Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

CONDOMINIUM AT BOON TECK ROAD

For

MCL LAND DEVELOPMENT PTE LTD

Copy No.	1

Prepared By: Yip Yoke Fun

Authorised By: Tan L S

Date: 9 June 2009

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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	6036-PQP	9 June 2009

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	9 June 2009	1 to 11	28	+ 1 pg (Sect 4.1 Overall Programme

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	

Statistics of Development	
Site Area, m²	2,588.10
Nett Floor Area, m²	-
Gross Floor Area, m²	7,654.48
Covered Carpark, m²	128.46
No. of Covered Carpark Lots	45
No. of Apartments/Houses	65
No. of Beds (for Hospitals)	N.A.
No. of Guestroom (for Hotels)	N.A.
No. of Blocks / No. of Storeys	1 block of 17 storey
No. of Phases	1 phase

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	1.10	0.97	0.28	0.25	0.9	0.2				
Awarded	-	-	-	-	-	-				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	25
Awarded	-	-	-

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

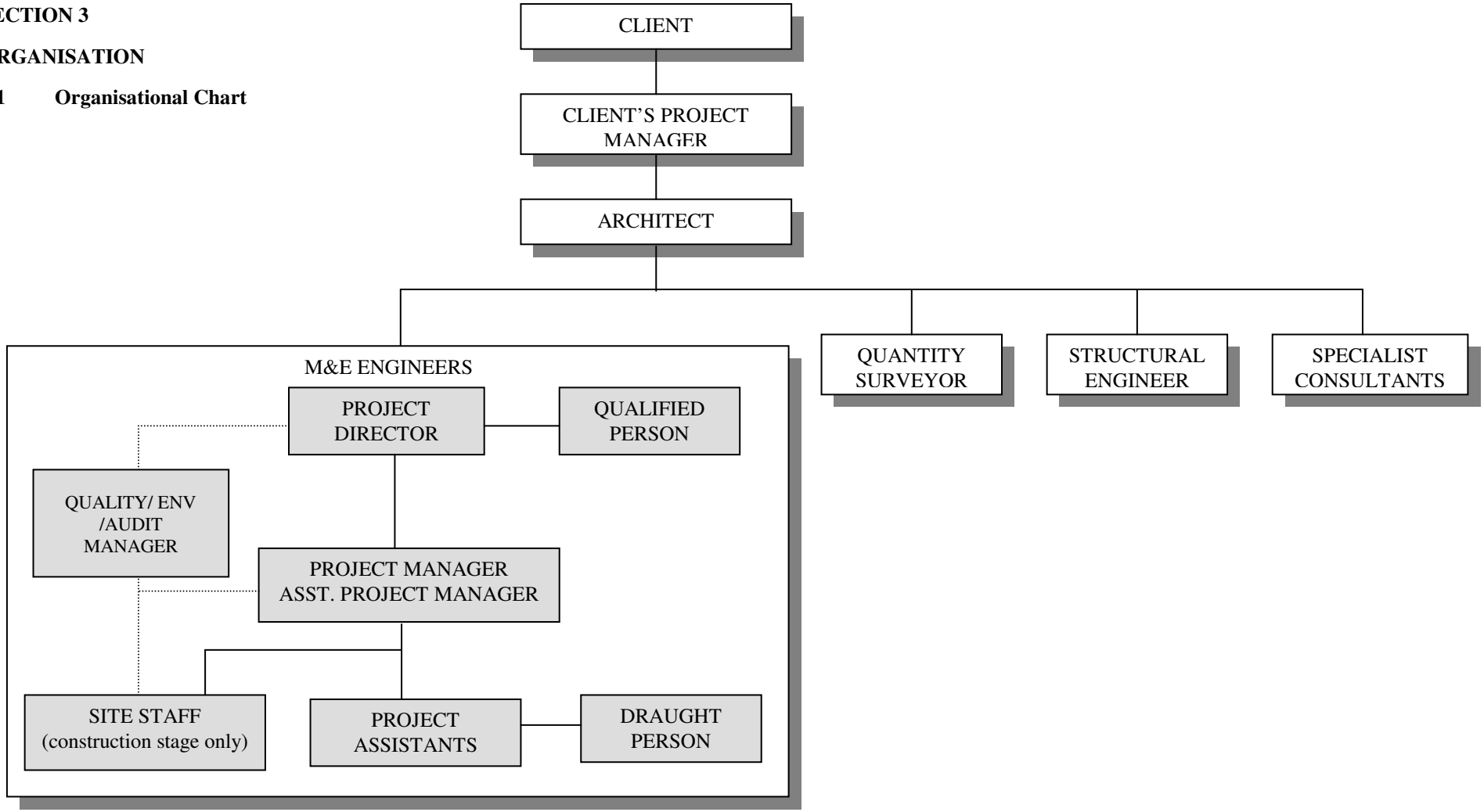
EJECTOR & DIVERTER	✓	SUMP PUMP	✓	FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Tan Lai Siong (TLS)
Qualified Person	Mechanical	Choong Choon Guan (CCG)
	Electrical	Tan Lai Siong (TLS)
Project Manager		Yip Yoke Fun (YYF)
Assistant Project Manager		Goh Soon Huat (GSH)
Project Assistant (Mech)		-
Project Assistant (Elect)		Winston Chee (WC)
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client :- (Developer) MCL Land Development Pte Ltd

Address:- 78 Shenton Way
#33-00
Singapore079120

Tel:- 6221 8111

Fax:- 6225 3383

Client's Representatives:-

Name of Company	Contact Person	Contact
MCL Land Development Pte Ltd	Name: Mr Sin Hai Chuan Position: Senior Project Manager	Tel: 6429 0843 Fax: 6225 3383 Handphone: - Email: haichuan.sin@mclland.com.sg
-	Name: Position:	Tel: Fax: Handphone: Email:
-	Name: Position:	Tel: Fax: Handphone: Email:
-	Name: Position:	Tel: Fax: Handphone: Email:
-	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Local)

Function / Name of Company	Contact Person	Contact
Architect P&T Consultants Pte Ltd	Name: Mr Kingsley Ng Position: Senior Associate	Tel: 6309 0214 Fax: 6535 1283 Handphone: - Email: kng@ptcon.com.sg
Quantity Surveyor KPK Quantity Surveyors	Name: Ms Esther Ng Position: Associate Quantity Surveyor	Tel: 6508 3354 Fax: 6536 2633 Handphone: - Email: estherng@kpkqs.com.sg
Structural Engineer KTP Consultants	Name: Mr Chen Yue Feng Position: Director	Tel: 6273 5622 Fax: 6273 8454 Handphone: - Email: yfchen@ktp.com.sg
Interior Designer -	Name: Position:	Tel: Fax: Handphone: Email:
Lighting Consultant -	Name: Position:	Tel: Fax: Handphone: Email:
Acoustic Consultant -	Name: Position:	Tel: Fax: Handphone: Email:
Landscape Consultant Coen Design International Pte Ltd	Name: Ms Ann Teo Position: Project Manager	Tel: 6345 6323 Fax: 6345 6386 Handphone: 91297168 Email: ann@coen-design.com
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Overseas) – **NOT USED**

Function / Name of Company	Contact Person	Contact
Architect	Name: Position:	Tel: Fax: Handphone: Email:
M&E Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Quantity Surveyor	Name: Position:	Tel: Fax: Handphone: Email:
Structural Engineer	Name: Position:	Tel: Fax: Handphone: Email:
Interior Designer	Name: Position:	Tel: Fax: Handphone: Email:
Lighting Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Acoustic Consultant	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.5 Contractors/Sub-Contractors

Function / Name of Company	Contract *	Contact Person	Contact
Main Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Air Conditioning & Ventilation Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Plumbing & Sanitary Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Electrical Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Lift & Escalator Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Fire Fighting & Alarm Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Carpark System Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
_____		Name: Position:	Tel: Fax: 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
SP PowerGrid:		
(a) Sub-Station	Mr Francis Chang See Tong	6823 8555
(b) Diversion		
SP Services:		
(a) Customer Supply		
(b) Installation		
(c) Meter Section		
(d) Road Lighting		
TFCC:		
(a) SCV		
(b) SingTel		
(c) IDA		
BCA:		
(a) Building Plan	Mrs Ling Yap Kim Har	6325 8649
FSSD:		
(a) Building Plan	Mr Yap Guan Hwa	6325 2211
(b) M&E Plan	Mr Vijayaratnam	6848 1448
PUB (Water Supply) Network Dept:		
(a) Water Conservation		
(b) Plumbing Plan	Mr Tay Kah Beng	6380 9824
(c) Diversion		
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU	Mr Ahmad Kahfi B Mohd	6732 7733
(b) M&E Plan		
(c) Diversion		
City Gas Pte Ltd:		
(a) Planning/Submission	Mr Liew Khee Boon	6578 7603
(b) Installation/Inspection		
PowerGas Pte Ltd		
(a) Diversion	Mr Tan Lye Sing	6751 8142
NEA (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

SECTION 4

PROGRAMME

4.1 Overall Programme - (refer to attached master programme)

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																									
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																									

PROGRAMME CHART (MAIN) - BASED ON 36 MONTHS

Project: RESIDENTIAL FLAT DEVELOPMENT AT BOON TECK ROAD

Prepared By :

Approved By :

Date : 06 JUNE 2009

Revision :

	ACTIVITIES \ MONTHS
A	ARCHITECTURAL
1.1	○ Confirmation of Design Brief
2.0	DC Submission
	○ URA
	○ NEA (SEW / DR /EHD / POLLUTION)
	○ LTA (ROADS / RAILS)
	○ PSB
	○ NParks
	○ CAAS
	○ DSTA
	○ HS (Consultation / Waiver)
3.0	BP Submission
	○ BCA
	○ Household Shelter
	○ NEA (DR)
	○ NEA (EHD)
	○ PSB
	○ LTA (VP)
	○ NParks
4.0	Other Authorities Submission
	○ Development Name
	○ House/Unit Number
	○ Post Master
5.0	Showflat Design
6.0	Marketing Launch
	○ Developer Licence
	○ Perspective
	○ Model
	○ Strata Area/ Commissioning of Bldg
7.0	Civil / Structural (Authorities Submission)
	○ Piling
	○ Main Contract (CBP Wall / Superstructure / Substructure / Approval Date)
8.0	Mechanical / Electrical (Authorities Submission)
	○ Powergrid (ESS)
	○ City Gas (Gas Installation)
	○ PUB, Water (Plumbing Installation)
	○ IDA - TFCC (SCV / TAS)
	○ FSSD (ACMV)
	○ FSSD (Fire Protection)
	○ CBPU (Sanitary)
	○ CBPU (Pool)
9.0	Construction
	○ Tender Preparation(Main Building) - Arch.
	○ Tender Preparation(Main Building) - QS
	○ Piling
	○ Main Building (Incl 21.4m wide Road & pedestrian Walkway)
	○ Sales Gallery + Show Area
	○ TOP

2007 2008 2009 2010 2011 2012

JAN FEB MARCH APRIL MAY JUNE JULY AUG SEP OCT NOV DEC

JAN FEB MARCH APRIL MAY JUNE JULY AUG SEP OCT

JUNE JULY AUG SEP OCT NOV DEC

JAN FEB MAR APR MAY JUN JULY AUG SEP OCT NOV DEC

JAN FEB MAR APR MAY JUN JULY AUG SEP OCT NOV DEC

JAN FEB MAR APR MAY JUN AUG SEP

LEGEND :

AC- Accredited Checker	DOC - Documentation	P - Preparation of drawings	WD - Written Direction
Aprov - Approval	E/A - Evaluation / Award	SUB - Submission	WP - Written Permission
C - Consultation	ID - Interior Fitting Out	T - Tender	
CL - Clearance	MOB - Mobilisation	TOP - Temporary Occupation Permit	

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services - 1st Submission

Service	Authority	Original Submission		Comments/Resubmission						Approval/
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	Clearance
Application for Electricity Supply	SP Services Ltd	-								
Power Supply Substation	SP PowerGrid Ltd	4/12/09								
Metering Layout	SP Services Ltd	-								
Sanitary Installation	PUB Water Reclamation (Network) Dept	7/5/10								
Domestic Water Supply	PUB (Water Supply) Network Dept	5/3/10								
Gas Supply Installation	City Gas Pte Ltd	4/1/10								
Air Conditioning & Ventilation Inst.	FSSD	4/6/10								
Fire Fighting & Alarm Installation	FSSD	2/7/10								
Telephone Installation	TFCC	1/4/10								
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision									
Fuel Storage	FSSD									
	NEA (Pollution Control)									

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) - 2nd Submission - NOT USED

Service	Authority	Original Submission		Comments/Resubmission						Approval/
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	Clearance
Application for Electricity Supply	SP Services Ltd									
Power Supply Substation	SP PowerGrid Ltd									
Metering Layout	SP Services Ltd									
Sanitary Installation	PUB Water Reclamation (Network) Dept									
Domestic Water Supply	PUB (Water Supply) Network Dept									
Gas Supply Installation	City Gas Pte Ltd									
Air Conditioning & Ventilation Inst.	FSSD									
Fire Fighting & Alarm Installation	FSSD									
Telephone Installation	TFCC									
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision									
Fuel Storage	FSSD									
	NEA (Pollution Control)									

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

File Ref:		File Ref:	
- Owner	✓	- Architect	✓
- Authorities	✓	- Other Consultants	✓
- Contractors	✓	- CC	✓
- CF	✓	- PQP/QSP	✓

Project Files to be initiated by PM as and when required

File Ref:		File Ref:		File Ref:	
- EC/MC	✓				

(✓*where applicable*)

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	YYF
Incoming Architectural Sketches/Details	YYF
Incoming Structural Drawings	WC
M&E Drawings	
- Electrical Installation	WC
- Lift & Escalator Installation	WC
- Air Conditioning & Ventilation Installation	YYF
- Fire Fighting & Alarm Installation	YYF
- Plumbing & Sanitary Installation	YYF
- Swimming Pool & Filtration Installation	YYF
Other Drawings	
- Landscape Drawing	WC
- FSSD Approval Building Plan	YYF

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

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	A	C	C	I	
b.	Project Administration	A	A	C	C	I	
c.	Project Cost Estimate/Contract Cost	A	A	C	C	I	
2.	**Drawings**						
a.	Outline Design Drgs.	A	A	C	C	-	
b.	Sketch Design Drgs.	A	A	C	C	-	
c.	Final Design Drgs.	A	A	C	C	-	
d.	Shop Drawings	I	I	A/C	C	-	
e.	As Built Drgs.	I	I	I	I	-	
3.	**Other Document**						
a.	Specification	A	A	A	I	I	
b.	Tender Document	A	A	A	I	I	
c.	Tender Evaluation Report	A	A	A	I	I	
d.	Design Report	C	C	I	-	-	
e.	Progress Report	A	A	A	I	I	
f.	Financial Report	-	-	-	-	-	
g.	Minutes of Meeting	I	I	I	I	-	
h.	Inspection Report	I	I	I	-	-	
i.	Testing & Comm. Report	I	I	I	-	-	
j.	O & M Manual	I	I	I	-	-	

SECTION 7

WORK AUTHORISATION

Activity \ Authorised Signatories	PD	QP	PM	AE	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 Questionnaires	✓	✓			
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
AE : Assistant Engineer
SS : ACEPL Site Staff

SECTION 8

DESIGN INPUT & METHODOLOGY

8.1 List of Client's Standards, Reference Documents or Brief – NOT USED

ITEM	KEPT BY

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

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 Consulting Engineers Pte Ltd's Quality Management System Procedures

Section	Title	✓ where applicable
M1	Preparation of Consultancy Offer	✓
M2	Project Commissioning and Service Agreement	✓
M3	Design Control	✓
M4	Design Change Control	✓
M5	Tender Process and Evaluation	✓
M6	Authority Submission	✓
M7	Construction Process Control	✓
M8	Testing and Commissioning	✓
S1	Document Control	✓
S2	Documentation of Quality & Environmental Management System Procedure	✓
S3	Documentation of Project Quality Plan	✓
S4	Specification Control	✓
S5	Library Control	
S6	Archive Control	✓
S7	Filing Control	✓
S8	Drawing Control	✓
S9	Administration Control	✓
S10	Purchasing Control	
S11	Training Control	
S12	Computer Control	
QE1	Quality & Environmental System Audit	✓
QE2	Feedback Reporting	✓
QE3	Clients Feedback	✓
QE4	Management Review	

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 Consulting Engineers Pte Ltd	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 Consulting Engineers Pte Ltd	Calculation of voltage drop and fault level	

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS – NOT USED

9.1 Sustainable Design Features / Criteria

Item	Remarks
Green Mark criteria	-
Green Design Features	-

9.2 Site PPE Requirement

The necessary Personal Protective Equipment (detailed below) shall be provided by the main contractor / Company in accordance to the site EHS requirements prior to the site monitoring.

PPE	✓ where applicable
Safety Helmet	-
Safety Shoes	-
Eye Protection	-
Ear Protection	-
Safety Harness / Belt	-
Others:	-

9.3 Site Emergency Preparedness

Site staff shall comply with the site emergency preparedness and response procedure, established by the main contractor / owner, which shall include the following details.

Items	✓ where applicable
Evacuation Route	-
Emergency Exit	-
Assembly Point	-
Emergency Contact List / Person	-
Alarm system / methods	-

SECTION 9

ENVIRONMENTAL CONSIDERATIONS – NOT USED

9.4 Reporting of Environmental Non-conformances

When encountering environmental non-conformances, Site Staff shall be responsible to feedback to the main contractor.

9.5 List of Applicable Environmental management system Procedures

Alpha Consulting Engineers Pte Ltd's Environmental Management System Procedures

Section	Title	✓ where applicable
E1	Aspect / Impact Identification, Risk Assessment & Risk Control	-
E2	Identifying Legal & Other Requirements	-
E3	Objectives, Targets & Programmes	-
E4	Communication	-
E5	Emergency Preparedness & Response	-
E6	Monitoring & Measurement	-
E7	Control of Air & Noise Pollution	-
E8	Management of Wastes	-

SECTION 10

CLIENT'S REQUIREMENTS

10.1 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	A
Tender Report	A
Payment Valuation for QS	A
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.

10.2 Specific Procedures Required By Client *(If applicable)*

NOT USED

SECTION 11

LIST OF SUB-JOB

11.1 List of Sub-Job Numbers - NOT USED

Sub Job No	Description	Allocation Details