Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

D'MIRA AT BOON TECK ROAD

For

MCL LAND DEVELOPMENT PTE LTD

Copy No.	1

Prepared By: Yip Yoke Fun

Authorised By: Goh Soon Huat

Date: 5 January 2011

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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	6120-PQP	5 January 2011

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	10 May 2010	1 to 11	28	+ 2 pgs (Sect 4.1 Overall Programme
1	5 January 2011	1 to 11	28	+ 3 pgs (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	1.41	*0.5	0.33	0.32	1.13	0.07				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	25
Awarded	-	0.87	23.34

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

** Exclude supply of air-con equipment cost.*

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

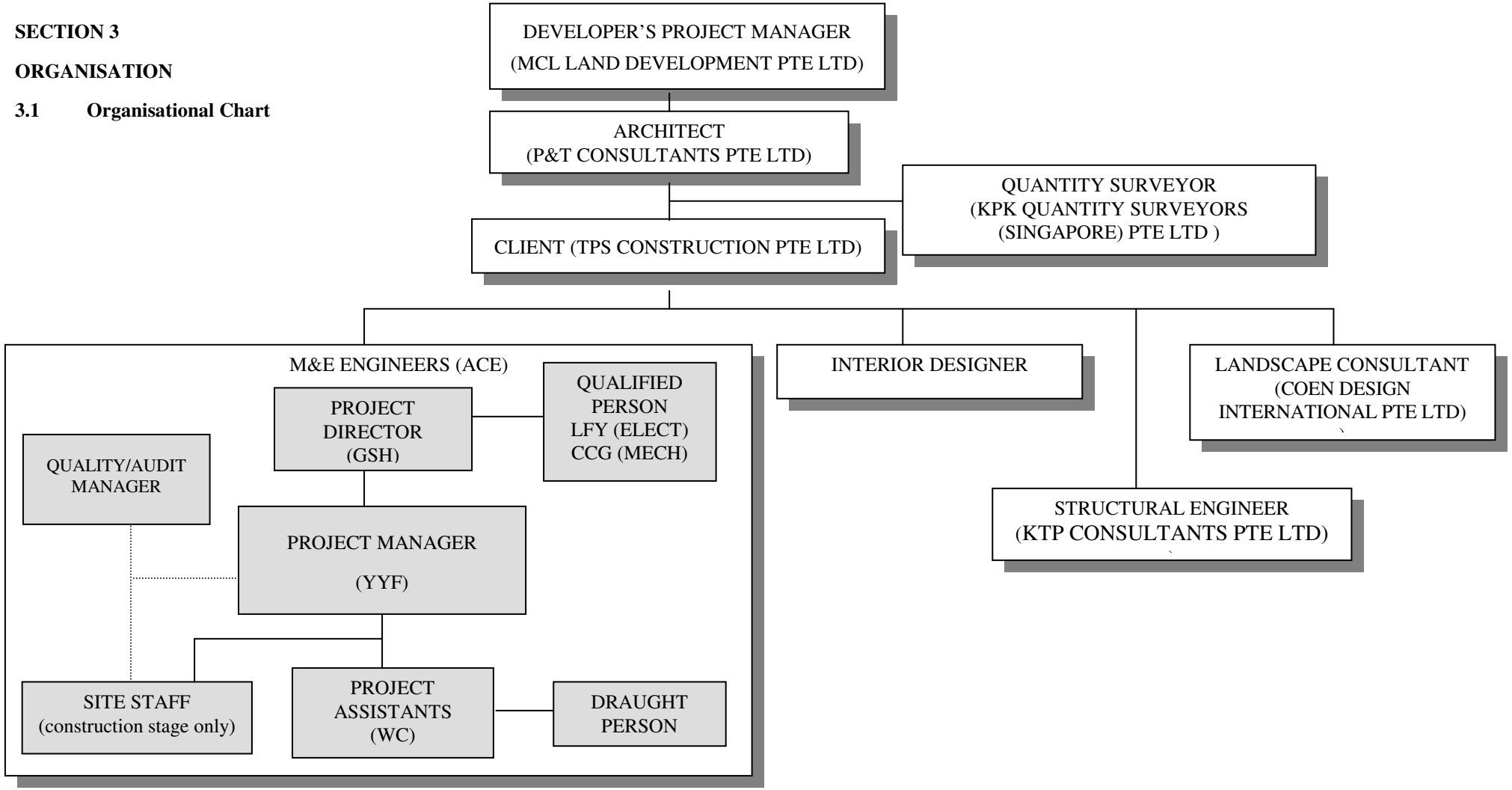
EJECTOR & DIVERTER	✓	SUMP PUMP	✓	FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL	✓	HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Goh Soon Huat (GSH)
Qualified Person	Mechanical	Choong Choon Guan (CCG)
	Electrical	Loh Fook Yuen (LFY)
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)		Mr Emmanuel Espiritu Guadana

3.3 Client/Client's Representatives

Client :- (Developer)	MCL Land Development Pte Ltd	Client:- (Main Contractor)	TPS Construction Pte Ltd
Address:-	78 Shenton Way #33-00 Singapore 079120	Address:-	8 Boon Lay Way #10-12/13 Trade Hub 21 Singapore 609964
Tel:-	6221 8111	Tel:-	6899 4957
Fax:-	6225 3383	Fax:-	6899 4956

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
TPS Construction Pte Ltd	Name: Mr Tong Wing South Position: Senior Project Manager	Tel: 6899 4957 Fax: 6899 4956 Handphone: 9088 9720 Email: ws@tpsconstruction.com.sg
-	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: Ms Yvon Yap Position: Director	Tel: 6309 0214 Fax: 6535 1283 Handphone: - Email: gcyap@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 TPS Construction Pte Ltd	DC	Name: Mr Hong Wing South Position: Senior Project Manager	Tel: 6899 4957 Fax: 6899 4956 Handphone: 9088 9720 Email: ws@tpsconstruction.com.sg
Air Conditioning & Ventilation Installation Sub-Contractor Cycle Aire (S) Pte Ltd	DSC	Name: Mr Tan K T Position: Manager	Tel: 6744 3933 Fax: 6744 8851 Handphone: 9635 6496 Email: cycle_aire@pacific.net.sg
Plumbing & Sanitary Installation Sub-Contractor New Asia (M&E) Pte Ltd	DSC	Name: Mr Andy Goh Position: Managing Director	Tel: 6482 0080 Fax: 6482 0030 Handphone: 8282 0228 Email: nasia@singnet.com.sg
Electrical Installation Sub-Contractor CNS Electrical Pte Ltd	DSC	Name: Mr Larry Chua Position: General Manager	Tel: 6285 1855 Fax: 6285 4654 Handphone: 9675 2357 Email: larrychua@cnselectrical.com
Lift & Escalator Installation Sub-Contractor Hitachi Asia Ltd	NSC	Name: Mr Siew Yat Hung Position: Senior Sales Manager	Tel: 6416 1711 Fax: 6561 0991 Handphone: Email: yhsiew@has.hitachi.com.sg
Fire Fighting & Alarm Installation Sub-Contractor TMP Engineering Pte Ltd	DSC	Name: Mr Thang M P Position: Director	Tel: 6742 0995 Fax: 6742 2290 Handphone: 8322 3857 Email: tmp2292@yahoo.com.sg
Swimming Pool Filtration Plant Installation Sub-Contractor Hydrotech M&E Services Pte Ltd	DSC	Name: Mr Ong Jian Way Position: Site Coordinator	Tel: 6748 4779 Fax: 6748 8016 Handphone: 91882606 Email: project@hydrotech.com.sg
Carpark System Installation Sub-Contractor		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	Mr Lam Tong Choy	67319385
(c) Diversion		
City Gas Pte Ltd:		
(a) Planning/Submission	Mr Liew Khee Boon	6578 7603
(b) Installation/Inspection	Mr Lim Teck Seng	90075727
PowerGas Pte Ltd		
(a) Diversion	Mr Tan Lye Sing	6751 8142
NEA (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

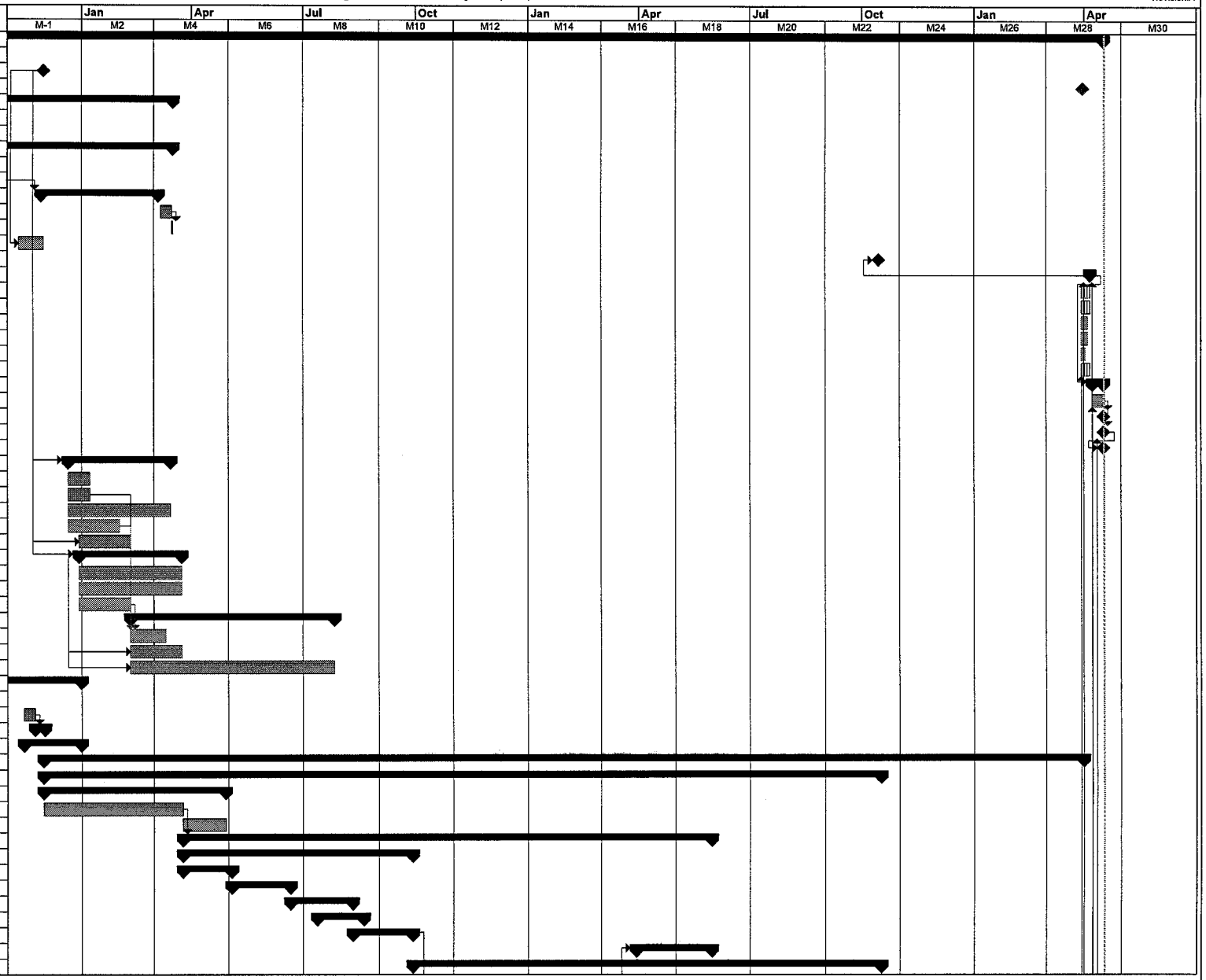
SECTION 4

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																									

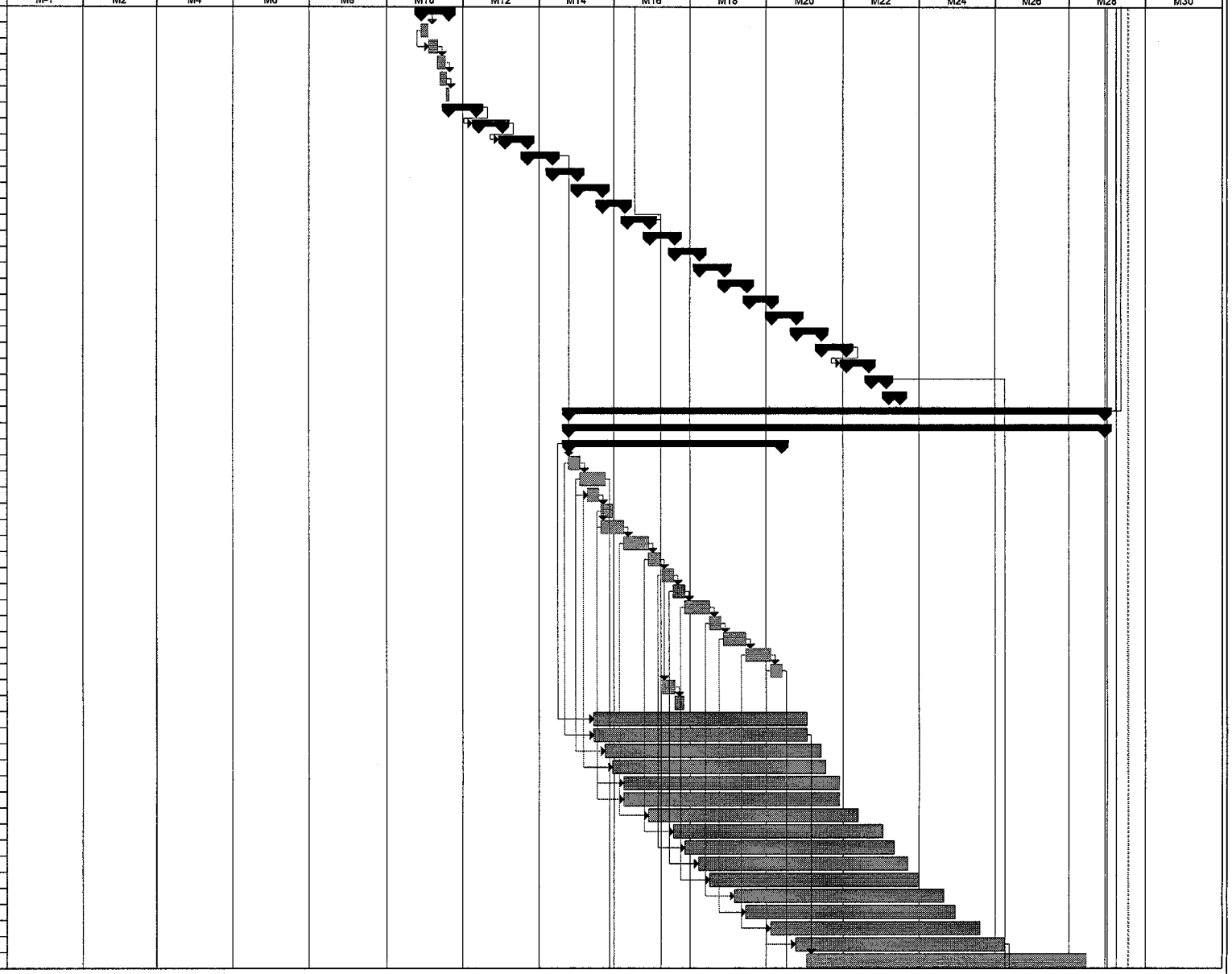
ID	Task Name	Days
1	**Project Milestone**	**910 d**
2	Receipt of Letter of Intent/Award	0 d
3	**Contract Commencement**	0 d
4	**Contract Completion Dates**	0 d
5	**Permit application / Authority submissions**	**363 d**
6	Factory Permit	14 d
7	**BCA permit (TERS)**	**14 d**
11	**Instrumentation**	**363 d**
12	Ground Instrumentation monitoring plan su	1 d
13	Approval of instrumentation plan	0 d
14	**Ground Instrumentation installation**	**70 d**
17	Submission of initial readings	7 d
18	Approval of bsmt excavation works	1 d
19	BCA Permit (Builder)	14 d
20	ESS handover to authority	
21	**Key dates for authority inspection**	
22	Singtel (Risers)	7 d
23	PowerGrid (Internal)	7 d
24	PUB(Water Tank)	5 d
25	ENV(Sanitary)	5 d
26	City Gas	3 d
27	FSSB(Lift & Sprinkler)	7 d
28	**RI / TOP inspection**	7 d
29	Consultants Pre-inspection	7 d
30	M&E RI	0 d
31	Arch RI	0 d
32	TOP Inspection	0 d
33	**Receipt of Construction Drawings**	**60 d**
34	Architecture	14 d
35	Landscspe	14 d
36	M&E	60 d
37	C&S	30 d
38	Nomination/appointment of NSCs	30 d
39	**Submission of samples / shop drwgs**	**60 d**
40	M&E items	60 d
41	Archi items	60 d
42	C&S items	30 d
43	**Approval of CSD**	**120 d**
44	C&S	21 d
45	M&E	30 d
46	Archi	120 d
47	**Mobilisation/setting out**	**300 d**
48	Pre-construction photographic survey on surroundi	28 d
49	Precomp approval	7 d
50	**Survey setting out**	**6 d**
53	**Site facilities (office/toilets/temporary structure**	**35 d**
56	**Construction Works**	**611 d**
57	**Structure Works**	**491 d**
58	**Piling works**	**107 d**
59	Foundation piles & 2WLT	82 d
60	TERS (GMP @ Zone 2)	25 d
61	**Substructure works**	**310 d**
62	**Zone 1**	**135 d**
63	**Ring beam/slab @ 1sty**	**29 d**
69	**Ring beam/slab @ B1**	**34 d**
75	**Pilecap for Twr Blk**	**37 d**
80	**B1 wall & Col**	**28 d**
83	**1st sty Temp opening cast back**	**35 d**
87	**Zone 2**	**44 d**
107	**Superstructures**	**274 d**



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

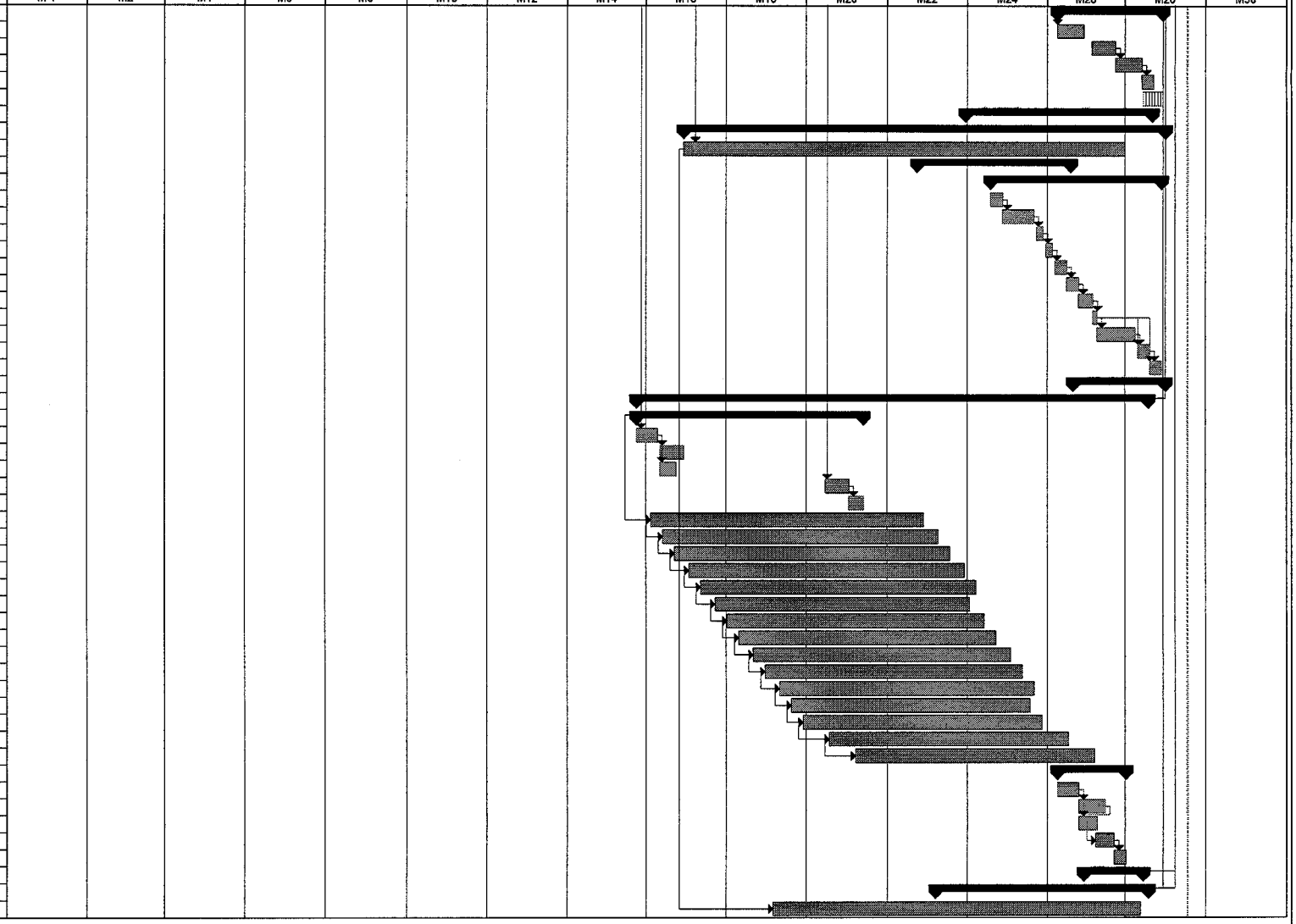
ID	Task Name	Days
108	1st sty frame	16 d
109	Col / wall	3 d
110	Beam/slab formwork	5 d
111	Beam/slab rebar	4 d
112	M&E services	3 d
113	Slab casting	2 d
114	2nd sty frame	16 d
120	3rd sty frame	15 d
126	4th sty frame	14 d
132	5th sty frame	14 d
135	6th sty frame	14 d
138	7th sty frame	14 d
141	8th sty frame	14 d
144	9th sty frame	14 d
147	10th sty frame	14 d
150	11th sty frame	14 d
153	12th sty frame	14 d
156	13th sty frame	14 d
159	14th sty frame	14 d
162	15th sty frame	14 d
165	16th sty frame	14 d
168	17th sty frame	14 d
171	Roof slab	14 d
174	Lift Motor Room slab & roof over stairca	10 d
177	Lift Motor Room Roof	7 d
180	Architectural	308 d
181	Internal Archi	308 d
182	2nd sty	123 d
183	Skim coat to ceiling	7 d
184	Brick works	14 d
185	Doors & window outer frames	7 d
186	Wet area waterproofing	7 d
187	Plastering	14 d
188	Bathrooms wall & floor tile	14 d
189	False ceiling	7 d
190	Floor screeding	7 d
191	Window Glazing	7 d
192	Timber flooring	14 d
193	Living / Dining floor tiles	7 d
194	Wardrobe & cabinets	14 d
195	Painting (base & 2nd coat)	14 d
196	Door panel & Ironmongery	7 d
197	Staircase wall & floor finishes	8 d
198	Staircase railing	5 d
199	3rd sty	123 d
200	4th sty	123 d
201	5th sty	123 d
202	6th sty	123 d
203	7th sty	123 d
204	8th sty	123 d
205	9th sty	120 d
206	10th sty	120 d
207	11th sty	120 d
208	12th sty	120 d
209	13th sty	120 d
210	14th sty	120 d
211	15th sty	120 d
212	16th sty	120 d
213	17th sty	120 d
214	1st sty	160 d



Prepared by : LM
Date printed: 5-01-11

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

ID	Task Name	Days
215	**Lower Roof**	**58 d**
216	Brick works	14 d
217	Plastering	14 d
218	Flat roof waterproofing/Panel roof & plir	14 d
219	Steel staircase	7 d
220	Trellis screen over M&E services	11 d
221	**Upper Roof Lift Motor Room**	**102 d**
228	**External works**	**263 d**
229	Plastering /painting works	240 d
230	**Screens / Trellis**	**85 d**
233	**Swimming pool & pool deck**	**94 d**
234	Waterproofing	7 d
235	Flood Test	18 d
236	Screeding	5 d
237	Wall & floor tiles	5 d
238	Pool deck waterproofing	7 d
239	Screeding	7 d
240	Pool deck tile	7 d
241	Over flow drain & cover	3 d
242	Timber deck	21 d
243	Railing & ladder	7 d
244	Underwater light	7 d
245	**Guard house / Balancing Tank & Filtration P**	**52 d**
251	**M&E Works**	**278 d**
252	**2nd sty**	**123 d**
253	2nd fix (concealed & pipe works)	12 d
254	Pressure test & meggaring test	14 d
255	Lobby Riser & Hosereel	10 d
256	3rd fix (Fitting & Fixtures)	14 d
257	T&C	7 d
258	3rd sty	150 d
259	4th sty	150 d
260	5th sty	150 d
261	6th sty	150 d
262	7th sty	150 d
263	8th sty	140 d
264	9th sty	140 d
265	10th sty	140 d
266	11th sty	140 d
267	12th sty	140 d
268	13th sty	140 d
269	14th sty	130 d
270	15th sty	130 d
271	16th sty	130 d
272	17th sty	130 d
273	**1st sty**	**38 d**
274	2nd fix (concealed & pipe works)	12 d
275	Pressure test & meggaring test	14 d
276	Lobby Riser & Hosereel	10 d
277	3rd fix (Fitting & Fixtures)	10 d
278	M&E Testing & commissioning	7 d
279	**Lower Roof**	**33 d**
286	**Lift**	**116 d**
291	CONQUAS / FA 123	200 d



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Date printed: 5-01-11

Task | Milestone | Rolled Up Critical Task | Split | External Milestone
Critical Task | Summary | Rolled Up Milestone | External Tasks | External Milestone
Progress | Rolled Up Task | Rolled Up Progress | Project 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	-	25/9/09	8/10/09	16/10/09					12/10/09
Power Supply Substation	SP PowerGrid Ltd	19/3/10	16/3/10	31/3/10	17/8/10	21/9/10	1/10/10			12/10/10
Metering Layout	SP Services Ltd	16/3/10	16/3/10	19/5/10						
Sanitary Installation	PUB Water Reclamation (Network) Dept	28/2/11								
Domestic Water Supply	PUB (Water Supply) Network Dept	14/1/11								
Gas Supply Installation	City Gas Pte Ltd	5/2/10	5/2/10							12/3/10
Air Conditioning & Ventilation Inst.	FSSD	18/2/11								
Fire Fighting & Alarm Installation	FSSD	1/4/11								
Telephone Installation	TFCC	28/1/11								
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision	28/1/11								
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	✓	- PQP/QSP	✓
- CC/CF	✓		

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

ITEM	KEPT BY
Tender Document	YYF

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

9.1 Sustainable Design Features / Criteria – NOT USED

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	N.A.
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 - NOT USED

Sub Job No	Description	Allocation Details