PROJECT QUALITY PLAN

PROPOSED ERECTION OF A 4/5 STOREY FLATTED LIGHT INDUSTRIAL BUILDING ON LOTS 4362PT SL MK 28, 4813PT SL & 4816PT MK 23 AT KAKI BUKIT AVENUE 1 & 3 (TECHVIEW)

For

M/S FIRST TECH PARK LAND PTE LTD

Copy No.	

Prepared By: Chong Lai Meng

Authorised By: Richard Teo

Date: 30 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	1129-PQP File	24 November 1998
2	Chong Lai Meng	24 November 1998

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
1/0	24 November 1998	Section 1 – 10	28	1st Issue
2	30 December 1998	Section 1 – 10	29	-

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Light Industrial Building

Statistics of Development	
Site Area, m²	25,493
Nett Floor Area, m² *	41,900
Gross Floor Area, m²	50,986
Covered Carpark, m²	12,100
No. of Covered Carpark Lots	471
No. of Apartments/Houses	-
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	4/5 Storeys
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	5.9289	7.9299	3.0196	1.798	1.9382	-				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	-	-	63.5

Site Clearance shall include earth work, soil improvement, service diversion and termination.

2.3 Scope of Works

2.3.1 Scope of Consultancy Services [see attached Appendix A (3 pages)]

Conceptual/Schematic Design	✓
Detailed Design	
Tender Documentation	
Tender Evaluation	
Contract Supervision *	✓
M&E Costing	
Submissions to Authority	✓

* Endorsement of shop drawings and periodic site visits. Witness final testing and commissioning.

(✓ *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

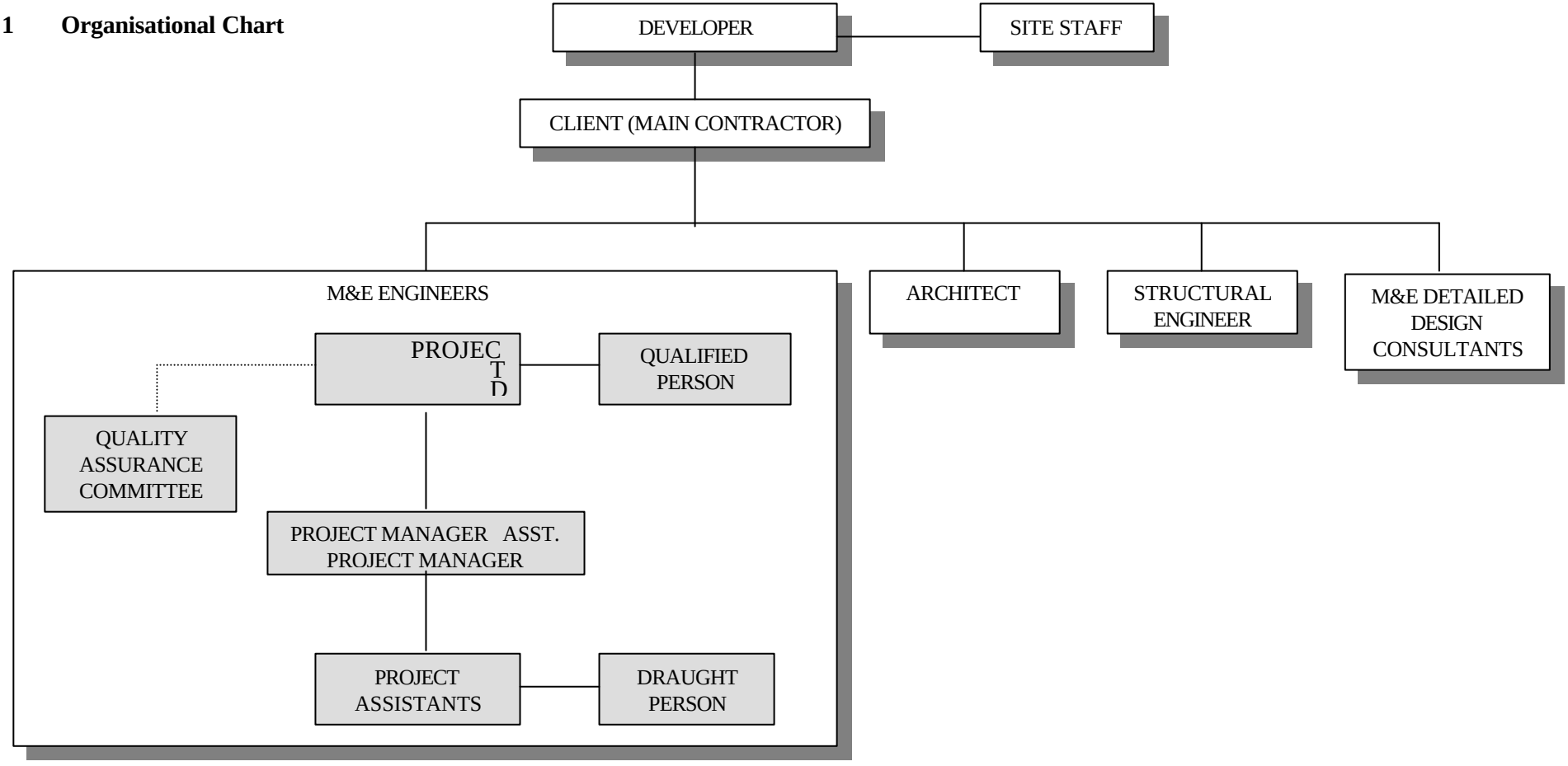
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓ *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
Qualified Person	Mechanical	Andrew Loh
	Electrical	Richard Teo
Project Manager		Chong Lai Meng
Assistant Project Manager		Goh Soon Huat
Project Assistant (Mech)		Aw Geok Hwee
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 Developer's/Client's Representatives

Developer:-	First Tech Park Land Pte Ltd	Client:-	Nakano (Singapore) Pte Ltd
Address:-	77 Science Park Drive #04-01/06 CINTECH III Singapore Science Park Singapore 118256		1 Coleman Street #06-02 The Adelphi Singapore 179803
Tel:-	774 1033		333 4933
Fax:-	777 8962		338 8568

Developer's/Client's Representatives:-

Name of Firm	Contact Person	Contact
First Tech Park Land Pte Ltd	Name: Mr Thomas Teo Position: General Manager	Tel: 774 1033 Fax: 777 8962 Pager: - Handphone: - Email: -
First Tech Park Land Pte Ltd	Name: Mr Adrian Ho Position: Project Manager	Tel: 774 9094 Fax: 777 8962 Pager: - Handphone: - Email: -
First Tech Park Land Pte Ltd	Name: Mr Pang Tee Fann Position: M&E COW	Tel: 744 3182 Fax: 744 3819 Pager: - Handphone: - Email: -
Nakano (Singapore) Pte Ltd	Name: Mr H Ikeue/Mr Vincent Chin Position: Project Manager/M&E Engineer	Tel: 744 6968 Fax: 744 0230 Pager: - Handphone: - Email: -

3.4 Other Consultants (Local)

Function / Name of Firm	Contact Person	Contact
Architect Architects Team Pte	Name: Ms Heng N H Position: Associate	Tel: 467 2233 Fax: 466 7810 Pager: - Handphone: - Email: Archt3@signet.com.sg
Quantity Surveyor -	Name: - Position: -	Tel: - Fax: - Pager: - Handphone: - Email: -
Structural Engineer KTP Consultants Pte Ltd	Name: Mr Song W N / Mr Lim Sing Ann Position: Director/Engineer	Tel: 273 5622 Fax: 273 8454 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: -
Detailed Design Consultant HPS Engineering (S) Pte Ltd	Name: Mr Jeffrey Koh Position: Director	Tel: 841 4833 Fax: 841 0838 Pager: - Handphone: - Email: Jeffrey@vitnet.com.sg

3.4 Other Consultants (Overseas)

NOT USED

3.5 Contractors/Sub-Contractors

Function / Name of Firm	Contract *	Contact Person	Contact
Main Contractor Nakano (Singapore) Pte Ltd	D&B	Name: Mr H Ikeue / Mr Vincent Chin Position: Project Manager/ M&E Engineer	Tel: 744 6968 Fax: 744 0230 Pager: - Handphone: - Email: limmengteck@post1.com
Air Conditioning & Ventilation Installation Sub-Contractor Design Aire Engineering (S) Pte Ltd	DSC	Name: Mr William Liew Position: Project Manager	Tel: 746 9611 Fax: 747 4922 Pager: - Handphone: - Email: -
Plumbing & Sanitary Installation Sub-Contractor WTC Engineering Pte Ltd	DSC	Name: Mr Wang Teck Cheng Position: Managing Director	Tel: 745 9733 Fax: 745 6806 Pager: - Handphone: - Email: wtc97@mbox.singnet.com.sg
Electrical Installation Sub-Contractor Bond Electrical Pte Ltd	DSC	Name: Mr Alvin Sim Position: Project Manager	Tel: 282 5445 Fax: 285 4065 Pager: - Handphone: - Email: -
Lift & Escalator Installation Sub-Contractor Ryoden (S) Pte Ltd	DSC	Name: Mr Mohamad Ariff Position: Project Manager	Tel: 842 5678 Fax: 748 2292 Pager: - Handphone: - Email: -
Fire Fighting & Alarm Installation Sub-Contractor Design Aire Engineering (S) Pte Ltd	DSC	Name: Mr William Liew Position: Project Manager	Tel: 746 9611 Fax: 747 4922 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	831 8281 / 831 8239
(b) Sub-Station	Mr Francis Chang	831 8555 / 831 85 64
(c) Installation	Mr Kevin Koh	277 7032/277 7044
(d) Meter Section	Mr Kok A M	277 7002/277 7008
(e) Road Lighting	-	-
(f) Diversion	-	-
Telecom:		
(a) Planning/Line Plant	Mr Lee Him Buan	838 2847
(b) Installation	-	-
(c) Diversion	-	-
BCD:		
(a) Building Plan	-	-
FSB:		
(a) Building Plan	-	-
(b) M&E Section	Mr Lee Kim Hock	838 6419
PUB (Water)		
(a) Water Conservation	M/s David Loh/Chang Meng Haur	731 3977
(b) Plumbing Plan	M/s Kuang Kim Yaw/Ng Guan Chai	731 3598
(c) Diversion	-	-
PowerGas:		
(a) Planning/Submission	Mr Tan Kah Hock	831 8680
(b) Installation/Inspection	Mr Thomas Lee	831 8695
(c) Diversion	-	-
ENV (Sewerage):		
(a) Building Plan	-	-
(b) M&E Section	Mr Yong Wei Hin	731 9622
(c) Diversion	-	-
ENV (Pollution Control)		
(a) Planning/Submission	-	-
(b) Inspection	-	-

SECTION 4

PROGRAMME

4.1 Overall Programme – (TOP obtained on 10 November 1998)

			1997												1998											
ID	TASK NAME	MONTHS	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 (By HPS)																									
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	-	2.7.97							14.7.97
Power Supply Substation	PowerGrid Pte Ltd	-	4.9.97	12.9.97	25.9.97					10.10.97
Main Single Line Diagram	Power Supply Pte Ltd	-	19.1.98	22.1.98	23.3.98					1.4.98
Consumer Switchroom Layout	PowerGrid Pte Ltd									
Metering Layout	PowerGrid Pte Ltd									
Sanitary Installation	ENV (Sewerage)	-	8.9.97	4.10.97	23.10.97					7.11.97
Domestic Water Supply	PUB (Water)	-	24.10.97	12.12.97	16.1.98					6.3.98
Gas Supply Installation	PowerGas Pte Ltd	-	15.10.97							20.10.97
Air Conditioning & Ventilation Inst.	Fire Safety Bureau	-	14.1.98							26.1.98
Fire Fighting & Alarm Installation	Fire Safety Bureau	-	14.1.98	4.2.98	6.2.98					17.2.98
Telephone Installation	Telecom (Broadband)	-	15.10.97							29.10.97
	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									
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)	-	28.7.98							31.7.98
Domestic Water Supply	PUB (Water)									
Gas Supply Installation	PowerGas Pte Ltd									
Air Conditioning & Ventilation Inst.	Building Control Division									
	Fire Safety Bureau	-	2.9.98							14.9.98
Fire Fighting & Alarm Installation	Fire Safety Bureau	-	2.9.98							9.9.98
	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/MT	✓
-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	Chong Lai Meng
Incoming Architectural Sketches/Details	Chong Lai Meng
Incoming Structural Drawings	Chong Lai Meng
M&E Drawings	
- Electrical Installation	Goh Soon Huat
- Lift & Escalator Installation	Goh Soon Huat
- Air Conditioning & Ventilation Installation	Chong Lai Meng
- Fire Fighting & Alarm Installation	Chong Lai Meng
- Plumbing & Sanitary Installation	Chong Lai Meng
- Swimming Pool & Filtration Installation	
Other Drawings	Chong Lai Meng

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	Developer Rep.	Developer's Project Manager	Architect	Structural Engineer	Quantity Surveyor
1.	**Letters/Fax:**					
a.	Project Design	-	-	-	-	-
b.	Project Administration	-	-	-	-	-
c.	Project Cost Estimate/Contract Cost	-	-	-	-	-
2.	**Drawings**					
a.	Outline Design Drgs.	-	-	-	-	-
b.	Sketch Design Drgs.	-	-	-	-	-
c.	Final Design Drgs.	-	-	-	-	-
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	-	-	-	-	-
e.	Progress Report	-	-	-	-	-
f.	Financial Report	-	-	-	-	-
g.	Minutes of Meeting	-	-	-	-	-
h.	Inspection Report	-	I	-	-	-
i.	Testing & Comm. Report	-	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 (Conceptual)	✓		✓	
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
Developer's Tender Document (M&E Volume)	CLM

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~~
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
A6	Archive Control (except Terms of Retention items 1.1, 2 & 3)
A9	Feedback Reporting
B1	Preparation of Consultancy Offer
B2	Project Commission and Service Agreement
B3	Design Control (only issues related to statutory requirements)
B5	Drawing Control (only item 1)
C1	Construction Process Control (only items 3, 8 & 9)
C2	Testing and Commissioning (only issues related to statutory requirements)
D1	Quality System Audit

8.5 List of Software Used For Design/Analysis

NOT USED

SECTION 9

CLIENT'S REQUIREMENTS

9.1 List of Output Required by Client:-

Item	* Remarks
M&E Design Report	For tender bid purpose
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)*

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers

NOT USED