Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

CASPIAN CONDOMINIUM

For

YISHUN LAND PTE LTD

Copy No.	1

Prepared By: Chim Heng Leong / Kevin Kee

Authorised By: Loh Fook Yuen

Date: 9 March 2012

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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	6081-PQP File	9 March 2012

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	9 December 2008	1 to 11	28	+ 1 pg (Section 4.1 – Overall programme)
1	29 June 2009	1 to 11	28	+ 1 pg (Section 4.1 – Overall programme)
2	28 April 2010	1 to 11	28	+ 1 pg (Section 4.1 – Overall programme)
3	10 January 2011	1 to 11	28	+ 1 pg (Section 4.1 – Overall programme)
4	9 March 2012	1 to 11	28	+ 1 pg (Section 4.1 – Overall programme)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Residential

Statistics of Development	
Site Area, m²	22,000.90
Nett Floor Area, m²	-
Gross Floor Area, m²	80,244.98
Covered Carpark, m²	-
No. of Covered Carpark Lots	718
No. of Apartments/Houses	712
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	11 Blocks of 17-Storey
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	11.35	7.37	3.5	1.5	7.93	0.895	

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	-	-	204

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

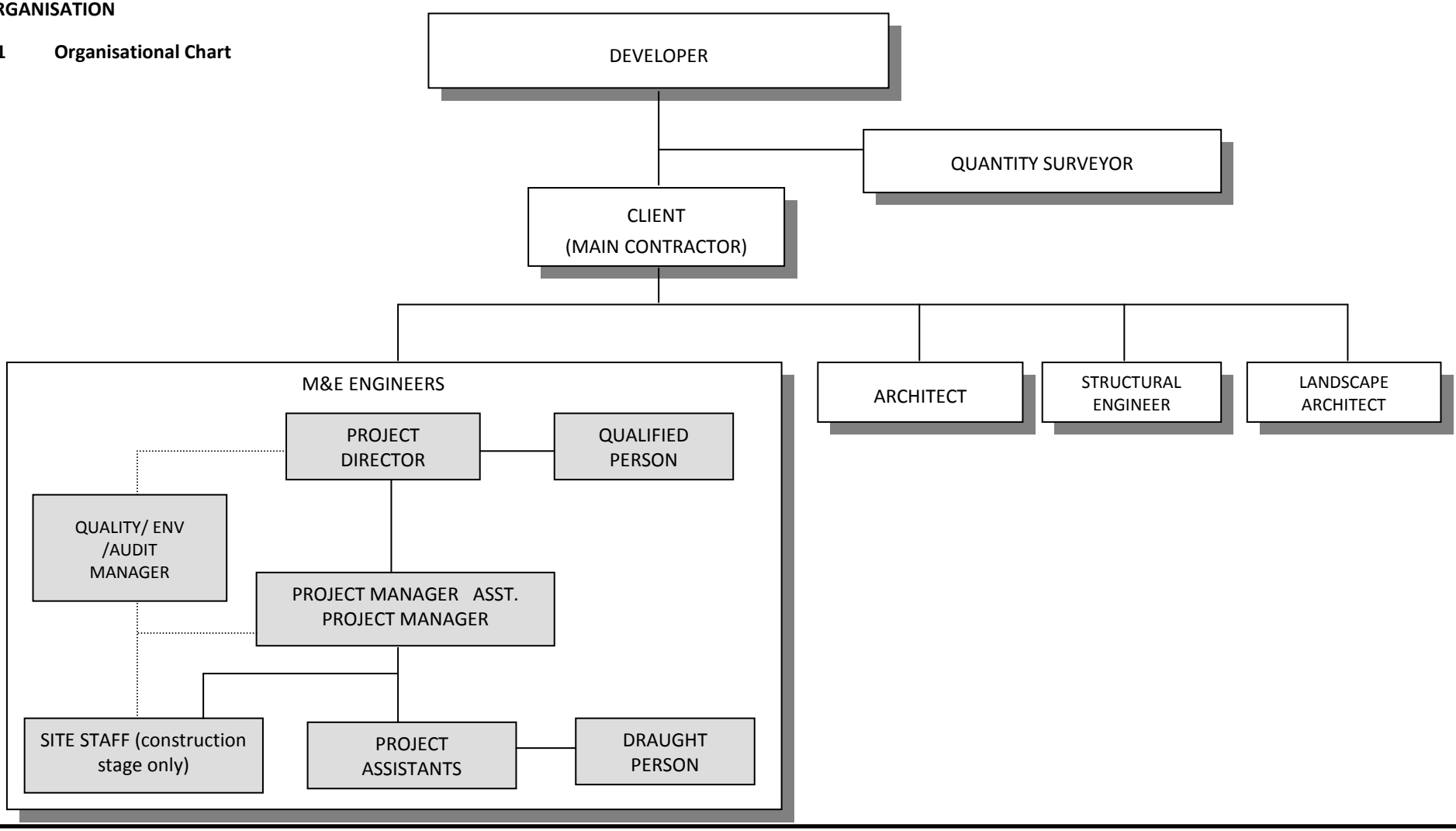
EJECTOR & DIVERTER	✓	SUMP PUMP	✓	FUEL OIL TANK		LIFT ~~&~~ ~~ESCALATOR~~	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Loh Fook Yuen (LFY)
Qualified Person	Mechanical	Andrew Loh (LCT)
	Electrical	Loh Fook Yuen (LFY)
Project Manager		Chim Heng Leong (CHL)
Assistant Project Manager		Lim Chai Hoon (LCY)
Project Assistant (Mech)		Kevin Kee (KK)
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: (Developer)	Yishun Land Pte Ltd	Client: (Main Contractor)	Nakano Singapore Pte Ltd
Address:	438 Alexandra Road #02-00 Alexandra Point Singapore 119958	Address:	1 Coleman Street #06-02 The Adelphi Singapore 179803
Tel:	6276 4882	Tel:	6333 4933
Fax:	6276 6328	Fax:	6338 8568

Client's Representatives:-

Name of Company	Contact Person	Contact
Yishun Land Pte Ltd	Name: Mr Chew Fook Cheon Position: Project Manager	Tel: 6276 4882 Fax: 6276 6328 Handphone: - Email: fookcheon@frasercentrepoint.com
	Name : Mr Lim Wei Ping Position: Project Manager	Tel: 6276 4882 Fax: 6276 6328 Handphone: - Email: weiping.lim@frasercentrepoint.com
Nakano Singapore Pte Ltd	Name: Mr Sebestian Tay Position: Project General Manager	Tel: 6733 8192 Fax: 6733 5195 Handphone: 9068 2264 Email: sebestian@nakano.com.sg
	Name: Gunadi Wihardjo Position: Asst. M&E Engineer	Tel: 6733 8192 Fax: 6733 5195 Handphone: 8420 6963 Email: gunadi@nakano.com.sg
	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 Yang Architects Pte Ltd	Name: Ms Merce Position: Project Architect	Tel: 6299 0090 Fax: 6295 5728 Handphone: - Email: lakeside@yangarchitects.com
Quantity Surveyor Davis Langdon & Seah Singapore Pte Ltd	Name: Mr Koay Kean Tatt Position: -	Tel: 6222 3888 Fax: 6224 7089 Handphone: - Email: koaykeantatt@dls.com.sg
Structural Engineer SCE Consultants (Pte) Ltd	Name: Mr Slamet Gunawan Position: -	Tel: 6337 2828 Fax: 6339 9313 Handphone: - Email: sg@sce.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 Architect Mace Studio Pte Ltd	Name: Mr Mason Tan Position: Managing Director	Tel: 6325 4941 Fax: 6325 4901 Handphone: 9796 1795 Email: nutmeg@macestudio.com.sg
_____	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 Nakano Singapore Pte Ltd	DC	Name: Mr Sebestian Tay Position: Project General Manager	Tel: 6733 8192 Fax: 6733 5195 Handphone: 9068 2264 Email: sebestian@nakano.com.sg
Air Conditioning & Ventilation Installation Sub-Contractor Design Aire Engineering Pte Ltd	DSC	Name: Mr Pang Kwon Yoo Position: Site Manager	Tel: 6746 9611 Fax: 6747 4922 Handphone: - Email: deaire@singnet.com.sg
Plumbing & Sanitary Installation Sub-Contractor WTC M&E Pte Ltd	DSC	Name: Mr Simon Pang Position: Asst. Project Manager	Tel: 6745 9733 Fax: 6745 6806 Handphone: 9188 4005 Email: wtc97@singnet.com.sg
Electrical Installation Sub-Contractor Bond M&E Pte Ltd	DSC	Name: Mr Vincent Chin Position: Project Director	Tel: 6741 1968 Fax: 6741 6763 Handphone: 9145 8782 Email: vchin@bondgrp.net
Lift & Escalator Installation Sub-Contractor Mitsubishi Elevator (S) Pte Ltd	DSC	Name: Mr Jacky Lim Position: -	Tel: 6842 5678 Fax: 6748 2292 Handphone: - Email: mitsubishielevator@m&sp.meap.com
Fire Fighting & Alarm Installation Sub-Contractor Sprinkler Engineering Pte Ltd	DSC	Name: Mr Tan Tiong Hin Position: General Manager	Tel: 6453 1488 Fax: 6453 7656 Handphone: 9780 0452 Email: sprinkler@singnet.com.sg
Swimming Pool Filtration Plant Installation Sub-Contractor Hydrotech M&E Services Pte Ltd	DSC	Name: Mr Louis Lai Position: Project Coordinator	Tel: 6748 4779 Fax: 6748 8015 Handphone: 9695 0969 Email: louis_hydrotech@yahoo.com
Carpark System Installation Sub-Contractor NA		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 Chin Yoke Fah	6823 8556
(b) Diversion		
SP Services:		
(a) Customer Supply	Mr Rick Lim	6823 8287
(b) Installation		
(c) Meter Section		
(d) Road Lighting		
TFCC:		
(a) SCV	Ms Valerie Ang	6825 6367
(b) SingTel		
(c) IDA	Mr Ng Kok Yong	6342 5934
BCA:		
(a) Building Plan		
FSSD:		
(a) Building Plan		
(b) M&E Plan		
PUB (Water Supply) Network Dept:		
(a) Water Conservation		
(b) Plumbing Plan	Ms Cheng Kia Yin	6731 3683/ 6731 3023 cheng_kia_yin@pub.gov.sg
(c) Diversion		
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU	Mr Abdul Razak Bin Abdul Majid	6731 9385
(b) M&E Plan		
(c) Diversion		
City Gas Pte Ltd:		
(a) Planning/Submission	Mr Liew Khee Boon	6586 8846
(b) Installation/Inspection		
PowerGas Pte Ltd		
(a) Diversion		
NEA (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

SECTION 4

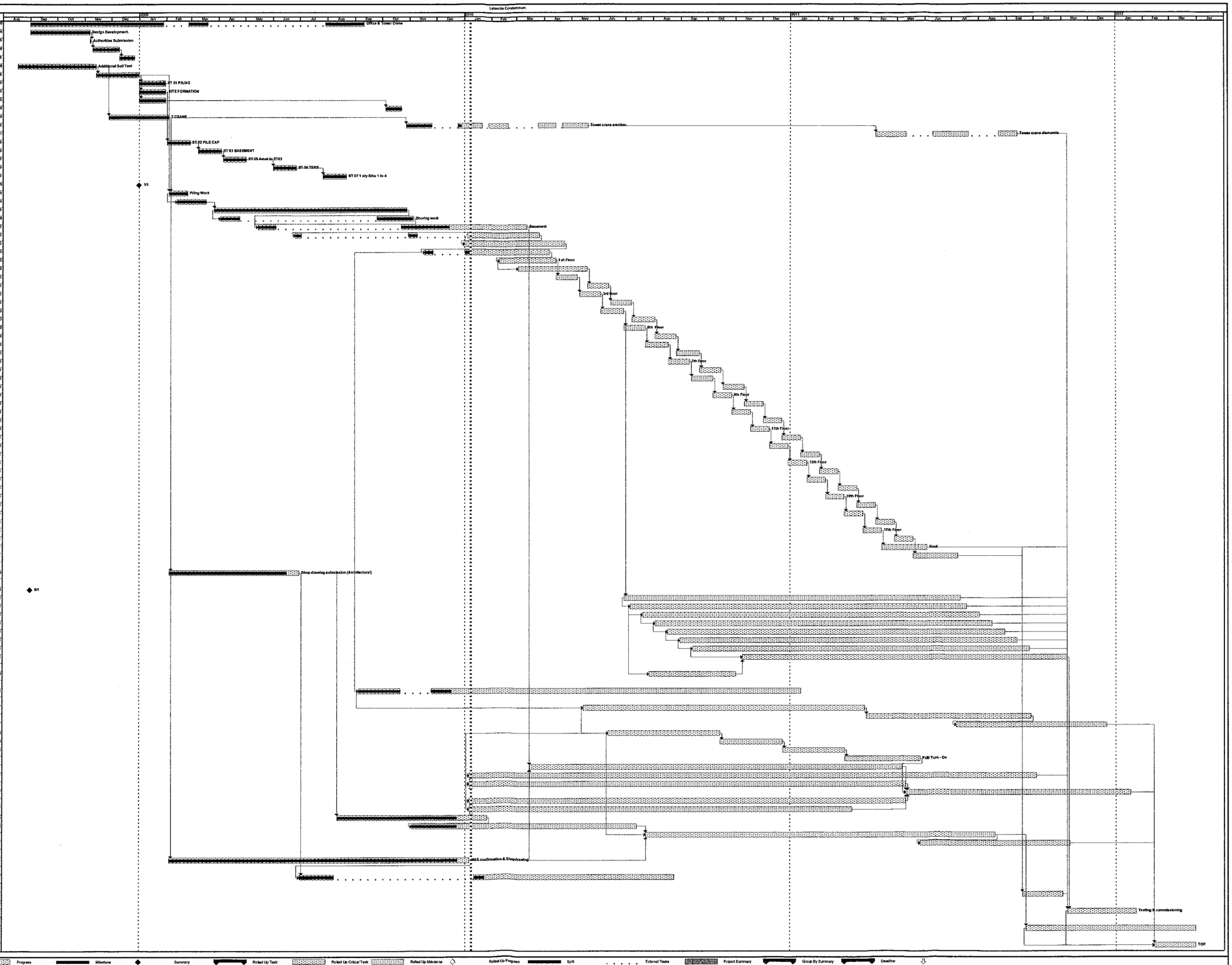
PROGRAMME

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																									

Lakeside Condominium

ID		Task Name	Duration	Start	Finish
1	✓	Temporary Work (Hoarding, wash bay & Office)	155 days	Mon 8/1/08	Thu 5/15/09
2	✓	Design Development	49 days	Mon 9/1/08	Thu 11/6/08
3	✓	Authorities Submission.	1 day?	Fri 11/7/08	Fri 11/7/08
4	✓	Preparation for submission of WP Approval	22 days	Mon 11/10/08	Tue 12/9/08
5	✓	BP submission & Approval	13 days	Wed 12/10/08	Fri 12/26/08
6	✓	Additional Soil Test	64 days	Mon 8/18/08	Thu 11/13/08
7	✓	Piling Submission to BCA	34 days	Fri 10/14/08	Wed 12/31/08
8	✓	Approval for piling (ST 01)	22 days	Thu 1/1/09	Fri 1/30/09
9	✓	Site Formation & Approval ( )	20 days	Thu 1/1/09	Fri 1/30/09
10	✓	TEP submission (Shoring Submission)	37 days	Thu 1/1/09	Fri 1/30/09
11	✓	Approval for(TEP) Shoring Work	14 days	Mon 1/5/09	Thu 1/22/09
12	✓	Tower Crane Approval	48 days	Fri 11/28/08	Tue 2/3/09
13		Tower crane erection	52 days	Wed 10/28/09	Wed 5/19/10
14		Tower crane dismantle	10 days	Thu 4/7/11	Tue 9/13/11
15	✓	Pile cap Submission & Approval (ST 02)	20 days	Mon 2/2/09	Fri 2/27/09
16	✓	Basement 1 & 2 Submission & approval (ST 03)	20 days	Mon 3/9/09	Fri 4/3/09
17	✓	1 storey Submission & approval (ST 05)	20 days	Mon 4/6/09	Fri 5/1/09
18	✓	Typical Flooring submission & approval (ST 06)	20 days	Mon 6/1/09	Fri 6/26/09
19	✓	Roof & Retaining wall submission & approval (ST 07)	20 days	Mon 7/27/09	Fri 8/21/09
20	✓	Piling Work	0 days	Thu 1/1/09	Thu 1/1/09
21	✓	Piling Mobilization	15 days	Wed 2/4/09	Tue 2/24/09
22	✓	Ultimate load test	23 days	Fri 2/13/09	Tue 3/17/09
23	✓	Piling Work	154 days	Fri 2/27/09	Wed 10/28/09
24		Shoring work	45 days	Fri 4/3/09	Thu 11/5/09
25		Excavation to Basement 2 & 1	113.75 days	Fri 5/15/09	Fri 3/12/10
26		Pile cap work	70 days	Fri 6/26/09	Fri 3/26/10
27		B2 Beam & Slab.	80 days	Fri 1/1/10	Fri 4/23/10
28		B1 Beam & Slab	75 days?	Tue 1/19/10	Tue 4/6/10
29		1 st Floor (Blocks : 2,3,4,5,6,7)	45 days	Wed 3/10/10	Tue 4/13/10
30		1st Floor (Blocks : 1,8,9,10,11)	55 days	Wed 3/3/10	Tue 5/18/10
31		2nd Floor	18 days	Wed 4/14/10	Fri 5/7/10
32		2nd Floor	18 days	Wed 5/19/10	Fri 6/11/10
33		3rd floor	18 days	Mon 5/10/10	Wed 6/2/10
34		3 rd floor	18 days	Mon 6/14/10	Wed 7/7/10
35		4th Floor	18 days	Thu 6/3/10	Mon 6/28/10
36		4th Floor	18 days	Thu 7/8/10	Mon 8/2/10
37		5th Floor	18 days	Tue 6/29/10	Thu 7/22/10
38		5th Floor	18 days	Tue 8/3/10	Thu 8/26/10
39		6th Floor	18 days	Fri 7/23/10	Tue 8/17/10
40		6th Floor	18 days	Fri 8/27/10	Tue 9/21/10
41		7th floor	18 days	Wed 8/18/10	Fri 9/10/10
42		7th floor	18 days	Wed 9/22/10	Fri 10/15/10
43		8th Floor	18 days	Mon 9/13/10	Wed 10/6/10
44		8th Floor	18 days	Mon 10/18/10	Wed 11/10/10
45		9th Floor	15 days	Thu 10/7/10	Wed 10/27/10
46		9th Floor	15 days	Thu 11/11/10	Wed 12/1/10
47		10th Floor	15 days	Thu 10/28/10	Wed 11/17/10
48		10th Floor	15 days	Thu 12/2/10	Wed 12/22/10
49		11th Floor	13 days	Thu 11/18/10	Wed 12/8/10
50		11th Floor	15 days	Thu 12/23/10	Wed 1/12/11
51		12th Floor	15 days	Thu 12/9/10	Wed 12/29/10
52		12th Floor	15 days	Thu 1/13/11	Wed 2/2/11
53		13th Floor	15 days	Thu 12/30/10	Wed 1/19/11
54		13th Floor	15 days	Thu 2/3/11	Wed 2/23/11
55		14th Floor	15 days	Thu 1/20/11	Wed 2/9/11
56		14th Floor	15 days	Thu 2/24/11	Wed 3/16/11
57		15th Floor	15 days	Thu 2/10/11	Wed 3/2/11
58		15th Floor	15 days	Thu 3/17/11	Wed 4/6/11
59		16th Floor	15 days	Thu 3/3/11	Wed 3/23/11
60		16th Floor	15 days	Thu 4/7/11	Wed 4/27/11
61		17th Floor	15 days	Thu 3/24/11	Wed 4/13/11
62		17th Floor	15 days	Thu 4/28/11	Wed 5/18/11
63		Roof	37 days	Thu 4/14/11	Fri 6/3/11
64		Roof	37 days	Thu 5/19/11	Fri 7/8/11
65					
66		Shop drawing submission (Architectural)	104 days	Wed 2/4/09	Mon 6/29/09
67					
68		FA 1 , 2 & 3, Audit & Inspection	0 days	Mon 9/1/08	Mon 9/1/08
69		Setting Out & Defect rectification (Structure)	270 days	Tue 8/25/10	Mon 7/11/11
70		Brick, Aluminum & Door frame work	270 days	Tue 7/6/10	Mon 7/18/11
71		M&E conceal & Plaster work	270 days	Tue 7/20/10	Mon 8/1/11
72		Waterproofing & Screed topping	270 days	Tue 8/3/10	Mon 8/15/11
73		Partition,Tiling & Marble work	270 days	Tue 8/17/10	Mon 8/29/11
74		Wardrobe,Kitchen Cabinet, shower screen & parquet	270 days	Tue 9/7/10	Mon 9/19/11
75		M&E final fit, Painting & Door panel	270 days	Tue 9/14/10	Mon 9/26/11
76		Preparation for Conquas 21	260 days	Tue 11/9/10	Mon 11/7/11
77					
78		Mock - Up Unit	70 days	Tue 7/27/10	Mon 11/1/10
79					
80		Precast & Prefabricate elements	330 days?	Fri 9/4/09	Thu 1/13/11
81					
82		Pool & R-deck & hardscape at courtyard	226 days	Fri 5/14/10	Fri 3/25/11
83		External Work	133 days	Mon 3/28/11	Wed 9/28/11
84		Lanscape soiling & Planting	120 days	Thu 7/7/11	Wed 12/21/11
85		Substation & Rc Centre	90 days	Fri 6/11/10	Thu 10/14/10
86		Brick, aluminum and door frame	90 days	Fri 10/15/10	Thu 12/23/10
87		Metal work & Plaster, painting & Inspection	60 days	Fri 12/24/10	Thu 3/3/11
88		PUB Taking over and equipment & turn-on	60 days?	Fri 3/4/11	Thu 5/26/11
89		Basmand sewer & Storm water	200 days?	Mon 3/15/10	Fri 5/6/11
90		Electrical work	455 days	Wed 1/6/10	Tue 10/4/11
91		Plumbing & Sanitary	350 days	Wed 1/6/10	Tue 5/10/11
92		Final fix for M&E	180 days?	Wed 5/11/11	Tue 1/17/12
93		Air-con & MV	350 days	Wed 1/6/10	Tue 5/10/11
94		Fire Protection	308 days	Wed 1/6/10	Fri 3/11/11
95		Lift confirmation of shopdrawing	120 days	Tue 6/1/10	Mon 12/5/10
96		Lift Fabrication	185 days	Tue 11/3/09	Mon 7/12/10
97		Lift Installation	283 days	Fri 7/23/10	Thu 8/18/11
98		Lift Interior work	120 days?	Fri 5/27/11	Thu 11/10/11
99					
100		M&E confirmation & Shopdrawing	340 days	Wed 2/4/09	Tue 1/5/10
101					
102		Material Procurement & Confirmation.	190 days	Tue 6/30/09	Tue 3/24/10
103					
104		Roof Water tank & others	33 days	Mon 9/19/11	Wed 11/2/11
105					
106		Testing & commissioning	55 days	Tue 11/8/11	Mon 1/23/12
107					
108		Pre-completion Inspection	136 days	Fri 9/23/11	Fri 3/30/12
109					
110		TOP	35 days	Mon 3/13/12	Fri 3/30/12



Project: Revised Main Schedule 01
Date: Thu 10/7/10

Task | Critical Task | Progress | Milestone | Summary | Rolled Up Task | Rolled Up Critical Task | Rolled Up Milestone | Rolled Up Progress | Split | External Tasks | Project Summary | Group By Summary | Deadline

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	11/8/08	20/8/08							10/9/08
Power Supply Substation	SP PowerGrid Ltd	30/10/08	29/10/08	21/11/08	9/1/09	4/2/09	19/2/09			20/3/09
Metering Layout	SP Services Ltd	N.A								
Sanitary Installation	PUB Water Reclamation (Network) Dept	31/5/10	28/6/10							30/6/10
Domestic Water Supply	PUB (Water Supply) Network Dept	30/9/09	9/2/10	11/3/10	17/3/10	18/3/10	24/4/10			10/5/10
Gas Supply Installation	City Gas Pte Ltd	30/8/09	28/1/10	9/2/10	11/3/10	23/3/10	24/3/10			8/4/10
Air Conditioning & Ventilation Inst.	FSSD	27/5/11	13/5/11							20/5/11
Fire Fighting & Alarm Installation	FSSD	30/6/11	30/6/11							13/7/11
Telephone Installation	TFCC	30/4/09	20/3/09							7/4/09
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision	N.A								
Fuel Storage	FSSD	N.A								
	NEA (Pollution Control)	N.A								

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:	
-PP/VO	✓				

(✓*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	Soft Copy – Server
Incoming Architectural Sketches/Details	
Incoming Structural Drawings	
M&E Drawings - Electrical Installation	Lim Chai Hoon (LCY)
- Lift & Escalator Installation	Lim Chai Hoon (LCY)
- Air Conditioning & Ventilation Installation	Chim Heng Leong (CHL)
- Fire Fighting & Alarm Installation	Chim Heng Leong (CHL)
- Plumbing & Sanitary Installation	Chim Heng Leong (CHL)
- Swimming Pool & Filtration Installation	Chim Heng Leong (CHL)
Other Drawings - Landscape Drawings	Soft Copy – Server Hard Copy – Kevin Kee (KK)

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	-	C	C	-	
b.	Project Administration	-	-	-	-	-	
c.	Project Cost Estimate/Contract Cost	-	-	-	-	-	
2.	**Drawings**						
a.	Outline Design Drgs.	C	-	C	C	-	
b.	Sketch Design Drgs.	C	-	C	C	-	
c.	Final Design Drgs.	A	-	C	C	-	
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	C	-	I	-	-	
e.	Progress Report	-	-	-	-	-	
f.	Financial Report	-	-	-	-	-	
g.	Minutes of Meeting	-	-	-	-	-	
h.	Inspection Report	-	-	-	-	-	
i.	Testing & Comm. Report	-	-	-	-	-	
j.	O & M Manual	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 – NOT USED

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

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

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, C
M&E Cost Estimate Report	N.A
Pre-Qualification of Tenderers	N.A
Tender Documents	N.A
Tender Report	N.A
Payment Valuation for QS	N.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

Sub Job No	Description	Allocation Details
6081-601	Purchaser's Request	CHL / KK