Alpha
Engineering Consultant

PROJECT QUALITY PLAN

PROPOSED SCHOOL OF CHEMICAL AND LIFE SCIENCES FOR SINGAPORE POLYTECHNIC PHASE 2A CAMPUS REDEVELOPMENT

For

M/S SINGAPORE POLYTECHNIC

Copy No.	

Prepared By: Tay Wen Chung

Authorised By: Richard Teo

Date: 7 May 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	1379-PQP File	07/11/03
2	Tay Wen Chung	07/11/03

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	07/11/03	1 - 10	27	1st Issue
1	7/11/04	1 – 10	26	
2	7/5/05	1 – 10	26	

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Institution

Statistics of Development	
Site Area, m²	4891
Nett Floor Area, m²	Data not available from the Architect
Gross Floor Area, m²	8000
Covered Carpark, m²	-
No. of Covered Carpark Lots	-
No. of Apartments/Houses	-
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	1 Block/6 Storeys
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	1.6	2.9	0.4	0.23	0.56	-				
Awarded	1.144	2.63	0.245	0.1946	0.489	-				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	0.205	0.573	10
Awarded	0.086	0.428	15.5

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		CABLE NETWORK	✓
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

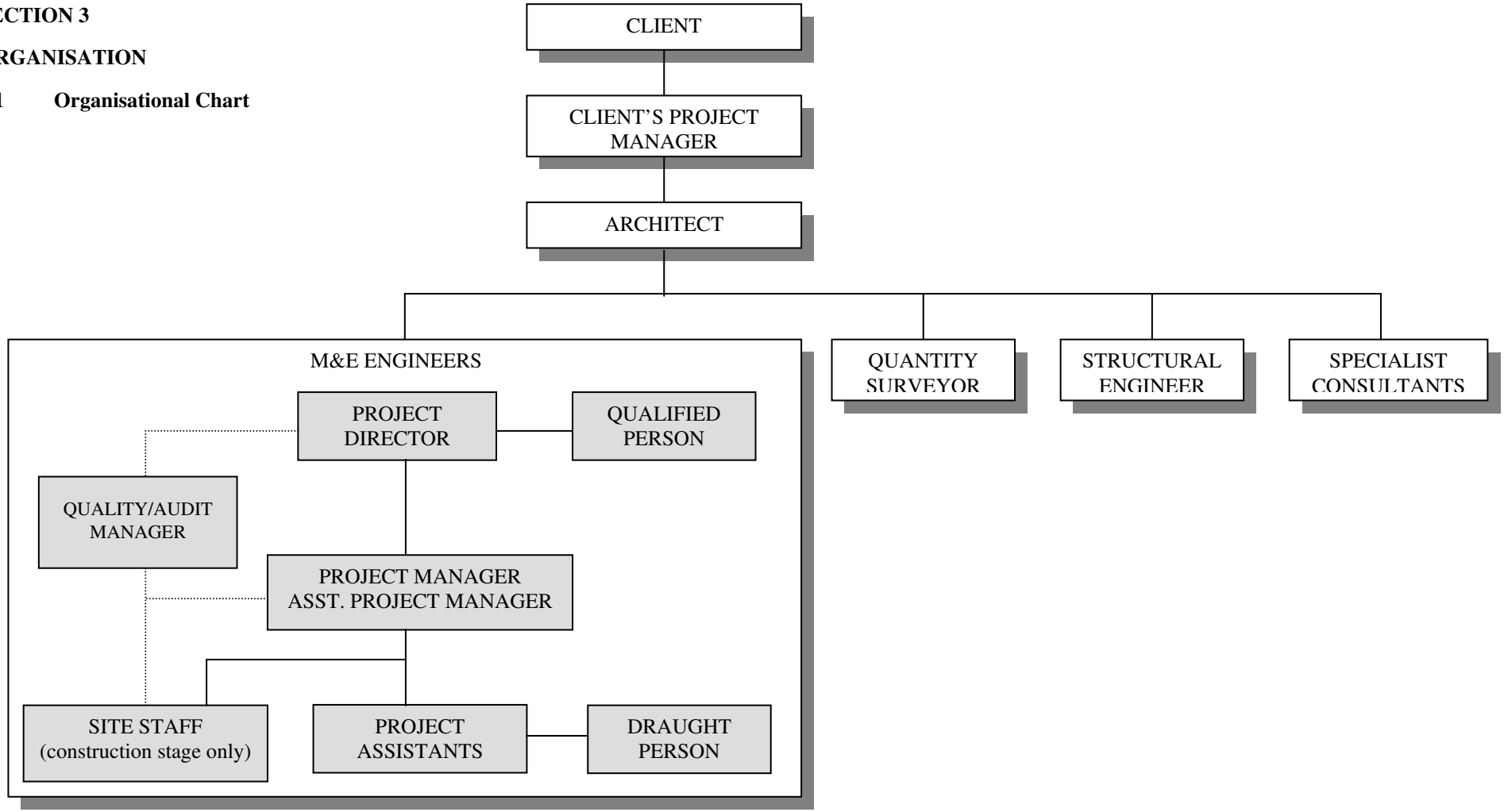
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR		PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 AEC's Project Team Member

TITLE		NAME
Project Director		Richard Teo
Qualified Person	Mechanical	Loh Chew Thong
	Electrical	Richard Teo
Project Manager		Tay Wen Chung
Assistant Project Manager		Soh Kai Yea
Project Assistant (Mech)		Liaw Soon Fen
Project Assistant (Elect)		Bai YuChen Jade
Draughtsperson		Common Pool
Resident Engineer (M&E)		Kng Swee Meng
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		Reghu

3.3 Client/Client's Representatives

Client:- Singapore Polytechnic

Address:- 500 Dover Road
Singapore 139651

Tel:- 6772 1820

Fax:- 6870 6025

Client's Representatives:-

Name of Firm	Contact Person	Contact
Singapore Polytechnic	Name: Mr Wong Swee Chan Position: Project Manager	Tel: 6772 1808 Fax: 6772 1951 Handphone: - Email: SweeChan@sp.edu.sg
Singapore Polytechnic	Name: Mr Lim Seng Hong Position: Assistant Project Manager	Tel: 6772 1821 Fax: 6772 1951 Handphone: - Email: SengHong@sp.edu.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 Firm	Contact Person	Contact
Architect Architects Team 3 (Private)	Name: Mr Richard Tio Position: Director	Tel: 6467 2233 Fax: 6466 7810 Handphone: - Email: richard_tio@at3.com.sg
Quantity Surveyor WT Partnership	Name: Ms Janessa Yeow Position: Quantity Surveyor	Tel: 6533 0822 Fax: 6533 2833 Handphone: - Email: wtpsin@singnet.com.sg
Structural Engineer Meinhardt (Singapore) Pte Ltd	Name: Mr Low Huei Siong Position: Senior Engineer	Tel: 6377 9534 Fax: 6274 0788 Handphone: - Email: low@meinhardt.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:
_____	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 Master Contract Services Pte Ltd		Name: C A Tan Position: Project Manager	Tel: 6285 9595 Fax: 6285 1814 Handphone: 9455 1924 Email: spsite@pacific.net.sg
Air Conditioning & Ventilation Installation Sub-Contractor Quest Technology (S) Pte Ltd	NSC	Name: George Tan Tai Huat Position: Project Manager	Tel: 6748 4310 Fax: 6748 3505 Handphone: 9366 8365 Email: project@quest-tech.com.sg
Plumbing & Sanitary Installation Sub-Contractor Trade Entrepreneur Engineering Pte Ltd	DSC	Name: Vincent Seng W H Position: Project Manager	Tel: 6543 2323 Fax: 6543 2849 Handphone: 9002 3043 Email: tel990@singnet.com.sg
Electrical Installation Sub-Contractor Kurihara Kogyo Co Ltd	DSC	Name: Chia Hiok Seah Position: Project Manager	Tel: 6271 9863 Fax: 6278 4475 Handphone: 90019774 Email: hschia@kurihara.com.sg
Lift & Escalator Installation Sub-Contractor Gylet Engineering & Trading Pte Ltd	NSC	Name: Teo K L Position: Project Manager	Tel: 6296 0430 Fax: 6297 2190 Handphone: 9661 7430 Email: gylet@pacific.net.sg
Fire Fighting & Alarm Installation Sub-Contractor Fire-Guard Engineering Pte Ltd	NSC	Name: Lim Teck Seng Position: Project Manager	Tel: 6744 2142 Fax: 6744 2406 Handphone: 9734 3420 Email: firegard@singnet.com.sg
Swimming Pool Filtration Plant Installation Sub-Contractor		Name: Position:	Tel: - Fax: - Handphone: - Email: -
Carpark System Installation Sub-Contractor		Name: Position:	Tel: - Fax: - Handphone: - Email: -
_____		Name: Position:	Tel: - Fax: - Handphone: - Email: -

** Type of Contract*
- *NSC (Nominated Sub-Contract)*
- *DSC (Domesticated Sub-Contract)*
- *DC (Direct Contract)*
- *NS (Nominated Supplier)*

3.6 Authorities

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
SP PowerGrid:		
(a) Sub-Station		
(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		
FSSD:		
(a) Building Plan		
(b) M&E Plan	CPT Rachel Wong	6848 1450
PUB (Water Supply) Network Dept:		
(a) Water Conservation		
(b) Plumbing Plan	Darren Wong Kee Sat	6731 3598
(c) Diversion		
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU		
(b) M&E Plan	Mrs Tan Kian Hong	6731 9628
(c) Diversion		
City Gas Pte Ltd:		
(a) Planning/Submission		
(b) Installation/Inspection		
PowerGas Pte Ltd		
(a) Diversion		
NEA (Pollution Control)		
(a) Planning/Submission		
(b) Inspection		

SECTION 4

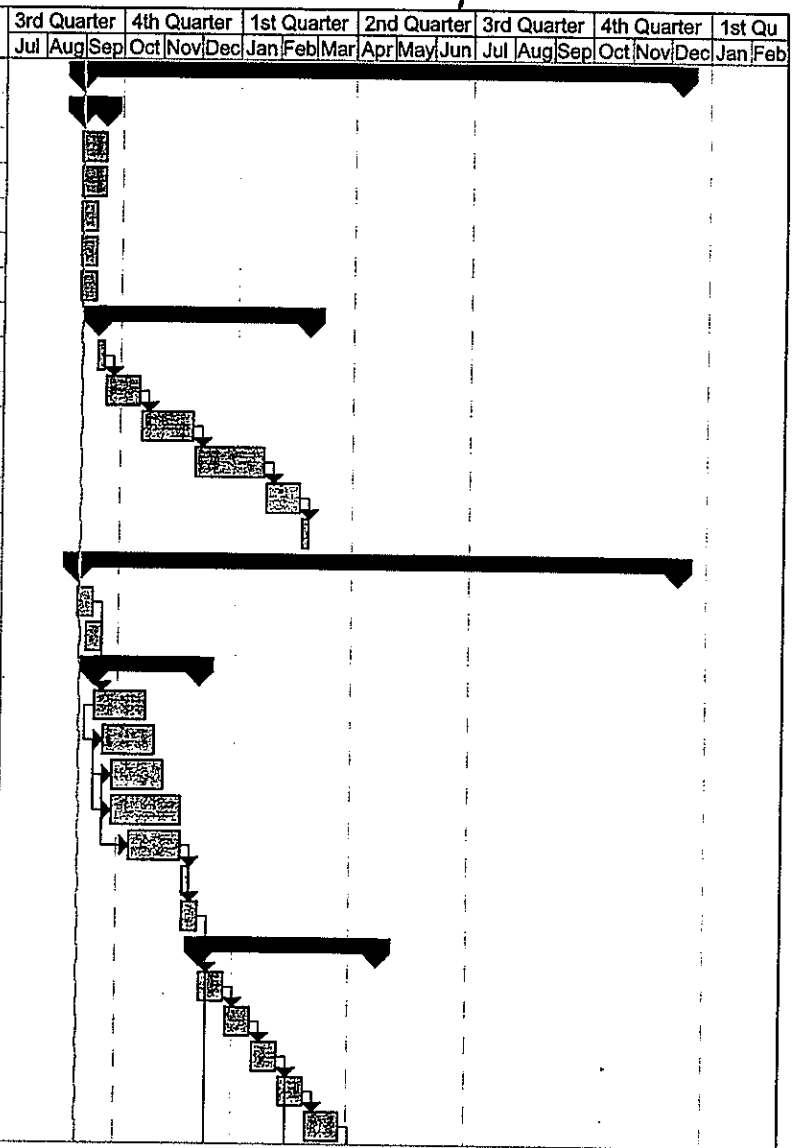
PROGRAMME

4.1 Overall Programme – See 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																									

1379
From Main Contractors

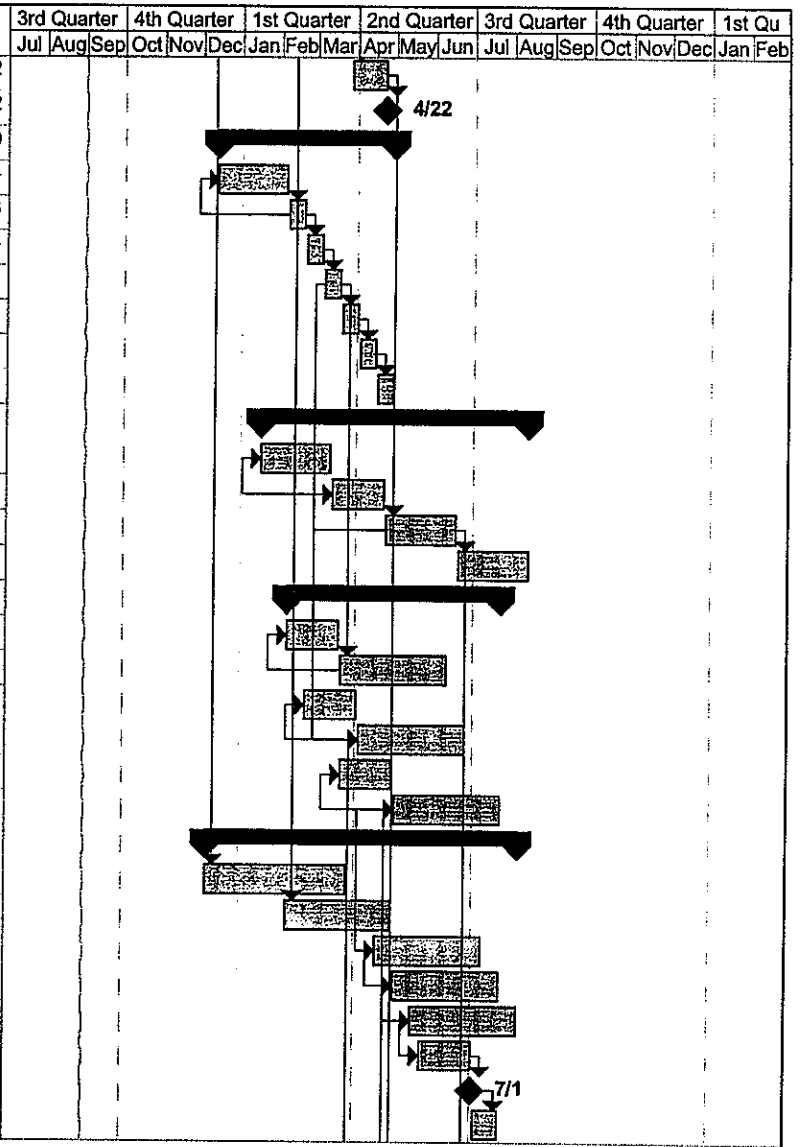
ID	Task Name	Duration	Start	Finish
1	**Construction Duration**	**67 wks**	**Aug 30**	**Dec 9**
2	**Preliminaries**	**3 wks**	**Aug 30**	**Sep 17**
3	Contract administration	3 wks	Aug 30	Sep 17
4	Site facilites & hoarding	3 wks	Aug 30	Sep 17
5	Pre-conditions survey	2 wks	Aug 30	Sep 10
6	Pre-computation set-up	2 wks	Aug 30	Sep 10
7	Service detection	2 wks	Aug 30	Sep 10
8	**Phase 1**	**24 wks**	**Sep 13**	**Feb 25**
9	Technical submission for micropiles	1 wk	Sep 13	Sep 17
10	Micropile to linkway 2	4 wks	Sep 20	Oct 15
11	RC structure works	6 wks	Oct 18	Nov 26
12	Steel structures & Roofing	8 wks	Nov 29	Jan 21
13	Finishes works	4 wks	Jan 24	Feb 18
14	Phase handing over	1 wk	Feb 21	Feb 25
15	**Phase 2**	**67 wks**	**Aug 30**	**Dec 9**
16	C&S materials submisison/approval	2 wks	Aug 30	Sep 10
17	M&E shopdrwgs submission/approval	2 wks	Sep 6	Sep 17
18	**Substructure Works**	**12 wks**	**Sep 13**	**Dec 3**
19	Excavation works	6 wks	Sep 13	Oct 22
20	Pile hacking/ECC	6 wks	Sep 20	Oct 29
21	Pilecaps	6 wks	Sep 27	Nov 5
22	Lift pits	8 wks	Sep 27	Nov 19
23	Ground beams	6 wks	Oct 11	Nov 19
24	M&E U/G works	1 wk	Nov 22	Nov 26
25	1/Flr slab	2 wks	Nov 22	Dec 3
26	**Superstructure Works**	**20 wks**	**Dec 6**	**Apr 22**
27	1/Flr Col & 2/Flr Slab	3 wks	Dec 6	Dec 24
28	2/Flr Col & 3/Flr Slab	3 wks	Dec 27	Jan 14
29	3/Flr Col & 4/Flr Slab	3 wks	Jan 17	Feb 4
30	4/Flr Col & 5/Flr Slab	3 wks	Feb 7	Feb 25
31	5/Flr Col & 6/Flr Slab	4 wks	Feb 28	Mar 25



Project: polyrev0
Run Date: Aug 31
Construction schedule Rev. 0.0 at 30/Aug/04

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

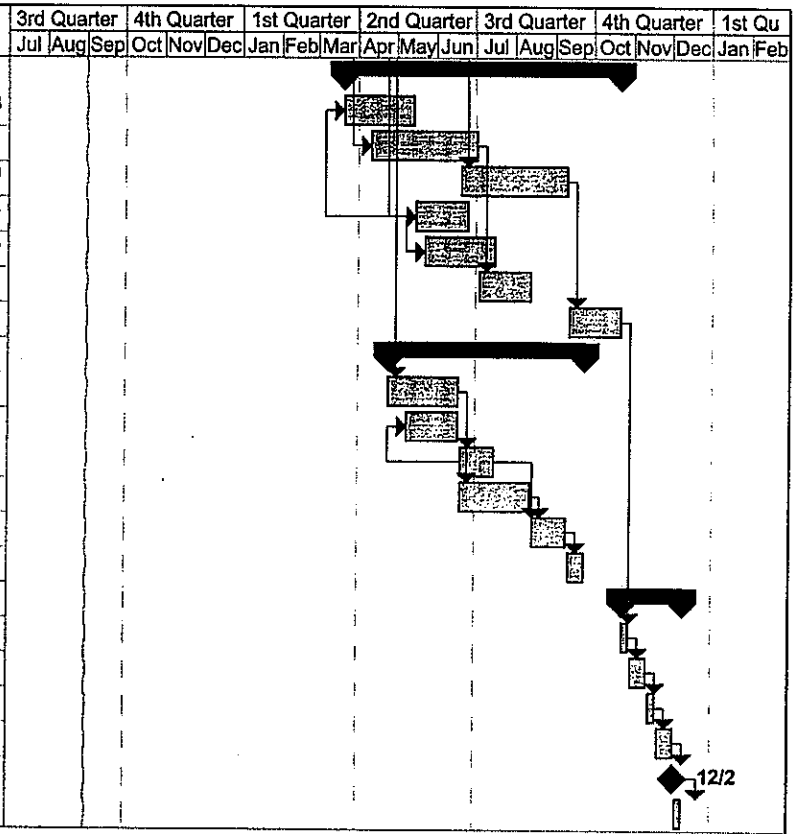
ID	Task Name	Duration	Start	Finish
32	Roof Works	4 wks	Mar 28	Apr 22
33	Handover lift shaft	0 wks	Apr 22	Apr 22
34	**Building Shell**	**20 wks**	**Dec 13**	**Apr 29**
35	Bricks/Joinery/Windows/Glazier Shopdra	8 wks	Dec 13	Feb 4
36	1/Flr brickworks/Frames/Plaster	2 wks	Feb 7	Feb 18
37	2/Flr brickworks/Frames/Plaster	2 wks	Feb 21	Mar 4
38	3/Flr brickworks/Frames/Plaster	2 wks	Mar 7	Mar 18
39	4/Flr brickworks/Frames/Plaster	2 wks	Mar 21	Apr 1
40	5/Flr brickworks/Frames/Plaster	2 wks	Apr 4	Apr 15
41	6/Flr brickworks/Frames/Plaster	2 wks	Apr 18	Apr 29
42	**External Cladding Works**	**30 wks**	**Jan 17**	**Aug 12**
43	Steel/Aluminiun cladding shopdrawings s	8 wks	Jan 17	Mar 11
44	Fabrication of steel/al works	6 wks	Mar 14	Apr 22
45	Steel structures installation	8 wks	Apr 25	Jun 17
46	Aluminium works installation	8 wks	Jun 20	Aug 12
47	**Floor/Wall/Ceiling Finishes**	**24 wks**	**Feb 7**	**Jul 22**
48	Floor finishes materials submission & ap	6 wks	Feb 7	Mar 18
49	Floor screed & finishes 1- 6 Flr	12 wks	Mar 21	Jun 10
50	Wall finishes shopdrawings submission &	6 wks	Feb 21	Apr 1
51	Wall erections/finishes 1-6/Flr	12 wks	Apr 4	Jun 24
52	Ceiling finishes shopdrawings submissio	6 wks	Mar 21	Apr 29
53	Ceiling finishes 1-6/Flr	12 wks	May 2	Jul 22
54	**M&E Works**	**35 wks**	**Dec 6**	**Aug 5**
55	M&E conceal works in RC works 1-6/flr	16 wks	Dec 6	Mar 25
56	M&E conceal works in Brickworks 1-6/flr	12 wks	Feb 7	Apr 29
57	M&E exposed trunkings/conduits/duct w	12 wks	Apr 18	Jul 8
58	M&E cable works	12 wks	May 2	Jul 22
59	M&E fittings installation	12 wks	May 16	Aug 5
60	M&E Termination / Testings	6 wks	May 23	Jul 1
61	Utilities Turn-On	0 wks	Jul 1	Jul 1
62	M&E Testing & Commissioning	3 wks	Jul 4	Jul 22



Project: polyrev0
Run Date: Aug 31
Construction schedule Rev. 0.0 at 30/Aug/04

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

ID	Task Name	Duration	Start	Finish
63	**Architecture Works**	**31 wks**	**Mar 21**	**Oct 21**
64	Fitments/Fittings/Finishes submission & :	8 wks	Mar 21	May 13
65	Base coat paint finishes internal	12 wks	Apr 11	Jul 1
66	Base coat paint finishes external	12 wks	Jun 20	Sep 9
67	Installation of windows/doors 1-6/fr	6 wks	May 16	Jun 24
68	Installation of fitments/fittings 1-6/fir	8 wks	May 23	Jul 15
69	Final coat paint finishes internal	6 wks	Jul 4	Aug 12
70	Final coat paint finishes external	6 wks	Sep 12	Oct 21
71	**External Works**	**22 wks**	**Apr 25**	**Sep 23**
72	Perimeter drain & apron	8 wks	Apr 25	Jun 17
73	Shopdrawings & materials submission &	6 wks	May 9	Jun 17
74	Retaining wall & drainage	4 wks	Jun 20	Jul 15
75	Covered linkway & Entrance canopy	8 wks	Jun 20	Aug 12
76	Driveways & carparks	4 wks	Aug 15	Sep 9
77	Turfing & hoardings	2 wks	Sep 12	Sep 23
78	**Handing Over**	**7 wks**	**Oct 24**	**Dec 9**
79	RI inspections	1 wk	Oct 24	Oct 28
80	RI rectifications works	2 wks	Oct 31	Nov 11
81	TOP inspection	1 wk	Nov 14	Nov 18
82	TOP rectification works	2 wks	Nov 21	Dec 2
83	TOP approval	0 wks	Dec 2	Dec 2
84	Handing over	1 wk	Dec 5	Dec 9



Project: polyrev0
Run Date: Aug 31
Construction schedule Rev. 0.0 at 30/Aug/04

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

SECTION 4

PROGRAMME

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

Service	Authority	Original Submission		Comments/Resubmission						Approval/ Clearance
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	
Application for Electricity Supply	SP Services Ltd	NA								
Power Supply Substation	SP PowerGrid Ltd	NA								
Metering Layout	SP Services Ltd	NA								
Sanitary Installation	PUB Water Reclamation (Network) Dept	14/5/04								
Domestic Water Supply	PUB (Water Supply) Network Dept	7/5/04								
Gas Supply Installation	City Gas Pte Ltd	NA								
Air Conditioning & Ventilation Inst.	FSSD	28/5/04								
Fire Fighting & Alarm Installation	FSSD	4/6/04								
Telephone Installation	TFCC	NA								
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision	NA								
Fuel Storage	FSSD	NA								
	NEA (Pollution Control)	NA								

SECTION 4

PROGRAMME

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

Service	Authority	Original Submission		Comments/Resubmission						Approval/ Clearance
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	
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:	
- 601	✓				
- EC/MC	✓				

Files under the old Filing System

File Ref: 1379		File Ref: 1379		File Ref: 1379		File Ref: 1379		File Ref: 1379	
-GC	✓	-CM/SM	✓	-CO/SR/SQ	✓	-E-G	✓		
-PC	✓	-BD	✓	-SC	✓	-A-G	✓		
-AE	✓	-CC	✓	-PP	✓	-L-G	✓		
-AM	✓	-CF	✓	-PQP	✓	-F-G	✓		
-AA	✓	-AI	✓	-VO	✓	-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	Liaw Soon Fen
Incoming Architectural Sketches/Details	-
Incoming Structural Drawings	Liaw Soon Fen
M&E Drawings	
- Electrical Installation	Bai YuChen Jade
- Lift & Escalator Installation	Bai YuChen Jade
- Air Conditioning & Ventilation Installation	Liaw Soon Fen
- Fire Fighting & Alarm Installation	Liaw Soon Fen
- Plumbing & Sanitary Installation	Liaw Soon Fen
- Swimming Pool & Filtration Installation	-
Other Drawings	
- Cable Network	Bai YuChen Jade

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	-	-	
b.	Project Administration	I	-	C	C*	I*	
c.	Project Cost Estimate/Contract Cost	A	-	C	-	C	
2.	**Drawings**						
a.	Outline Design Drgs.	A	-	C	C*	-	
b.	Sketch Design Drgs.	I	-	C	C*	-	
c.	Final Design Drgs.	I	-	C	C*	-	
d.	Shop Drawings	I	-	C	C*	-	
e.	As Built Drgs.	I	-	-	-	-	
3.	**Other Document**						
a.	Specification	A	-	I	-	-	
b.	Tender Document	I	-	I	-	C	
c.	Tender Evaluation Report	A	-	I	-	I	
d.	Design Report	A	-	C	-	-	
e.	Progress Report	-	-	-	-	-	
f.	Financial Report	I	-	I	-	C	
g.	Minutes of Meeting	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 Questionaires			✓		
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

ITEM	KEPT BY
Users specific requirements	MC or EC File

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 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	
Hyena	4.00.1	ACADS-BSG	Fire Sprinkler & Hydrant Analysis	
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	-
M&E Cost Estimate Report	Issued and approved before tender
Pre-Qualification of Tenderers	NA (Public Tender)
Tender Documents	A
Tender Report	A
Payment Valuation for QS	For progress claim certification
Certificates of Supervision for TOP/CSC	I

** 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)*

a. Authority levels for initiating variations are agreed and established with Client through email/letter.

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers – NOT USED

Sub Job No	Description	Allocation Details