Alpha
Engineering Consultant

PROJECT QUALITY PLAN

PROPOSED ADDITIONS & ALTERATIONS INVOLVING CHANGE OF USE TO COMMERCIAL USE TO THE EXISTING 4-STOREY ST JAMES POWERSTATION (PRESERVATION BUILDING) ON LOT 1147M (PT) TS 23 AT GATEWAY AVENUE (BUKIT MERAH / SOUTHERN ISLANDS DGP)

For

M/S HARBOURFRONT PTE LTD

Copy No.	1

Prepared By: Soh Kai Yea

Authorized By: Andrew Loh

Date: 2 November 2005

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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	1398-PQP File	18 October 2004
2	Soh Kai Yea	18 October 2004

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	18 October 2004	1 to 10	26	
1	2 November 2005	1 to 10	26	

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Commercial

Statistics of Development	
Site Area, m²	20,102
Nett Floor Area, m²	N.A
Gross Floor Area, m²	8,556
Covered Carpark, m²	N.A
No. of Covered Carpark Lots	N.A
No. of Apartments/Houses	N.A.
No. of Beds (for Hospitals)	N.A
No. of Guestroom (for Hotels)	N.A
No. of Blocks / No. of Storeys	3 blocks / 4 storeys
No. of Phases	2

2.2 Project Cost

M&E Services Cost Plan (S$ x 1K)										
Services	EI	ACVI	LEI	FFAI	PSI & Gas	SPFI	Auto Gate			
Estimate	1,350	2,000	230	500	650	-	-			
Awarded	1,068	1,443	215	420	854	-	-			

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	N.A	N.A	19,346,000.00
Awarded	N.A	N.A	17,922,250.00

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.		AUTO GATE CONTROL							
FLUSHFLOOR TRUNKING									

(✓*where applicable*)

2.3.3 Submission to Relevant Authorities by Others

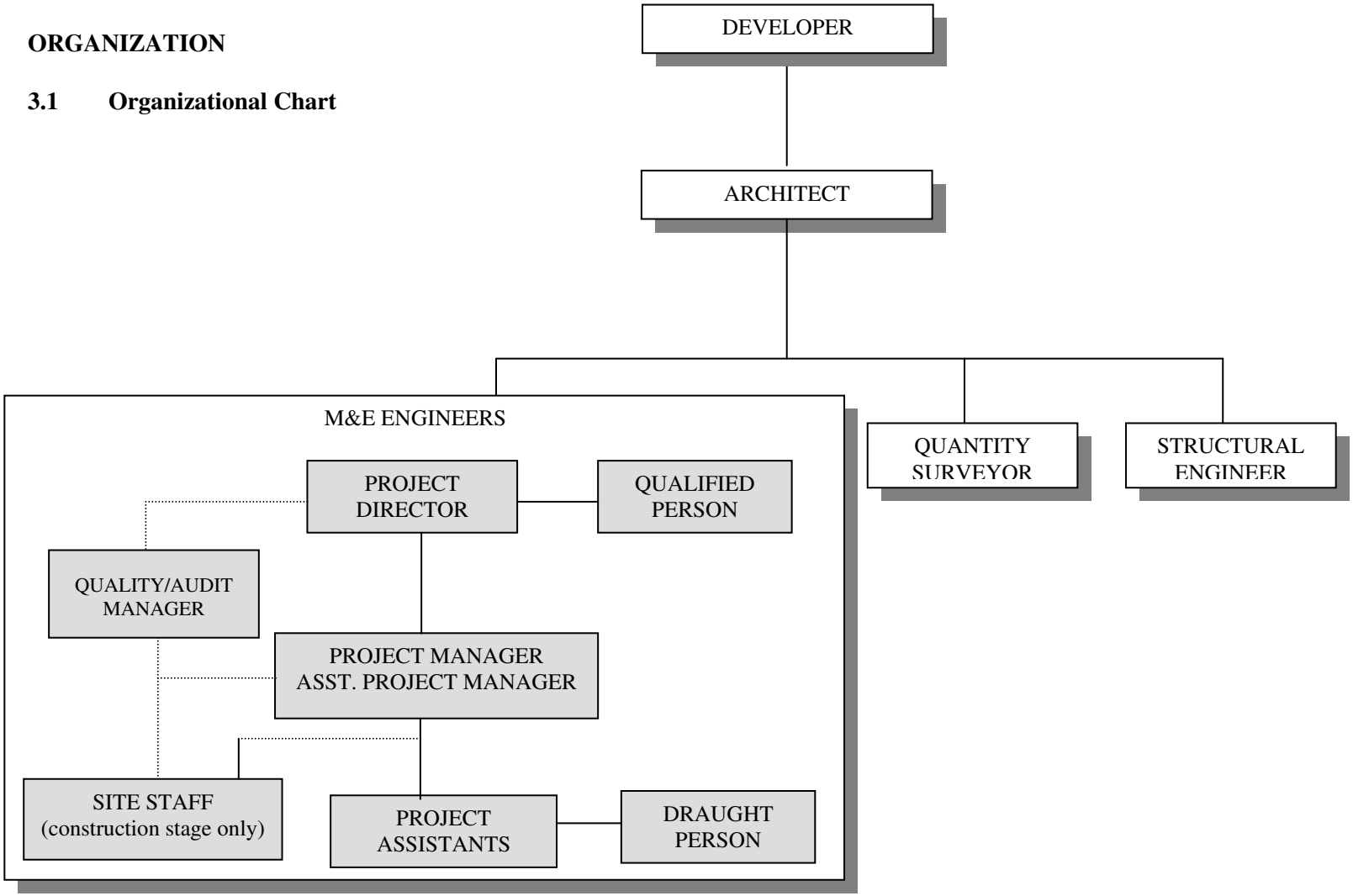
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANIZATION

3.1 Organizational Chart



SECTION 3

ORGANIZATION

3.2 AEC's Project Team Member

TITLE		NAME
Project Director		Andrew Loh (LCT)
Qualified Person	Mechanical	Andrew Loh (LCT)
	Electrical	Tan Lai Siong (TLS)
Project Manager		Soh Kai Yea (SKY)
Assistant Project Manager		Heng Chye Hing (HCH)
Project Assistant (Mech)		Ang Wee Loong (AWL)
Project Assistant (Elect)		Jade Bai Yuchen (JB)
Draughtsperson		Common Pool
Resident Engineer		Tan Chye Huat
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		Winston Goh

3.3 Client/Client's Representatives

Client: Mapletree Investment Pte Ltd

Address: 1 Maritime Square
#13th Storey (Lobby B)
HarbourFront Centre
Singapore 099253

Tel: 6377 6111

Fax: 6273 2740

Name of Firm	Contact Person	Contact
Mapletree Investment Pte Ltd	Name: Mrs Lee Pheck Yan Position: Director (Development Management)	Tel: 6377 6110 Fax: 6273 2740 Handphone: Email: pylee@mapletree.com.sg
Mapletree Investment Pte Ltd	Name: Mr Peter Chua Teck Hong Position: Senior Project Manager	Tel: 6377 6102 Fax: 6273 2740 Handphone: - Email: peterchua@mapletree.com.sg
Mapletree Investment Pte Ltd	Name: Ms Chong Kim Fung Position: Asset Manager	Tel: 6377 6127 Fax: 6376 2168 Handphone: - Email: kfchong@mapletree.com.sg
Mapletree Investment Pte Ltd	Name: Mr Goh Choon Kiat Position: Project Manager	Tel: 6377 6111 Fax: 6273 2740 Handphone: - Email: ckgoh@mapletree.com.sg

3.4 **Other Consultants** (Local)

Function / Name of Firm	Contact Person	Contact
Architect DCA Architects Pte Ltd	Name: Ms Shindy Foo Position: Architech	Tel: 6225 5366 Fax: 6225 4288 Handphone: 9735 5380 Email: shindy@dca-architects.com
Quantity Surveyor Northcroft Lim Consultants Pte Ltd	Name: Ms Tina Goh Position: Senior Quantity Surveyor	Tel: 6220 7188 Fax: 6222 0868 Handphone: 9634 5107 Email: tgoh@northcroft.com.sg
Structural Engineer T Y Lin South East Asia Pte Ltd	Name: Mr Ng Swee Tong Position: Associate	Tel: 6277 1524 Fax: 6278 2622 Handphone: Email: ngsweetong@tylin.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:
-	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Overseas) – **Not Used**

Function / Name of Firm	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 Firm	Contract *	Contact Person	Contact
Main Contractor Tiong Aik Construction Pte Ltd		Name: Mr Chew Chan Choon Position: Project Manager	Tel: 6392 2988 Fax: 6392 0988 Handphone: 9690 9688 Email: charchoon@tiongaik.com.sg
		Name: Mr Tan Hock Kim Position: M&E Manager	Tel: 6392 2988 Fax: 6392 0988 Handphone: 9780 2357 Email: -
Air Conditioning & Ventilation Installation Sub-Contractor Kurihara Kogyo Co., Ltd	DSC	Name: Mr Don Tan Position: Manager	Tel: 6271 9863 Fax: 6278 4475 Handphone: 9732 0536 Email: dontan@kurihara.com.sg
Plumbing & Sanitary Installation Sub-Contractor Wang Kok Sewerage Construction Pte Ltd	DSC	Name: Mr Marlboro Chua Position: Project Manager	Tel: 6280 7823 Fax: 6382 4371 Handphone: 9830 9348 Email: wangkok@singnet.com.sg
Electrical Installation Sub-Contractor Powen Electrical Engineering Pte Ltd	DSC	Name: Mr Kok Luck Kee Position: Manager	Tel: 6468 6868 Fax: 6763 1908 Handphone: 9380 9273 Email: luckkee@powen.com.sg
Lift & Escalator Installation Sub-Contractor Schindler Lifts (Singapore) Pte Ltd	DSC	Name: Mr Frankie Goh Position: Manager	Tel: 6748 8611 Fax: 6846 2212 Handphone: Email: frankie-_goh@sg.schindler.com
Fire Fighting & Alarm Installation Sub-Contractor Kurihara Kogyo Co., Ltd	DSC	Name: Mr Don Tan Position: Manager	Tel: 6271 9863 Fax: 6278 4475 Handphone: 9732 0536 Email: dontan@kurihara.com.sg
-		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	Tel: 6823 8556
(b) Customer Project	Mr Ang Kah Seng	Tel: 6823 8888
SP Services		
(a) Customer Supply	Ms Alice Tang	Tel: 6823 8888
(b) Installation	-	Tel:
(c) Meter Section	-	Tel:
(d) Road Lighting	-	Tel:
TFCC:		
(a) SCV	Mr Roland Lim	Tel: 6825 6169
(b) SingTel	-	Tel:
(c) IDA	-	Tel:
BCA:		
(a) Building Plan	-	Tel:
FSSD:		
(a) Building Plan	-	Tel:
(b) M&E Plan	Mr Han Fook Kuang	Tel: 6848 1467
PUB (Water Supply) Network Dept:		
(a) Water Conservation	-	Tel:
(b) Plumbing Plan	Mr Toh Tse Teck	Tel: 6885 2466
(c) Diversion	-	Tel:
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU	-	Tel:
(b) M&E Plan	-	Tel:
(c) Diversion	-	Tel:
City Gas Pte Ltd:		
(a) Planning/Submission	Mr Dion Tay	Tel: 6823 8635
(b) Installation/Inspection	-	Tel:
PowerGas Pte Ltd		
(a) Diversion	Mr Mohd Zin	Tel: 6751 8133
ENV (Pollution Control)		
(a) Planning/Submission	Mr Tan Kheng Kim	Tel: 6731 9155
(b) Inspection	-	Tel:

SECTION 4

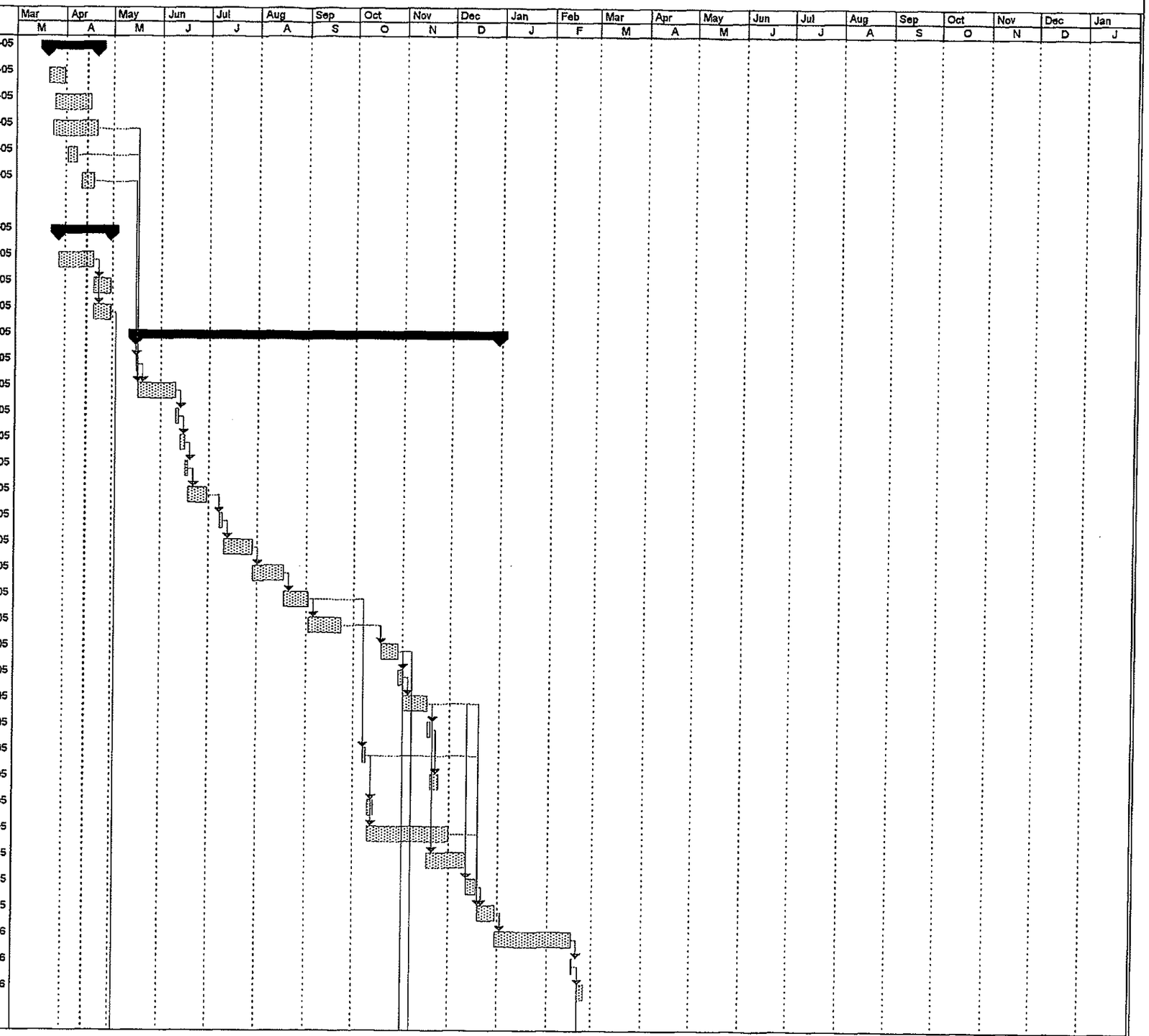
PROGRAMME

4.1 Overall Programme – (Refer to attached)

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																									

MASTER CONSTRUCTION PROGRAMME
ST JAMES POWER STATION

ID	Task Name	Duration	Start	Finish
1	Preliminaries	27 days	21-03-05	20-04-05
2	Site mobilisation	9 days	21-03-05	30-03-05
3	Factory license application	20 days	25-03-05	16-04-05
4	Pre-condition survey	24 days	24-03-05	20-04-05
5	Cable detection	5 days	02-04-05	07-04-05
6	Instrumentation	7 days	11-04-05	18-04-05
7				
8	Temporary work	29 days	28-03-06	29-04-05
9	Strutting design by PE	19 days	28-03-05	18-04-05
10	Approval by QP	10 days	19-04-05	29-04-05
11	Demolition permit	10 days	19-04-05	29-04-05
12	Phase 1 (ESS)	196 days	16-05-05	29-12-05
13	Setting out	1 day	16-05-05	16-05-05
14	Piling/load test	21 days	17-05-05	09-06-05
15	Excavation	2 days	10-06-05	11-06-05
16	Cutting off pile head	3 days	13-06-05	15-06-05
17	Pile ECC	2 days	16-06-05	17-06-05
18	Pilecap	10 days	18-06-05	29-06-05
19	Backfill	2 days	08-07-05	09-07-05
20	Cable chamber RC	16 days	11-07-05	28-07-05
21	Switch room level Rc	16 days	29-07-05	16-08-05
22	Tranformer roof RC	14 days	17-08-05	01-09-05
23	Switchroom roof Rc	18 days	02-09-05	22-09-05
24	Brick work/glass block	10 days	18-10-05	28-10-05
25	Installation of door/window frame outer frame	2 days	29-10-05	31-10-05
26	Plastering work	14 days	01-11-05	16-11-05
27	Installation of door/window inner frame	2 days	17-11-05	18-11-05
28	Rc roof waterproofing	2 days	07-10-05	08-10-05
29	Cat ladder and ss railing	4 days	19-11-05	23-11-05
30	Alum. louvre screen	4 days	10-10-05	13-10-05
31	M&E work	45 days	10-10-05	30-11-05
32	Underground pipes and draw pit	21 days	17-11-05	10-12-05
33	Painting	6 days	12-12-05	17-12-05
34	Handover to Power grid	10 days	19-12-05	29-12-05
35	Installation of tranformer & switch gear	35 days	30-12-05	15-02-06
36	Power turn on	1 day	16-02-06	16-02-06
37	Installation of genset	4 days	20-02-06	23-02-06
38				

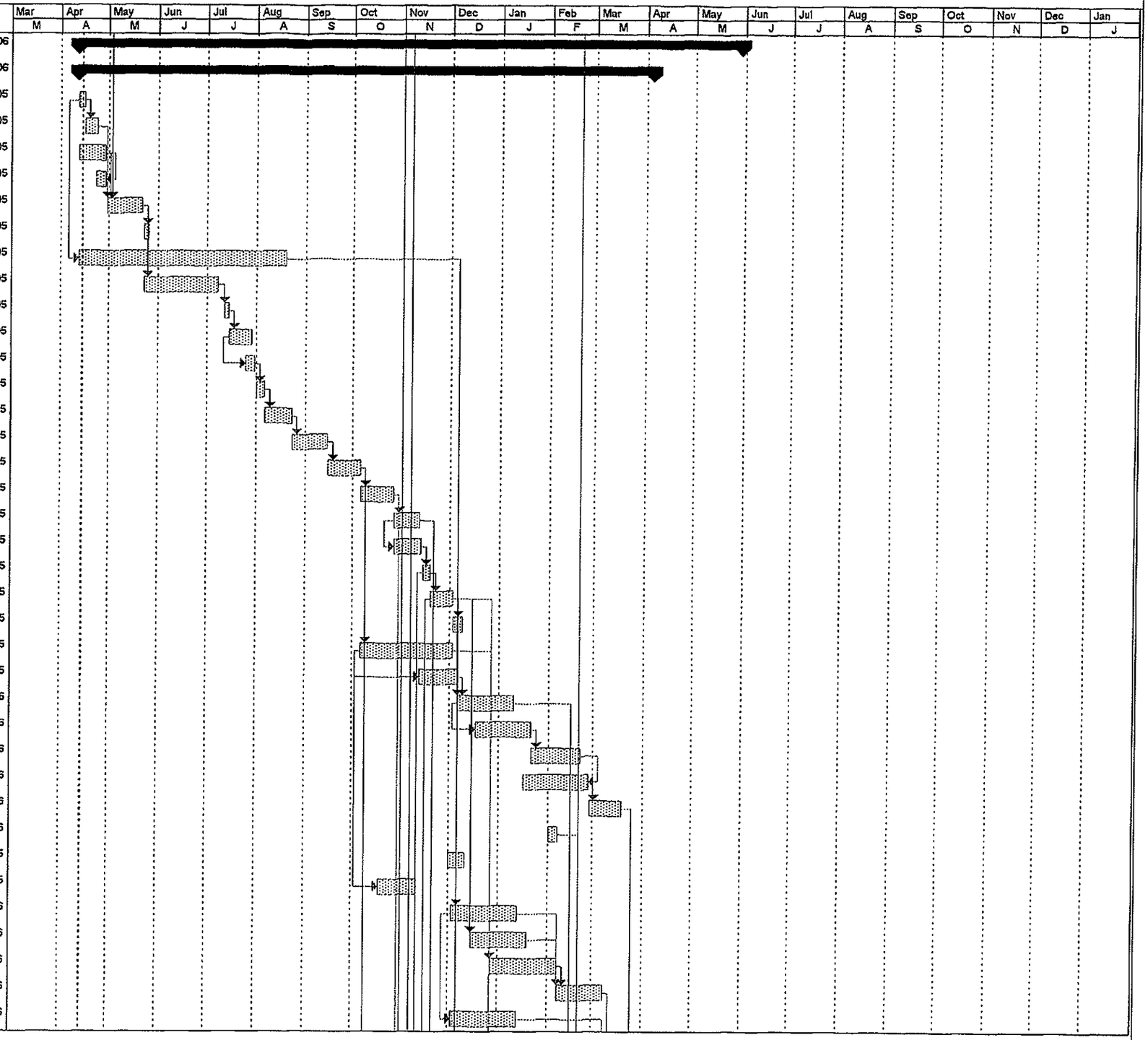


Project: ST JAMES POWER STATION
Date: 14-04-05

Task | Progress | Summary | Rolled Up Split | Rolled Up Progress
Split | Milestone | Critical | Rolled Up Milestone

MASTER CONSTRUCTION PROGRAMME
ST JAMES POWER STATION

ID	Task Name	Duration	Start	Finish
39	Phase 2	354 days	12-04-05	29-05-06
40	Block C	302 days	12-04-05	04-04-06
41	Hacking of ground slab	4 days	12-04-05	15-04-05
42	Removal of roof and steel truss	7 days	16-04-05	23-04-05
43	Survey of existing window , timberwork & window	15 days	12-04-05	28-04-05
44	Protection of existing elements to be preseved	5 days	23-04-05	28-04-05
45	Demolition work	18 days	30-04-05	21-05-05
46	Clear debris off site	3 days	23-05-05	25-05-05
47	Structural verification / repair work	110 days	12-04-05	18-08-05
48	Piling work/load test	40 days	23-05-05	07-07-05
49	Excavation	3 days	12-07-05	14-07-05
50	Pilecap	12 days	15-07-05	28-07-05
51	Underground sanitary work	6 days	25-07-05	30-07-05
52	Backfill/soil treatment/lean conc	5 days	01-08-05	05-08-05
53	1st storey RC	14 days	06-08-05	22-08-05
54	2nd Storey RC	20 days	23-08-05	14-09-05
55	3rd storey RC	18 days	15-09-05	05-10-05
56	4th storey RC (Incl. Chillers slab)	18 days	06-10-05	26-10-05
57	RC lift shaft above 4th sty	14 days	27-10-05	11-11-05
58	Roof truss-making good/replace missing	15 days	27-10-05	12-11-05
59	New roof insulation	5 days	14-11-05	18-11-05
60	New roofing sheet	12 days	19-11-05	02-12-05
61	Lightning conductor	5 days	03-12-05	08-12-05
62	Brickwall	50 days	06-10-05	02-12-05
63	M&E conceal services	20 days	12-11-05	05-12-05
64	Plastering work	30 days	06-12-05	09-01-06
65	M&E above ceiling services	30 days	17-12-05	20-01-06
66	Ceiling finishes	20 days	21-01-06	20-02-06
67	Tiling work	30 days	16-01-06	25-02-06
68	Toilet partition	18 days	27-02-06	18-03-06
69	Installation of roof chiller	5 days	01-02-06	06-02-06
70	Handing over of MDF & CDR room	9 days	01-12-05	10-12-05
71	Door & window mock-up	21 days	18-10-05	10-11-05
72	Timber casement window/fixed glass-outer frame(New)	35 days	03-12-05	12-01-06
73	Alum. Window/fixed glass/louvres-outer frame(New)	30 days	15-12-05	18-01-06
74	Timber & metal door-outer frame(New)	30 days	27-12-05	08-02-06
75	Door & window inner frame(New)	25 days	07-02-06	07-03-06
76	Make good of existing timber door and window	35 days	03-12-05	12-01-06

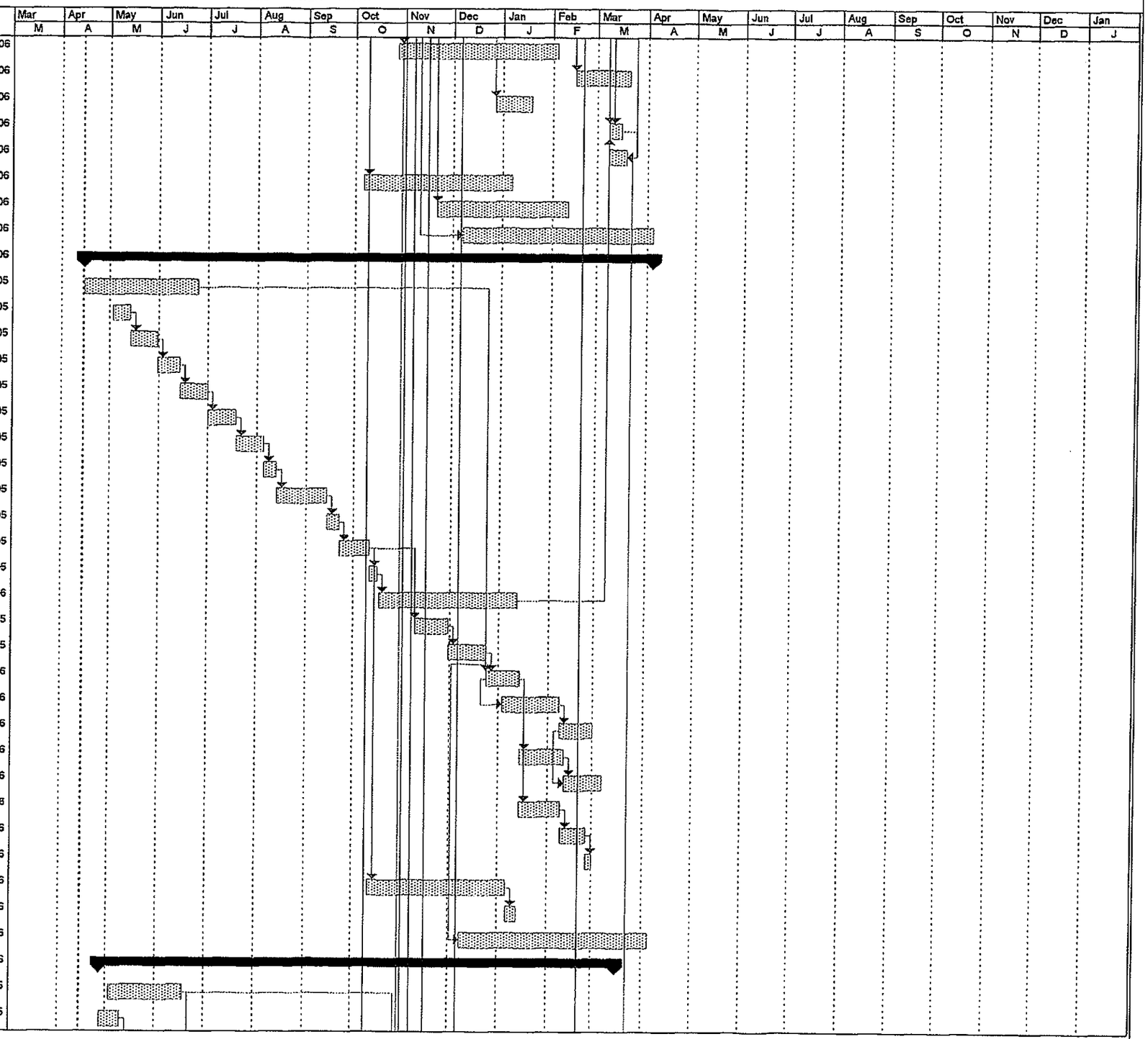


Project: ST JAMES POWER STATION
Date: 14-04-05

Task | Progress | Summary | Rolled Up Split | Rolled Up Progress
Split | Milestone | Critical | Rolled Up Milestone

MASTER CONSTRUCTION PROGRAMME
ST JAMES POWER STATION

ID	Task Name	Duration	Start	Finish
77	Reinstatement of external wall/facade/parapet	80 days	27-10-05	03-02-06
78	Painting	30 days	15-02-06	20-03-06
79	Entrance canopy	20 days	27-12-05	18-01-06
80	Ironmongeries	7 days	08-03-06	15-03-06
81	Sanitary fitting	10 days	08-03-06	18-03-06
82	ACMV	60 days	06-10-05	06-01-06
83	Lift installation	65 days	21-11-05	10-02-06
84	Fitting out (by other)	98 days	07-12-05	04-04-06
85	Block B	299 days	15-04-05	04-04-06
86	Structure verification / repair works	60 days	15-04-05	24-06-05
87	Floor hacking for sanitary work	10 days	03-05-05	13-05-05
88	Underground sanitary work	14 days	14-05-05	30-05-05
89	1st Storey RC	12 days	31-05-05	13-06-05
90	2nd storey RC linkbridge	15 days	14-06-05	30-06-05
91	3rd storey RC	15 days	01-07-05	18-07-05
92	4th storey steel structure	15 days	19-07-05	04-08-05
93	Dsmantling of existing metal roof and insulation	7 days	05-08-05	12-08-05
94	Making good roof truss & replace missing bracing	27 days	13-08-05	13-09-05
95	New roof insulation	7 days	14-09-05	21-09-05
96	New metal roof	16 days	22-09-05	10-10-05
97	Lightning conductor	5 days	11-10-05	15-10-05
98	Reinstatement of external wall/façade/parapet	75 days	17-10-05	11-01-06
99	Brickwall	18 days	09-11-05	29-11-05
100	Door and window outer frame	21 days	30-11-05	23-12-05
101	Plastering work	18 days	24-12-05	13-01-06
102	M&E above ceiling services	25 days	03-01-06	07-02-06
103	Ceiling finishes	18 days	08-02-06	28-02-06
104	Door and window inner frame	18 days	14-01-06	10-02-06
105	Painting	20 days	11-02-06	06-03-06
106	Tiling work	16 days	14-01-06	08-02-06
107	Toilet partition	14 days	09-02-06	24-02-06
108	Ironmongeries	3 days	25-02-06	28-02-06
109	ACMV	75 days	11-10-05	05-01-06
110	Sanitary fitting	6 days	06-01-06	12-01-06
111	Fitting out (by other)	97 days	08-12-05	04-04-06
112	Block A	270 days	27-04-05	16-03-06
113	Structure verification / repair work	40 days	03-05-05	17-06-05
114	Mock-up of brick work repair	10 days	27-04-05	09-05-05

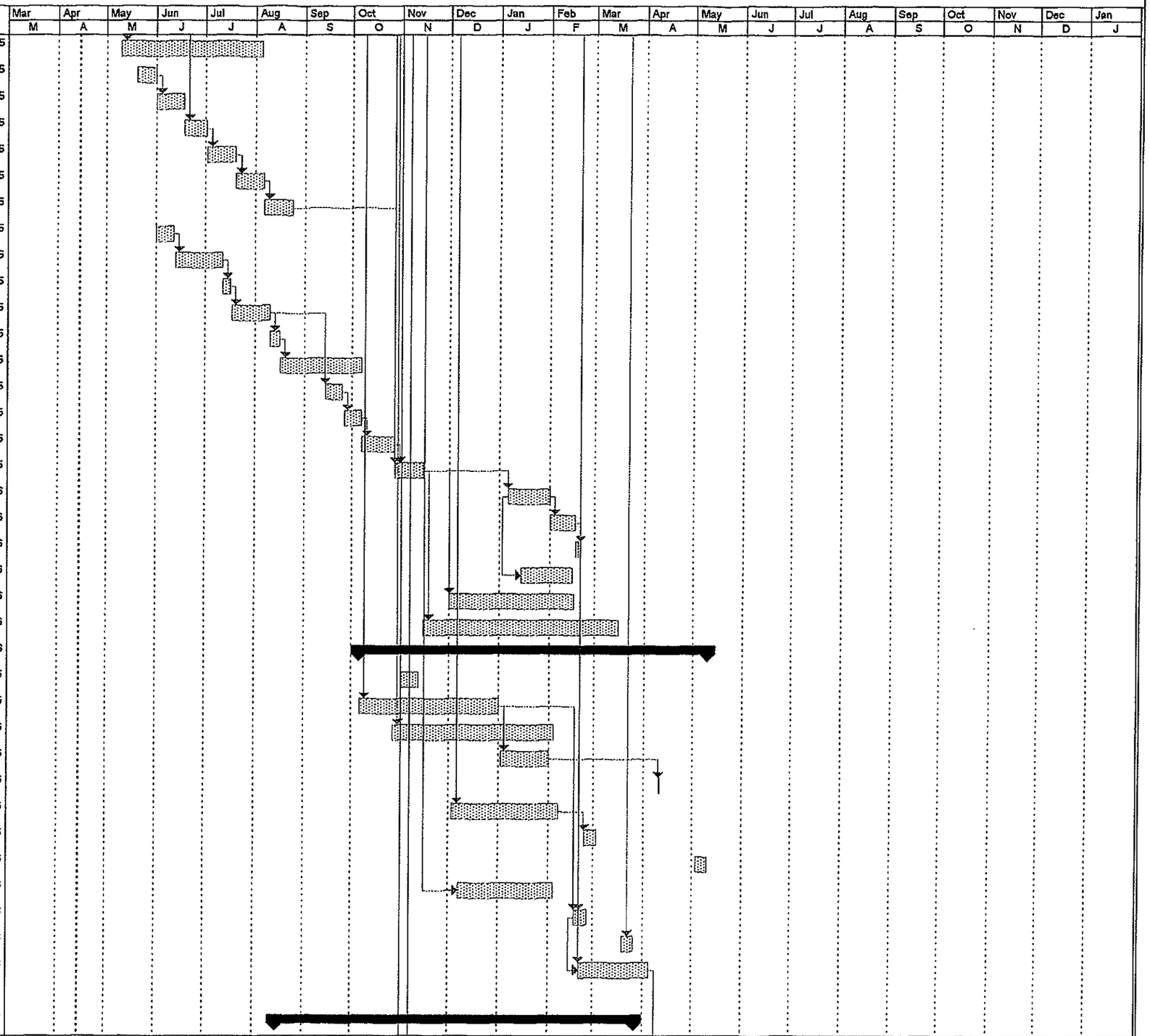


Project: ST JAMES POWER STATION
Date: 14-04-05

Task | Progress | Summary | Rolled Up Split | Rolled Up Progress
Split | Milestone | Critical | Rolled Up Milestone

MASTER CONSTRUCTION PROGRAMME
ST JAMES POWER STATION

ID	Task Name	Duration	Start	Finish
115	Reinstatement of external wall/facade/parapet	75 days	10-05-05	04-08-05
116	Floor hacking for M&E works	10 days	20-05-05	31-05-05
117	Under sanitary work	15 days	01-06-05	17-06-05
118	1st Rc	12 days	18-06-05	01-07-05
119	2nd storey composite slab	15 days	02-07-05	19-07-05
120	3rd storey composite slab	15 days	20-07-05	05-08-05
121	4th storey steel structure	15 days	06-08-05	23-08-05
122	Dismantling of existing metal roof and insulation	10 days	01-06-05	11-06-05
123	Making good roof truss & replace missing bracing	25 days	13-06-05	11-07-05
124	New roof insulation	5 days	12-07-05	16-07-05
125	New roofing sheet	20 days	18-07-05	09-08-05
126	Lightning conductor	5 days	10-08-05	15-08-05
127	Making good of existing chimney	45 days	16-08-05	06-10-05
128	Brickwall	10 days	14-09-05	24-09-05
129	Conceal M&E services	10 days	26-09-05	06-10-05
130	Door and window outer frame	18 days	07-10-05	27-10-05
131	Plastering	15 days	28-10-05	14-11-05
132	Painting	16 days	06-01-06	31-01-06
133	Door and window inner frame	14 days	01-02-06	16-02-06
134	Ironmongeries	2 days	17-02-06	18-02-06
135	Fixed glass @ 2nd sty gallery bar	21 days	14-01-06	14-02-06
136	Acoustic wall	60 days	01-12-05	15-02-06
137	Fitting out (by other)	98 days	15-11-05	15-03-06
138	M&E / Plumbing works	184 days	06-10-05	09-05-06
139	MDF & SCV lead in pipe	10 days	01-11-05	11-11-05
140	Wiring work	75 days	06-10-05	31-12-05
141	Sprinkler system	80 days	27-10-05	03-02-06
142	Gas pipe	20 days	02-01-06	31-01-06
143	Gas turn on	1 day	10-04-06	10-04-06
144	IC and Manhole	50 days	03-12-05	06-02-06
145	ENV inspection	7 days	23-02-06	02-03-06
146	SCV inspection	7 days	03-05-06	09-05-06
147	Plumbing/hydrant	45 days	07-12-05	03-02-06
148	Electrical turn on to block	7 days	17-02-06	24-02-06
149	Water turn-on	7 days	19-03-06	25-03-06
150	Commissioning	40 days	20-02-06	04-04-06
151				
152	External work	188 days	15-08-05	26-03-06

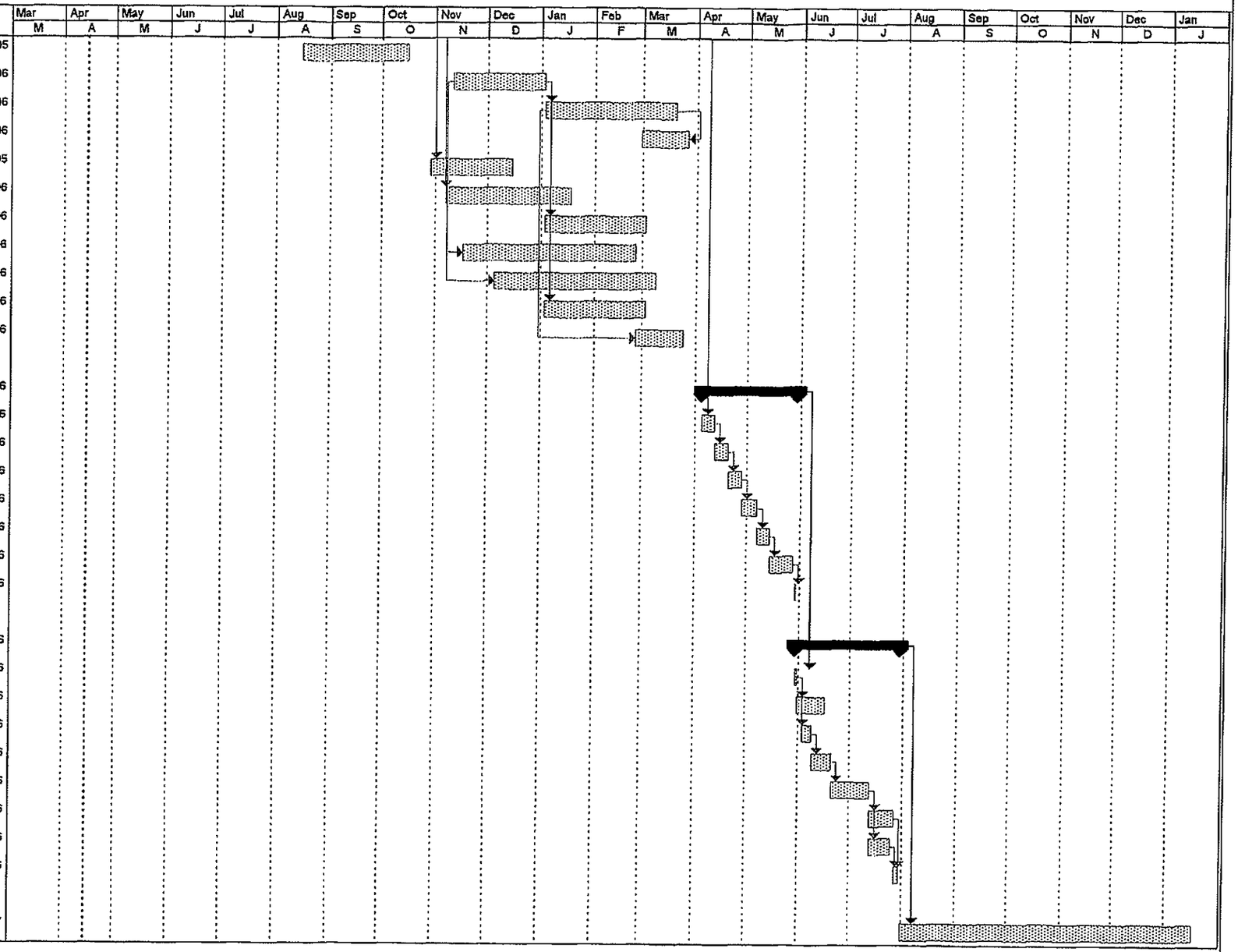


Project: ST JAMES POWER STATION
Date: 14-04-05

Task | Progress | Summary | Rolled Up Split | Rolled Up Progress
Split | Milestone | Critical | Rolled Up Milestone

MASTER CONSTRUCTION PROGRAMME
ST JAMES POWER STATION

ID	Task Name	Duration	Start	Finish
153	Re-location of bus stop (FTZ)	54 days	15-08-05	15-10-05
154	Drain	45 days	11-11-05	02-01-06
155	Carpark / driveway / foot path	60 days	03-01-06	19-03-06
156	Fire engines access	25 days	28-02-06	26-03-06
157	Pump room	40 days	29-10-05	14-12-05
158	Sprinkler tank	62 days	07-11-05	17-01-06
159	Feature wall	45 days	03-01-06	02-03-06
160	Bin centre	80 days	17-11-05	24-02-06
161	Cover walkway	75 days	05-12-05	08-03-06
162	Fence and gate	45 days	03-01-06	02-03-06
163	Landscape work	25 days	25-02-06	24-03-06
164				
165	TOP	52 days	05-04-06	29-05-06
166	Combined services testing	6 days	05-04-06	11-04-06
167	Pre-RI	8 days	12-04-06	19-04-06
168	M&E RI	6 days	20-04-06	27-04-06
169	Archi-RI	8 days	28-04-06	06-05-06
170	BP inspection by internal consultants	7 days	07-05-06	13-05-06
171	BCA inspection	14 days	14-05-06	27-05-06
172	TOP obtained	1 day	29-05-06	29-05-06
173				
174	Phase 3	53 days	30-05-06	29-07-06
175	Handing over of Phase 3 by other	1 day	30-05-06	30-05-06
176	Landscaping work	14 days	31-05-06	15-06-06
177	Cladding shop drawing submission	4 days	03-06-06	07-06-06
178	Approval of cladding shop drawing	10 days	08-06-06	19-06-06
179	Cladding shop fabrication	20 days	20-06-06	12-07-06
180	Installation of cladding	12 days	13-07-06	26-07-06
181	Fixed glass panel	10 days	13-07-06	24-07-06
182	Cleaning up and handover	3 days	27-07-06	29-07-06
183				
184	Targeted CSC	125 days	31-07-06	16-01-07



Project: ST JAMES POWER STATION
Date: 14-04-05

Task | Progress | Summary | Rolled Up Split | Rolled Up Progress
Split | Milestone | Critical | Rolled Up Milestone

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services - 1st Submission – Refer to attached

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)									

PROJECT QUALITY PLAN (PQP)
- STATUS OF MECHANICAL & ELECTRICAL SUBMISSIONS (12 Oct 2005)

JOB NO: **318**

PROJECT TITLE:

PROPOSED ADDITIONS & ALTERATIONS INVOLVING CHANGE OF USE TO COMMERCIAL USE TO THE EXISTING 4-STOREY ST JAMES POWERSTATION ON LOT 1174N (PT) TS 23 AT GATEWAY AVENUE - SENTOSA (BUKIT MERAH PLANNING AREA)

KEY DEPARTMENT	TARGET DATE OF APPLICATION	DATE OF APPLICATION	DATE OF APPROVAL	REMARKS
Sanitary Installation (CBPU/NEA)		14 March 2005	17 March 2005	
		*28 Sept 2005	3 October 2005	* Amendment plan submission to capture changes in point of connection to existing MH
Gas Supply Installation (City Gas)	1 April 2005	16 March 2005	16 May 20005	
		3 May 2005		
Domestic Water Supply (PUB Water Supply)	15 April 2005	26 March 2005	5 October 2005	
		11 May 2005		
		22 August 2005		
MV/AC (FSSD)	28 June 2005	28 June 2005	6 September 2005	
Fire Fighting & Alarm Installation (FSSD)	6 July 2005	19 July 2005	10 August 2005	
Telephone Installation (TFCC)	15 March 2005	15 March 2005	16 March 2005	
Broadband Co-axial Cable System (SCV)	15 March 2005	15 March 2005	19 March 2005	
SP PowerGrid Sub-Station (SPPG)	30 September 2004	30 September 2004	1 December 2004	
Application for Connection to PowerGrid Transmission System	9 June 2004	9 June 2004	18 June 2004	

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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	✓

Project Files to be initiated by PM as and when required

File Ref: 1398		File Ref:		File Ref:	
-601	✓				
-IC	✓				

Files under the old Filing System

File Ref: 1398		File Ref: 1398		File Ref: 1398		File Ref: 1398		File Ref: 1398	
-CM	✓	-EC/MC	✓	-PP	✓	-L-G	✓		
-PC	✓	-SR	✓	-CO	✓	-E-G	✓		
-AE	✓	-SM	✓	-A-G	✓				
-AM	✓	-GC	✓	-F-G	✓				
-BD	✓	-AA	✓	-P-G	✓				

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 (Latest Set)	
Incoming Architectural Sketches/Details (Latest Set)	
Incoming Structural Drawings (Latest Set)	
M&E Drawings	
- Electrical Installation	SKY/ HCH/ NHS/ ARR
- Lift & Escalator Installation	(All project drawings in soft copy to
- Air Conditioning & Ventilation Installation	be saved in server)
- Fire Fighting & Alarm Installation	
- Plumbing & Sanitary Installation	
Other Drawings	

Note: All superseded hard copies of drawings (with soft copies in server) are discarded.

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	N.A.
	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.	Electrical loading for following items: a) ACMV system b) Hosereel pumps c) Booster pumps d) Sprinkler pumps	HCH	SKY	-	completed
2.	Pipe invert level around substation area for following items: a) Sanitary system b) Water system	HCH	SKY	-	completed

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

* Note: AEC to issue M&E progress payment evaluation by 4th day from receipt of the Contractor's submission

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 Questionnaire			✓		
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 : AEC 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

Trane Air Conditioning Manual

Carrier's System Piping Design Part 3

ASHRAE Handbooks

8.4 List of Applicable Quality System Procedures

Alpha Engineering Consultant'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 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	✓
Q1	Quality System Audit	✓
Q2	Feedback Reporting	✓
Q3	Clients Feedback	✓
Q4	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 Engineering	Lift traffic calculation	✓
Econdial	2.5	Merlin Gerlin	Design for low voltage network	
Fault Level Calculation	-	Alpha Engineering	Calculation of voltage drop and fault level	

(✓*where applicable*)

SECTION 9

CLIENT'S REQUIREMENTS

9.1 List of Output Required by Client:-

Item	* Remarks
M&E Design Report	A
M&E Cost Estimate Report	A
Pre-Qualification of Tenderers	A
Tender Documents	A
Tender Report	A
Payment Valuation for QS	I
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.

9.2 Specific Procedures Required By Client *(If applicable) –* ***Not Used***

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers

Sub Job No	Description	Allocation Details
601	Co-ordination with tenancy fitting-out works	SKY/HCH