PROJECT QUALITY PLAN

PROPOSED CONDOMINIUM HOUSING DEVELOPMENT ON LOT 7149 PT & 6365PT MK 22 AT YIO CHU KANG ROAD/HOUGANG AVE 9/HOUGANG ST 92 APARTMENT HOUSING DEVELOPMENT - REGENTVILLE

For

M/S SERENITY PROPERTIES PTE LTD

Copy No.	

Prepared By: Loh Fook Yuen

Authorised By: Richard Teo

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	1078-PQP File	6 June 1997
2	Loh F Y	6 June 1997

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
1/0	6 June 1997	All	26	1st Issue
2/0	16 October 1998	All	26	2nd Issue
3	28 December 1998	Section 1 – 10	26	3rd Issue

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Apartment Development (Condominium)

Statistics of Development	
Site Area, m²	24053
Nett Floor Area, m²	-
Gross Floor Area, m²	67323
Covered Carpark, m²	17640
No. of Covered Carpark Lots	589
No. of Apartments/Houses	580
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	15
No. of Phases	01

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI	Showflat	Landscape		
Estimate	7.8	6.0	3.7	0.7	8.3	0.2	-	-		
Awarded	5.8	4.6	2.2	0.315	-	0.202	830K	35K		

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	0.3	2.2	97.3

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

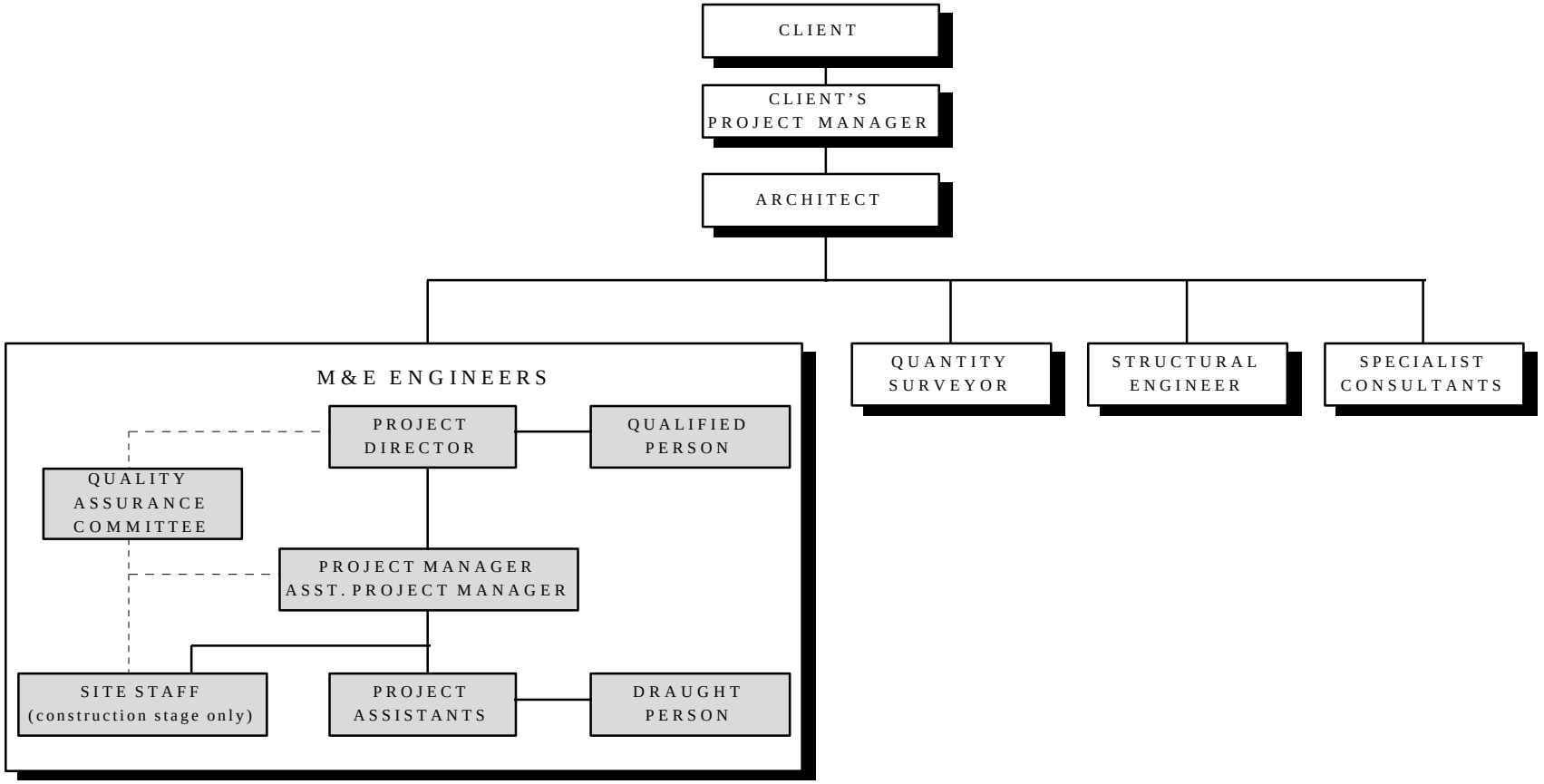
EJECTOR & DIVERTER		SUMP PUMP	✓	FUEL OIL TANK		LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOAM	

(✓ *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		Loh F Y
Assistant Project Manager		Alan Lau
Project Assistant (Mech)		Serene Teh
Project Assistant (Elect)		Shirley Loke
Draughtsperson		Common Pool
Resident Engineer (M&E)		Leong Lup Weng
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		Tan Min Hian

3.3 Client/Client's Representatives

Client:- Serenity Properties Pte Ltd (SPPL)

Address:- 140 Scotts Road #06-00
Far East Plaza
Singapore 228213

Tel:- 235 2411

Fax:- 235 3316

Client's Representatives:-

Name of Firm	Contact Person	Contact
Serenity Properties Pte Ltd	Name: Mr Pram Chandran Position: Project Manager	Tel: 235 2411 Fax: 235 3316 Pager: - Handphone: 9675 3951 Email:
	Name: Ms Rachael Tan Position: Quantity Surveyor	Tel: 734 8890 Fax: 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 Ong & Ong Architect	Name: Mr Ong Tze Boon/Mr Kevin Lim Position: Architect	Tel: 258 8666 Fax: 259 8648 Pager: Handphone: Email:
Quantity Surveyor KPK Quantity Surveyor	Name: Ms Beatrice Kwan/Ms Authea Chang Position: Quantity Surveyor	Tel: 220 2573 Fax: 536 2633 Pager: Handphone: Email:
Structural Engineer Tan Ee Ping & Partners	Name: Mr James Ng/Mr David Law Position: Engineer	Tel: 339 7277 Fax: 338 8362 Pager: Handphone: Email:
Interior Designer Design Minako	Name: Ms Jane Wang/ Mr Renick Chua Position: Designer	Tel: 468 7866 Fax: 469 8532 Pager: Handphone: Email:
Lighting Consultant	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Acoustic Consultant	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Landscape Consultant Ecoplan Landscape Architect	Name: Mr Dennis Guillema Position: Landscape	Tel: 252 2188 Fax: 252 2988 Pager: Handphone: Email:
_____	Name: Position:	Tel: Fax: 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 Poh Lian Construction Pte Ltd	DC	Name: Mr Bobby Lim Position: Project Manager	Tel: 284 7622 Fax: 284 1353 Pager: 9708 0658 Handphone: 9727 5482 Email:
Air Conditioning & Ventilation Installation Sub-Contractor Leong Hum Engineering Pte Ltd	NSC	Name: Mr Wong Chee Weng Position: Project Engineer	Tel: 286 8473 Fax: 296 0213 Pager: Handphone: Email:
Plumbing & Sanitary Installation Sub-Contractor Swee Meng Contractor	DSC	Name: Mr Ho Thian Soon Position: Project Manager	Tel: 561 3362 Fax: 665 5715 Pager: Handphone: Email:
Electrical Installation Sub-Contractor Wah Loon Electrical Engineering Pte Ltd	NSC	Name: Mr Alex Tan Position: Project Engineer	Tel: 747 3773 Fax: 741 3773 Pager: 9580 2994 Handphone: Email:
Lift & Escalator Installation Sub-Contractor Schindler Lifts (S) Pte Ltd	NSC	Name: Mr Ho Weng Ong Position: Project Engineer	Tel: 283 8611 Fax: 283 2212 Pager: 9308 8352 Handphone: Email:
Fire Fighting & Alarm Installation Sub-Contractor Rico Engineering Works	NSC	Name: Mr Jeffrey Piak Position: Project Engineer	Tel: 482 0153 Fax: 482 9553 Pager: Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor Fon Marketing Services Pte Ltd	NSC	Name: Mr Stephen Lim Position: Project Engineer	Tel: 764 1028 Fax: 762 6448 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 Lee Chi Ming	831 8281
(b) Sub-Station	Mr Francis Chang	831 8555
(c) Installation	Mr Loh Park Woon	277 7045
(d) Meter Section	Mr Kok Ah Man	277 7002
(e) Road Lighting	-	
(f) Diversion	-	
Telecom:		
(a) Planning/Line Plant	Mr Ng Kok Yong	838 2838
(b) Installation	-	
(c) Diversion	-	
BCD:		
(a) Building Plan		
FSB:		
(a) Building Plan	-	
(b) M&E Section	Mr Tan Kim Hoe Alroy	838 6417
PUB (Water)		
(a) Water Conservation	Mr Mufik	731 3575
(b) Plumbing Plan	Mr Kuang Kim Yaw	731 3575
(c) Diversion	-	
PowerGas:		
(a) Planning/Submission		
(b) Installation/Inspection		
(c) Diversion		
ENV (Sewerage):		
(a) Building Plan	Mr Alison Liew	731 9628
(b) M&E Section	Lam Tong Chai	731 9783
(c) Diversion	-	
ENV (Pollution Control)		
(a) Planning/Submission	Tan Kheng Kim	731 9649
(b) Inspection	-	

SECTION 4

PROGRAMME

4.1 Overall Programme

ID	TASK NAME	MTHS	1997												1998												1999				
			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
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		190396	260396	040496					100496
Power Supply Substation	PowerGrid Pte Ltd		130596	220596	050696	130696	260696	090796	240197	040297
Main Single Line Diagram	Power Supply Pte Ltd	150797	210998							260998
Consumer Switchroom Layout	PowerGrid Pte Ltd	NR								
Metering Layout	PowerGrid Pte Ltd	NR								
Sanitary Installation	ENV (Sewerage)		021196	201296	270197					280297
Domestic Water Supply	PUB (Water)		200597							280598
Air Conditioning & Ventilation Inst.	Fire Safety Bureau		NR							
Fire Fighting & Alarm Installation	Fire Safety Bureau	300697	280498							050598
Telephone Installation	Telecom (Broadband)	150797	020697							230697
	Telecom (TDCS)	NR								
	Telecom (Domestic Operation)	150898	031298							
Fuel Storage	Fire Safety Bureau	NR								
	Pollution Control Department	NR								

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) - 2nd Submission – Not Applicable

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)									
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/AD	✓	-EC/MC	✓	-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	BS	-			
-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	Loh F Y
Incoming Architectural Sketches/Details	Loh F Y
Incoming Structural Drawings	Loh F Y
M&E Drawings	
- Electrical Installation	Shirley Loke
- Lift & Escalator Installation	Shirley Loke
- Air Conditioning & Ventilation Installation	Alan Lau
- Fire Fighting & Alarm Installation	Alan Lau
- Plumbing & Sanitary Installation	Alan Lau
- Swimming Pool & Filtration Installation	
Other Drawings	

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	C		C	C	C	
b.	Project Administration	C		C	C	C	
c.	Project Cost Estimate/Contract Cost	A		I	I	I	
2.	**Drawings**						
a.	Outline Design Drgs.			C	C		
b.	Sketch Design Drgs.	I		C	C		
c.	Final Design Drgs.	I		I	I		
d.	Shop Drawings	I		A	A		
e.	As Built Drgs.	C		C			
3.	**Other Document**						
a.	Specification	C		C		C	
b.	Tender Document	C		C		C	
c.	Tender Evaluation Report	C		C			
d.	Design Report	A		A			
e.	Progress Report	I		I		I	
f.	Financial Report	C		I			
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
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	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
C1	Contruction Process Control
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/C/I/Re
M&E Cost Estimate Report	C/I/Re
Pre-Qualification of Tenderers	C/I/Re
Tender Documents	A/C
Tender Report	I/Re
Payment Valuation for QS	I/Re
Certificates of Supervision for TOP/CSC	I/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