Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

THE SPRINGSIDE (PHASE 8B1, 9B, 11C, 11C1, 11D & 11D1)
COMPRISING 69 UNITS OF 3-STOREY TERRACE DWELLING HOUSES
AT SEMBAWANG ROAD / JALAN ULU SELETAR

For

KALLANG DEVELOPMENT PTE LTD

Copy No.	1

Prepared By: Goh Whye Liang

Authorised By: Choong Choon Guan

Date: 6 January 2011

TABLE OF CONTENTS

SECTION	DESCRIPTION
-	**TITLE PAGE**
-	**TABLE OF CONTENTS**
1	**QUALITY PLAN CONTROL AND DISTRIBUTION**
1.1	List of Copy Holders
1.2	Revision Record
2	**PROJECT INFORMATION**
2.1	Project Description
2.2	Project Cost (Phase 4)
2.3	Scope of Works
3	**ORGANISATION**
3.1	Organisational Chart
3.2	ACEPL's Project Team Member
3.3	Client/Client's Representatives
3.4	Other Consultants - Local - Overseas – Not Used
3.5	Contractor/Sub-Contractors (Phase 4)
3.6	Authorities
4	**PROGRAMME**
4.1	Overall Programme (Phase 4)
4.2	Authority Submission Status for M&E Services – 1st Submission (Phase 4)
4.3	Authority Submission Status for M&E Services (Amendments) – 2nd Submission – Not Used
5	**PROJECT RECORDS**
5.1	List of Internal Files
5.2	Filing of Drawings

TABLE OF CONTENTS

SECTION	DESCRIPTION
6	**INTERFACING**
6.1	Method of Interface
6.2	Internal Design Interface
6.3	Circulation of Documents to External Parties
7	**WORK AUTHORISATION**
8	**DESIGN INPUT AND METHODOLOGY**
8.1	List of Client's Standards, Reference Documents or Brief
8.2	List of Applicable Code of Practice and Regulations
8.3	List of Design Guide or Handbook Used
8.4	List of Applicable Quality System Procedures
8.5	List of Software Used for Design/Analysis
9	**ENVIRONMENTAL CONSIDERATIONS**
9.1	Sustainable Design Features / Criteria – Not Used
9.2	Site PPE Requirement
9.3	Site Emergency Preparedness
9.4	Reporting of Environmental Non-conformances
9.5	List of Applicable Environmental Management System Procedures
10	**CLIENT'S REQUIREMENTS**
10.1	List of Output Required by Client
10.2	Specific Procedures Required by Client – Not Used
11	**LIST OF SUB-JOB**
11.1	List of Sub-Job Numbers

SECTION 1

QUALITY PLAN CONTROL AND DISTRIBUTION

1.1 List of Copy Holders

Copy No.	Copy Holder	Date of Issue
1	1391-PQP File	6 January 2011

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	1 March 2004	1 to 10	26	
1	18 September 2006	1 to 10	30	+ 8 pgs (Sect 4.1 – Overall Programme)
2	15 July 2008	1 to 11	32	+ 20 pgs (Sect 4.1 – Overall Programme)
3	26 June 2009	1 to 11	28	Phase 1 to 3 data not included + 12 pgs (Sect 4.1 – Overall Programme) + 7 pgs (Sect 9.3 – Site Emergency Preparedness Plan)
4	11 May 2010	1 to 11	28	Phase 1 to 3 data not included + 12 pgs (Sect 4.1 – Overall Programme) + 7 pgs (Sect 9.3 – Site Emergency Preparedness Plan)
5	6 January 2011	1 to 11	28	Phase 1 to 3 data not included + 12 pgs (Sect 4.1 – Overall Programme) + 7 pgs (Sect 9.3 – Site Emergency Preparedness Plan)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Residential

Statistics of Development	
Site Area, m²	Approx. 12,700
Nett Floor Area, m²	N.A
Gross Floor Area, m²	14,500 (excl carporch GFA)
Covered Carpark, m²	N.A
No. of Covered Carpark Lots	N.A
No. of Apartments/Houses	Phase 1 to 3 – 25 units (completed) Phase 4 – 44 units
No. of Beds (for Hospitals)	N.A
No. of Guestroom (for Hotels)	N.A
No. of Blocks / No. of Storeys	7 blocks / 3 storeys
No. of Phases	Phase 1 – Phase 8B1 & 11C (4 units show houses for type TF, TF1 & TL, TL) (completed) Phase 2 – Phase 8B1 & 11C (17 units of 3-storey terrace house for type TF, TF2 & TL, TL2) (completed) Phase 3 – Phase 11D & 11D1 (4 units show houses for type TM, TM1 & TP, TP2) (completed) Phase 4 – Phase 9B, 11C1, 11D & 11D1 (44 units of 3-storey terrace house for type TM & TP)

2.2 Project Cost (Phase 4)

M&E Services Cost Plan (S$ x 1K)								
Services	EI	ACVI	LEI	FFAI	PSI	SPFI	Auto-gate	
Estimate	-	-	990	-	-	-	-	
Awarded	2,197	1,937	160	-	1,703	39	-	

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	-	-	28.2788

** 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	✓
Home Elevator (for Phase 11C1 & 11D1)	✓	MECHANICAL VENTILATION	✓	FIRE ALARM (for Show Houses Only)	✓	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 (Not Applicable for Show Houses)	✓						
FLUSHFLOOR TRUNKING									

(✓*where applicable*)

2.3.3 Submission to Relevant Authorities by Others

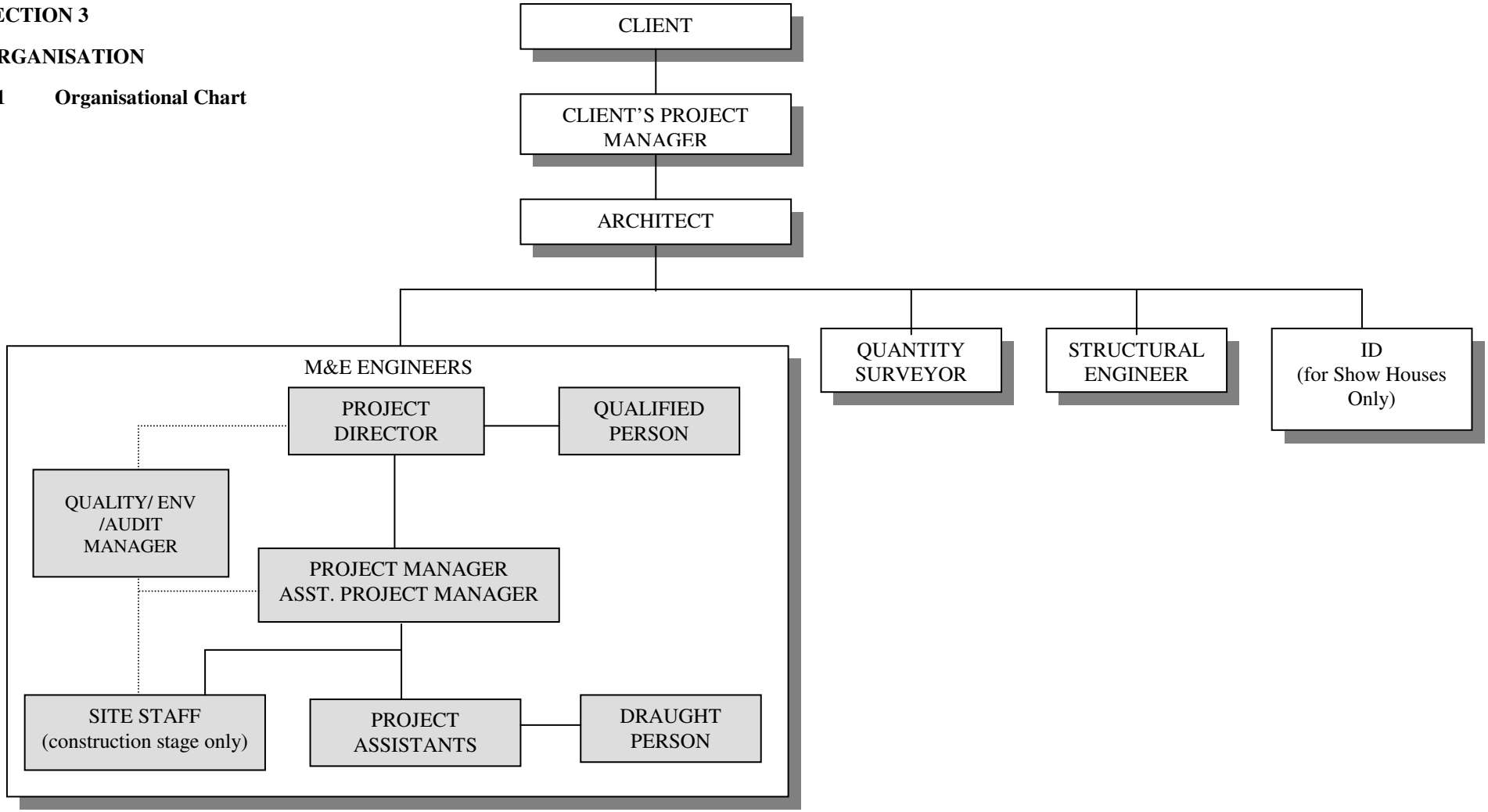
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*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	Andrew Loh (LCT) – Phase 1,2 & 3 Choong Choon Guan (CCG) – Phase 4
	Electrical	Loh Fook Yuen (LFY)
Project Manager		Goh Whye Liang (GWL)
Assistant Project Manager		Winston Chee (WC)
Project Assistant (Mech)		-
Project Assistant (Elect)		-
Draughtsperson		Common Pool
Resident Engineer (M&E)		Lim Seng Kok (Civil & Architectural)
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		Nil

3.3 Client/Client's Representatives

Client:- Kallang Development Pte Ltd

Address:- 65 Chulia Street #45-01
OCBC Centre
Singapore 049513

Tel:- 6538 2372

Fax:- 6535 5217

Client's Representatives:- Areca Property Management Pte Ltd acted as Project Manager

Name of Firm	Contact Person	Contact
Areca Property Management Pte Ltd	Name: Lim Ling Huey Position: Senior Project Executive (In-charge of phases 3, & 4)	Tel: 6236 0252 Fax: 6535 5217 Handphone: 9107 0743 Email: LHLim@singapore-e.com.sg
	Name: Sebastian Chow Position: Senior Project Executive (In-charge of phases 1 & 2)	Tel: 6236 0250 Fax: 6535 5217 Handphone: 9339 8745 Email: FHChow@singapore-e.com.sg
	Name: Ms Ann Awyong Position: Personal Assistant to PM	Tel: 6236 0201 Fax: 6535 5217 Handphone: - Email: AnnAwyong@singapore-e.com.sg

3.4 **Other Consultants** (Local)

Function / Name of Firm	Contact Person	Contact
Architect ADDP Architects	Name: Tang Kok Thye Position: Principal Architect	Tel: 6220 2153 Fax: 6325 4918 Handphone: Email: kokthye@addp-do.com.sg
	Name: Richard Lai Teck Chuan Position: Senior Principal Architect	Tel: 6220 2153 Fax: 6325 4918 Handphone: Email: richard@addp-do.com.sg
	Name: Lene Ho Position: Architect (In-charge of phase 2 & 3)	Tel: 6220 2153 Fax: 6325 4918 Handphone: Email: lene@addp-do.com.sg
	Name: Jetonie G Goneo Position: Architect (In-charge of phase 4)	Tel: 6220 2153 Fax: 6325 4918 Handphone: 9834 6417 Email: jetonie@addp-do.com.sg
Quantity Surveyor Northcroft Lim Consultants Pte Ltd	Name: James Loo/ Tam Mun Chan Position: Director/ QS	Tel: 6220 7188 Fax: 6222 0868 Handphone: - Email: jloo@northcroft.com.sg Email: mctam@northcroft.com.sg
Structural Engineer DE Consultants (S) Pte Ltd	Name: Tan Siang Jick/ Megan /Ben Foo Position: Director/-/-	Tel: 6227 3900 Fax: 6227 2909 Handphone: - Email: deconsult@pacific.net.sg Email: megan.hoon@de-consultants.com Email: ben.foo@de-consultants.com
Interior Designer	Name: Position:	Tel: - Fax: - Handphone: - Email: -
Lighting Consultant	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 (Phase 4)

Function / Name of Firm	Contract *	Contact Person	Contact
Main Contractor Array Engineering & Construction Pte Ltd		Name: Zaldy Position: Project Manager	Tel: 64534427 Fax: 64532170 Handphone: 9764 9221 Email: arrpl_spring@pacific.net.sg
Air Conditioning & Ventilation Installation Sub-Contractor Leong Hum Engineering Pte Ltd	DSC	Name: Desmond Leong Position: Project Manager	Tel: 6296 8473 Fax: 6296 0213 ext 118 Handphone: 9387 1938 Email: lhepl@singnet.com.sg
Plumbing & Sanitary Installation Sub-Contractor Acacia Engineering Pte Ltd	DSC	Name: Tok Kiah Tong Position: Director	Tel: 6453 0500 Fax: 6453 0400 Handphone: 9754 6350 Email: acacia_epl@singnet.com.sg
Electrical Installation Sub-Contractor Kurihara Kogyo Co., Ltd	DSC	Name: Lim Peng Soon Position: Project Manager	Tel: 6271 9863 Fax: 6278 4475 Handphone: 9634 8737 Email: pslim@kurihara.com.sg
Home Elevator Installation Sub-Contractor Mitsubishi Elevator (S) Pte Ltd	NSC	Name: Jansen Chay Jen Yat Position: Project Manager	Tel: 6842 5678 Fax: 6748 2292 Handphone: 9004 7998 Email: jansen.chay@mesp.meap.com
Fire Fighting & Alarm Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor Reubens Pte Ltd	NSC	Name: Agnes Lim Position: Director	Tel: 6284 7812 Fax: 6284 7813 Handphone: 9017 1693 Email: reupl@singnet.com.sg
Carpark System Installation Sub-Contractor		Name: Position:	Tel: Fax: Handphone: Email:
Autogate Control System Installation Sub-Contractor Lam International Corporation Pte Ltd	DSC	Name: Bobby Position: -	Tel: 6382 2822 Fax: 6382 3912 Handphone: 9456 6713 Email: lamintl@singnet.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 Francis Chang	6823 8555/ 6823 8564
(b) Diversion	Mr Tony Yeo Cheng Hee	6823 8552/ 6823 8564/ tonyyeo@singaporepower.com.sg
SP Services:		
(a) Customer Supply		
(b) Installation	Mr Tay Peck Seng	6240 9243/ 6240 9225/ 9047 6200
(c) Meter Section	Mr Hsu Foo Nan	hsufoonan@singaporepower.com.sg
(d) Road Lighting		
TFCC:		
(a) SCV	Ms Paulyn Chew	6725 1507/ 6820 6008
(b) SingTel	Mr Goh Ser Cheng	scgoh@singtel.com
(c) IDA		
BCA:		
(a) Building Plan		
FSSD:		
(a) Building Plan		
(b) M&E Plan		
PUB Water Supply (Network) Dept:		
(a) Water Conservation		
(b) Plumbing Plan	Ms Pratheipa Rajendram	6731 3553/ 6731 3023 Pratheipa_rajendram@pub.gov.sg
(c) Diversion	Mr Leow Cheng Hwee	6289 4470 leow_cheng_hwee@pub.gov.sg
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU	Mr David Lim B H	6731 9629 / 6731 9725
(b) M&E Plan	Mr Lim Ju Peng	6731 3297
(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

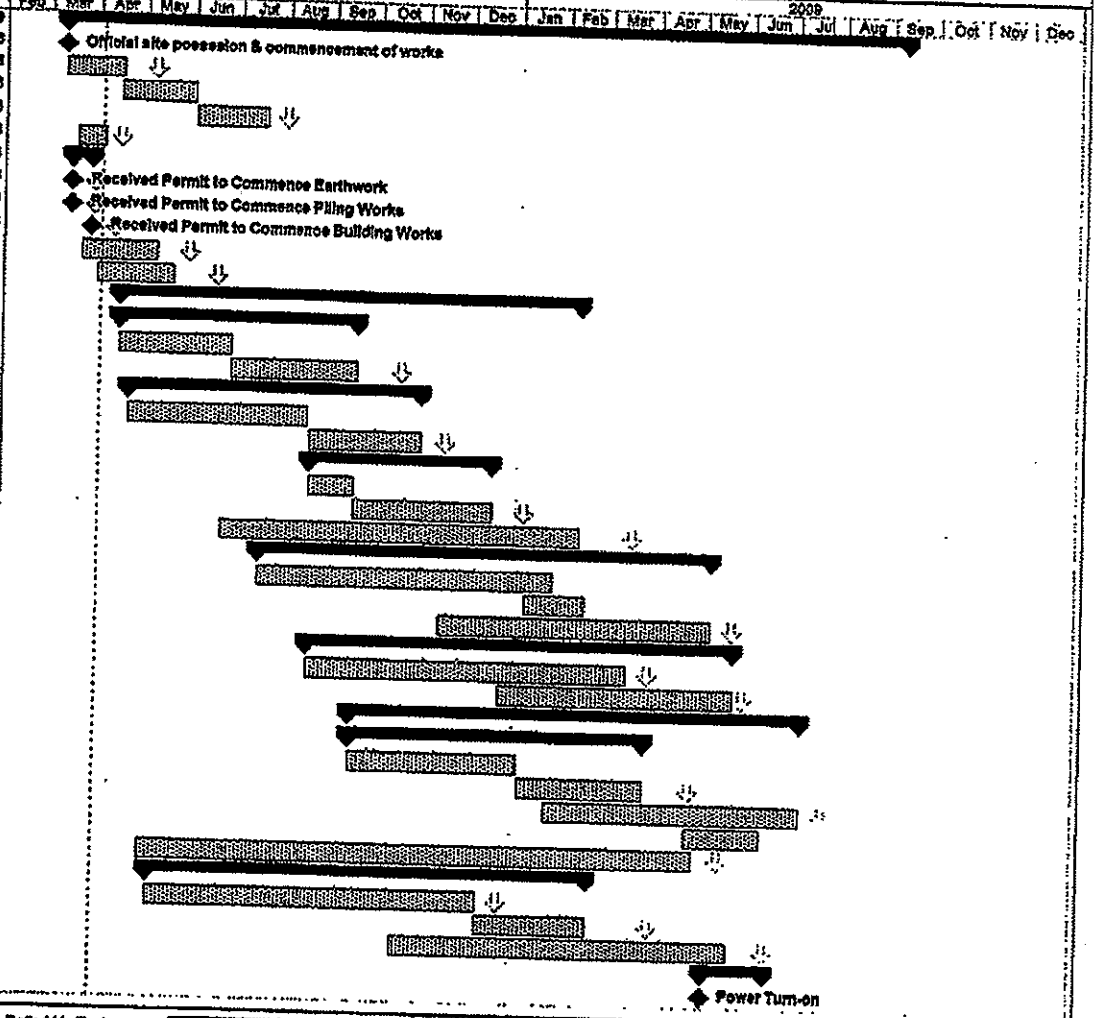
4.1 Overall Programme – Phase 4 (Refer to attached)

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																									

4.1.4 OVERALL PROGRAMME - PHASE 4

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 444 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED MASTER PROGRAMME Rev 2

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
1	SPRINGSIDE	463 d	10-03-08	09-09-09	19-03-08	09-09-09
2	Official site possesion & commencement of works	0 d	10-03-08	10-03-08	19-03-08	19-03-08
3	Mobilisation	31 d	10-03-08	15-04-08	31-03-08	06-05-08
4	Material submission and approval	8 wks	15-04-08	31-05-08	25-04-08	13-06-08
5	Shop Drawing submission and approval	8 wks	02-06-08	17-07-08	14-06-08	30-07-08
6	Site Survey	3 wks	18-03-08	04-04-08	28-03-08	14-04-08
7	AUTHORITY APPROVAL (obtained by Developer)	10 d	14-03-08	27-03-08	28-03-08	11-04-08
8	Received Permit to Commence Earthwork	0 d	14-03-08	14-03-08	29-03-08	29-03-08
9	Received Permit to Commence Piling Works	0 d	14-03-08	14-03-08	29-03-08	29-03-08
10	Received Permit to Commence Building Works	0 d	27-03-08	27-03-08	11-04-08	11-04-08
11	Earthworks	8 wks	22-03-08	08-05-08	12-04-08	29-05-08
12	Piling works	41 d	01-04-08	16-05-08	01-04-08	16-05-08
13	Phase 11D (Units 2 to 22) 11 units	283 d	16-04-08	10-02-09	16-04-08	17-03-09
14	Units 2 to 8 (4 units) RC works	131 d	16-04-08	17-09-08	16-04-08	16-10-08
15	Pilecap to 3rd sty	61 d	16-04-08	26-06-08	16-04-08	26-06-08
16	3rd to roof	70 d	27-06-08	17-09-08	25-07-08	16-10-08
17	Units 10 to 22 (7 units) RC works	161 d	22-04-08	29-10-08	22-04-08	14-11-08
18	Pilecap to 3rd sty	99 d	22-04-08	16-08-08	22-04-08	16-08-08
19	3rd sty to roof	82 d	18-08-08	29-10-08	03-09-08	14-11-08
20	Units 24 to 25 (2units) RC works	102 d	16-06-08	15-12-08	16-06-08	06-01-09
21	Pilecap to 1st sty	25 d	16-06-08	15-09-08	16-06-08	16-09-08
22	1st sty to roof	77 d	16-09-08	15-12-08	06-10-08	06-01-09
23	Architectural, M&E and External Works	197 d	21-06-08	10-02-09	25-07-08	17-03-09
24	Phase 11C1 (Units 137 to 159) 12 units	250 d	16-07-08	03-06-09	16-07-08	22-06-09
25	RC Works (Building)	162 d	16-07-08	24-01-09	16-07-08	24-01-09
26	RC Works (Carporch)	34 d	07-01-09	14-02-09	07-01-09	14-02-09
27	Architectural, M&E and External Works	150 d	12-11-08	06-06-09	25-11-08	22-06-09
28	Phase 11D1 (Units 36 to 52) 9 units	236 d	16-06-08	23-06-09	23-06-08	29-06-09
29	RC Works	177 d	16-06-08	14-06-09	23-06-08	20-03-09
30	Architectural, M&E and External Works	129 d	22-12-08	23-06-09	29-12-08	29-06-09
31	Phase 9B (Unit 33 to 51) 10 units	249 d	16-06-08	07-07-09	16-06-08	22-07-09
32	RC Works	182 d	16-06-08	26-03-09	16-06-08	10-04-09
33	Pilecap to 2nd sty	92 d	16-06-08	03-01-09	16-06-08	03-01-09
34	2nd sty to roof	70 d	05-01-09	26-03-09	19-01-09	09-04-09
35	Architectural, M&E and External Works	142 d	22-01-09	07-07-09	06-02-09	22-07-09
36	Archi and M&E Final Fix	41 d	24-04-09	11-06-09	24-04-09	11-06-09
37	Lift Installation	305 d	03-05-08	28-04-09	20-05-08	16-05-09
38	External Services	242 d	09-05-08	19-02-09	23-05-08	31-03-09
39	Laying of u/g pipes and cables	152 d	09-05-08	09-12-08	23-05-08	23-12-08
40	Installation of road appliances	60 d	10-12-08	19-02-09	21-01-09	31-03-09
41	Roadworks	185 d	16-10-08	22-06-09	09-11-08	15-06-09
42	Services Turn-on, Testing & Commissioning	38 d	05-05-09	16-06-09	07-05-09	16-06-09
43	Power Turn-on	0 d	05-05-09	05-05-09	07-05-09	07-05-09

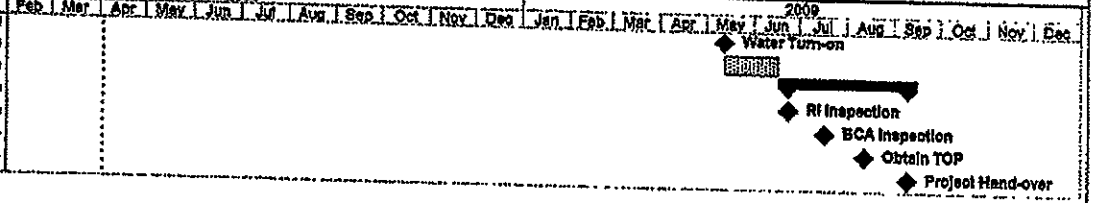


Project: the springside master program
Date: 03-04-09

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

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 444 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED MASTER PROGRAMME Rev 2

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
44	Water Turn-on	0 d	12-05-09	12-05-09	13-05-09	13-05-09
45	Services Final Testing & Commissioning	30 d	13-05-09	15-06-09	13-05-09	15-06-09
46	TOP & Handing Over	65 d	23-05-09	09-09-09	24-06-09	09-09-09
47	RI Inspection	0 d	23-05-09	23-06-09	24-06-09	24-06-09
48	BCA Inspection	0 d	17-07-09	17-07-09	18-07-09	18-07-09
49	Obtain TOP	0 d	12-05-09	12-05-09	13-05-09	13-05-09
50	Project Hand-over	0 d	09-09-09	09-09-09	09-09-09	09-09-09

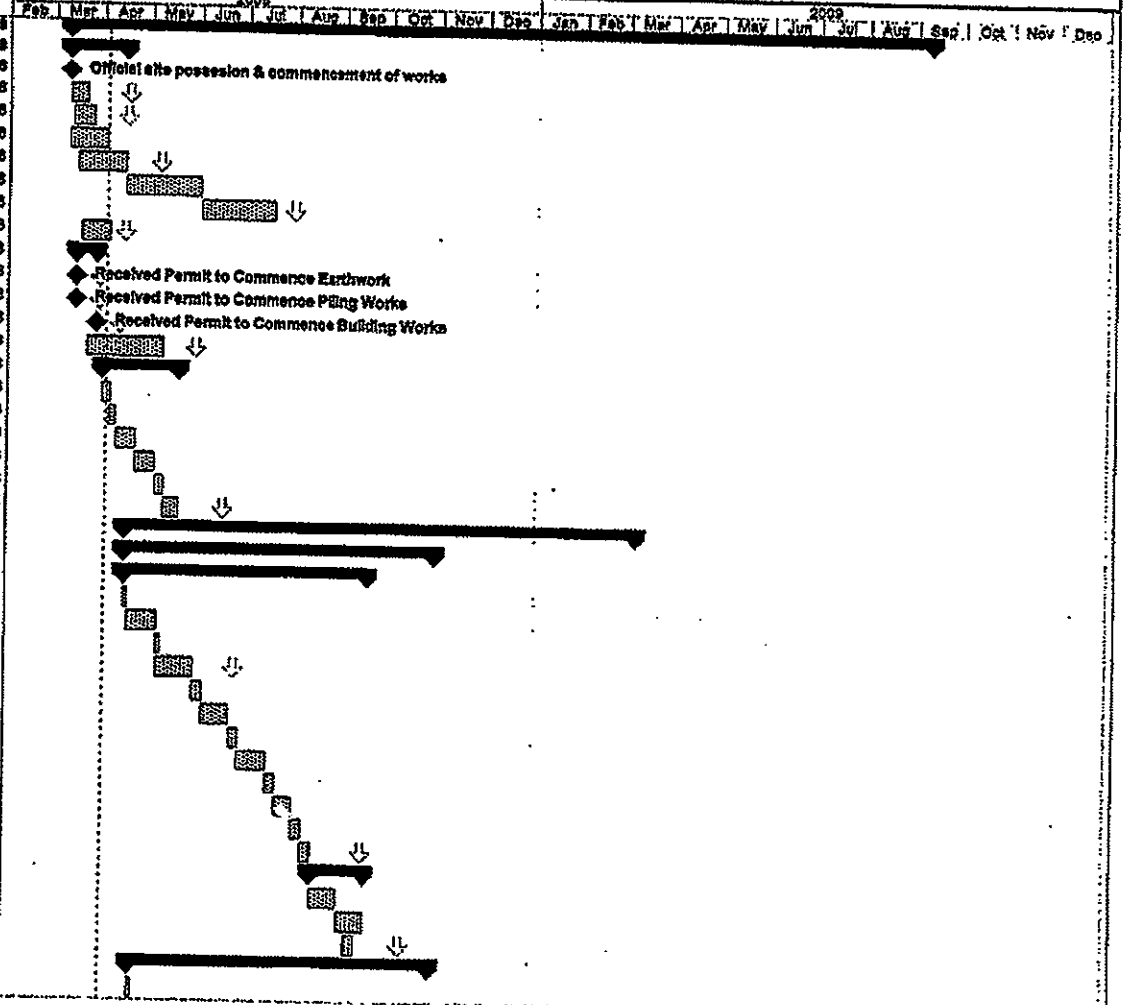


Project: the springside master program
Date: 03-04-09

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

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 44+4 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SIMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
1	SPRINGSIDE	481 d	10-03-08	09-09-09	15-06-07	09-01-09
2	MOBILISATION	30 d	10-03-08	14-04-08	10-03-08	09-03-08
3	Official site possesion & commencement of work	0 d	10-03-08	10-03-08	10-03-08	10-03-08
4	Contructor's Authority/Client Submission	2 wks	10-03-08	20-03-08	02-04-08	12-04-08
5	Erection of Temporary Site Hoarding	2 wks	12-03-08	24-03-08	04-04-08	15-04-08
6	Site Clearing & Construction of Tamporary Acces	4 wks	10-03-08	02-04-08	01-04-08	23-04-08
7	Construction of temporary Office & Facilities	5 wks	15-03-08	14-04-08	07-04-08	09-05-08
8	Material submission and approval	8 wks	15-04-08	31-05-08	28-04-08	13-06-08
9	Shop Drawing submission and approval	8 wks	02-06-08	17-07-08	14-06-08	30-07-08
10	Site Survey	3 wks	18-03-08	04-04-08	28-03-08	14-04-08
11	AUTHORITY APPROVAL (obtained by Developer)	10 d	14-03-08	27-03-08	29-03-08	11-04-08
12	Received Permit to Commence Earthwork	0 d	14-03-08	14-03-08	29-03-08	29-03-08
13	Received Permit to Commence Piling Works	0 d	14-03-08	14-03-08	29-03-08	29-03-08
14	Received Permit to Commence Building Works	0 d	27-03-08	27-03-08	11-04-08	11-04-08
15	Earthworks	6 wks	22-03-08	06-05-08	12-04-08	29-05-08
16	PILING WORKS	41 d	01-04-08	19-05-08	01-04-08	16-06-08
17	Mobilisation of Piling rig	1 wk	01-04-08	05-04-08	01-04-08	05-04-08
18	Setting-out	3 d	05-04-08	08-04-08	05-04-08	08-04-08
19	Phase 11D	10 d	10-04-08	21-04-08	10-04-08	21-04-08
20	Phase 11C1	10 d	22-04-08	02-05-08	21-05-08	31-05-08
21	Phase 11D1	5 d	05-05-08	09-05-08	02-06-08	06-06-08
22	Phase 9B	6 d	10-05-08	19-05-08	07-06-08	16-06-08
23	PHASE 11D (Units 2 to 22) 11-units	272 d	16-04-08	05-03-09	15-06-07	17-03-09
24	STRUCTURAL WORKS	185 d	16-04-08	29-10-08	15-06-07	14-11-08
25	Units 2 to 8 (4 units)	131 d	16-04-08	17-09-08	16-04-08	15-10-08
26	Setting-out	2 d	16-04-08	17-04-08	16-04-08	17-04-08
27	Pilecap Construction	15 d	16-04-08	06-05-08	19-04-08	09-05-08
28	Anti termite	2 d	07-05-08	08-05-08	23-05-08	24-05-08
29	1st sty slab & beam	20 d	07-05-08	29-05-08	07-05-08	29-05-08
30	1st sty column	5 d	30-05-08	04-06-08	30-05-08	04-06-08
31	2nd Sty beam and slab	15 d	05-06-08	21-06-08	05-06-08	21-06-08
32	2nd sty column & Staircase	5 d	23-06-08	27-06-08	23-06-08	27-06-08
33	3rd sty beam & slab	15 d	28-06-08	15-07-08	28-06-08	15-07-08
34	3rd sty column & Staircase	5 d	15-07-08	21-07-08	14-08-08	19-08-08
35	Attic floor beam & slab	10 d	22-07-08	01-08-08	20-08-08	30-08-08
36	Attic column & Staircase	5 d	02-08-08	07-08-08	01-09-08	05-09-08
37	Roof Beam	4 d	08-08-08	13-08-08	08-09-08	10-09-08
38	Roofing works	30 d	14-08-08	17-09-08	11-09-08	16-10-08
39	Roof truss installation	3 wks	14-08-08	30-08-08	11-09-08	27-09-08
40	Roof insulation and Roof Tiles instal	3 wks	01-09-08	17-09-08	29-09-08	16-10-08
41	Skylight	1 wk	08-09-08	11-09-08	06-10-08	10-10-08
42	Units 10 to 22 (7 units)	160 d	22-04-08	29-10-08	15-06-07	14-11-08
43	Setting-out	2 d	22-04-08	23-04-08	15-06-07	18-06-07

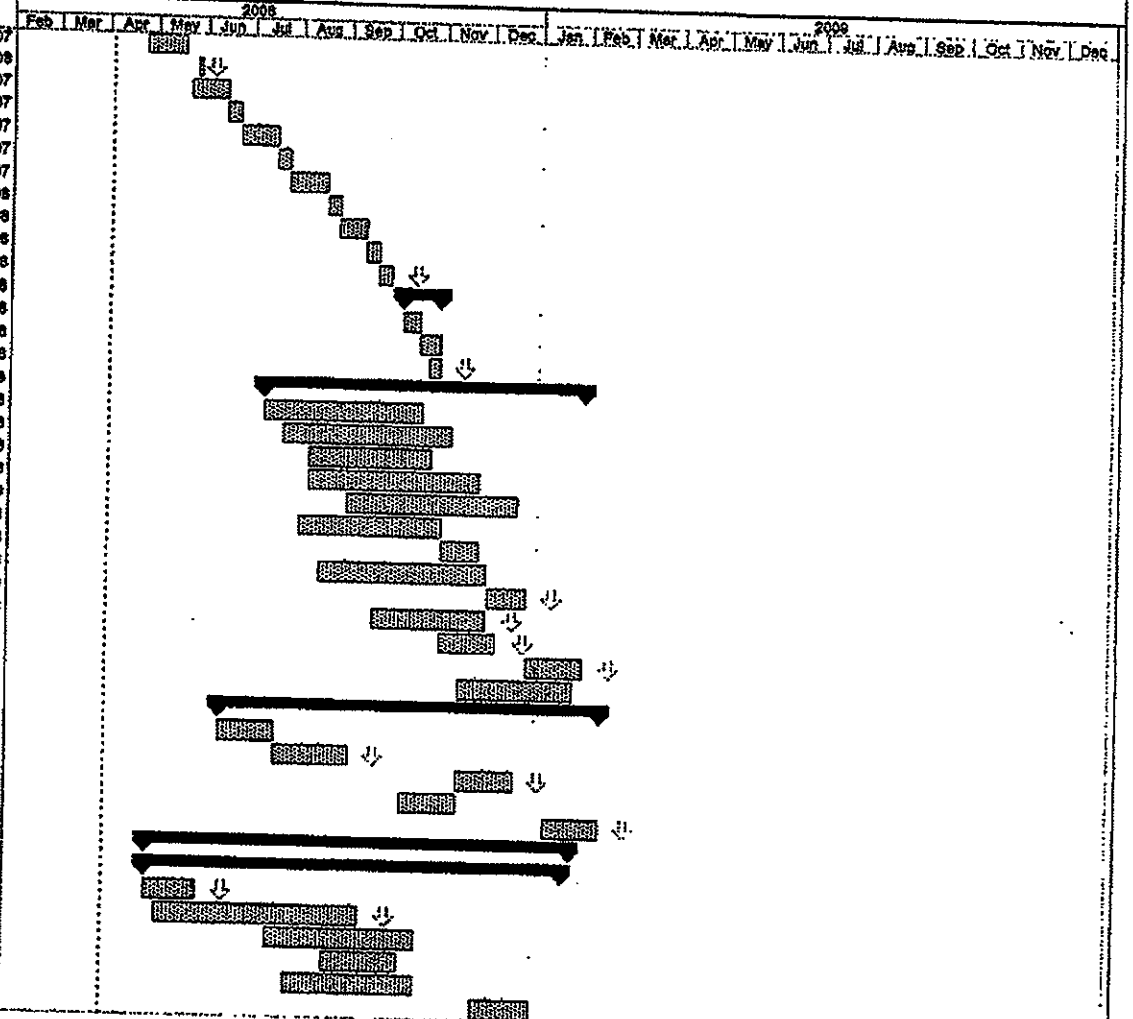


Project: the springside detailed progres
Date: 03-04-08

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

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 44+4 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
44	Pilecap Construction	20 d	24-04-08	17-05-08	19-06-07	16-07-07
45	Anti-termite	2 d	26-05-08	27-05-08	04-06-08	05-06-08
46	1st sty slab & beam	20 d	22-05-08	13-06-08	20-07-07	16-08-07
47	1st sty column	7 d	14-06-08	21-06-08	17-08-07	27-08-07
48	2nd Sty beam and slab	20 d	23-06-08	15-07-08	28-08-07	24-09-07
49	2nd sty column & Staircase	7 d	16-07-08	23-07-08	25-09-07	03-10-07
50	3rd sty beam & slab	20 d	24-07-08	16-08-08	04-10-07	31-10-07
51	3rd sty column & Staircase	7 d	18-08-08	25-08-08	02-09-08	09-09-08
52	Attic floor beam & slab	15 d	26-08-08	11-09-08	10-09-08	25-09-08
53	Attic column & Staircase	7 d	12-09-08	19-09-08	27-09-08	06-10-08
54	Roof Beam	7 d	20-09-08	27-09-08	07-10-08	14-10-08
55	Roofing works	20 d	06-10-08	29-10-08	22-10-08	14-11-08
56	Roof trues installation	2 wks	06-10-08	16-10-08	22-10-08	03-11-08
57	Roof Installation and Roof Tiles Instal	2 wks	17-10-08	29-10-08	04-11-08	14-11-08
58	Skylight	1 wk	29-10-08	29-10-08	10-11-08	14-11-08
59	ARCHITECTURAL WORKS	170 d	10-07-08	30-01-09	10-07-08	18-02-09
60	Skim Coat to Ceiling	85 d	10-07-08	18-10-08	10-07-08	18-10-08
61	Brickwall	90 d	22-07-08	06-11-08	22-07-08	06-11-08
62	Waterproofing	65 d	06-08-08	24-10-08	25-08-08	10-11-08
63	Plastering	90 d	08-08-08	24-11-08	25-08-08	10-12-08
64	Internal Painting	90 d	02-09-08	18-12-08	17-09-08	05-01-09
65	Door & Window Frame Installation	75 d	02-08-08	31-10-08	13-08-08	10-11-08
66	Door & Window Panel Installation	4 wks	01-11-08	24-11-08	11-11-08	03-12-08
67	Tiling Works	90 d	15-08-08	29-11-08	30-08-08	15-12-08
68	Other Wall & Floor Finishes	20 d	01-12-08	24-12-08	17-12-08	10-01-09
69	False Ceiling	60 d	19-09-08	29-11-08	06-10-08	16-12-08
70	Staircase Railing	30 d	01-11-08	05-12-08	18-11-08	23-12-08
71	Wardrobe & Kitchen Cabinet	30 d	28-12-08	30-01-09	13-01-09	18-02-09
72	External Painting	60 d	13-11-08	24-01-09	24-11-08	04-02-09
73	DRAINAGE & OTHER EXTERNAL WORKS	202 d	14-08-08	11-02-09	01-07-08	21-02-09
74	Meter Compartment	8 wks	14-08-08	18-07-08	01-07-08	04-08-08
75	Fencing (Front)	8 wks	19-07-08	04-09-08	05-08-08	20-09-08
76	Fencing Wall (Rear)	8 wks	13-11-08	18-12-08	27-11-08	03-01-09
77	Perimeter Drain	6 wks	08-10-08	12-11-08	22-10-08	25-11-08
78	Paving & Landscaping	6 wks	05-01-09	11-02-09	19-01-09	21-02-09
79	M&E WORKS	225 d	30-04-08	24-01-09	17-05-08	18-02-09
80	Plumbing & Sanitary Works	220 d	30-04-08	19-01-09	17-05-08	04-02-09
81	Underground waste/water pipe	27 d	30-04-08	31-05-08	17-05-08	17-06-08
82	Concrete embedded pipes	110 d	07-05-08	12-09-08	23-05-08	29-09-08
83	Soil, Waste & Vent stack	60 d	15-07-08	18-10-08	30-07-08	03-11-08
84	IC construction	40 d	21-08-08	07-10-08	04-09-08	21-10-08
85	Water supply pipe installation	70 d	28-07-08	18-10-08	24-10-08	17-01-09
86	Sanitary fitting, water heater	30 d	26-11-08	31-12-08	04-12-08	10-01-09

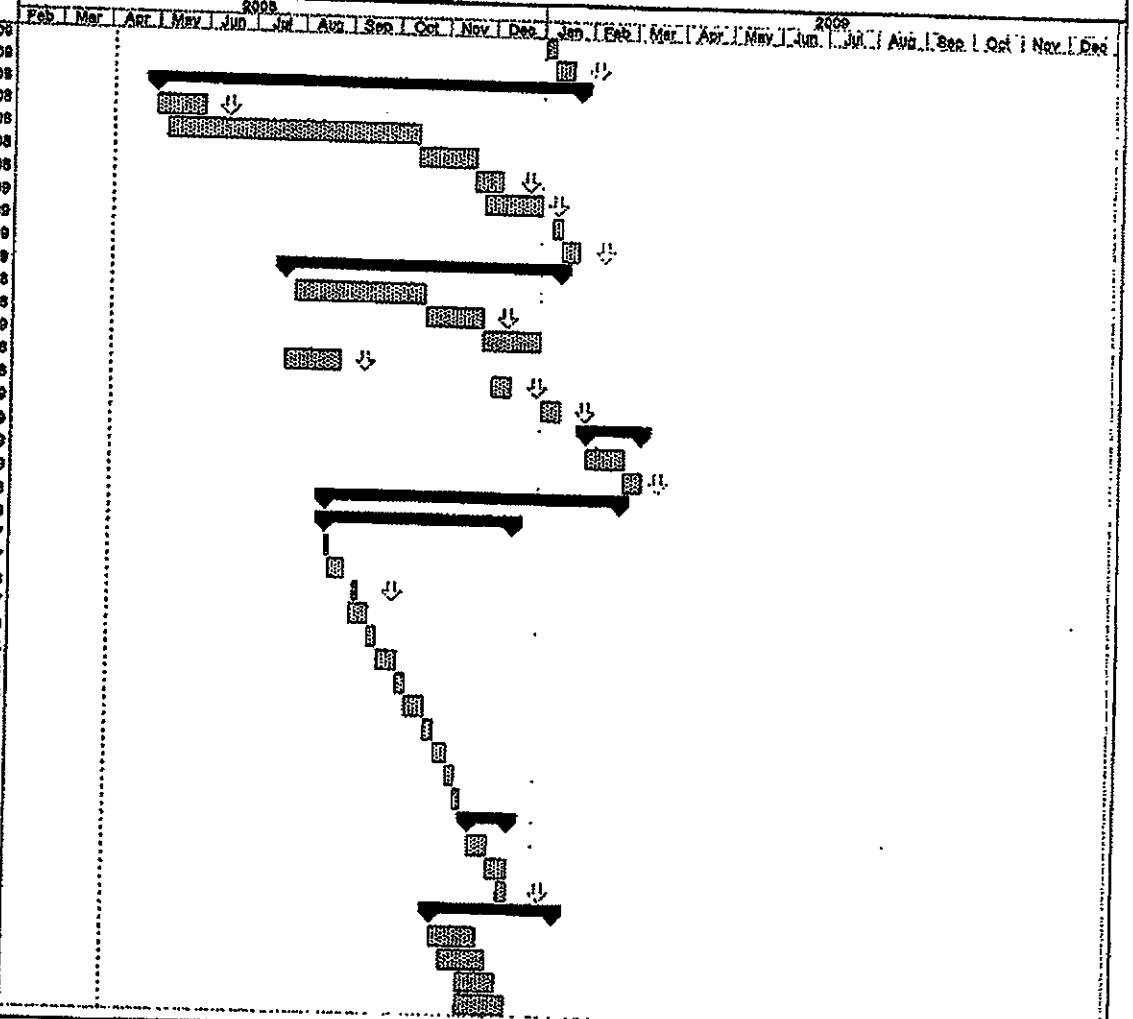


Project: the springside detailed progra
Date: 03-04-08

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

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 44+4 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
87	Water meter	1 wk	02-01-09	07-01-09	19-01-09	23-01-09
88	Partial Testing & Commissioning	2 wks	08-01-09	19-01-09	24-01-09	04-02-09
89	Electrical, Tel & SCV Works	226 d	30-04-08	24-01-09	17-06-08	10-02-09
90	Underground cables	25 d	30-04-08	29-05-08	17-05-08	14-06-08
91	Concealed conduit,etc	135 d	07-05-08	13-10-08	23-05-08	30-10-08
92	Cabling and wiring	30 d	14-10-08	18-11-08	31-10-08	04-12-08
93	DB Installation	3 wks	19-11-08	05-12-08	05-12-08	23-12-08
94	Light Fitting, SSO, tel, SCV outlet	30 d	25-11-08	31-12-08	04-12-08	10-01-09
95	Electrical/SCV Meter	1 wk	06-01-09	13-01-09	24-01-09	29-01-09
96	Partial Testing & Commissioning	2 wks	14-01-09	24-01-09	30-01-09	10-02-09
97	ACMV	146 d	22-07-08	13-01-09	07-08-08	28-01-09
98	Concealed piping	70 d	28-07-08	18-10-08	13-08-08	04-11-08
99	Cabling & wiring	30 d	20-10-08	24-11-08	05-11-08	10-12-08
100	CU & FCU Installation	30 d	25-11-08	31-12-08	12-12-08	17-01-09
101	Toilet exhaust / intake duct	30 d	22-07-08	26-08-08	07-08-08	11-09-08
102	Toilet Exhaust Fan	2 wks	01-12-08	12-12-08	17-12-08	29-12-08
103	Partial Testing & Commissioning	2 wks	02-01-09	13-01-09	19-01-09	29-01-09
104	CLEANING & PRE-INSPECTION	36 d	31-01-08	05-03-09	11-02-09	17-03-09
105	Pre-Inspection and Touch-up works	4 wks	31-01-09	23-02-09	11-02-09	05-03-09
106	Final Cleaning	2 wks	24-02-09	05-03-09	06-03-09	17-03-09
107	PHASE 11D (Units 24 to 26) 2 units	157 d	18-06-08	21-02-09	01-11-07	07-03-08
108	STRUCTURAL WORKS	109 d	18-06-08	15-12-08	01-11-07	05-01-09
109	Setting-out	2 d	18-06-08	19-06-08	01-11-07	02-11-07
110	Pilecap Construction	10 d	20-06-08	30-06-08	05-11-07	16-11-07
111	Anti-termite	2 d	05-09-08	08-09-08	29-09-08	30-09-08
112	1st sty slab & beam	10 d	04-09-08	15-09-08	22-11-07	03-12-07
113	1st sty column	5 d	16-09-08	20-09-08	26-09-08	02-10-08
114	2nd Sty beam and slab	10 d	22-09-08	03-10-08	03-10-08	14-10-08
115	2nd sty column & Staircase	5 d	04-10-08	09-10-08	15-10-08	20-10-08
116	3rd sty beam & slab	10 d	10-10-08	21-10-08	27-10-08	07-11-08
117	3rd sty column & Staircase	5 d	22-10-08	27-10-08	06-11-08	13-11-08
118	Attic floor beam & slab	7 d	29-10-08	05-11-08	14-11-08	21-11-08
119	Attic column & Staircase	4 d	06-11-08	10-11-08	22-11-08	26-11-08
120	Roof Beam	4 d	11-11-08	14-11-08	27-11-08	01-12-08
121	Roofing works	20 d	21-11-08	18-12-08	11-12-08	05-01-09
122	Roof truss installation	10 d	21-11-08	02-12-08	11-12-08	22-12-08
123	Roof Insulation and Roof Tiles Installatio	10 d	03-12-08	15-12-08	23-12-08	05-01-09
124	Skylight	5 d	10-12-08	18-12-08	30-12-08	05-01-09
125	ARCHITECTURAL WORKS	84 d	29-10-08	14-01-09	06-11-08	30-01-09
126	Skim Coat to Ceiling	25 d	29-10-08	28-11-08	06-11-08	06-12-08
127	Brickwall	25 d	04-11-08	02-12-08	14-11-08	13-12-08
128	Waterproofing	20 d	15-11-08	09-12-08	01-12-08	24-12-08
129	Plastering	25 d	15-11-08	16-12-08	01-12-08	31-12-08

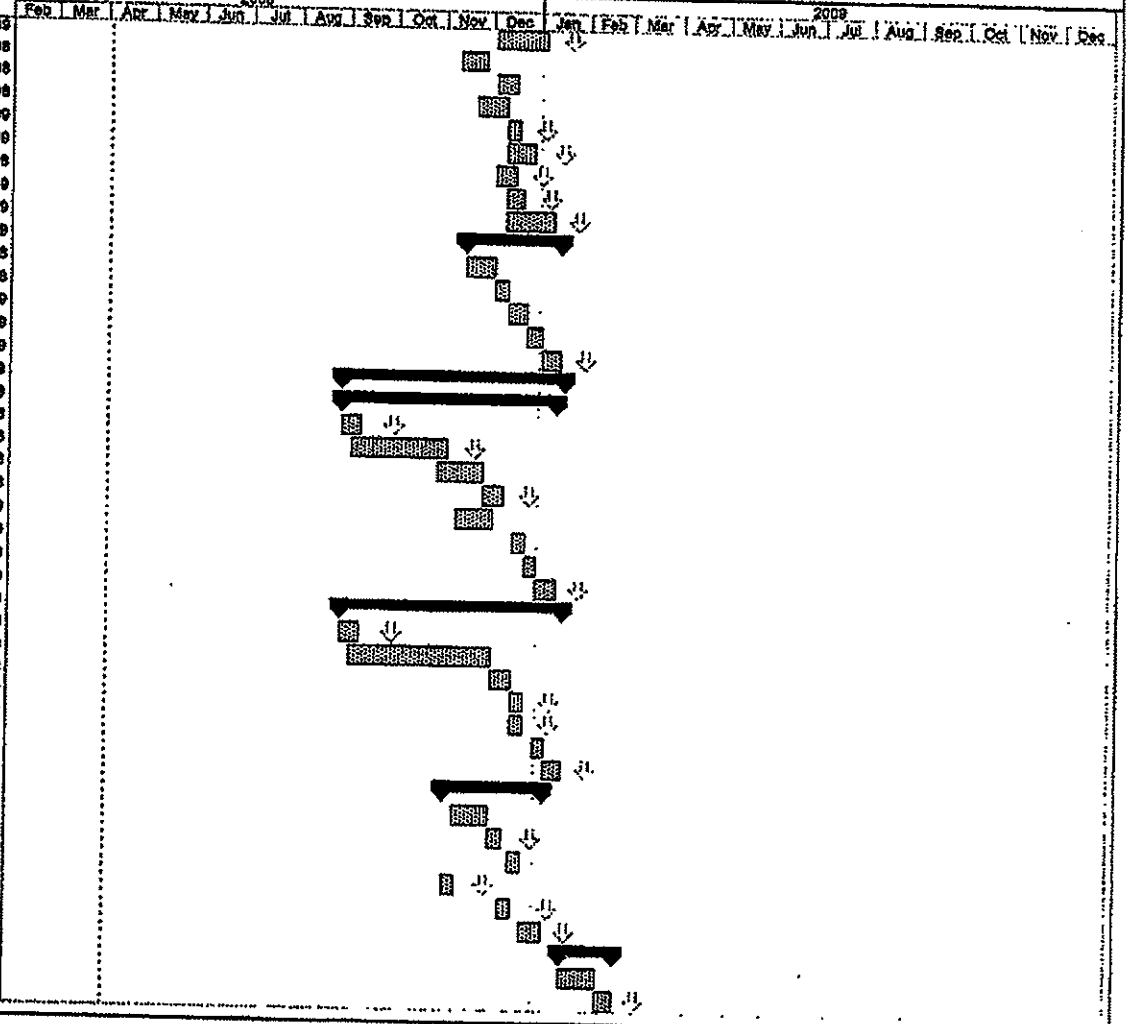


Project: the springside detailed progra
Date: 03-04-09

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

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 44+4 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
130	Internal Painting	25 d	03-12-08	03-01-09	20-12-08	20-01-09
131	Door & Window Frame Installation	15 d	10-11-08	26-11-08	24-11-08	11-12-08
132	Door & Window Panel Installation	10 d	03-12-08	15-12-08	16-12-08	30-12-08
133	Tiling Works	15 d	21-11-08	09-12-08	06-12-08	24-12-08
134	Other Wall & Floor Finishes	7 d	10-12-08	17-12-08	26-12-08	03-01-09
135	False Ceiling	15 d	10-12-08	27-12-08	29-12-08	16-01-09
136	Staircase Railing	10 d	03-12-08	15-12-08	19-12-08	31-12-08
137	Wardrobe & Kitchen Cabinet	10 d	10-12-08	20-12-08	28-12-08	07-01-09
138	External Painting	25 d	10-12-08	09-01-09	26-12-08	24-01-09
139	DRAINAGE & OTHER EXTERNAL WORKS	49 d	15-11-08	14-01-09	02-12-08	30-01-09
140	Perimeter Drain	3 wks	15-11-08	02-12-08	02-12-08	19-12-08
141	Meter Compartment	7 d	03-12-08	11-12-08	20-12-08	29-12-08
142	Fencing (Front)	10 d	12-12-08	23-12-08	30-12-08	10-01-09
143	Paving & Landscaping	7 d	24-12-08	02-01-09	12-01-09	19-01-09
144	Fencing Wall (Rear)	10 d	03-01-09	14-01-09	20-01-09	30-01-09
145	M&E WORKS	117 d	29-08-08	17-01-09	19-09-08	31-01-09
146	Plumbing & Sanitary Works	112 d	29-08-08	12-01-09	19-09-08	27-01-09
147	Underground waste/water pipe	10 d	29-08-08	09-09-08	19-09-08	30-09-08
148	Concrete embedded pipes	55 d	04-09-08	03-11-08	19-09-08	18-11-08
149	Soil, Waste & Vent stack	25 d	29-10-08	28-11-08	14-11-08	13-12-08
150	IC construction	10 d	27-11-08	09-12-08	15-12-08	26-12-08
151	Water supply pipe installation	20 d	10-11-08	02-12-08	16-12-08	08-01-09
152	Sanitary fitting, water heater	7 d	16-12-08	23-12-08	31-12-08	08-01-09
153	Water meter	1 wk	24-12-08	30-12-08	09-01-09	14-01-09
154	Partial Testing & Commissioning	2 wks	31-12-08	12-01-09	16-01-09	27-01-09
155	Electrical, Tel & SCV Works	117 d	29-08-08	17-01-09	19-09-08	31-01-09
156	Underground cables	10 d	29-08-08	09-09-08	19-09-08	30-09-08
157	Concealed conduit,etc	75 d	04-09-08	02-12-08	19-09-08	16-12-08
158	Cabling and wiring	10 d	03-12-08	15-12-08	16-12-08	31-12-08
159	DB Installation	7 d	16-12-08	23-12-08	02-01-09	09-01-09
160	Light Fitting, SSO, tel, SCV outlet	7 d	16-12-08	23-12-08	02-01-09	09-01-09
161	Electrical/SCV Meter	1 wk	31-12-08	06-01-09	16-01-09	20-01-09
162	Partial Testing & Commissioning	2 wks	07-01-09	17-01-09	21-01-09	31-01-09
163	ACMV	52 d	04-11-08	05-01-09	22-11-08	21-01-09
164	Concealed piping	20 d	10-11-08	02-12-08	27-11-08	20-12-08
165	Cabling & wiring	7 d	03-12-08	11-12-08	22-12-08	30-12-08
166	CU & FCU installation	7 d	16-12-08	23-12-08	02-01-09	09-01-09
167	Toilet exhaust / intake duct	7 d	04-11-08	11-11-08	22-11-08	29-11-08
168	Toilet Exhaust Fan	7 d	10-12-08	17-12-08	03-01-09	10-01-09
169	Partial Testing & Commissioning	2 wks	24-12-08	05-01-09	10-01-09	21-01-09
170	CLEANING & PRE-INSPECTION	30 d	19-01-09	21-02-09	02-02-09	07-03-09
171	Pre-Inspection and Touch-up works	4 wks	19-01-09	10-02-09	02-02-09	24-02-09
172	Final Cleaning	2 wks	11-02-09	21-02-09	25-02-09	07-03-09

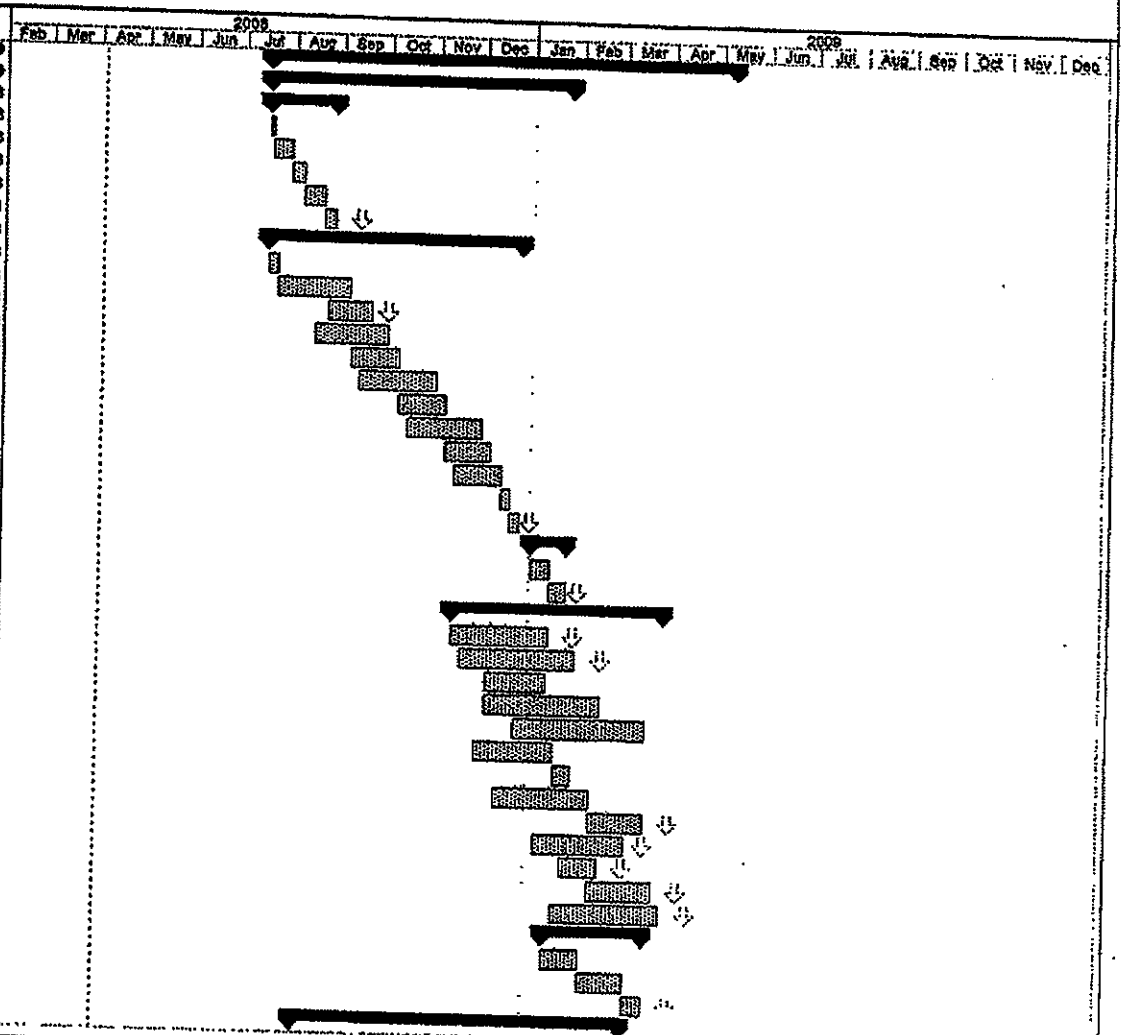


Project: the springside detailed progra
Date: 03-04-08

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

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 444 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
173	PHASE 11C1 (Units 137 to 188) 12 units	248 d	16-07-08	05-03-09	16-07-08	22-03-09
174	STRUCTURAL WORKS	180 d	16-07-08	24-01-09	16-07-08	31-01-09
175	Swimming Pool (unit 137)	35 d	16-07-08	27-08-08	01-08-08	12-09-08
176	Setting-out	2 d	16-07-08	17-07-08	01-08-08	02-08-08
177	Pilecap & Excavation	10 d	18-07-08	29-07-08	04-08-08	15-08-08
178	Base slab	7 d	30-07-08	06-08-08	16-08-08	23-08-08
179	RC wall	10 d	07-08-08	19-08-08	25-08-08	04-09-08
180	RC Deck	7 d	20-08-08	27-08-08	05-09-08	12-09-08
181	Building	135 d	16-07-08	24-12-08	16-07-08	31-12-08
182	Setting-out	5 d	16-07-08	21-07-08	16-07-08	21-07-08
183	Pilecap Construction	40 d	22-07-08	05-09-08	22-07-08	05-09-08
184	Anti-termite	25 d	23-08-08	20-09-08	02-09-08	30-09-08
185	1st sty slab & beam	40 d	15-08-08	30-09-08	15-08-08	30-09-08
186	1st sty column	25 d	05-09-08	07-10-08	05-09-08	07-10-08
187	2nd Sty beam and slab	40 d	13-09-08	31-10-08	13-09-08	31-10-08
188	2nd sty column & Staircase	25 d	08-10-08	06-11-08	14-10-08	12-11-08
189	3rd sty beam & slab	40 d	14-10-08	29-11-08	20-10-08	05-12-08
190	3rd sty column & Staircase	25 d	07-11-08	05-12-08	13-11-08	12-12-08
191	Attic floor beam & slab	25 d	13-11-08	12-12-08	19-11-08	18-12-08
192	Attic column & Staircase	5 d	13-12-08	18-12-08	19-12-08	24-12-08
193	Roof Beam	5 d	19-12-08	24-12-08	26-12-08	31-12-08
194	Roofing works	20 d	02-01-09	24-01-09	09-01-09	31-01-09
195	Roof truss installation	2 wks	02-01-09	13-01-09	09-01-09	20-01-09
196	Roof insulation and Roof Tiles installatio	2 wks	14-01-09	24-01-09	21-01-09	31-01-09
197	ARCHITECTURAL WORKS	114 d	13-11-08	28-03-09	13-11-08	14-04-09
198	Skim Coat to Ceiling	50 d	13-11-08	13-01-09	13-11-08	13-01-09
199	Brickwall	60 d	19-11-08	30-01-09	19-11-08	30-01-09
200	Waterproofing	30 d	05-12-08	12-01-09	23-12-08	29-01-09
201	Plastering	60 d	05-12-08	16-02-09	19-12-08	27-02-09
202	Internal Painting	70 d	24-12-08	17-03-09	07-01-09	28-03-09
203	Door & Window Frame Installation	40 d	29-11-08	17-01-09	12-12-08	29-01-09
204	Door & Window Panel Installation	2 wks	19-01-09	29-01-09	04-02-09	14-02-09
205	Tiling Works	50 d	12-12-08	10-02-09	30-12-08	26-02-09
206	Other Wall & Floor Finishes	30 d	11-02-09	17-03-09	27-02-09	02-04-09
207	False Ceiling	50 d	07-01-09	05-03-09	16-01-09	17-03-09
208	Staircase Railing	20 d	24-01-09	16-02-09	10-02-09	04-03-09
209	Wardrobe & Kitchen Cabinet	35 d	11-02-09	28-03-09	27-02-09	08-04-09
210	External Painting	60 d	19-01-09	28-03-09	04-02-09	14-04-09
211	DRAINAGE & OTHER EXTERNAL WORKS	65 d	14-01-09	15-03-09	30-01-09	03-04-09
212	Perimeter Drain	4 wks	14-01-09	05-02-09	30-01-09	21-02-09
213	Fencing	5 wks	06-02-09	06-03-09	23-02-09	23-03-09
214	Landscape	2 wks	07-03-09	18-03-09	24-03-09	03-04-09
215	M&E WORKS	174 d	05-08-08	05-03-09	25-08-08	21-03-09

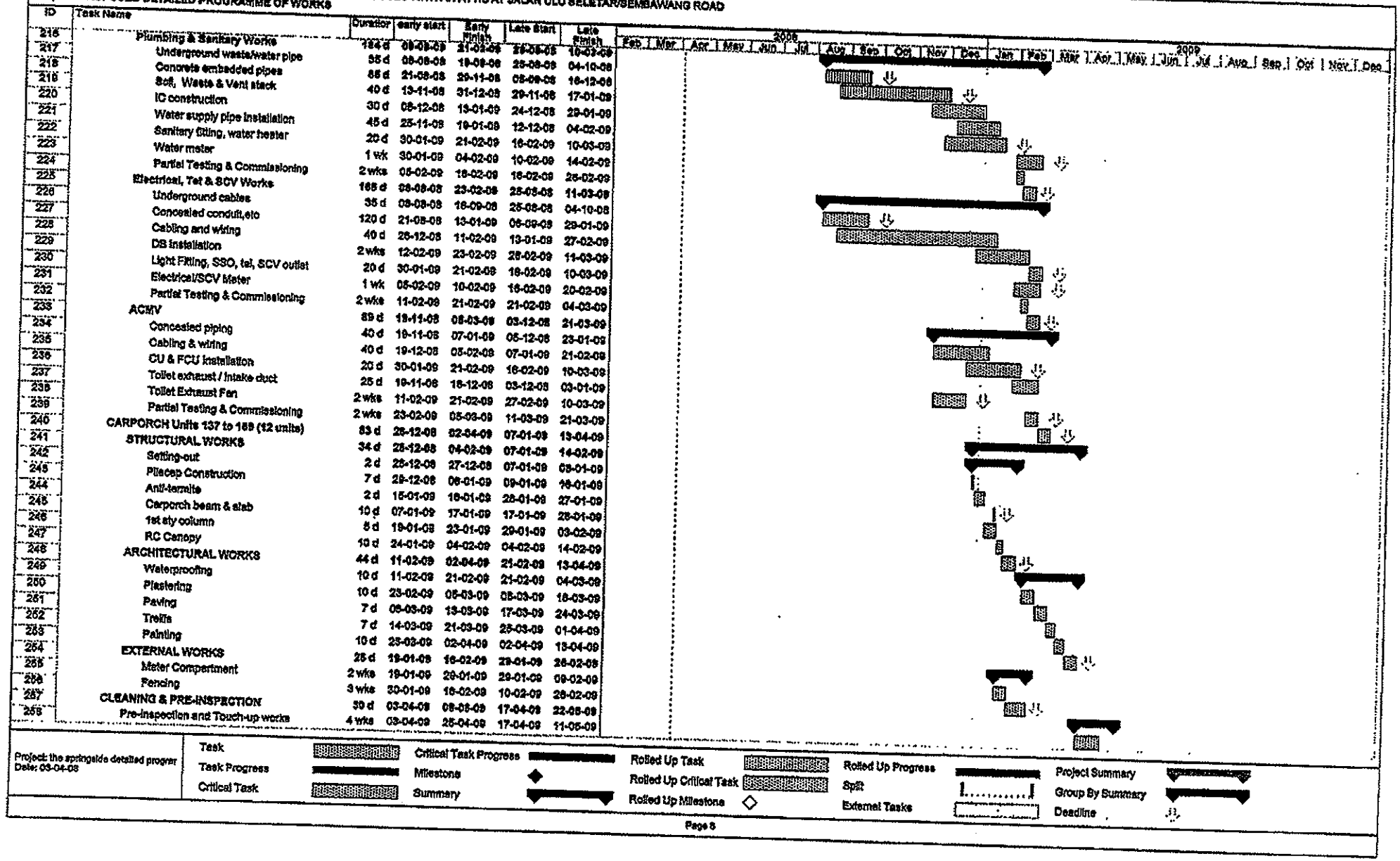


Project: the springside detailed progra
Date: 03-04-08

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

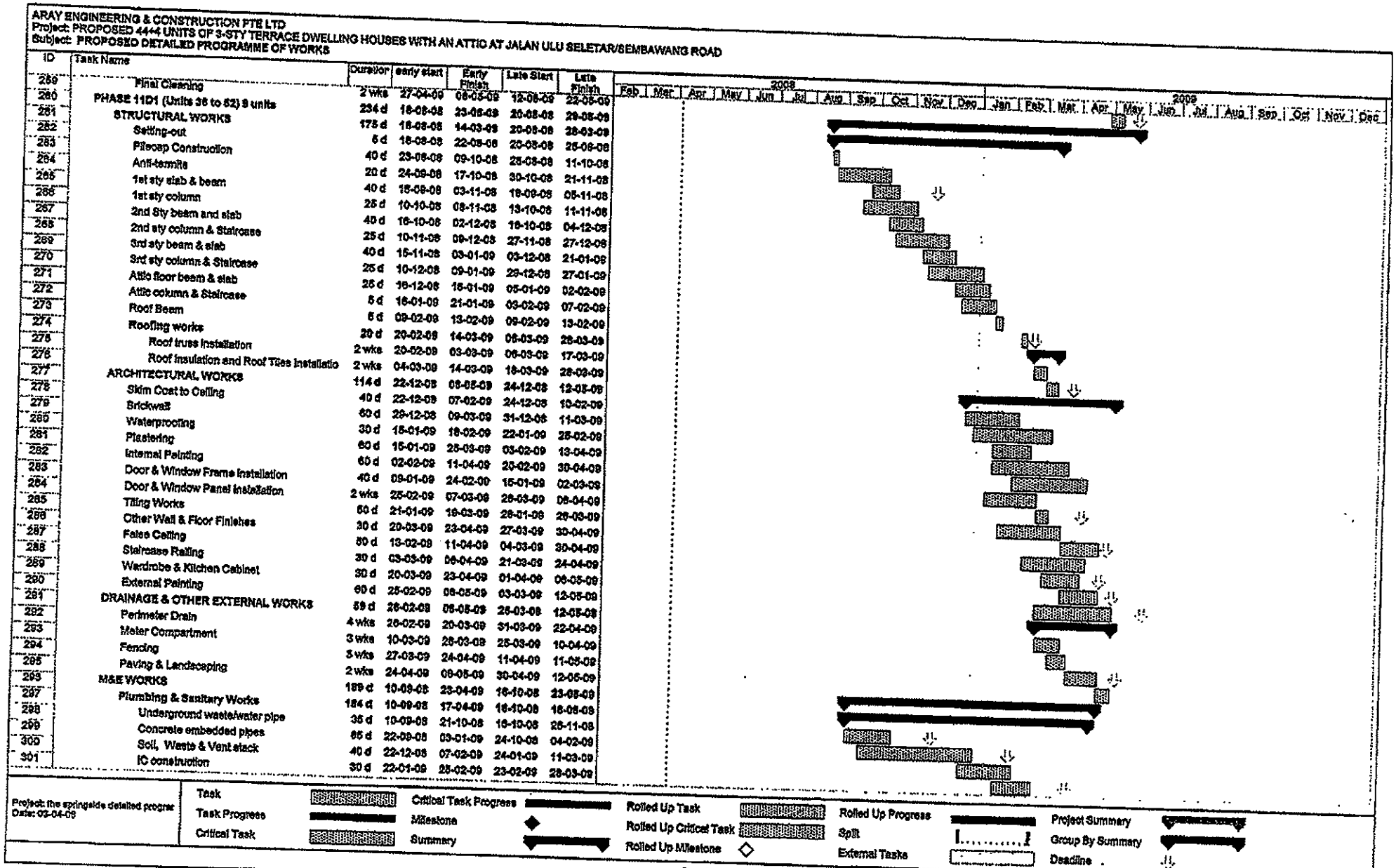
ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 4444 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
216	Plumbing & Sanitary Works	184 d	09-09-08	21-01-09	25-09-08	10-03-09
217	Underground waste/water pipe	55 d	09-09-08	19-09-08	25-09-08	04-10-08
218	Concrete embedded pipes	65 d	21-09-08	29-11-08	06-09-08	16-12-08
219	Soil, Waste & Vent stack	40 d	13-11-08	31-12-08	29-11-08	17-01-09
220	IC construction	30 d	05-12-08	13-01-09	24-12-08	29-01-09
221	Water supply pipe installation	45 d	25-11-08	19-01-09	12-12-08	04-02-09
222	Sanitary fitting, water heater	20 d	30-01-09	21-02-09	16-02-09	10-03-09
223	Water meter	1 wk	30-01-09	04-02-09	10-02-09	14-02-09
224	Partial Testing & Commissioning	2 wks	05-02-09	18-02-09	16-02-09	26-02-09
225	Electrical, Tel & SCV Works	165 d	09-09-08	23-02-09	25-09-08	11-03-09
226	Underground cables	35 d	09-09-08	16-09-08	25-09-08	04-10-08
227	Concealed conduit,etc	120 d	21-09-08	13-01-09	06-09-08	29-01-09
228	Cabling and wiring	40 d	26-12-08	11-02-09	13-01-09	27-02-09
229	DB installation	2 wks	12-02-09	23-02-09	25-02-09	11-03-09
230	Light Fitting, SSO, tel, SCV outlet	20 d	30-01-09	21-02-09	18-02-09	10-03-09
231	Electrical/SCV Meter	1 wk	05-02-09	10-02-09	16-02-09	20-02-09
232	Partial Testing & Commissioning	2 wks	11-02-09	21-02-09	21-02-09	04-03-09
233	ACMV	89 d	19-11-08	06-03-09	03-12-08	21-03-09
234	Concealed piping	40 d	19-11-08	07-01-09	05-12-08	23-01-09
235	Cabling & wiring	40 d	19-12-08	05-02-09	07-01-09	21-02-09
236	CU & FCU installation	20 d	30-01-09	21-02-09	16-02-09	10-03-09
237	Toilet exhaust / intake duct	25 d	19-11-08	18-12-08	03-12-08	03-01-09
238	Toilet Exhaust Fan	2 wks	11-02-09	21-02-09	27-02-09	10-03-09
239	Partial Testing & Commissioning	2 wks	23-02-09	06-03-09	11-03-09	21-03-09
240	CARPORCH Units 137 to 169 (12 units)	83 d	26-12-08	02-04-09	07-01-09	13-04-09
241	STRUCTURAL WORKS	34 d	26-12-08	06-02-09	07-01-09	14-02-09
242	Setting-out	2 d	26-12-08	27-12-08	07-01-09	08-01-09
243	Pilecap Construction	7 d	26-12-08	06-01-09	09-01-09	16-01-09
244	Anti-termite	2 d	15-01-09	16-01-09	26-01-09	27-01-09
245	Carporch beam & slab	10 d	07-01-09	17-01-09	17-01-09	28-01-09
246	1st sty column	5 d	19-01-09	23-01-09	29-01-09	03-02-09
247	RC Canopy	10 d	24-01-09	04-02-09	04-02-09	14-02-09
248	ARCHITECTURAL WORKS	44 d	11-02-09	02-04-09	21-02-09	13-04-09
249	Waterproofing	10 d	11-02-09	21-02-09	21-02-09	04-03-09
250	Plastering	10 d	23-02-09	05-03-09	05-03-09	18-03-09
251	Paving	7 d	06-03-09	13-03-09	17-03-09	24-03-09
252	Trellis	7 d	14-03-09	21-03-09	25-03-09	01-04-09
253	Painting	10 d	25-03-09	02-04-09	02-04-09	13-04-09
254	EXTERNAL WORKS	25 d	19-01-09	16-02-09	29-01-09	26-02-09
255	Meter Compartment	2 wks	19-01-09	29-01-09	29-01-09	09-02-09
256	Fencing	3 wks	30-01-09	18-02-09	10-02-09	28-02-09
257	CLEANING & PRE-INSPECTION	30 d	03-04-09	08-05-09	17-04-09	22-05-09
258	Pre-inspection and Touch-up works	4 wks	03-04-09	25-04-09	17-04-09	11-05-09



ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 4444 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
259	Final Cleaning	2 wks	27-04-09	08-05-09	12-05-09	22-05-09
260	PHASE 11D1 (Units 36 to 52) 9 units	234 d	16-08-08	23-05-09	20-08-08	29-05-09
261	STRUCTURAL WORKS	175 d	16-08-08	14-03-09	20-08-08	28-03-09
262	Setting-out	5 d	16-08-08	22-08-08	20-08-08	26-08-08
263	Pilecap Construction	40 d	23-08-08	09-10-08	25-08-08	11-10-08
264	Anti-termite	20 d	24-09-08	17-10-08	30-10-08	21-11-08
265	1st sty slab & beam	40 d	18-09-08	03-11-08	18-09-08	05-11-08
266	1st sty column	25 d	10-10-08	08-11-08	13-10-08	11-11-08
267	2nd Sty beam and slab	40 d	16-10-08	02-12-08	18-10-08	04-12-08
268	2nd sty column & Staircase	25 d	10-11-08	09-12-08	27-11-08	27-12-08
269	3rd sty beam & slab	40 d	15-11-08	03-01-09	03-12-08	21-01-09
270	3rd sty column & Staircase	25 d	10-12-08	09-01-09	29-12-08	27-01-09
271	Attic floor beam & slab	25 d	16-12-08	15-01-09	05-01-09	02-02-09
272	Attic column & Staircase	5 d	16-01-09	21-01-09	03-02-09	07-02-09
273	Roof Beam	5 d	09-02-09	13-02-09	09-02-09	13-02-09
274	Roofing works	20 d	20-02-09	14-03-09	06-03-09	28-03-09
275	Roof truss installation	2 wks	20-02-09	03-03-09	06-03-09	17-03-09
276	Roof insulation and Roof Tiles installatio	2 wks	04-03-09	14-03-09	18-03-09	28-03-09
277	ARCHITECTURAL WORKS	114 d	22-12-08	06-05-09	24-12-08	12-05-09
278	Skim Coat to Ceiling	40 d	22-12-08	07-02-09	24-12-08	10-02-09
279	Brickwall	60 d	29-12-08	09-03-09	31-12-08	11-03-09
280	Waterproofing	30 d	15-01-09	18-02-09	22-01-09	25-02-09
281	Plastering	60 d	15-01-09	25-03-09	03-02-09	13-04-09
282	Internal Painting	60 d	02-02-09	11-04-09	20-02-09	30-04-09
283	Door & Window Frame Installation	40 d	09-01-09	24-02-09	15-01-09	02-03-09
284	Door & Window Panel Installation	2 wks	25-02-09	07-03-09	25-03-09	06-04-09
285	Tiling Works	60 d	21-01-09	16-03-09	28-01-09	25-03-09
286	Other Wall & Floor Finishes	30 d	20-03-09	23-04-09	27-03-09	30-04-09
287	False Ceiling	50 d	13-02-09	11-04-09	04-03-09	30-04-09
288	Staircase Railing	30 d	03-03-09	06-04-09	21-03-09	24-04-09
289	Wardrobe & Kitchen Cabinet	30 d	20-03-09	23-04-09	01-04-09	06-05-09
290	External Painting	60 d	25-02-09	06-05-09	03-03-09	12-05-09
291	DRAINAGE & OTHER EXTERNAL WORKS	59 d	26-02-09	06-05-09	26-03-09	12-05-09
292	Perimeter Drain	4 wks	26-02-09	20-03-09	31-03-09	22-04-09
293	Meter Compartment	3 wks	10-03-09	26-03-09	26-03-09	10-04-09
294	Fencing	3 wks	27-03-09	24-04-09	11-04-09	11-05-09
295	Paving & Landscaping	2 wks	24-04-09	06-05-09	30-04-09	12-05-09
296	M&E WORKS	189 d	10-08-08	23-04-09	16-10-08	23-05-09
297	Plumbing & Sanitary Works	184 d	10-09-08	17-04-09	16-10-08	18-05-09
298	Underground waste/water pipe	35 d	10-09-08	21-10-08	16-10-08	25-11-08
299	Concrete embedded pipes	65 d	22-08-08	03-01-09	24-10-08	04-02-09
300	Soil, Waste & Vent stack	40 d	22-12-08	07-02-09	24-01-09	11-03-09
301	IC construction	30 d	22-01-09	25-02-09	23-02-09	28-03-09

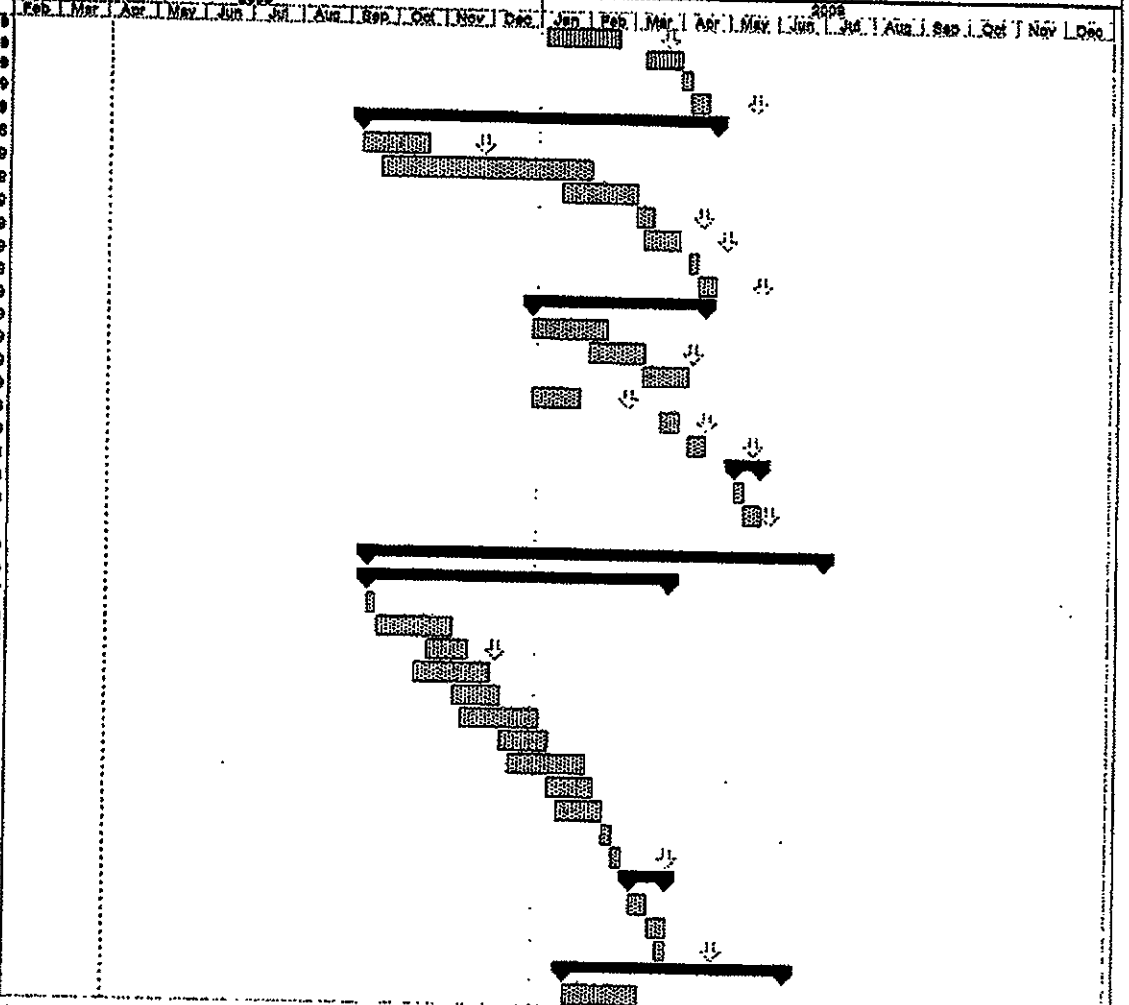


Project: the springside detailed progra
Date: 03-04-09

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

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 44+4 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
352	Water supply pipe installation	40 d	05-01-09	19-02-09	05-02-09	23-03-09
353	Sanitary fitting, water heater	20 d	09-03-09	31-03-09	07-04-09	29-04-09
354	Water meter	1 wk	01-04-09	06-04-09	30-04-09	06-05-09
355	Partial Testing & Commissioning	2 wks	07-04-09	17-04-09	07-05-09	18-05-09
356	Electrical,Tel & SCV Works	189 d	10-09-08	23-04-09	18-10-08	23-05-09
357	Underground cables	35 d	10-09-08	21-10-08	18-10-08	28-11-08
358	Concealed conduit,etc	110 d	22-09-08	02-02-09	24-10-08	05-03-09
359	Cabling and wiring	40 d	16-01-09	05-03-09	17-02-09	03-04-09
360	DB Installation	2 wks	04-03-09	14-03-09	04-04-09	15-04-09
361	Light Fitting, SSO, tel, SCV outlet	20 d	09-03-09	31-03-09	08-04-09	30-04-09
362	Electrical/SCV Meter	1 wk	07-04-09	11-04-09	07-05-09	12-05-09
363	Partial Testing & Commissioning	2 wks	13-04-09	23-04-09	13-05-09	23-05-09
364	ACMV	84 d	29-12-08	17-04-09	30-01-09	18-05-09
365	Concealed piping	40 d	29-12-08	13-02-09	30-01-09	17-03-09
366	Cabling & wiring	30 d	03-02-09	09-03-09	06-03-09	09-04-09
367	CU & FCU installation	25 d	09-03-09	06-04-09	07-04-09	06-05-09
368	Toilet exhaust / intake duct	25 d	29-12-08	27-01-09	30-01-09	27-02-09
369	Toilet Exhaust Fan	2 wks	20-03-09	31-03-09	05-04-09	18-04-09
370	Partial Testing & Commissioning	2 wks	07-04-09	17-04-09	07-05-09	18-05-09
371	CLEANING & PRE-INSPECTION	15 d	07-05-09	23-05-09	13-05-09	29-05-09
372	Pre-Inspection and Touch-up works	1 wk	07-05-09	12-05-09	13-05-09	18-05-09
373	Final Cleaning	2 wks	13-05-09	23-05-09	19-05-09	29-05-09
374						
375	PHASE 8B (33 to 51) 10 units	244 d	16-09-08	03-07-09	06-12-07	22-07-09
376	STRUCTURAL WORKS	160 d	16-09-08	26-03-09	06-12-07	25-04-09
377	Setting-out	5 d	16-09-08	20-09-08	06-12-07	12-12-07
378	Pilecap Construction	40 d	22-09-08	06-11-08	13-12-07	06-02-08
379	Anti-termite	21 d	24-10-08	18-11-08	13-11-08	06-12-08
380	1st sty slab & beam	40 d	18-10-08	02-12-08	10-01-08	04-03-08
381	1st sty column	25 d	10-11-08	09-12-08	07-02-08	10-03-08
382	2nd Sty beam and slab	40 d	15-11-08	03-01-09	14-02-08	03-04-08
383	2nd sty column & Staircase	25 d	10-12-08	09-01-09	12-01-09	09-02-09
384	3rd sty beam & slab	40 d	16-12-08	02-02-09	17-01-09	04-03-09
385	3rd sty column & Staircase	25 d	10-01-09	07-02-09	10-02-09	10-03-09
386	Attic floor beam & slab	25 d	16-01-09	13-02-09	16-02-09	16-03-09
387	Attic column & Staircase	5 d	14-02-09	19-02-09	17-03-09	21-03-09
388	Roof Beam	5 d	20-02-09	26-02-09	23-03-09	27-03-09
389	Roofing works	20 d	04-03-09	26-03-09	03-04-09	25-04-09
390	Roof truss installation	2 wks	04-03-09	14-03-09	03-04-09	14-04-09
391	Roof insulation and Roof Tiles installatio	2 wks	16-03-09	26-03-09	15-04-09	25-04-09
392	Skylight	1 wk	21-03-09	26-03-09	21-04-09	25-04-09
393	ARCHITECTURAL WORKS	119 d	22-01-09	10-06-09	22-04-09	26-06-09
394	Skim Coat to Ceiling	40 d	22-01-09	09-03-09	22-04-09	07-06-09

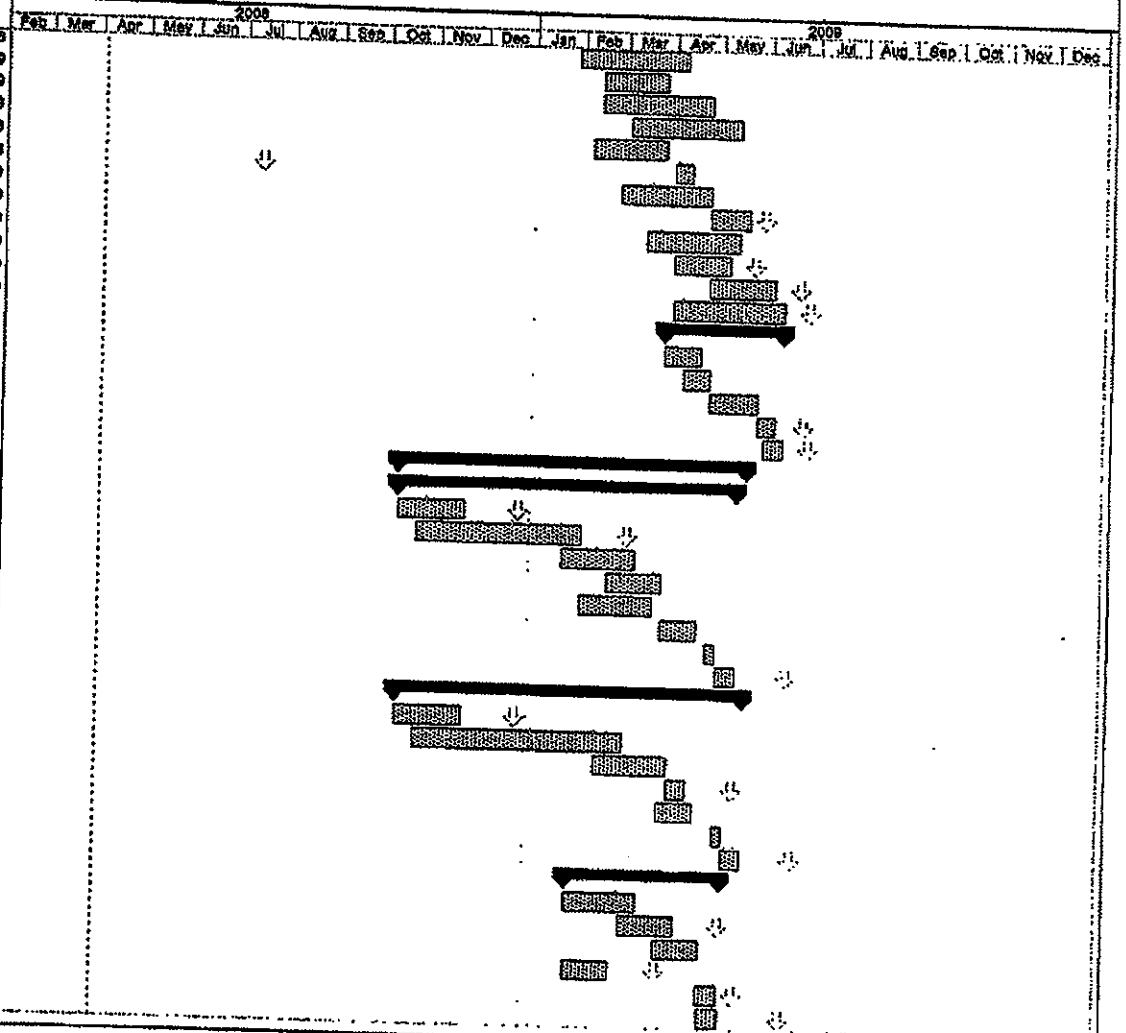


Project: the springside detailed progra
Date: 03-04-09

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

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 444 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
345	Brickwall	60 d	25-01-09	07-04-09	25-04-09	07-07-09
346	Waterproofing	35 d	13-02-09	25-03-09	24-02-09	04-04-09
347	Plastering	60 d	13-02-09	25-04-09	02-03-09	11-05-09
348	Internal Painting	60 d	03-03-09	12-05-09	19-03-09	28-05-09
349	Door & Window Frame Installation	40 d	07-02-09	25-03-09	05-05-09	24-06-09
350	Door & Window Panel Installation	2 wks	01-04-09	11-04-09	01-07-09	11-07-09
351	Tiling Works	60 d	25-02-09	23-04-09	07-03-09	05-05-09
352	Other Wall & Floor Finishes	20 d	24-04-09	18-05-09	05-05-09	28-05-09
353	False Ceiling	50 d	14-03-09	12-05-09	31-03-09	28-05-09
354	Staircase Railing	30 d	01-04-09	08-05-09	17-04-09	22-05-09
355	Wardrobe & Kitchen Cabinet	35 d	24-04-09	04-06-09	12-05-09	20-06-09
356	External Painting	50 d	01-04-09	10-06-09	17-04-09	25-06-09
357	DRAINAGE & OTHER EXTERNAL WORKS	54 d	27-03-09	10-06-09	25-04-09	26-06-09
358	Perimeter Drain	4 wks	27-03-09	18-04-09	02-05-09	25-05-09
359	Meter Compartment	3 wks	06-04-09	24-04-09	25-04-09	13-05-09
360	Fencing	5 wks	25-04-09	25-05-09	14-05-09	11-06-09
361	Timber Trellis	2 wks	25-05-09	05-06-09	12-06-09	23-06-09
362	Paving & Landscaping	2 wks	30-05-09	10-06-09	16-06-09	25-06-09
363	M&E WORKS	185 d	10-10-08	15-05-09	13-11-08	29-06-09
364	Plumbing & Sanitary Works	190 d	10-10-08	13-06-09	13-11-08	15-08-09
365	Underground waste/water pipe	35 d	10-10-08	20-11-08	13-11-08	24-12-08
366	Concrete embedded pipes	55 d	22-10-08	02-02-09	21-11-08	03-03-09
367	Soil, Waste & Vent stack	40 d	22-01-09	09-03-09	22-01-09	09-03-09
368	IC construction	30 d	20-02-09	26-03-09	20-02-09	26-03-09
369	Water supply pipe installation	40 d	05-02-09	20-03-09	09-02-09	26-03-09
370	Sanitary fitting, water heater	20 d	27-03-09	18-04-09	27-03-09	18-04-09
371	Water meter	1 wk	25-04-09	30-04-09	29-05-09	03-06-09
372	Partial Testing & Commissioning	2 wks	02-05-09	13-05-09	04-06-09	15-06-09
373	Electrical, Tel & SCV Works	185 d	10-10-08	19-05-09	13-11-08	29-06-09
374	Underground cables	35 d	10-10-08	20-11-08	13-11-08	24-12-08
375	Concealed conduit,etc	110 d	22-10-08	03-03-09	21-11-08	01-04-09
376	Cabling and wiring	40 d	14-02-09	01-04-09	16-03-09	30-04-09
377	DB installation	2 wks	02-04-09	13-04-09	02-05-09	13-05-09
378	Light Fitting, SSO, tel, SCV outlet	20 d	27-03-09	18-04-09	27-03-09	18-04-09
379	Electrical/SCV Meter	1 wk	02-05-09	07-05-09	04-06-09	09-06-09
380	Partial Testing & Commissioning	2 wks	09-05-09	19-05-09	10-06-09	20-06-09
381	ACMV	88 d	28-01-09	07-05-09	25-02-09	15-05-09
382	Concealed piping	40 d	28-01-09	14-03-09	25-02-09	11-04-09
383	Cabling & wiring	30 d	04-03-09	07-04-09	01-04-09	06-05-09
384	CU & FCU installation	25 d	27-03-09	24-04-09	06-05-09	03-06-09
385	Toilet exhaust / intake duct	25 d	28-01-09	25-02-09	27-02-09	27-03-09
386	Toilet Exhaust Fan	2 wks	24-04-09	05-05-09	06-05-09	15-05-09
387	Partial Testing & Commissioning	2 wks	25-04-09	07-05-09	04-06-09	15-06-09

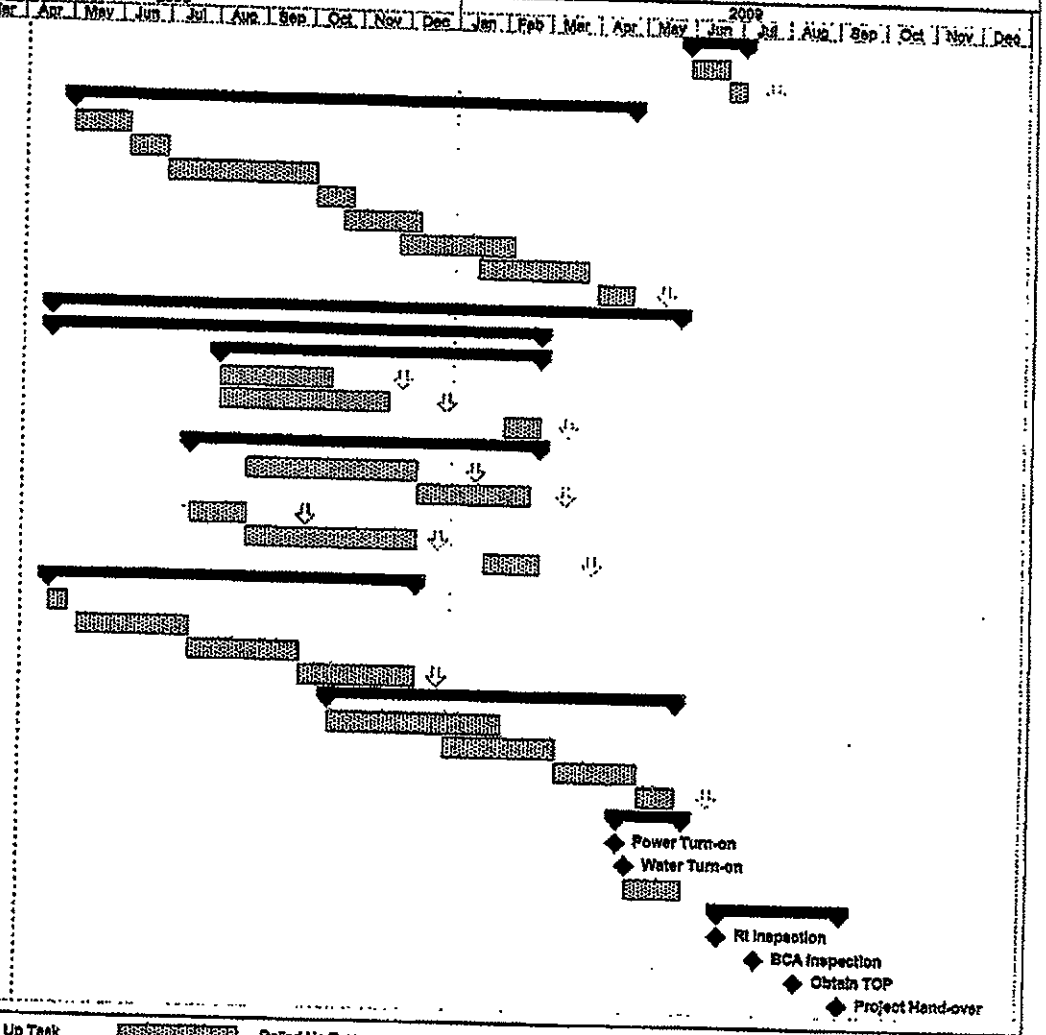


Project: the springside detailed progrer
Date: 03-04-09

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

ARAY ENGINEERING & CONSTRUCTION PTE LTD
Project: PROPOSED 4444 UNITS OF 3-STY TERRACE DWELLING HOUSES WITH AN ATTIC AT JALAN ULU SELETAR/SEMBAWANG ROAD
Subject: PROPOSED DETAILED PROGRAMME OF WORKS

ID	Task Name	Duration	early start	Early Finish	Late Start	Late Finish
388	CLEANING & PRE-INSPECTION	30 d	30-05-09	03-07-09	18-06-09	22-07-09
389	Pre-inspection and Touch-up works	4 wks	30-05-09	22-06-09	18-06-09	10-07-09
390	Final Cleaning	2 wks	23-06-09	03-07-09	11-07-09	22-07-09
391	LIFT WORKS	300 d	03-08-08	24-04-09	29-05-08	18-05-09
392	material submission and approval	8 wks	03-05-09	06-06-08	29-05-08	02-07-08
393	Shop drawing submission	4 wks	07-05-08	30-06-08	03-07-08	25-07-08
394	Procurement	4 mo	01-07-08	03-10-08	28-07-08	30-10-08
395	Plumbing and setting-out	4 wks	04-10-08	27-10-08	31-10-08	22-11-08
396	Installation of guide rail	8 wks	22-10-08	09-12-08	16-11-08	06-01-09
397	Installation of lift car	12 wks	27-11-08	07-02-09	24-12-08	05-03-09
398	Finishing works	12 wks	16-01-09	28-03-09	11-02-09	21-04-09
399	Testing and Commissioning	4 wks	02-04-09	24-04-09	22-04-09	15-05-09
400	ROADWORKS & OTHER EXTERNAL WORKS	338 d	21-04-08	25-05-09	06-05-08	15-05-09
401	M&E Services	250 d	21-04-08	25-02-09	06-05-08	31-03-09
402	Plumbing & Sanitary	170 d	05-05-08	25-02-09	05-05-08	14-03-09
403	Lay New 200dia. VCP	60 d	05-09-08	16-10-08	05-05-08	15-10-08
404	Lay New Watermain	90 d	05-05-08	20-11-08	10-05-08	27-12-08
405	Install New Fire Hydrant	20 d	03-02-09	25-02-09	20-02-09	14-03-09
406	Electrical Works	155 d	16-07-08	25-02-09	23-05-08	31-03-09
407	Laying cable for street lighting	90 d	23-08-08	09-12-08	23-05-08	09-12-08
408	New Lamp Post	60 d	10-12-08	19-02-09	05-01-09	14-03-09
409	New 2-110dia uPVC laid u/g c/w cable	30 d	16-07-08	22-08-08	26-05-08	29-06-08
410	New LT cable (by SPPG)	90 d	23-08-08	09-12-08	06-09-08	23-12-08
411	New OG box for Lighting (by SPPG)	30 d	22-01-09	25-02-09	25-02-09	31-03-09
412	Tel & SCV	195 d	21-04-08	09-12-08	06-05-08	23-12-08
413	Inspect & Take-over extg u/g tel pipes &	2 wks	21-04-08	02-05-08	06-05-08	16-05-08
414	Checking & clearing of u/g pipes	60 d	09-05-08	17-07-08	23-05-08	31-07-08
415	Costruct new MH3	60 d	16-07-08	26-09-08	01-08-08	11-10-08
416	Laying u/g cables	60 d	27-08-08	09-12-08	13-10-08	23-12-08
417	Roadworks	185 d	16-10-08	25-05-09	04-11-08	15-06-09
418	Road kerb and drain	90 d	16-10-08	02-02-09	04-11-08	19-02-09
419	Side table	60 d	29-12-08	09-03-09	16-01-09	26-03-09
420	Road Base	45 d	10-03-09	30-04-09	31-03-09	22-05-09
421	Road Surfacing	20 d	02-05-09	25-05-09	29-05-09	15-06-09
422	Services Turn-on, Testing & Commissioning	35 d	15-04-09	30-05-09	15-04-09	30-05-09
423	Power Turn-on	0 d	15-04-09	15-04-09	15-04-09	15-04-09
424	Water Turn-on	0 d	24-04-09	24-04-09	25-04-09	25-04-09
425	Services Final Testing & Commissioning	30 d	25-04-09	30-05-09	25-04-09	30-05-09
426	TOP & Handing Over	65 d	23-06-09	09-09-09	24-06-09	09-09-09
427	RI inspection	0 d	23-06-09	23-06-09	24-06-09	24-06-09
428	BCA inspection	0 d	17-07-09	17-07-09	18-07-09	18-07-09
429	Obtain TOP	0 d	12-08-09	12-08-09	13-08-09	13-08-09
430	Project Hand-over	0 d	09-09-09	09-09-09	09-09-09	09-09-09



Project: the springside detailed progra
Date: 03-04-09

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

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services - 1st Submission (Phase 4)

Service	Authority	Original Submission		Comments/Resubmission						Approval/ Clearance
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	
Application for Electricity Supply	SP Services Ltd									
	Phase 3	By Electrical Sub-Contractor								
	Phase 4	-	10/04/08							
Power Supply Substation	SP PowerGrid Ltd									
	Phase 4	NA								
Metering Layout	SP Services Ltd									
	Phase 4	Oct 2008 by EI Sub-Contractor								
Sanitary Installation	NEA (Sewerage) Phase 3	NA								
	Phase 4 BP No. A781-00006-2006	-/06/08	23/01/09							2/2/09
	BP No. A781-00007-2006	-/06/08	28/04/09							13/5/09
	BP No. A781-00008-2006	-/06/08	28/08/08							2/9/08
	BP No. A781-00009-2006	-/06/08	28/04/09							13/5/09
Domestic Water Supply	PUB (Water Supply) Network Dept Phase 3	NA								
	Phase 4 – External		19/09/06	19/10/06	22/11/06					08/12/06
	Phase 4 – Internal	By Plumber								
Gas Supply Installation	City Gas Pte Ltd	N.A.								
Air Conditioning & Ventilation Inst.	FSSD	N.A.								
Fire Fighting & Alarm Installation	FSSD	N.A.								
Telephone Installation	TFCC	Master Plan had been approved in Year 2001								
	Phase 4	-/07/08	16/7/08	8/8/08	25/8/08	12/9/08	23/9/08	20/10/08	20/4/09	6/5/09
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision	Master Plan had been approved in Year 2001								
	Phase 4	-/07/08	16/7/08	8/8/08	25/8/08	12/9/08	23/9/08	20/10/08	20/4/09	6/5/09
Fuel Storage	FSSD	N.A.								
	NEA (Pollution Control)	N.A.								

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) - 2nd Submission

Service	Authority	Original Submission		Comments/Resubmission						Approval/ Clearance
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	
Application for Electricity Supply	SP Services Ltd									
	Phase 3	By Electrical Sub-Contractor								
	Phase 4	-	10/04/08							
Power Supply Substation	SP PowerGrid Ltd									
	Phase 4	NA								
Metering Layout	SP Services Ltd									
	Phase 4	Oct 2008 by EI Sub-Contractor								
Sanitary Installation	NEA (Sewerage)									
	Phase 4 BP No. A781-00006-2006	-	11/2/10							7/4/10
	BP No. A781-00007-2006	-	2/2/10							12/3/10
	BP No. A781-00008-2006	-	11/2/10							23/2/10
	BP No. A781-00009-2006	-	2/2/10							5/3/10
Domestic Water Supply	PUB (Water Supply) Network Dept									
Gas Supply Installation	City Gas Pte Ltd	N.A.								
Air Conditioning & Ventilation Inst.	FSSD	N.A.								
Fire Fighting & Alarm Installation	FSSD	N.A.								
Telephone Installation	TFCC	Master Plan had been approved in Year 2001								
Broadband Co-axial Cable System (BCS)	Starhub Cable Vision	Master Plan had been approved in Year 2001								
Fuel Storage	FSSD	N.A.								
	NEA (Pollution Control)	N.A.								

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: 1391		File Ref:		File Ref:	
-601	✓				
-602	✓				
-603	✓				

Files under the old Filing System

File Ref: 1391		File Ref: 1391		File Ref: 1391	
-AE		-AM		-BD	
-CM		-GC	✓	-PC	✓
-AA		-SF		-SM	
-SQ		-CO	✓	-MC	
-A-G		-E-G		-L-G	
-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 (only soft copy will be retained)	(All project drawings in soft copy to be saved in server)
Incoming Architectural Sketches/Details (only soft copy will be retained)	
Incoming Structural Drawings (only soft copy will be retained)	
M&E Drawings - Electrical Installation - Home Elevator Installation - Air Conditioning & Ventilation Installation - Plumbing & Sanitary Installation - Swimming Pool & Filtration Installation - Autogate Control System	
Other Drawings Shop drawing:	
- Electrical	WC
- Mechanical	GWL

SECTION 6

INTERFACING

6.1 Method of Interface

Description	Method of Interface	
Client's Review & Approval	M&E Design Report	N.A
	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.	Air Conditioning Equipment Electrical Loading	ST	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		I	I	I	I	
b.	Project Administration		I	I	I	I	
c.	Project Cost Estimate/ Contract Cost		C	I		I	
2.	**Drawings**						
a.	Outline Design Drgs.						
b.	Sketch Design Drgs.		C	C			
c.	Final Design Drgs.		C	C			
d.	Shop Drawings		C	C			
e.	As Built Drgs.		I				
3.	**Other Document**						
a.	Specification		C			I	
b.	Tender Document		I	I		I	
c.	Tender Evaluation Report		A	I		I	
d.	Design Report		C	I			
e.	Progress Report						
f.	Financial Report		A	I		I	
g.	Minutes of Meeting						
h.	Inspection Report		I				
i.	Testing & Comm. Report		I				
j.	O & M Manual		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 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

* Denotes Activities which could be authorized by Project Assistants (M&E)

SECTION 8

DESIGN INPUT & METHODOLOGY

8.1 List of Client's Standards, Reference Documents or Brief

ITEM	KEPT BY
Sales Brochure	GWL

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~~
Home Elevator 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	
Ecodial	2.5	Merlin Gerlin	Design for low voltage network	
Hyena	4.00.1	ACADS-BSG	Fire Sprinkler & Hydrant Analysis	
Heat Load Calculation DACCS HKGS	-	Daikin	Programme for calculation of heat load	✓

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.1 Sustainable Design Features / Criteria – NOT REQUIRED BY CLIENT

Item	Remarks
Green Mark criteria	NA
Green Design Features	NA

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	NA
Ear Protection	NA
Safety Harness / Belt	NA
Others:	-

9.3 Site Emergency Preparedness – Refer to attached

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	NA

合 力 工 程 私 人 有 限 公 司
ARRAY ENGINEERING AND CONSTRUCTION PTE LTD
BLK 1004, TOA PAYOH IND. PARK #01-1483, SINGAPORE 319076.
TEL: 6256 5122 FAX: 6252 7511
GST Reg No. M2-0066467-6
RCB : 198306084M

2nd April 2008

Our ref. 2008/AEC/Spring- 031

ADDP Architects
59-A Tanjong Pagar Road
Singapore 066480
By hand

Attn: Ms. Lene Ho
Tel : 6220 2153
Fax: 6325 4918

Dear Sir,

PROPOSED DEVELOPMENT OF 3-STOREY TERRACE DWELLING HOUSES WITH AN ATTIC AT SEMBAWANG ROAD / JALAN ULU SELETAR
SAFETY EMERGENCY PREPAREDNESS PLAN

We refer to above subject.

Enclosed herewith is the site emergency preparedness plan for your retention.

Thank you

Yours faithfully,

Zaldy A. Paglicawan
Senior Project Manager

cc

Kallang Development Pte Ltd	Ms. Lim Ling Huey	Fax: 6535 5217
D E Consultants (S) Pte Ltd	Ms. Tan Swee Keng	Fax: 6227 2909
Alpha Engineering Consultant	Mr. Richard Teo K K	Fax: 6276 9929
Northcroft Lim Consultants P L	Mr. Tan Mun Chuan	Fax: 6222 0868
RE/COW	Mr. Jason Chua / Mr Ang	

Fire Emergency Plan

Objectives

The purpose of the Fire Emergency Plan is ;

i) To ensure the safe guard of human lives in the event of fire,

ii) To establish a systematic and orderly evacuation,

iii) To ensure prompt raising of the fire alarm and marshalling of first aid fire fighting efforts in the event of fire.

Action to be taken in the event of an outbreak of fire

1) **Informant**

The person who discovers the fire shall immediately;

a. Raise the alarm
b. Attempt to extinguish any incipient fire with the available fire fighting equipment and without personal risk.

2) **All Staff**

a. Upon hearing the fire alarm, all staff shall lock important files, cash, shut down machinery etc. and evacuate immediately guided by their respective Fire Warden.
b. When evacuating, do not panic but quickly walk down the staircase by the nearest exit and proceed to the assembly point.
c. All staff/guests/customers/visitors shall not reenter the building once at the assembly point unless instructed otherwise by the Civil Defence Officer in attendance.

3) **Coordinator / Assistant coordinator**

a. Ensure that the Singapore Civil Dafence Force (SCDF) has been notified of the fire.
b. Proceed to the fire alarm main panel and ensure the fire fighting team has been mobilised to respond to the alarm.
c. Proceed to the assembly point and obtain the floor evacuation status reports from the Fire Wardens.
d. Await the arrival of the responding crew from the Singapore Civil Defence at the main entrance of the building and report to the officer in charge the status of the evacuation.

4) **Fire Warden / Asst. Fire Warden**

On hearing the alarm

a. Alert everyone on his storey to evacuate in an orderly manner using the nearest exit.
b. Check all office, store,toilet etc to ensure that no one is left behind.
c. Ensure that the disabled, children, pregnant woman etc if present in their storey are given particular attention during evacuation.
d. Leave the building after ascertaining that all the occupants of the floor have compiled with his order. (Last one to leave the floor)
e. On reaching the assembly area, conduct a roll call of the staff present and report to the Coordinator in person of the evacuation status.

5) **Fire Fighting Team (Min. 2 persons)**

a. Upon hearing the fire alarm, members of the team shall ascertain the location of the fire from the main alarm panel and proceed to the fire floor via staircase.
b. The fire fighting team shall attempt to extinguish or control the fire without taking personal risk, before the arrival of the Singapore Civil Defence Force.
c. The fire fighting team shall comprise one teamleader/Asst. Team leader and four team members.

6) **Recovery Team (Min. 2 persons)**

a. Upon hearing the fire alarm, members of the team shall ascertain the location of the fire from the main alarm panel and proceed to the fire floor via staircase.
b. Remove all flammable materials away from the fire source.
c. Use hosereel to cool down surrounding temperature or combustible materials.

7) **Security Guard**

a. To deploy at floor staircases exits to guide the guests/visitors to the designated assembly area when evacuation has been declared.
b. Ensure that all main entrances and exits to the building are adequately manned to prohibit unauthorised entry.
c. Direct the Civil Defence Officer on his arrival to the Assembly Area.

8) **First Aid Team**

a. Upon hearing the fire alarm, members of the team shall ascertain the location of the injured (if any).

b. Bring along the first aid box to the location.

c. Ascertain the environment is safe and perform first aid on injured.

d. And move injured to Assembly Area, report to Coordinator for further instruction.

e. If environment is unsafe, quicky remove the injured to Assembly Area to perform first aid.

火勢緊急狀況計划

目的

火勢緊急狀況計划的目的是：

i) 确保員工的生命有保障

ii) 制定一個系統和整齊的疏散

iii) 确保迅速敲擊警鈴并且匯集救傷和救火小隊

火災時應做的准備

1) 通知者

發現有火的人必須立刻，

a. 敲打警鈴
b. 在個人安全的環境下，嘗試使用滅火器去滅火

2) 全部員工

a. 當听到警鈴時，鎖一切重要文件，現金，關掉机械，然后立刻跟隨火勢守衛者緊急疏散
b. 在疏散時，不要惊慌可是走快點，由最近的出口到緊急集合處

c. 當在緊急集合處，不管在任何環境下，都不能再進入建筑屋內

3) 火勢協調者

a. 确保通知新加坡消防部隊
b. 确保火勢地點，通知消防小組去 滅火

c. 到緊急集合處，拿火勢守衛者的形勢報告

d. 等新加坡消防部隊的到達，向他們報告這里面的情形

4) 火勢守衛者

當听到警鈴時；

a. 警戒全部員工由最近的出入口秩序的疏散
b. 檢查辦公室，貯藏室，廁所，确保沒人流下
c. 在疏散時，多照顧殘廢，孩子，孕婦等等

d. 确保所有員工全部安全疏散才离開現場

e. 到達緊急集合處，開始數人頭，然后把報告交給火勢協調者

5) 消防小組去

a. 當听到警鈴時，确定職位，由樓梯到火勢地點

b. 以滅火器扑滅火勢，可是在确保個人安全的環境下

6) 救援小組

a. 當听到警鈴時，确定職位，由樓梯到火勢地點

b. 移開一切靠近火勢的易燃物体
c. 用救火水管，噴在易燃物体，并且降低周圍的溫度

7) 保安人員

a. 确保訪客安全的引導到緊急集合處

b. 确保全部出入口都被看守，不准任何人再進入建筑屋內

c. 指引新加坡消防部隊到緊急集合處

8) 救伤人員

a. 當听到警鈴時，确定伤者職位，由樓梯到伤者地點

b. 随身带紧急医药箱

c. 确保环境安全，再对伤者施行医疗

d. 伤者移到緊急集合處，报告火势协调者

e. 如果环境不安全，伤者移到紧急集合点，再对伤者施行医疗

EMERGENCY/ INCIDENT/ FIRE/RESPONSE ORGANISATION CHART

SPRINGSIDE PROJECT

Police	999
NUH	6772 5000
SCDF/Ambulance	1777 / 995

Fire Wardens

1) ONG KENG HUAT

2) CHEN JIU WU

3) ZHU HONG BING

4) LI HONG BO

5) LI ZHI QIONG

6) WANG BO

7) KASI SUBRAMANIAM

Emergency Coordinator

Danny Ho
Hp : 9339 2699

Alternate Coordinator

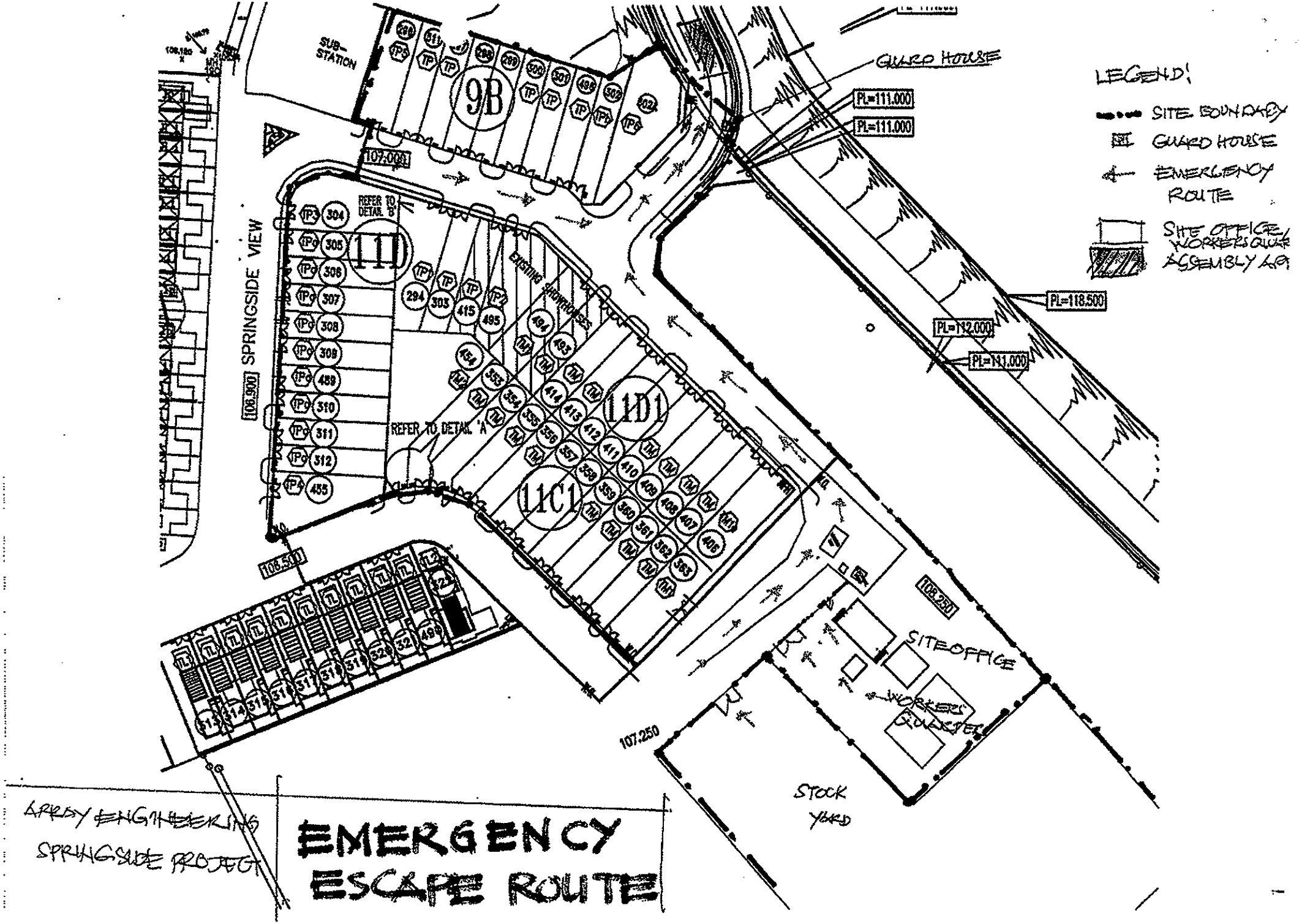
Kenneth Khoo
Hp : 9003 3887

Emergency Response Team

1) Xu Shou He
2) Reynaldo Vernie
3) Shariful Islam

First Aid Team

1) Azizul Hakim — First Aider


SUB-STATION
9B
GUARD HOUSE
LEGEND:
SITE BOUNDARY
GUARD HOUSE
EMERGENCY ROUTE
SITE OFFICE/ WORKERS QUAR
ASSEMBLY AR
PL=111.000
PL=111.000
PL=118.500
PL=112.000
PL=111.000
107.000
REFER TO DETAIL 'B'
11D
SPRINGSIDE VIEW
106.900
Existing Shopfronts
REFER TO DETAIL 'A'
11D1
11C1
108.500
108.250
SITE OFFICE
WORKERS QUARTERS
107.250
STOCK YARD
ARRIS ENGINEERING
SPRINGSIDE PROJECT
EMERGENCY ESCAPE ROUTE

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	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.

10.2 Specific Procedures Required By Client *(If applicable)* – **NOT USED**

SECTION 11

LIST OF SUB-JOB

11.1 List of Sub-Job Numbers

Sub Job No	Description	Allocation Details
601	Optional Air-con for Purchasers	LTC & ST
602	Purchasers requirement	SKY & CCG
603	The Springside Phases 9B, 11C1, 11D and 11D1: TP/TPa/TPb/TP5 Options	CCG, GWL & WC