Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

PROPOSED ERECTION OF A 4-STOREY SINGLE-USER INDUSTRIAL BUILDING ON LOT 03096M PT MK29 AT TAMPINES INDUSTRIAL CRESCENT (PAYAR LEBAR PLANNING AREA)

For

AAC OPTICS SOLUTIONS PTE LTD

Copy No.	1

Prepared By: Tung Choi Mun

Authorised By: Loh Fook Yuen

Date: 10 June 2019

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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	6272-PQP File	10 June 2019

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	10 June 2019	1 to 11	29	+ 1 page (Section 4 – Overall Programme)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Retail, Office and Service Residence

Statistics of Development	
Site Area, m²	13,500.00
Nett Floor Area, m²	23,081.60
Gross Floor Area, m²	18,900.00
Covered Carpark, m²	-
No. of Carpark Lots	30
No. of Apartments/Houses	-
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	1 Block / 4 Storeys
Green Mark Category	Certified
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$)					
Services	Electrical	Plumbing & Sanitary	ACMV	Fire Protection	Lift
Estimate	-	-	-	-	-
Awarded	2,140,000	954,760	417,900	900,000	978,000

Total Project Construction Cost (S$)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	150,000	1,200,000	31,800,000

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

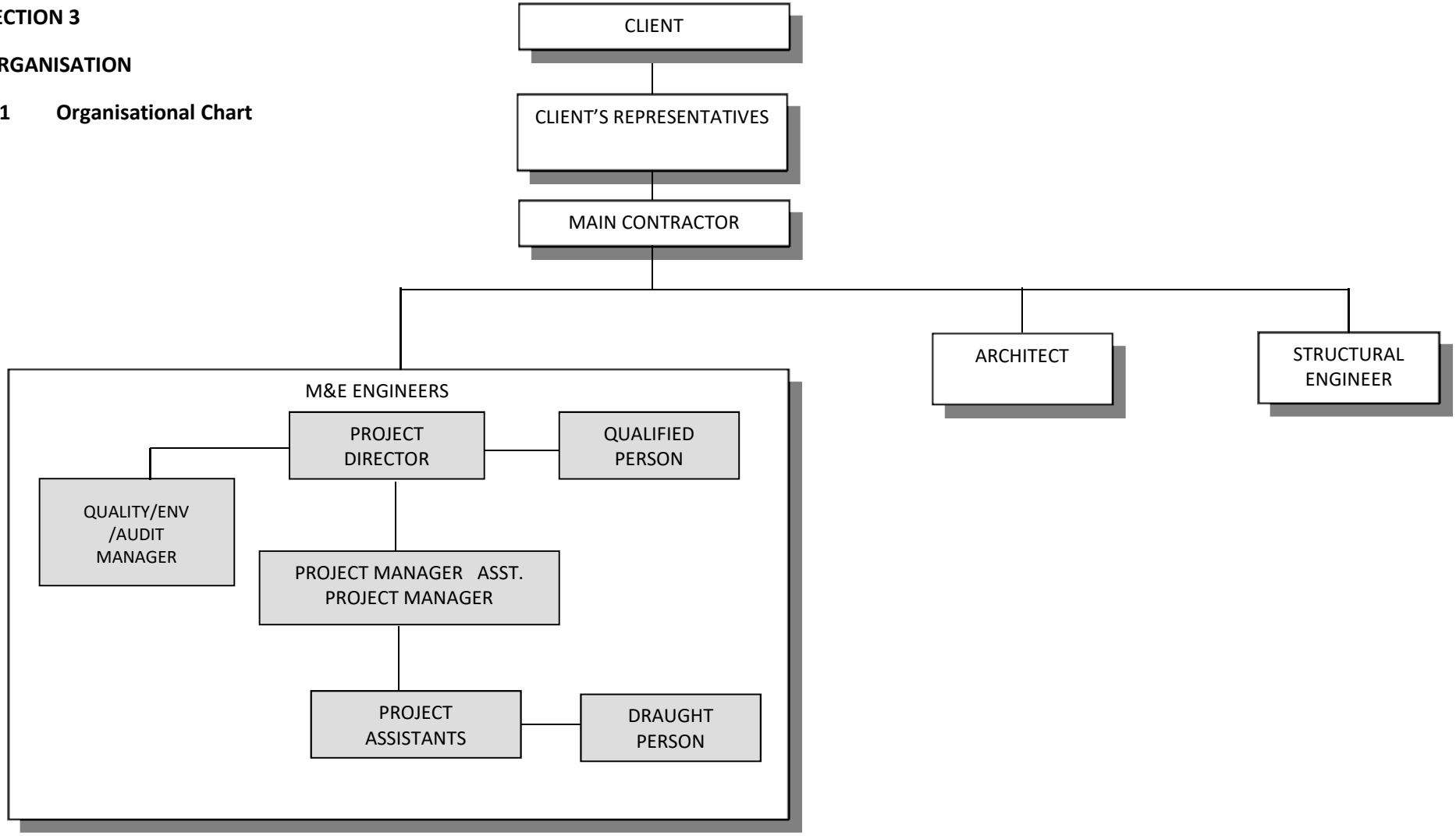
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Choong Choon Guan (CCG)
Qualified Person	Mechanical	Choong Choon Guan (CCG)
	Electrical	Loh Fook Yuen (LFY)
Project Manager		Chuan Kian Heng (CKH)
Assistant Project Manager		-
Project Assistant (Mech)		Tung Choi Mun (CM)
Project Assistant (Elect)		-
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Resident Technical Officer (M&E)		-

3.3 Client/Client's Representatives

Client: AAC Optics Solutions Pte Ltd

Address: 85 Science Park Drive, #02-08, The Cavendish, Singapore 118259

Tel:-

Fax:-

Client's Representatives:-

Name of Company	Contact Person	Contact
AAC Optics Solutions Pte Ltd	Name: Mr Roger Tay Position: General Manager & Vice President R&D	Tel: 6753 6906 Fax: 6753 1050 Handphone: Email: RogerTay@aactechnologies.com
AAC Optics Solutions Pte Ltd	Name: Mr Lee Beng Lark Position: Senior Engineer	Tel: 6753 6906 Fax: 6753 1050 Handphone: 8201 6388 Email: LeeBL@aactechnologies.com

3.3 Main Contractor

Name of Company	Contact Person	Contact
Yongnam Engineering & Construction Pte Ltd	Name: Mr Darren Tan Position: Manager	Tel: 6758 1511 Fax: 6758 0753 Handphone: 9479 2778 Email: darren.project@yongnamgroup.com
Yongnam Engineering & Construction Pte Ltd	Name: Mr Jing Chun How Position: Project Manager	Tel: 6758 1511 Fax: 6758 0753 Handphone: 9848 7905 Email: chjing.project@yongnamgroup.com

3.4 Other Consultants (Local)

Function / Name of Company	Contact Person	Contact
Architect Ong & Ong Pte Ltd	Name: Ms Wendy Tan Position: Project QP	Tel: 6528 8666 Fax: 6259 8648 Handphone: Email: tan.wendy@ong-ong.com
Architect Ong & Ong Pte Ltd	Name: Ms Josephine Loo Position: Assistant Director	Tel: 6528 8666 Fax: 6259 8648 Handphone: 9673 6678 Email: loo.josephine@ong-ong.com
Architect Ong & Ong Pte Ltd	Name: Mr Sivakumar Ratnasingam Position: Senior Architect	Tel: 6528 8666 Fax: 6259 8648 Handphone: Email: ratnasingam.sivakumar@ong-ong.com
Architect Ong & Ong Pte Ltd	Name: Mr Azman Embong Position: Architect	Tel: 6528 8666 Fax: 6259 8648 Handphone: 9651 9122 Email: embong.azman@ong-ong.com
Architect Ong & Ong Pte Ltd	Name: Mr Elmer Jay Caparros Position: Architect	Tel: 6528 8666 Fax: 6259 8648 Handphone: 8258 8666 Email: caparros.elmer.jay@ong-ong.com
Structural Engineer Rankine& Hill Pte Ltd	Name: Mr Simon Loh Shiou Man Position: Project Engineer	Tel: 6278 9588 Fax: 6273 5290 Handphone: 9423 9066 Email: loh.shiou.man@rankine-hill.com

3.5 Contractors/Sub-Contractors

Function / Name of Company	Contract *	Contact Person	Contact
Air Conditioning & Ventilation Installation Sub-Contractor Chem Technologies Pte Ltd	DSC	Name: Mr Tan Cheng Siang Position: Manager	Tel: 6455 2663 Fax: 6455 6932 Handphone: 9683 8800 Email: cstan@chemtech.com.sg
Plumbing & Sanitary Installation Sub-Contractor MW Dynamics Pte Ltd	DSC	Name: Mr Liang Weijie Position: License Plumber	Tel: 6483 7862 Fax: 6481 4238 Handphone: 9755 2797 Email: mw_gary@yahoo.com
Electrical Installation Sub-Contractor Nyglect Engineering Pte Ltd	DSC	Name: Mr Teo Hock Seng Position: Project Director	Tel: 6759 6888 Fax: 6759 6988 Handphone: 9763 6497 Email: teohs@nyglect.com
Fire Fighting & Alarm Installation Sub-Contractor SKYDE Engineering Pte Ltd	DSC	Name: Mr Uqba Abdullah Adib Position: Project Engineer	Tel: 6336 6058 Fax: 6336 6059 Handphone: 9106 5263 Email: uqba@sepl.com.sg

** 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 Abbas Mohd Supiah	6916 8557/ ABBASMOHDSUPIAH@spgroup.com.sg
(b) Diversion		
SP Services:		
(a) Customer Supply	Ms Serene Koh Su Juan	6916 7231 / serenekoh@spgroup.com.sg
(b) Installation		
(c) Meter Section		
(d) Road Lighting		
SP Telecommunication: (a) Diversion		
TFCC:		
(a) SCV		
(b) SingTel (Diversion)		
(c) SingTel (MDF)		
(d) IDA	Mr Lee Him Buan	6211 3893 / himbuan.lee@netlinknbn.com
BCA:		
(a) Building Plan		
(b) Green Mark		
FSSD:		
(a) Building Plan		
(b) M&E Plan		
PUB (Water Supply) Network Dept:		
(a) Water Conservation		
(b) Plumbing Plan	Ms Norain Binte Dalail	6885 2533 / 8826 4896/ norain_dalail@pub.gov.sg
(c) Diversion		

3.6 Authorities (cont'd)

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
(d) NEWater	Mr Alan Tan J C	6731 3065 / 9845 7641/Alan_Jc_TAN@pub.gov.sg
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU	Mr Low Yang You	6731 3223 / low_yang_you@pub.gov.sg
(b) M&E Plan		
(c) Diversion		
City Gas Pte Ltd:		
(a) Planning/Submission		
(b) Installation/Inspection		
(c) Diversion		
PowerGas Pte Ltd		
(a) Diversion		
NEA (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

SECTION 4

PROGRAMME

4.1 Overall Programme (Refer to the attached program)

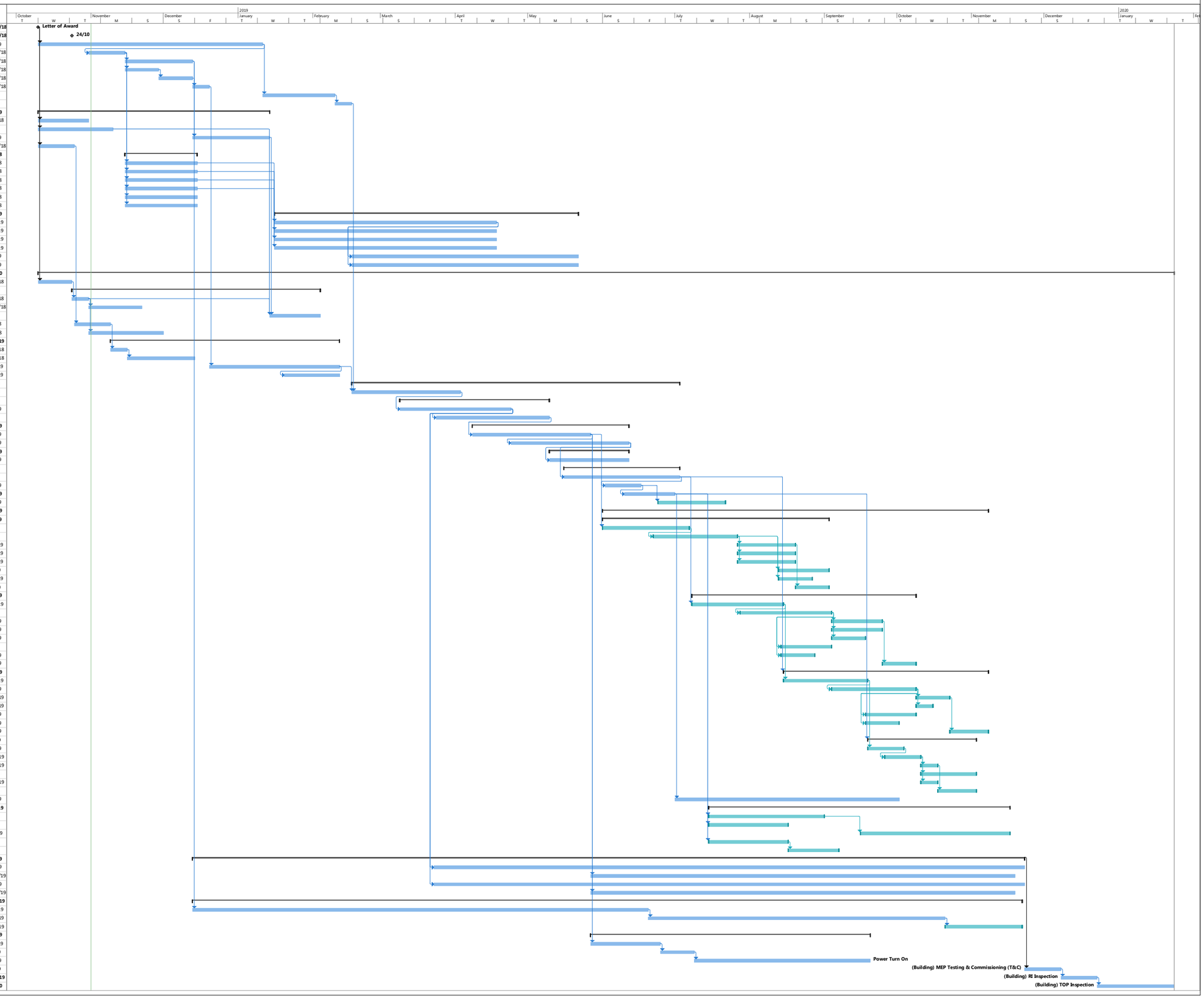
ID	TASK NAME	MONTHS	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1.	Preliminary Planning																									
2.	Planning Submission																									
3.	Detail Design																									
4.	BP Submission																									
5.	BP Submission (Amendments)																									
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																									

AAC OPTICS SOLUTIONS AT TAMPINES INDUSTRIAL

MASTER PROGRAM REV0

Yongnam Engineering & Construction Pte Ltd

ID	Task Name	Duration	Start	Finish
1	**Letter of Award**	**0 days**	**Wed 10/10/18**	**Wed 10/10/18**
2	**Contract Commencement**	**0 days**	**Wed 24/10/18**	**Wed 24/10/18**
3	Detailed Design Development	90 days	Wed 10/10/18	Thu 10/1/19
4	JTC Endorsement	14 days	Wed 31/10/18	Wed 14/11/18
5	URA submission for Provisional Permit (PP)	28 days	Thu 15/11/18	Wed 12/12/18
6	Accredited Checker submission (AC)	14 days	Thu 15/11/18	Wed 28/11/18
7	BCA ST (Piling) Submission	14 days	Thu 29/11/18	Wed 12/12/18
8	Permit to commence work	7 days	Thu 13/12/18	Wed 19/12/18
9	BCA ST (Superstructure) Submission	28 days	Fri 11/1/19	Sat 9/2/19
10	Permit to commence work	7 days	Sun 10/2/19	Sat 16/2/19
11	**Authority Submission - Preliminary Work**	**93 days**	**Wed 10/10/18**	**Sun 13/1/19**
12	MOM Submission	21 days	Wed 10/10/18	Tue 30/10/18
13	PUB - ECM Submission	30 days	Wed 10/10/18	Fri 9/11/18
14	ERSS Submission	30 days	Thu 13/12/18	Sun 13/1/19
15	Application for Temporary Road Crossing	15 days	Wed 10/10/18	Wed 24/10/18
16	**Submission of DC clearance**	**30 days**	**Thu 15/11/18**	**Fri 14/12/18**
17	Archi Plan Submission	30 days	Thu 15/11/18	Fri 14/12/18
18	NEA Submission	30 days	Thu 15/11/18	Fri 14/12/18
19	Npark Submission	30 days	Thu 15/11/18	Fri 14/12/18
20	LTA Submission	30 days	Thu 15/11/18	Fri 14/12/18
21	PUB Submission	30 days	Thu 15/11/18	Fri 14/12/18
22	Power Grid Submission	30 days	Thu 15/11/18	Fri 14/12/18
23	**BCA BP Submission**	**120 days**	**Wed 16/1/19**	**Tue 21/5/19**
24	Archi Plan Submission	90 days	Wed 16/1/19	Wed 17/4/19
25	NEA Submission	90 days	Wed 16/1/19	Wed 17/4/19
26	Npark Submission	90 days	Wed 16/1/19	Wed 17/4/19
27	LTA Submission	90 days	Wed 16/1/19	Wed 17/4/19
28	PUB Submission	90 days	Sun 17/2/19	Tue 21/5/19
29	FSSD Submission	90 days	Sun 17/2/19	Tue 21/5/19
30	**CONSTRUCTION**	**454 days**	**Wed 10/10/18**	**Thu 23/1/20**
31	Mobilization	14 days	Wed 10/10/18	Tue 23/10/18
32	**Temporary Works**	**100 days**	**Wed 24/10/18**	**Sun 3/2/19**
33	Setting Out Survey	7 days	Wed 24/10/18	Tue 30/10/18
34	Perimeter Hoarding	21 days	Wed 31/10/18	Wed 21/11/18
35	Washing Bay & ECM	21 days	Mon 14/1/19	Sun 3/2/19
36	Temporary Road Crossing	14 days	Thu 25/10/18	Thu 8/11/18
37	Site Office Set Up	30 days	Wed 31/10/18	Fri 30/11/18
38	**Piling**	**91 days**	**Fri 9/11/18**	**Mon 11/2/19**
39	Mobilization	7 days	Fri 9/11/18	Thu 15/11/18
40	Ultimate Load Test	28 days	Fri 16/11/18	Thu 13/12/18
41	Piling - Jack In Piles	50 days	Thu 20/12/18	Mon 11/2/19
42	Working Load Test / PDA / PIT	21 days	Sun 20/1/19	Mon 11/2/19
43	**Structure**	**131 days**	**Sun 17/2/19**	**Tue 2/7/19**
44	**Pilecap**	**45 days**	**Sun 17/2/19**	**Tue 2/4/19**
45	**1st Storey**	**60 days**	**Sat 9/3/19**	**Thu 9/5/19**
46	Cast In-Situ (CIS) Beam & Slab	45 days	Sat 9/3/19	Tue 23/4/19
47	Precast Columns	45 days	Sun 24/3/19	Thu 9/5/19
48	**2nd Storey**	**60 days**	**Mon 8/4/19**	**Tue 11/6/19**
49	Precast Beam, Slab & Topping	45 days	Mon 8/4/19	Sun 26/5/19
50	Precast Columns	45 days	Wed 24/4/19	Tue 11/6/19
51	**3rd Storey**	**30 days**	**Fri 10/5/19**	**Tue 11/6/19**
52	Precast Slab & Topping	30 days	Fri 10/5/19	Tue 11/6/19
53	**4th Storey / Roof**	**45 days**	**Thu 16/5/19**	**Tue 2/7/19**
54	Precast Beam, Slab & Topping	45 days	Thu 16/5/19	Tue 2/7/19
55	Precast Columns	14 days	Sun 2/6/19	Sun 16/6/19
56	**Upper RC Roof**	**21 days**	**Mon 10/6/19**	**Sun 30/6/19**
57	**Metal Roof**	28 days	Mon 24/6/19	Sun 21/7/19
58	**Architectural**	**154 days**	**Sat 1/6/19**	**Thu 7/11/19**
59	**1st Storey**	**90 days**	**Sat 1/6/19**	**Mon 2/9/19**
60	Precast Panel	35 days	Sat 1/6/19	Sat 6/7/19
61	Plastering	35 days	Sat 22/6/19	Fri 26/7/19
62	Windows	21 days	Sat 27/7/19	Mon 19/8/19
63	Doors	21 days	Sat 27/7/19	Mon 19/8/19
64	Louvers	21 days	Sat 27/7/19	Mon 19/8/19
65	Tiling	21 days	Tue 13/8/19	Mon 2/9/19
66	Railing	14 days	Tue 13/8/19	Mon 26/8/19
67	Painting	14 days	Tue 20/8/19	Mon 2/9/19
68	**2nd Storey**	**90 days**	**Mon 8/7/19**	**Tue 8/10/19**
69	Precast Panel	35 days	Mon 8/7/19	Wed 14/8/19
70	Plastering	35 days	Sun 28/7/19	Tue 3/9/19
71	Windows	21 days	Wed 4/9/19	Tue 24/9/19
72	Doors	21 days	Wed 4/9/19	Tue 24/9/19
73	Louvers	14 days	Wed 4/9/19	Tue 17/9/19
74	Tiling	21 days	Wed 14/8/19	Tue 3/9/19
75	Railing	14 days	Wed 14/8/19	Tue 27/8/19
76	Painting	14 days	Wed 25/9/19	Tue 8/10/19
77	**3rd Storey**	**83 days**	**Thu 15/8/19**	**Thu 7/11/19**
78	Precast Panel	35 days	Thu 15/8/19	Wed 18/9/19
79	Plastering	35 days	Wed 4/9/19	Tue 8/10/19
80	Windows	14 days	Wed 9/10/19	Tue 22/10/19
81	Doors	7 days	Wed 9/10/19	Tue 15/10/19
82	Tiling	21 days	Wed 18/9/19	Tue 8/10/19
83	Railing	14 days	Wed 18/9/19	Tue 1/10/19
84	Painting	14 days	Wed 23/10/19	Thu 7/11/19
85	**4th Storey / Roof**	**43 days**	**Thu 19/9/19**	**Sat 2/11/19**
86	Precast Panel	15 days	Thu 19/9/19	Thu 3/10/19
87	Plastering	15 days	Thu 26/9/19	Thu 10/10/19
88	Doors	7 days	Fri 11/10/19	Thu 17/10/19
89	Tiling	21 days	Fri 11/10/19	Sat 2/11/19
90	Railing	7 days	Fri 11/10/19	Thu 17/10/19
91	Painting	14 days	Fri 18/10/19	Sat 2/11/19
92	**Façade Curtain Wall**	90 days	Mon 1/7/19	Tue 1/10/19
93	**External Work**	**120 days**	**Mon 15/7/19**	**Sat 16/11/19**
94	Perimemeter Drains	45 days	Mon 15/7/19	Sat 31/8/19
95	Hydrant Works	30 days	Mon 15/7/19	Fri 16/8/19
96	Driveway	60 days	Mon 16/9/19	Sat 16/11/19
97	Underground Tanks	30 days	Mon 15/7/19	Fri 16/8/19
98	Retaining Wall	21 days	Sat 17/8/19	Fri 6/9/19
99	**MEP**	**331 days**	**Thu 13/12/18**	**Fri 22/11/19**
100	Electrical	235 days	Sat 23/3/19	Fri 22/11/19
101	Fire Protection	170 days	Mon 27/5/19	Mon 18/11/19
102	Plumbing & Sanitary	235 days	Sat 23/3/19	Fri 22/11/19
103	ACMV	170 days	Mon 27/5/19	Mon 18/11/19
104	Lift	330 days	**Thu 13/12/18**	**Thu 21/11/19**
105	Procurement	180 days	Thu 13/12/18	Wed 19/6/19
106	Installation	120 days	Thu 20/6/19	Sun 20/10/19
107	Testing & Commissioning	30 days	Mon 21/10/19	Thu 21/11/19
108	**Electrical Sub-Station (ESS)**	**112 days**	**Mon 27/5/19**	**Thu 19/9/19**
109	Internal / External Finishes	28 days	Mon 27/5/19	Mon 24/6/19
110	Handover to PG	14 days	Tue 25/6/19	Mon 8/7/19
111	Power Turn On	70 days	Tue 9/7/19	Thu 19/9/19
112	**(Building) MEP Testing & Commissioning (T&C)**	**15 days**	**Sat 23/11/19**	**Sat 7/12/19**
113	**(Building) RI Inspection**	**15 days**	**Sun 8/12/19**	**Sun 22/12/19**
114	**(Building) TOP Inspection**	**30 days**	**Mon 23/12/19**	**Thu 23/1/20**



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	-	25/03/2019							25/04/2019
Power Supply Substation	SP PowerGrid Ltd	-	26/12/2018							07/01/2019
MDF Room	TFCC	-	02/01/2019	-	-	-	-	-	-	18/01/2019
Sanitary Installation	PUB Water Reclamation (Network) Dept	-	18/04/2019	-	-	-	-	-	-	25/04/2019
Domestic Water Supply	PUB (Water Supply) Network Dept	-	22/04/2019							
Gas Supply Installation	City Gas Pte Ltd	-	-	-	-	-	-	-	-	-
Air Conditioning & Ventilation Inst.	FSSD									
Fire Fighting & Alarm Installation	FSSD									
Emergency Voice Communication	FSSD									
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision									
Fuel Storage	FSSD									
Ejector Pump	CBPU-NEA	-	-	-	-	-	-	-	-	-

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) - 2nd 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	-	-	-	-	-	-	-	-	-
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	-	26/02/2019	-	-	-	-	-	-	08/03/2019
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:	

(✓*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	CM
Incoming Architectural Sketches/Details	CM
Incoming Structural Drawings	CM
M&E Drawings	
- Electrical Installation	LFY
- Lift & Escalator Installation	-
- Air Conditioning & Ventilation Installation	CM
- Fire Fighting & Alarm Installation	CM
- Plumbing & Sanitary Installation	CM
- Swimming Pool & Filtration Installation	-
Other Drawings	
- Drawings in Softcopy	Server

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

Item No.	Description*	Required From	Required By	Date Required	Remarks
1	Mechanical schematic design	CKH, CM	CCG	18/07/2018	
2	Electrical schematic design	-	LFY	18/07/2018	
3	Mechanical detail design				
4	Electrical detail design				
5	Mechanical tender documentation				
6	Electrical tender documentation				

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

8.2 List of Applicable Code of Practice and Regulations

Services	Title of Code of Practice/Standard
Electrical Wiring	Singapore Standard CP 5: 1998 Code of Practice for Electrical Installations
Lightning Protection System	Singapore Standard SS 555: 2010 Code of Practice for Protection against Lightning
Emergency Voice Communication System	Singapore Standard CP 546: 2009 Code of Practice for Emergency Voice Communication Systems in Buildings
Air Conditioning & Ventilation Installation	Singapore Standard CP 553: 2009 Code of Practice for Air-conditioning and Mechanical Ventilation in Buildings
Sprinkler System	Singapore Standard CP 52: 2004 Code of Practice for Automatic Fire Sprinkler System
Dry Riser System	Singapore Standard CP SS 575: 2012 Code of Practice for Fire Hydrant, Rising Mains and Hose Reel Systems
Automatic Fire Alarm System	Singapore Standard CP 10: 2005 Code of Practice for Installation and Servicing of Electrical Fire Alarm Systems
Sanitary System	Code of Practice on Sewerage & Sanitary Works
Plumbing System	Singapore Standard CP 48: 2005 Code of Practice for Water Services

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 Pre-Consultation and Waiver – NOT APPLICABLE

S/N	Description	Date of Application	Date of Approval	Remarks
1	*Clause number in Code of Practice for (Services) which require clarification or waiver. Consultation Ref No. Waiver Ref. No.			
2	*Clause number in Code of Practice for (Services) which require clarification or waiver. Consultation Ref No. Waiver Ref. No.			
3	*Clause number in Code of Practice for (Services) which require clarification or waiver. Consultation Ref No. Waiver Ref. No.			

*To fill in actual information

8.5 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	
S13	Non-Conformity and Corrective Action Procedures	✓
S14	Quality & Environmental System Audit	✓
S15	Feedback Reporting	✓
S16	Clients Feedback	✓
S17	Management Review	✓
S18	Risk Identification, Assessment & Control	✓

8.6 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	
Dialux	4.11	Freeware	Lighting design	
Lift Traffic	7.18	Elevate	Lift traffic calculation	
Fault Level Calculation	11.1.1	ETAP	Calculation of fault level and voltage drop	

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.1 Sustainable Design Features / Criteria

Item	Remarks
Green Mark criteria	Certified
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	-
M&E Cost Estimate Report	-
Pre-Qualification of Tenderers	-
Tender Documents	-
Tender Report	-
Payment Valuation for QS	-
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 APPLICABLE

SECTION 11

LIST OF SUB-JOB

11.1 List of Sub-Job Numbers – NOT APPLICABLE

Sub Job No	Description	Allocation Details