PROJECT QUALITY PLAN

PROPOSED 4 BLOCKS OF 7/8-STOREY FLATTED LIGHT INDUSTRIAL BUILDING EACH WITH A BASEMENT ON LOT 4427PT MUKIM 23
AT UBI AVENUE 1/PAYA LEBAR WAY
(PAYA UBI INDUSTRIAL PARK)

For

M/S PAYA UBI INDUSTRIAL PARK PTE LTD

Copy No.	

Prepared By: Goh Soon Huat

Authorised By: Tan L S

Date: 28 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	1136-PQP File	6 June 1998
2	Goh Soon Huat	6 June 1998

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
1/0	6 June 1998	Section 1 to Section 9	26	1st Issue
1/1	29 September 1998	Section 1, 2, 3.2, 3.5, 3.6, 4.3 & 4.5	7	1st Revision
2	28 December 1998	Section 1 to Section 10	26	2nd Issue

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Industrial

Statistics of Development	
Site Area, m²	54,126
Nett Floor Area, m²	-
Gross Floor Area, m²	135.315
Covered Carpark, m²	30,000
No. of Covered Carpark Lots	
No. of Apartments/Houses	-
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	4 Blocks of 7/8 Storeys with 1 Basement
No. of Phases	1
No. of Terrace Factory	264

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	MVI	LI	FFAI	PSI					
Estimate	14	7.5	14	4.5	5					
Awarded	8.7	6.3	11	3.75	3.6					

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	150
Awarded	-	11	120.5

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

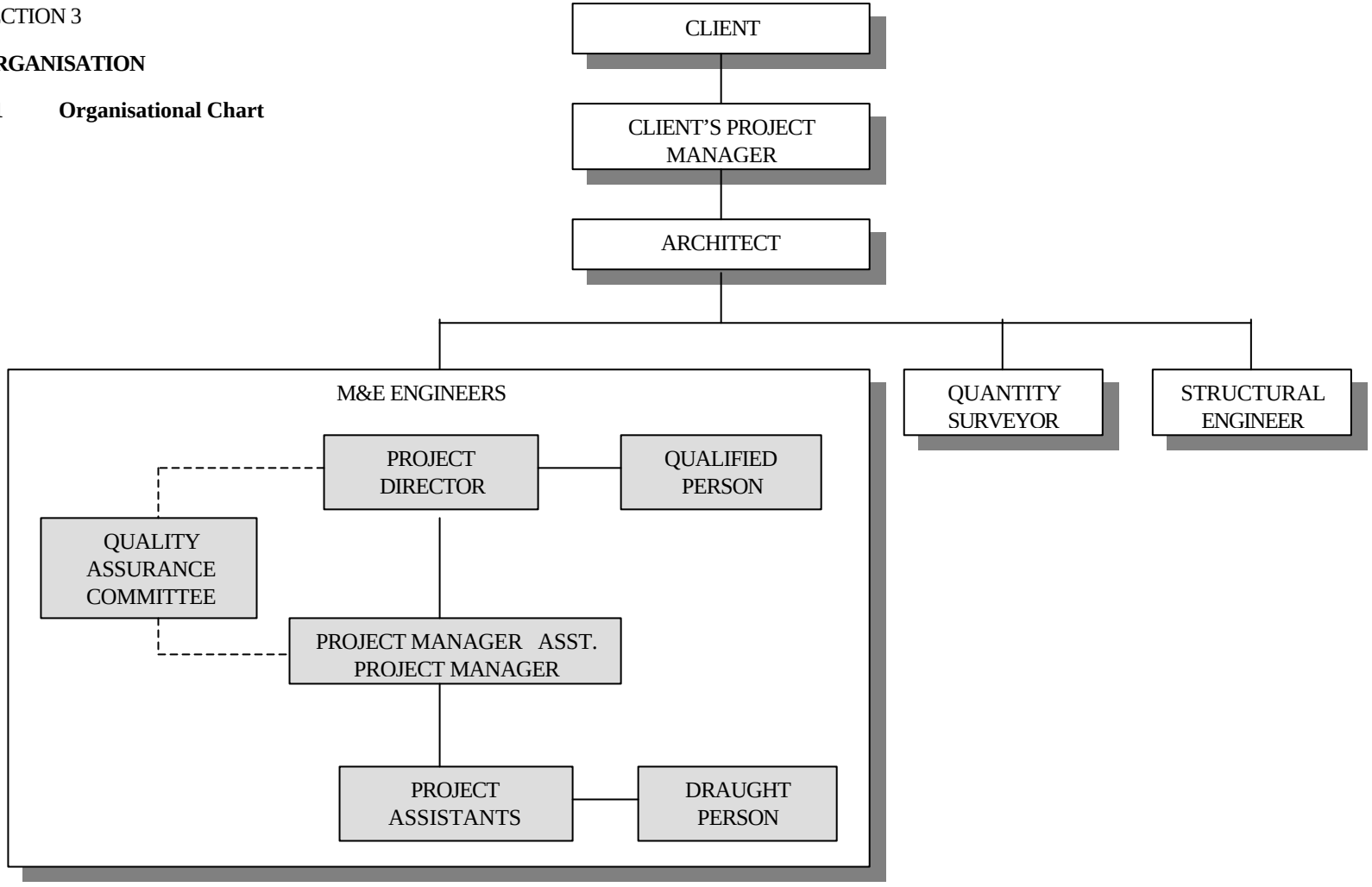
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT	✓	PRESSURE VESSEL		HOISTS		FOA M	

(✓ *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	Andrew Loh
	Electrical	Tan Lai Siong
Project Manager		Goh Soon Huat
Assistant Project Manager		Choong Choon Guan
Project Assistant (Mech)		Vincent Wong
Project Assistant (Elect)		Wong Tack Chow
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client:- Paya Ubi Industrial Park Pte Ltd

Address:- 8 Lornie Road
Singapore 298623

Tel:- 466 8800

Fax:- 466 5063

Client's Representatives:-

Name of Firm	Contact Person	Contact
Paya Ubi Industrial Park Pte Ltd	Name: Mr Chng Ghim Huat Position: Chairman	Tel: 466 8800 Fax: 466 5063 Pager: - Handphone: - Email: -
Paya Ubi Industrial Park Pte Ltd	Name: Mr Benjamin Chng Beng Hua Position: Managing Director	Tel: 466 8800 Fax: 466 5063 Pager: 9704 2282 Handphone: 9634 7342 Email: -
Paya Ubi Industrial Park Pte Ltd	Name: Mr Chwee Meng Chong Position: Director	Tel: 392 5311/392 5322 Fax: 392 5233 Pager: - Handphone: - Email: -
Paya Ubi Industrial Park Pte Ltd	Name: Mr Goh Han Boon Position: M&E Clerk-of-Work	Tel: - Fax: 748 6026 Pager: - Handphone: - Email: -
-	Name: Position:	Tel: Fax: Pager: Handphone: Email:

3.4 Other Consultants (Local)

Function / Name of Firm	Contact Person	Contact
Architect DP Architects Pte Ltd	Name: Mr Song Yew Kee Position: Senior Associate	Tel: 338 3988 Fax: 337 9989 Pager: Handphone: Email: dpa@dparchitects.com
Quantity Surveyor KPK Quantity Surveyors	Name: Mr Loh Kwi Leong Position: Director	Tel: 536 3303 Fax: 536 2633 Pager: - Handphone: 9819 3445 Email: kpkqs@singnet.com.sg
Structural Engineer Loh Consultants Pte Ltd	Name: Mr Chin C W Position: Engineer	Tel: 735 6028 Fax: 735 6005 Pager: 9308 7660 Handphone: - Email: lohcpl@mbox3.singnet.com.sg
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:
Marketing Agent PIP Marketing Pte Ltd	Name: Mr Alex Chng/ Mr Michael Chan Position: -	Tel: 746 0377 Fax: 746 4177 Pager: 9705 0534 Handphone: 9621 7737 Email: -
_____ -	Name: Position:	Tel: Fax: 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 Tekken Corporation	Lump Sum Contract	Name: Mr Takemi Onozuka Position: Project Manager Name: Mr Shoko Ishiyama Position: Senior M&E Manager Name: Mr Lim T Y Position: M&E Engineer	Tel: 748 6558 Fax: 748 6496 Pager: 9493 8013 Handphone: 9638 2095 Pager: 9412 6544
Mechanical Ventilation Installation Sub-Contractor Shinryo Corporation	NSC	Name: Mr Masaki Oikawa Position: Project Manager Name:Mr Chew Swee Heng Position: Senior Engineer	Tel:226 1101 Fax: 226 3100 Pager: 9413 0296 Handphone: 9751 6942 Pager: 9209 6603
Plumbing & Sanitary Installation Sub-Contractor Fidens Engineering Pte Ltd	DSC	Name: Mr T Shanmugam Position: Registered Plumber Name: Mr Tan Teo Hoo Position: Project Manager	Tel: 741 2906 Fax: 741 2419 Pager: 9314 3619 Handphone: 9617 3822 Email: -
Electrical Installation Sub-Contractor Ngee Cheong Contractors Pte Ltd	NSC	Name: Mr Alan Teo Position: Project Manager	Tel: 293 6830 Fax: 293 9095 Pager: 9268 0794 Handphone: - Email: -
Lift & Escalator Installation Sub-Contractor Schindler Lifts (S) Pte Ltd	NSC	Name:Mr Kelvin Tan Position: Project Manager	Tel: 381 9530 Fax: 283 2212 Pager: 9432 7434 Handphone: - Email: -
Fire Fighting & Alarm Installation Sub-Contractor Chubb Singapore Pte Ltd	NSC	Name: Mr Ho Wai Lam Position: Project Manager Name: Mr Tennon Ong Position: Site Engineer	Tel: 292 8421 Fax: 298 7310 Pager: 9413 9719 Pager: 9413 9719 Email: -
Swimming Pool Filtration Plant Installation Sub-Contractor -		Name: Position:	Tel: Fax: Pager: Handphone: Email:
Carpark System Installation Sub-Contractor -		Name: Position:	Tel: Fax: 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 Tan Chong Poh	831 8551
(b) Sub-Station	Mr Francis Chang	831 8555
(c) Installation	Mr Noorhisam B Saimin	277 7040
(d) Meter Section	Mr Tan Hoe Kiang	733 1668
(e) Road Lighting	-	-
(f) Diversion	-	-
Telecom:		
(a) Planning/Line Plant	Mr Lee Him Buan	838 2847
(b) Installation	-	-
(c) Diversion	-	-
BCD:		
(a) Building Plan	Ms Louisa May Khoo	329 3385
FSB:		
(a) Building Plan	Mr Lim Hock Beng	838 6416
(b) M&E Section	Mr Lee Kim Hock	838 6419
PUB (Water)		
(a) Water Conservation	Mr David Loh	731 3518
(b) Plumbing Plan	Mr Ng Kor Peng	731 3598
(c) Diversion	-	-
PowerGas:		
(a) Planning/Submission	-	-
(b) Installation/Inspection	-	-
(c) Diversion	-	-
ENV (Sewerage):		
(a) Building Plan	Mrs Alison Liew	731 9628
(b) M&E Section	Mr Chow Yew Meng	337 7661/337 7662
(c) Diversion	-	-
ENV (Pollution Control)		
(a) Planning/Submission	-	-
(b) Inspection	-	-

SECTION 4

PROGRAMME

4.1 Overall Programme

		1997												1998												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	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
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																																										

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	May 97	11/4/97							2/5/97
Power Supply Substation	PowerGrid Pte Ltd	June 97	27/5/97	4/6/97	31/8/97					4/9/97
Main Single Line Diagram	Power Supply Pte Ltd	June 98	11/8/978							29/8/98
Consumer Switchroom Layout	PowerGrid Pte Ltd	-	-							
Metering Layout	PowerGrid Pte Ltd	Dec 98	31/8/98							9/9/98
Sanitary Installation	ENV (Sewerage)	Aug 97	23/6/97	29/7/97	16/1/98					11/2/98
Domestic Water Supply	PUB (Water)	June 98	22/7/98	1/9/98	10/9/98					10/12/98
Gas Supply Installation	PowerGas Pte Ltd	-	-							-
Mechanical Ventilation Inst.	Fire Safety Bureau	June 98	2/9/98	25/9/98	5/10/98					29/10/98
Smoke Control System	Fire Safety Bureau	June 98	22/7/98	6/8/98	3/9/98					29/10/98
Fire Fighting & Alarm Installation	Fire Safety Bureau	July 98	8/12/98							17/12/98
Telephone Installation	Telecom (Broadband)	Sept 97	10/10/97							22/10/97
	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	← Not Applicable To-Date →								
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									
Fire Fighting & Alarm Installation	Fire Safety Bureau									
	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	✓		

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	Goh Soon Huat
Incoming Architectural Sketches/Details	Goh Soon Huat
Incoming Structural Drawings	Goh Soon Huat
M&E Drawings	
- Electrical Installation	Goh Soon Huat
- Lift & Escalator Installation	Goh Soon Huat
- Air Conditioning & Ventilation Installation	Vincent Wong
- Fire Fighting & Alarm Installation	Vincent Wong
- Plumbing & Sanitary Installation	Vincent Wong
- Swimming Pool & Filtration Installation	
Other Drawings	Goh Soon Huat

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

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		
Mechanical Ventilation Installation	~~BS~~	~~AS~~	~~NFPA~~	SS	~~MS~~
Lift 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~~	SS	

(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
A6	Archive 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
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	Not Required
M&E Cost Estimate Report	For Comment
Pre-Qualification of Tenderers	Not Required
Tender Documents	For Information
Tender Report	For Approval
Payment Valuation for QS	For Record
Certificates of Supervision for TOP/CSC	For Record

** 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