PROJECT QUALITY PLAN

PROPOSED GOOD CLASS BUNGALOW DEVELOPMENT AT PLOT 5 AND 6 AT CABLE ROAD

For

STRAITS DEVELOPMENTS PTE LTD

Copy No.	1

Prepared By: Khor Bee Khoon

Authorised By: Goh Soon Huat

Date: 1 June 2010

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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	6096-PQP File	30 April 2010

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	30 June 2009	Section 1 to 11	28	+ 4 pgs (Sect 4.1 – Overall Programme
1	1 June 2010	Section 1 to 11	28	+ 3 pgs (Sect 4.1 – Overall Programme) & 1 pg (Sect 4.2 - Authority Submission Status for M&E Services)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Residential

Statistics of Development	
Site Area, m²	3010
Nett Floor Area, m²	N.A
Gross Floor Area, m²	Plot 5 = 820.313 Plot 6 =726.686
Covered Carpark, m²	Plot 5 = 46 Plot 6 =50
No. of Covered Carpark Lots	2 (1 no. per plot)
No. of Apartments/Houses	N.A
No. of Beds (for Hospitals)	N.A
No. of Guestroom (for Hotels)	N.A
No. of Blocks / No. of Storeys	Plot 5 & 6 (2 storeys each)
No. of Phases	1

2.2 Project Cost (For both plots)

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	0.32	0.345	0.24	N.A	0.366	0.145	Price obtained from preliminary cost estimate (as per Design Brief Rev 2)			
Awarded	0.32	0.32	0.082	N.A.	0.30	0.100				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	-	-	$6,771,019.00

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

2.3 Scope of Works

2.3.1 Scope of Consultancy Services

Conceptual/Schematic Design	✓
Detailed Design	✓
Tender Documentation	✓
Tender Evaluation	✓
Contract Supervision	✓
M&E Costing	✓
Submissions to Authority	✓

(✓*where applicable*)

2.3.2 Scope of M&E Services

ELECTRICAL	✓	AIR CONDITIONING	✓	SPRINKLER		SANITARY	✓	SWIMMING POOL	✓
LIFT	✓	MECHANICAL VENTILATION	✓	FIRE ALARM		COLD WATER	✓	STEAM BOILER	
ESCALATOR		MECHANICAL SMOKE EXTRACT		HOSEREEL		HOT WATER	✓	FUEL STORAGE	
PABX		COMPUTER A/C		WET RISER		TOWN GAS	✓		
SECURITY	✓	BST CARPARK EXH		DRY RISER		LPG GAS			
TELELIFT		HEATING				MEDICAL GAS			
DATA COMM.									
FLUSHFLOOR TRUNKING									

(✓*where applicable*)

* By Specialist

2.3.3 Submission to Relevant Authorities by Others

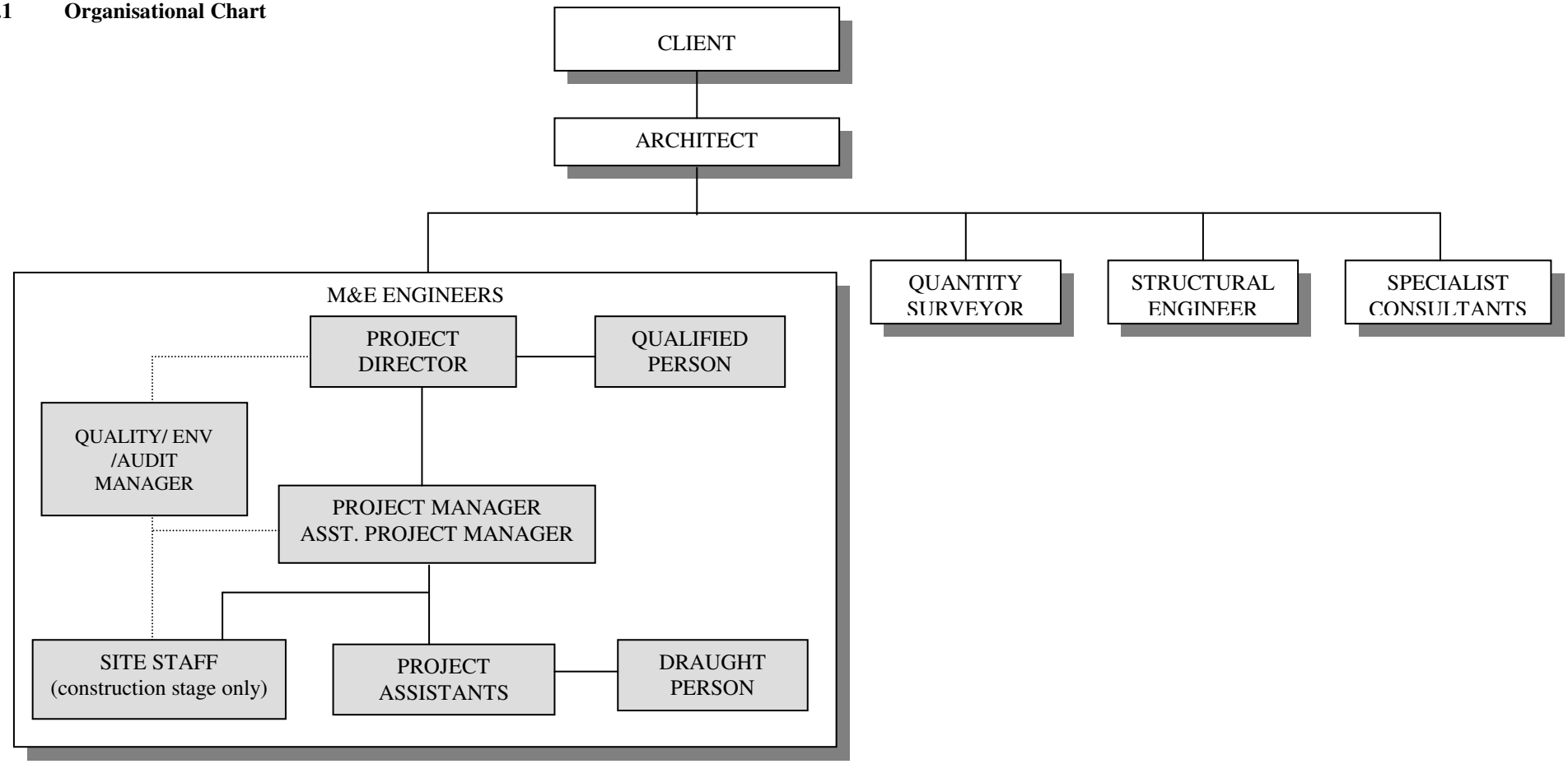
EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Goh Soon Huat
Qualified Person	Mechanical	Choong Choon Guan
	Electrical	Tan Lai Siong
Project Manager		Goh Soon Huat
Assistant Project Manager		Khor Bee Khoon
Project Assistant (Mech)		-
Project Assistant (Elect)		Trece Koh
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client:- Straits Developments Pte Ltd

Address:- 18 Cross Street #15-01
Singapore 048423

Tel:- 6513 9288

Fax:- 6534 7202

Client's Representatives:-

Name of Company	Contact Person	Contact
Straits Developments Pte Ltd	Name: Mr Lew Kook Yong Position: Senior Vice President	Tel: 6513 9286 Fax: Handphone: Email: lew_ky@stc.com.sg
Straits Developments Pte Ltd	Name: Mr Foo Wat Chuan Position: Assistant Vice President	Tel: 6513 9277 Fax: - Handphone: Email: foo_wc@stc.com.sg
	Name: Position:	Tel: Fax: Handphone: Email:
	Name: Position:	Tel: Fax: Handphone: Email:
	Name: Position:	Tel: Fax: Handphone: Email:

3.4 **Other Consultants** (Local)

Function / Name of Company	Contact Person	Contact
Architect Team Design Architects Pte Ltd	Name: Mdm Wong Meng Heng/Jennife Limon Position: Director/Architect	Tel: 6323 3168 Fax: 6323 3618 Handphone: - Email: team@teamdesign.com.sg
Quantity Surveyor Davis Langdon & Seah Singapore Pte Ltd	Name: M/s Sunny Tan /Norhafidah Marican/Lynn Teo Position: -	Tel: 6222 3888 Fax: 6224 7089 Handphone: - Email: 5172@dls.com.sg
Structural Engineer CP Lim & Partners	Name: Mr Albert Chua Position: Partner	Tel: 6296 2968 Fax: 6292 0385 Handphone: 9782 9560 Email: limcpl@singnet.com.sg
Landscape Consultant Landscape Architect	Name: Tan Peck Cheong/ Kelvin Poo Position: Principle/Snr Project Coordinator	Tel: 6255 6024 Fax: 6255 6354 Handphone: 8228 0776/ - Email: project@tinderbox.com.sg
Lighting Consultant -	Name: Position:	Tel: Fax: Handphone: Email:
_____	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 Company	Contact Person	Contact
Architect	Name: Position:	Tel: Fax: Handphone: Email:
M&E Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Quantity Surveyor	Name: Position:	Tel: Fax: Handphone: Email:
Structural Engineer	Name: Position:	Tel: Fax: Handphone: Email:
Interior Designer	Name: Position:	Tel: Fax: Handphone: Email:
Lighting Consultant	Name: Position:	Tel: Fax: Handphone: Email:
Acoustic Consultant	Name: Position:	Tel: Fax: Handphone: Email:
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.5 Contractors/Sub-Contractors

Function / Name of Company	Contract *	Contact Person	Contact
Main Contractor Juho Construction Pte Ltd	DSC	Name: Mr T. L. Siah/ Mr Quek G. K. Position: Managing Director/Contract Manager	Tel: 6744 8088 Fax: 6744 9088 Handphone: 9616 6715 Email: juhocon@singnet.com.sg
Air Conditioning & Ventilation Installation Sub-Contractor Thermal Pte Ltd	DSC	Name: Mr Micheal Wong/ Mr Ivan Yeo Position: Tender/ Procurement Manager	Tel: 6362 0660 Fax: 6362 0770 Handphone: 9386 4838/ 9109 4875 Email: ivan.yeo@tplthermal.com.sg
Plumbing & Sanitary Installation Sub-Contractor Markpoint Engineering Pte Ltd	DSC	Name: Mr Galvin Ang Position: Managing Director	Tel: 6456 8012 Fax: 6454 8012 Handphone: 9455 8012 Email: markpoint@pacific.net.sg
Electrical Installation Sub-Contractor Perfect Electric & Co. Pte Ltd	DSC	Name: Mr H. S. Chua Position:	Tel: 6747 1155 Fax: 6742 1155 Handphone: Email: perfect_elec@pacific.net.sg
Lift & Escalator Installation Sub-Contractor Mitsubishi Elevator (Singapore) Pte Ltd	DSC	Name: Position:	Tel: 6842 5678 Fax: 6748 2292 Handphone: 9822 1179 Email: misubishielevator@mesp.meap.com
Fire Fighting & Alarm Installation Sub-Contractor -	N.A.	Name: Position:	Tel: Fax: Handphone: Email:
Swimming Pool Filtration Plant Installation Sub-Contractor Men's Pool (Pte) Ltd	DSC	Name: Mr A. K. Lim Position:	Tel: 6266 1211 Fax: 6261 4414 Handphone: Email: ak@menspool.com.sg menspool@singnet.com.sg
Carpark System Installation Sub-Contractor -	N.A.	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	N.A.	N.A.
(b) Diversion		
SP Services:		
(a) Customer Supply	Pappammal Naidu	6823 8287
(b) Installation	Lion Chee Wei	6823 8283
(c) Meter Section	-	
(d) Road Lighting	-	
TFCC:		
(a) SCV	Mohd Adam/Pek Hong Hoo	6825 6196/6595 9123
(b) SingTel	Jamaluddin	9653 1398
(c) IDA	Tan Huay Sam	6211 1870
BCA:		
(a) Building Plan		
FSSD:		
(a) Building Plan	N.A.	N.A.
(b) M&E Plan		
PUB (Water Supply) Network Dept:		
(a) Water Conservation	N.A.	N.A.
(b) Plumbing Plan	Zaman Khutubdeen/Norain Dalail	6731 3762
(c) Diversion	N.A.	N.A.
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU	Razak Majid	6731 9725
(b) M&E Plan	N.A.	N.A.
(c) Diversion	N.A.	N.A.
City Gas Pte Ltd:		
(a) Planning/Submission	Ivan Lim	6578 7862
(b) Installation/Inspection	Ng Thiam Peng	6578 7852
PowerGas Pte Ltd		
(a) Diversion		
NEA (Pollution Control)		
(a) Planning/Submission	N.A.	N.A.
(b) Inspection		

SECTION 4

PROGRAMME

4.1 Overall Programme – Refer to attached

ID	TASK NAME	MONTHS	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1.	Preliminary Planning																									
2.	Planning Submission																									
3.	Detail Design																									
4.	BP Submission																									
5.	BP Submission (Amendments)																									
6.	Tender Period for Piling																									
7.	Tender Period for Sub-Structure																									
8.	Tender Period for Super-Structure																									
9.	Piling Period																									
10.	Sub-Structure Construction Period																									
11.	Super-Structure Construction Period																									
12.	TOP																									
13.	CSC																									

JUHO CONSTRUCTION PTE LTD

RECONSTRUCTION OF EXISTING SINGLE STOREY CONSERVED HOUSE WITH NEW 2-STOREY HOUSE AND NEW SWIMMING POOL AT NO. 10 AND NO. 12 CABLE ROAD

PRELIMINARY CONSTRUCTION PROGRAMME (Revision No. 1)

NO.	DESCRIPTION / TRADES	DURATION	W1 26/04/10 to 02/05/10	W2 03/05/10 to 09/05/10	W3 10/05/10 to 16/05/10	W4 17/05/10 to 23/05/10	W5 24/05/10 to 30/05/10	W6 31/05/10 to 6/06/10	W7 07/06/10 to 13/06/10	W8 14/06/10 to 20/06/10	W9 21/06/10 to 27/06/10	W10 28/06/10 to 04/07/10	W11 05/07/10 to 11/07/10	W12 12/7/10 to 18/07/10	W13 19/07/10 to 25/07/10	W14 29/07/10 to 01/08/10	W15 02/08/10 to 08/08/10	W16 09/08/10 to 15/08/10	W17 16/08/10 to 22/08/10	W18 23/08/10 to 29/08/10	W19 30/08/10 to 05/09/10	W20 06/09/10 to 12/09/10	W21 13/09/10 to 19/09/10	W22 20/09/10 to 26/09/10	W23 27/09/10 to 03/10/10	W24 04/10/10 to 10/10/10	W25 11/10/10 to 17/10/10	W26 18/10/10 to 24/10/10	W27 25/10/10 to 31/10/10	W28 01/11/10 to 07/11/10	W29 08/11/10 to 14/11/10	W30 15/11/10 to 21/11/10	W31 22/11/10 to 28/11/10	W32 29/11/10 to 05/12/10	W33 06/12/10 to 12/12/10	W34 13/12/10 to 19/12/10	W35 20/12/10 to 26/12/10
1	**CONTRACT PERIOD**	**78 weeks**																																				
A	**Surveys**	**6 weeks**																																				
i.	Pre-Con Survey	2 weeks																																				
ii.	Site Computation Survey	2 weeks																																				
iii.	Cable Detection	2 weeks																																				
iv.	Conserved House Survey	6 weeks																																				
B	**Driveway Retaining Walls**	**10 weeks**																																				
i.	+++ Design & Submit for Consultant's Approval	2 weeks																																				
ii.	+ Submit for Authority's Approval	2 weeks																																				
iii.	Construct Retaining Walls	6 weeks																																				
B	**Demolition Works**	**7 weeks**																																				
i.	+ Submit for Authority's Approval	2 weeks																																				
ii.	Remove Existing Equipments etc.	3 weeks																																				
iii.	Demolish Existing Structure etc.	4 weeks																																				
C	**Piling Works**	**12 weeks**																																				
i.	Procurement of RC Piles	4 weeks																																				
ii.	Mobilise Piling Equipments	1 week																																				
iii.	Jack-in RC Piles	6 weeks																																				
iv.	PDA Test	1 week																																				
v.	Static Load Test	2 weeks																																				
vi.	De-mobilise Piling Equipments	1 week																																				
D	**Sub-structure**	**15 weeks**																																				
i.	Excavation to Pile Cut-off Level	6 weeks																																				
ii.	Pile Cap Construction	6 weeks																																				
iii.	Ground Beams	6 weeks																																				
iv.	Lift and CD Shelter Pit	4 weeks																																				
v.	Ground Slab	4 weeks																																				
E	**Super-structure**	**12 weeks**																																				
i.	Staircases	4 weeks																																				
ii.	2nd Storey	6 weeks																																				
iii.	Roof	6 weeks																																				
iv.	Upper Roof	4 weeks																																				
D	**Architecture Works**	**38 weeks**																																				
i.	Brickwalls	8 weeks																																				
ii.	Internal Plastering and Skimming	6 weeks																																				
iii.	Doors and Windows	4 weeks																																			Confirmation of Profile and Color	
iv.	Floor Finishes	12 weeks																																			Selection and Confirmation of Materials	
v.	Wall Finishes	8 weeks																																			Selection and Confirmation of Materials	
vi	Ceiling Finishes	8 weeks																																			Selection and Confirmation of Materials	
vii.	Painting	4 weeks																																			Selection and Confirmation of Materials	
viii.	Staircases	2 weeks																																			Selection and Confirmation of Design	
ix.	External Floor and Ceiling Finishes	6 weeks																																			Selection and Confirmation of Materials	
x.	** Kitchen Cabinet / Wardrobe etc.	6 weeks																																			Appointment of sub-contractor and Confirmation of Design	
xi.	** Sanitary Wares, Fittings & Accessories etc.	4 weeks																																			Selection and Confirmation of Materials	
xii.	** Kitchen Appliances	4 weeks																																			Selection and Confirmation of Materials	
E	**External Works**	**17 weeks**																																				
i.	Driveway and Drop-Off Area	10 weeks																																				
ii.	Fences, Boundary Walls and Gates	10 weeks																																				
iii.	Landscape Works	7 weeks																																			Selection and Confirmation of Trees and Plants	
F	**Electrical Services**	**47 weeks**																																				
i.	External Electrical Works	30 weeks																								Selection and Confirmation of Materials												
ii.	Internal Electrical Works	16 weeks																																				
iii.	Install & Terminate of Electrical Devices	6 weeks																																				
iv.	Make Electrical Terminations for ACMV	4 weeks																																				
v.	Install Light Fixtures	6 weeks																																				
vi.	Testing and Commissioning	2 weeks																																				
G	**Lift Services**	**56 weeks**																																				
i.	Procurement of Lift	32 weeks												Selection and Confirmation of Materials																								
ii.	Handover Lift Shaft	3 weeks																																				
iii.	Install Lift Equipments and Rails	16 weeks																																				
iv.	Clearing and Cleaning	3 weeks																																				
v.	Testing and Commissioning	2 weeks																																				
H	**Sanitary and Plumbing Services**	**47 weeks**																		Selection and Confirmation of Materials																		
i.	Sanitary Works	23 weeks																																				
ii.	Internal Plumbing Works	12 weeks																																				
iii.	External Plumbing Works	12 weeks																																				
iv.	Set Plumbing Fixtures and Trim	4 weeks																																				
v.	Flush, Test and etc.	4 weeks																																				
I	**ACMV Installation**	**24 weeks**																		Selection and Confirmation of Materials																		
i.	Install Duct etc.	16 weeks																																				
ii.	Set Equipments and Controls	10 weeks																																				
iii.	Testing and Commissioning	2 weeks																																				
J	**Handover**	**4 weeks**																																				
i.	Clearing and Cleaning	4 weeks																																				
ii.	Inspection and Handover	2 weeks																																				
iii	TOP	1 week																																				

Note:

** Provisional Sum Items

+++ Estimated Duration

\+ Duration Subjected to Authority's Approval

JUHO CONSTRUCTION PTE LTD

RECONSTRUCTION OF EXISTING SINGLE STOREY C(

PRELIMINARY CONSTRUCTION PROGRAMME (Revisi

NO.	DESCRIPTION / TRADES	DURATION	W36 27/12/10 to 02/01/11	W37 03/01/11 to 09/01/11	W38 10/01/11 to 16/01/11	W39 17/01/11 to 23/01/11	W40 24/01/11 to 30/01/11	W41 31/01/11 to 06/02/11	W42 07/02/11 to 13/02/11	W43 14/02/11 to 20/02/11	W44 21/02/11 to 27/02/11	W45 28/02/11 to 06/03/11	W46 07/03/11 to 13/03/11	W47 14/03/11 to 20/03/11	W48 21/03/11 to 27/03/11	W49 28/03/11 to 03/04/11	W50 04/04/11 to 10/04/11	W51 11/04/11 to 17/04/11	W52 18/04/11 to 24/04/11	W53 25/04/11 to 01/05/11	W54 02/05/11 to 08/05/11	W55 09/05/11 to 15/05/11	W56 16/05/11 to 22/05/11	W57 23/05/11 to 29/05/11	W58 30/05/11 to 05/06/11	W59 06/06/11 to 12/06/11	W60 13/06/11 to 19/06/11	W61 20/06/11 to 26/06/11	W62 27/06/11 to 03/07/11	W63 04/07/11 to 10/07/11	W64 11/07/11 to 17/07/11	W65 18/07/11 to 24/07/11	W66 25/07/11 to 31/07/11	W67 01/08/11 to 07/08/11	W68 08/08/11 to 14/08/11	W69 15/08/11 to 21/08/11	W70 22/08/11 to 28/08/11	W71 29/08/11 to 04/09/11
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D	**Sub-structure**	**15 weeks**																																				
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iii.	Testing and Commissioning	2 weeks																																				
J	**Handover**	**4 weeks**																																				
i.	Clearing and Cleaning	4 weeks																																				
ii.	Inspection and Handover	2 weeks																																				
iii	TOP	1 week																																				

Note:

** Provisional Sum Items

+++ Estimated Duration

+ Duration Subjected to Authority's Approval

JUHO CONSTRUCTION PTE LTD

RECONSTRUCTION OF EXISTING SINGLE STOREY C(

PRELIMINARY CONSTRUCTION PROGRAMME (Revisi

NO.	DESCRIPTION / TRADES	DURATION	W72 05/09/11 to 11/09/11	W73 12/09/11 to 18/09/11	W74 19/09/11 to 25/09/11	W75 26/09/11 to 02/10/11	W76 03/10/11 to 09/10/11	W77 10/10/11 to 16/10/11	W78 17/10/11 to 23/10/11
1	**CONTRACT PERIOD**	**78 weeks**							
A	**Surveys**	**6 weeks**							
i.	Pre-Con Survey	2 weeks							
ii.	Site Computation Survey	2 weeks							
iii.	Cable Detection	2 weeks							
iv.	Conserved House Survey	6 weeks							
B	**Driveway Retaining Walls**	**10 weeks**							
i.	+++ Design & Submit for Consultant's Approval	2 weeks							
ii.	+ Submit for Authority's Approval	2 weeks							
iii.	Construct Retaining Walls	6 weeks							
B	**Demolition Works**	**7 weeks**							
i.	+ Submit for Authority's Approval	2 weeks							
ii.	Remove Existing Equipments etc.	3 weeks							
iii.	Demolish Existing Structure etc.	4 weeks							
C	**Piling Works**	**12 weeks**							
i.	Procurement of RC Piles	4 weeks							
ii.	Mobilise Piling Equipments	1 week							
iii.	Jack-in RC Piles	6 weeks							
iv.	PDA Test	1 week							
v.	Static Load Test	2 weeks							
vi.	De-mobilise Piling Equipments	1 week							
D	**Sub-structure**	**15 weeks**							
i.	Excavation to Pile Cut-off Level	6 weeks							
ii.	Pile Cap Construction	6 weeks							
iii.	Ground Beams	6 weeks							
iv.	Lift and CD Shelter Pit	4 weeks							
v.	Ground Slab	4 weeks							
E	**Super-structure**	**12 weeks**							
i.	Staircases	4 weeks							
ii.	2nd Storey	6 weeks							
iii.	Roof	6 weeks							
iv.	Upper Roof	4 weeks							
D	**Architecture Works**	**38 weeks**							
i.	Brickwalls	8 weeks							
ii.	Internal Plastering and Skimming	6 weeks							
iii.	Doors and Windows	4 weeks							
iv.	Floor Finishes	12 weeks							
v.	Wall Finishes	8 weeks							
vi	Ceiling Finishes	8 weeks							
vii.	Painting	4 weeks							
viii.	Staircases	2 weeks							
ix.	External Floor and Ceiling Finishes	6 weeks							
x.	** Kitchen Cabinet / Wardrobe etc.	6 weeks							
xi.	** Sanitary Wares, Fittings & Accessories etc.	4 weeks							
xii.	** Kitchen Appliances	4 weeks							
E	**External Works**	**17 weeks**							
i.	Driveway and Drop-Off Area	10 weeks							
ii.	Fences, Boundary Walls and Gates	10 weeks							
iii.	Landscape Works	7 weeks							
F	**Electrical Services**	**47 weeks**							
i.	External Electrical Works	30 weeks							
ii.	Internal Electrical Works	16 weeks							
iii.	Install & Terminate of Electrical Devices	6 weeks							
iv.	Make Electrical Terminations for ACMV	4 weeks							
v.	Install Light Fixtures	6 weeks							
vi.	Testing and Commissioning	2 weeks							
G	**Lift Services**	**56 weeks**							
i.	Procurement of Lift	32 weeks							
ii.	Handover Lift Shaft	3 weeks							
iii.	Install Lift Equipments and Rails	16 weeks							
iv.	Clearing and Cleaning	3 weeks							
v.	Testing and Commissioning	2 weeks							
H	**Sanitary and Plumbing Services**	**47 weeks**							
i.	Sanitary Works	23 weeks							
ii.	Internal Plumbing Works	12 weeks							
iii.	External Plumbing Works	12 weeks							
iv.	Set Plumbing Fixtures and Trim	4 weeks							
v.	Flush, Test and etc.	4 weeks							
I	**ACMV Installation**	**24 weeks**							
i.	Install Duct etc.	16 weeks							
ii.	Set Equipments and Controls	10 weeks							
iii.	Testing and Commissioning	2 weeks							
J	**Handover**	**4 weeks**							
i.	Clearing and Cleaning	4 weeks							
ii.	Inspection and Handover	2 weeks							
iii	TOP	1 week							

Note:

** Provisional Sum Items

+++ Estimated Duration

+ Duration Subjected to Authority's Approval

Updated On: 30 April 2010

SECTION 4

PROGRAMME

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

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

	AUTHORITY MATTERS -																				
		PLOT 5											PLOT 6								
1.0	PLANNING	1st Submission	Advice (WD)	Approval	2nd Submission	Advice (WD)	Approval	3rd Submission	Advice (WD)	4th Submission	Advice (WD)	Final Approval	1st Submission	Advice (WD)	Approval	2nd Submission	Advice (WD)	Approval	3rd Submission	Advice (WD)	Final Approval
1.1	URA	1st PP		PP1	PP2			WP		WP			1st PP		PP1	PP2			WP		
	- Team Design	25-Feb-09		19-Mar-09	16-Oct-09	16-Nov-09		11-Feb-10	11-Mar-10	12-Mar-09		**17-Mar-10**	25-Feb-09		19-Mar-09	16-Oct-09	16-Nov-09		3-Feb-10		**22-Feb-10**
	- CPL / reconstruct statement											----------									----------
2.0	TECH. DEPTS. (DC)																				
2.1	LTA (Roads)			DC											DC						
	- Team Design	6-Apr-09										**22-Apr-09**	6-Apr-09								**22-Apr-09**
2.2	Nparks																				
	- Team Design	17-Apr-09			20-May-09							**29-May-09**	17-Apr-09			26-May-09					**4-Jun-09**
2.3	CBPU (Drains & Sewer)																				
	- Team Design	26-May-09	7-Jul-09		12-Aug-09	21-Aug-09		3-Sep-09				**16-Sep-09**	26-May-09	7-Jul-09		12-Aug-09					**21-Aug-09**
3.0	BUILDING CONTROL																				
3.1	BCA																				
	- Team Design	24-Mar-10										**26-Mar-10**	23-Mar-10								**24-Mar-10**
	- CPL	22-Mar-10										**19-Mar-10**	11-Mar-10	19-Mar-10							**24-Mar-10**
3.2	BCA - Household Shelter (SCDF)																				
	- Team Design (ORIGINAL PLAN)	6-Apr-09		15-Apr-09				23-Oct-09	9-Nov-09			----------	6-Apr-09		15-Apr-09				23-Oct-09		**6-Nov-09**
	- Team Design (Base on latest URA submission drawings)	4-Feb-10	11-Feb-10		23-Feb-10							**1-Mar-10**	2-Feb-10								**17-Feb-10**
	- CPL	19-Mar-10										**24-Mar-10**	18-Mar-10								**24-Mar-10**
4.0	TECH. DEPTS. (BP)																				
4.1	LTA (Roads)	No Submission Required											No Submission Required								
	- Team Design											----------									----------
	- CPL											----------									----------
4.2	Nparks																				
	- Team Design	23-Feb-10	26-Feb-10		12-Mar-10							**14-Apr-10**	22-Feb-10	2-Mar-10		10-Mar-10					**18-Mar-10**
	- CPL											----------									----------
4.3	CBPU (Drains & Sewer)																				
	- Team Design	25-Feb-10										**26-Feb-10**	24-Feb-10	25-Feb-10		9-Mar-10					**15-Mar-10**
	- CPL	13-Nov-09										**16-Nov-09**	13-Nov-09								**16-Nov-09**
	- Alpha (Sanitary)	3-Dec-09										**8-Dec-09**	3-Dec-09								**8-Dec-09**
4.4	Electrical Load & Meter Detail																				
	- Alpha	4-Dec-09										**10-Dec-09**	4-Dec-09		10-Dec-09	25-Jan-10					**11-Feb-10**
4.5	SCV & Telecom																				
	- Alpha											**30-Mar-10**									**30-Mar-10**
4.6	PUB (Water)																				
	- Alpha	9-Oct-09	9-Oct-09		2-Dec-09							**25-Jan-10**	9-Oct-09	29-Oct-09		2-Dec-09					**25-Jan-10**
4.7	Power Gas																				
	- Alpha	3-Dec-09	8-Dec-09		27-Jan-10							**6-Feb-10**	3-Dec-09	8-Dec-09		27-Jan-10					**6-Feb-10**

Note : Target dates to submit are in bracket.

SECTION 4

PROGRAMME

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

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

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

File Ref:		File Ref:	
- Owner	✓	- Architect	✓
- Authorities	✓	- Other Consultants	✓
- Contractors	✓	- CC	
- CF	✓	- PQP/QSP	✓

Project Files to be initiated by PM as and when required

File Ref:		File Ref:		File Ref:	

(✓*where applicable*)

SECTION 5

PROJECT RECORDS

5.2 Filing of Drawings

The following team members shall take charge of filing of drawings, stamping "SUPERSEDED" drawings, etc.

Description	Team Member
Incoming Architectural Floor Plans	Incoming Soft Copy in Server
Incoming Architectural Sketches/Details	Incoming Soft Copy in Server
Incoming Structural Drawings	Incoming Soft Copy in Server
M&E Drawings	
- Electrical Installation	Trece Koh
- Lift & Escalator Installation	Trece Koh
- Air Conditioning & Ventilation Installation	Khor Bee Khoon
- Fire Fighting & Alarm Installation	-
- Plumbing & Sanitary Installation	Khor Bee Khoon
- Swimming Pool & Filtration Installation	Khor Bee Khoon
Other Drawings	

SECTION 6

INTERFACING

6.1 Method of Interface

Description	Method of Interface	
Client's Review & Approval	M&E Design Report	✓
	Pre-planned meeting at fixed intervals	✓
	Telefax, letter and telephone	✓
	Email	✓
Interface With External Design Teams	M&E Design Report	✓
	Pre-planned meeting at fixed intervals	✓
	Telefax, letter and telephone	✓
	Email	✓
Interface Between Internal Design Teams	Telephone	✓
	Email	✓
	Internal Project Team Meeting	✓
	Circulation of Information	✓

(✓*where applicable*)

SECTION 6

INTERFACING

6.2 Internal Design Interface

Item No.	Description*	Required From	Required By	Date Required	Remarks
1	Electrical Load	KBK	TK	1 Aug 09	

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

SECTION 8

DESIGN INPUT & METHODOLOGY

8.1 List of Client's Standards, Reference Documents or Brief – NOT USED

ITEM	KEPT BY

8.2 List of Applicable Code of Practice and Regulations

Electrical Wiring	~~BS~~	SS	~~IEE~~	~~NFPA~~		
Lightning Protection System	~~BS~~	SS				
~~Emergency Voice Communication System~~	~~BS~~	~~SS~~	~~NFPA~~			
Air Conditioning & Ventilation Installation	~~BS~~	~~AS~~	~~NFPA~~	SS	~~MS~~	
Lift ~~& Escalator~~ Installation	~~BS~~	SS				
~~Sprinkler System~~	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	~~LPC~~	
~~Dry/Wet Riser System~~	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	~~MS~~	
~~Automatic Fire Alarm System~~	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	~~MS~~	
Sanitary System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~MS~~	
Plumbing System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~MS~~	
Town Gas/~~LPG Supply System~~	~~BS~~	SS	~~NFPA~~	~~AS~~		
~~Boiler and Steam Supply System~~	~~ASME~~	~~BS~~	~~AS~~			
~~Mechanical Smoke Control System~~	~~BS~~	~~NFPA~~	~~AS~~			

(Delete where necessary)

SECTION 8

DESIGN INPUT & METHODOLOGY

8.3 List of Design Guide or Handbook Used

Carrier's Handbook of Air Conditioning System Design

ASHRAE Handbooks

Institute of Plumbing's Plumbing Services Design Guide

8.4 List of Applicable Quality System Procedures

Alpha Consulting Engineers Pte Ltd's Quality Management System Procedures

Section	Title	✓ where applicable
M1	Preparation of Consultancy Offer	✓
M2	Project Commissioning and Service Agreement	✓
M3	Design Control	✓
M4	Design Change Control	✓
M5	Tender Process and Evaluation	✓
M6	Authority Submission	✓
M7	Construction Process Control	✓
M8	Testing and Commissioning	✓
S1	Document Control	✓
S2	Documentation of Quality & Environmental Management System Procedure	✓
S3	Documentation of Project Quality Plan	✓
S4	Specification Control	✓
S5	Library Control	✓
S6	Archive Control	✓
S7	Filing Control	✓
S8	Drawing Control	✓
S9	Administration Control	✓
S10	Purchasing Control	✓
S11	Training Control	✓
S12	Computer Control	✓
QE1	Quality & Environmental System Audit	✓
QE2	Feedback Reporting	✓
QE3	Clients Feedback	✓
QE4	Management Review	✓

8.5 List of Software Used For Design/Analysis

DESCRIPTION/ PACKAGE NAME	VERSION	SUPPLIER/ SOURCE	PURPOSE	
Calculux	2.30	Philips	Lighting design	
Cophos	3.31	Zumtobel	Lighting design	
Carrier E20-II	3.21	Carrier	Programme for determination of heat load, duct size and its losses, etc.	✓
Gensize 2	2.1	Onan	Generator sizing	
Lift Traffic	-	Alpha Consulting Engineers Pte Ltd	Lift traffic calculation	
Econdial	2.5	Merlin Gerlin	Design for low voltage network	
Hyena	4.00.1	ACADS-BSG	Fire Sprinkler & Hydrant Analysis	
Fault Level Calculation	-	Alpha Consulting Engineers Pte Ltd	Calculation of voltage drop and fault level	

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.1 Sustainable Design Features / Criteria - NOT USED

Item	Remarks
Green Mark Criteria	
Green Design Features	

9.2 Site PPE Requirement

The necessary Personal Protective Equipment (detailed below) shall be provided by the main contractor / Company in accordance to the site EHS requirements prior to the site monitoring.

PPE	✓ where applicable
Safety Helmet	✓
Safety Shoes	✓
Eye Protection	
Ear Protection	
Safety Harness / Belt	
Others:	

9.3 Site Emergency Preparedness - NOT USED

Site staff shall comply with the site emergency preparedness and response procedure, established by the main contractor / owner, which shall include the following details.

Items	✓ where applicable
Evacuation Route	
Emergency Exit	
Assembly Point	
Emergency Contact List / Person	
Alarm system / methods	

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.4 Reporting of Environmental Non-conformances

When encountering environmental non-conformances, Site Staff shall be responsible to feedback to the main contractor.

9.5 List of Applicable Environmental management system Procedures

Alpha Consulting Engineers Pte Ltd's Environmental Management System Procedures

Section	Title	✓ where applicable
E1	Aspect / Impact Identification, Risk Assessment & Risk Control	✓
E2	Identifying Legal & Other Requirements	✓
E3	Objectives, Targets & Programmes	✓
E4	Communication	✓
E5	Emergency Preparedness & Response	✓
E6	Monitoring & Measurement	✓
E7	Control of Air & Noise Pollution	✓
E8	Management of Wastes	✓

SECTION 10

CLIENT'S REQUIREMENTS

10.1 List of Output Required by Client:-

Item	* Remarks
M&E Design Report	A
M&E Cost Estimate Report	I
Pre-Qualification of Tenderers	N.A
Tender Documents	A
Tender Report	I
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 – NOT USED

Sub Job No	Description	Allocation Details