Drgs.	C/I	-	C/I	C/I	-	
c.	Final Design Drgs.	A	-	A	I	I	
d.	Shop Drawings	-	-	A/C	C	-	
e.	As Built Drgs.	I	-	-	-	-	
3.	**Other Document**						
a.	Specification	I	-	I	-	-	
b.	Tender Document	I	-	I	-	-	
c.	Tender Evaluation Report	A/C	-	C	-	-	
d.	Design Report	A/C	-	C	-	-	
e.	Progress Report	-	-	-	-	-	
f.	Financial Report	-	-	-	-	C/I	
g.	Minutes of Meeting	I	-	I	I	I	
h.	Inspection Report	I	-	I	-	-	
i.	Testing & Comm. Report	I	-	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
Owner's brief dated 1 March 1995	File 1041-PC

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			
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	~~BS~~	SS	~~NFPA~~	~~AS~~	

(Delete where necessary)

SECTION 8

DESIGN INPUT & METHODOLOGY

8.3 List of Design Guide or Handbook Used - NOT USED

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
B1	Preparation of Consultancy Offer
B2	Project Commission and Service Agreement
B5	Drawing Control
C1	Construction Process Control
C2	Testing and Commissioning

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	A
Tender Documents	Re
Tender Report	A/C
Payment Valuation for QS	For action
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 USED