Alpha
Consulting Engineers Pte Ltd

PROJECT QUALITY PLAN

PROPOSED CONDOMINIUM HOUSING DEVELOPMENT COMPRISING 2 BLOCKS OF 38 STOREY RESIDENTIAL FLATS (TOTAL 509 UNITS) WITH TWO BASEMENT CAR PARKS, A LANDSCAPE DECK AND OTHER ANCILLARY FACILITIES ON LOT 16900T MK 18 AT BISHAN STREET 14

For

BISHAN RESIDENTIAL DEVELOPMENT PTE LTD

Copy No.	1

Prepared By: Khor Bee Khoon

Authorised By: Choong Choon Guan

Date: 8 November 2013

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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	6166-PQP File	8 November 2013

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
0	17 Feb 2012	1 to 11	28	+4 pages (section 4.1- overall programme)
1	8 November 2013	1 to 11	29	+4 pages (section 4.1- overall programme) + 1 page (section 4.2 – authority submission for M&E services)

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Residential/ Condominium

Statistics of Development	
Site Area, m²	10,649.46
Nett Floor Area, m²	-
Gross Floor Area, m²	64664.369
Covered Carpark, m²	20,200.91
No. of Covered Carpark Lots	509 + 2 washing bay
No. of Apartments/Houses	509 apartment units
No. of Beds (for Hospitals)	-
No. of Guestroom (for Hotels)	-
No. of Blocks / No. of Storeys	2 Blocks of 38 Storeys c/w 2 Basement
Green Mark Category	Gold Plus
No. of Phases	1

2.2 Project Cost

M&E Services Cost Plan (S$ x 1M)										
Services	EI	ACVI	LEI	FFAI	PSI	SPFI				
Estimate	-	-	-	-	-	-				
Awarded	-	-	-	-	-	-				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling Works	Main Contract
Estimate	-	-	-
Awarded	-	-	175

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

2.3 Scope of Works

2.3.1 Scope of Consultancy Services

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

(✓*where applicable*)

2.3.2 Scope of M&E Services

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

(✓*where applicable*)

2.3.3 Submission to Relevant Authorities by Others

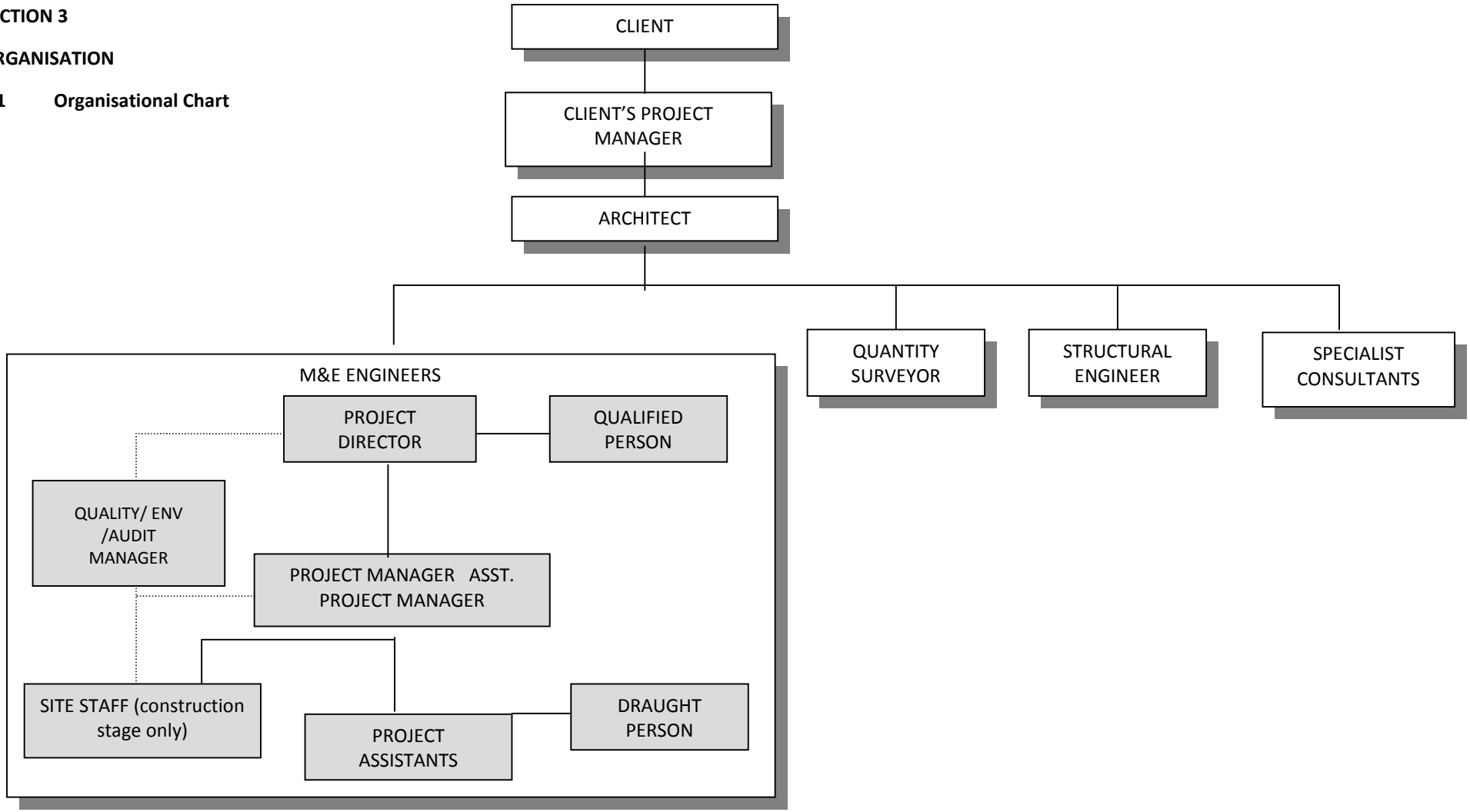
EJECTOR & DIVERTER	✓	SUMP PUMP	✓	FUEL OIL TANK		LIFT & ESCALATOR	✓	PRESSURE VESSEL		HOISTS		FOAM	

(✓*where applicable*)

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 ACEPL's Project Team Member

TITLE		NAME
Project Director		Loh Fook Yuen (LFY)
Qualified Person	Mechanical	Choong Choon Guan (CCG)
	Electrical	Loh Fook Yuen (LFY)
Project Manager		Lim Chai Hoon (LCY)
Assistant Project Manager		Khor Bee Khoon (KBK)
Project Assistant (Mech)		-
Project Assistant (Elect)		-
Draughtsperson		Common Pool
Resident Engineer (M&E)		-
Assistant Resident Engineer (M&E)		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client: Shimizu Corporation

Address: 78 Shenton Way #11-01
Singapore 079120

Tel: 6220 0406

Fax: 6223 9117

Client's Representatives:-

Name of Company	Contact Person	Contact
CapitaLand Residential Singapore	Name: Vincent Choong Position: Project Manager	Tel: 6826 6664 Fax: 6820 8679 Handphone: - Email: vincent.choong@capitaland.com
CapitaLand Residential Singapore	Name: Kelvin Lo Position: Vice President	Tel: 6826 6681 Fax: 6820 2208 Handphone: - Email: kelvin.lo@capitaland.com
CapitaLand Residential Singapore	Name: Benny Wong Position: Assistant Vice President	Tel: 6826 6691 Fax: 6820 8679 Handphone: - Email: benny.wong@capitaland.com
Shimizu Corporation	Name: Chua Beng Tong Position: Project Director	Tel: 6735 8057 Fax: - Handphone: 9759 9366 Email: chua.bengtong@shimz.biz
Shimizu Corporation	Name: Jamiluddin Position: M& E Manager	Tel: 6837 3208 Fax: - Handphone: 9450 5425 Email: jamiluddin.m@shimz.biz

3.4 **Other Consultants** (Local)

Function / Name of Company	Contact Person	Contact
Architect DCA Architects Pte Ltd	Name: Vincent Khoo/Sim Ming Howe/Mahayuni Position: Architect QP/Architects	Tel: 6225 5366 Fax: 6225 4288 Handphone: - Email: 660Bishan@dca-architects.com
Quantity Surveyor Davis Langdon & Seah Singapore Pte Ltd	Name: Tan Ching Ching/Juliana Hor Position: Quantity Surveyor	Tel: 6222 3888 Fax: 6224 7089 Handphone: - Email: 6004@sg.langdonseah.com
Structural Engineer RSP Architect Planners & Engineers PL	Name: Lai Chee Kin Position: Structure Engineer	Tel: 6737 7544 Fax: 6733 9143 Handphone: - Email: r13@rsp.sg
Landscape Architect Coen design international pte ltd	Name: Choo Kiang Siang Position: Senior Project Director	Tel: 6345 6323 Fax: 6345 6386 Handphone: - Email: kiangsiang@coen-design.com
Interior Designer -	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
Lighting Consultant -	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
Acoustic Consultant -	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
_____	Name: Position:	Tel: Fax: Handphone: Email:

3.4 Other Consultants (Overseas) - **NOT USED**

Function / Name of Company	Contact Person	Contact
Architect	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
M&E Consultant	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 Shimizu Corporation	D&B	Name: Chua Beng Tong Position: Project Director	Tel: 6735 8057 Fax: - Handphone: 9759 9366 Email: chua.bengtong@shimz.biz
Air Conditioning & Ventilation Installation Sub-Contractor -	-	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
Plumbing & Sanitary Installation Sub-Contractor -	-	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
Electrical Installation Sub-Contractor -	-	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
Lift & Escalator Installation Sub-Contractor -	-	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
Fire Fighting & Alarm Installation Sub-Contractor -	-	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
Swimming Pool Filtration Plant Installation Sub-Contractor -	-	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
Carpark System Installation Sub-Contractor -	-	Name: - Position: -	Tel: - Fax: - Handphone: - Email: -
_____		Name: Position:	Tel: Fax: Handphone: Email:

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

3.6 Authorities

Authorities/Department	Contact Person	Tel/Fax Nos./E-mail
SP PowerGrid:		
(a) Sub-Station	Mr Francis Chang	6378 8555
(b) Diversion	-	
SP Services:		
(a) Customer Supply	-	
(b) Installation	Mr Ting Chiong Seng	6409 2603
(c) Meter Section	-	
(d) Road Lighting	-	
TFCC:		
(a) SCV	Mr Francis Goh	6825 6429
(b) SingTel	Mr Tan Beng Hua	9735 3182
(c) IDA	Mr Tan Huay San	6211 1870
BCA:		
(a) Building Plan	-	
(b) Green Mark	-	
FSSD:		
(a) Building Plan	Ms Ang Ai Hua	6848 1464
(b) M&E Plan	Mr Lee Kok Chuen	6848 1457
PUB (Water Supply) Network Dept:		
(a) Water Conservation	-	
(b) Plumbing Plan	Ms Neshitra Nair	6731 3552
(c) Diversion	-	
(d) NEWater	-	
PUB Water Reclamation (Network) Dept:		
(a) Building Plan/CBPU	Mr Abdul Razak Bin Abdul Majik	6731 9527
(b) M&E Plan	-	
(c) Diversion	-	
City Gas Pte Ltd:		
(a) Planning/Submission	Mr Ivan Lim/Mr Liew Khee Boon	6578 7862
(b) Installation/Inspection	Mr Lim Teck Seng	6578 7814/9007 5727
PowerGas Pte Ltd		
(a) Diversion	-	
NEA (Pollution Control)		
(a) Planning/Submission	-	
(b) Inspection	-	

SECTION 4

PROGRAMME

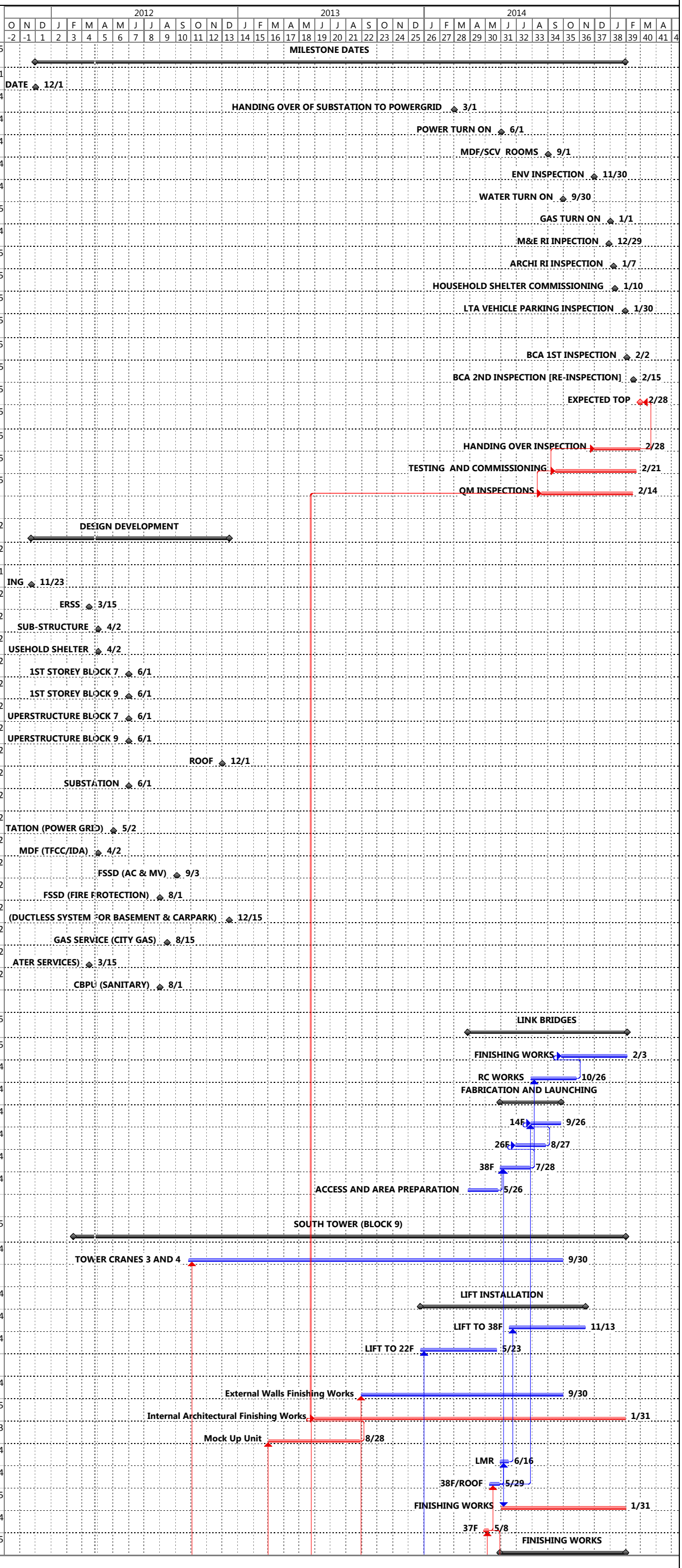
4.1 Overall Programme – Refer to attached

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																									

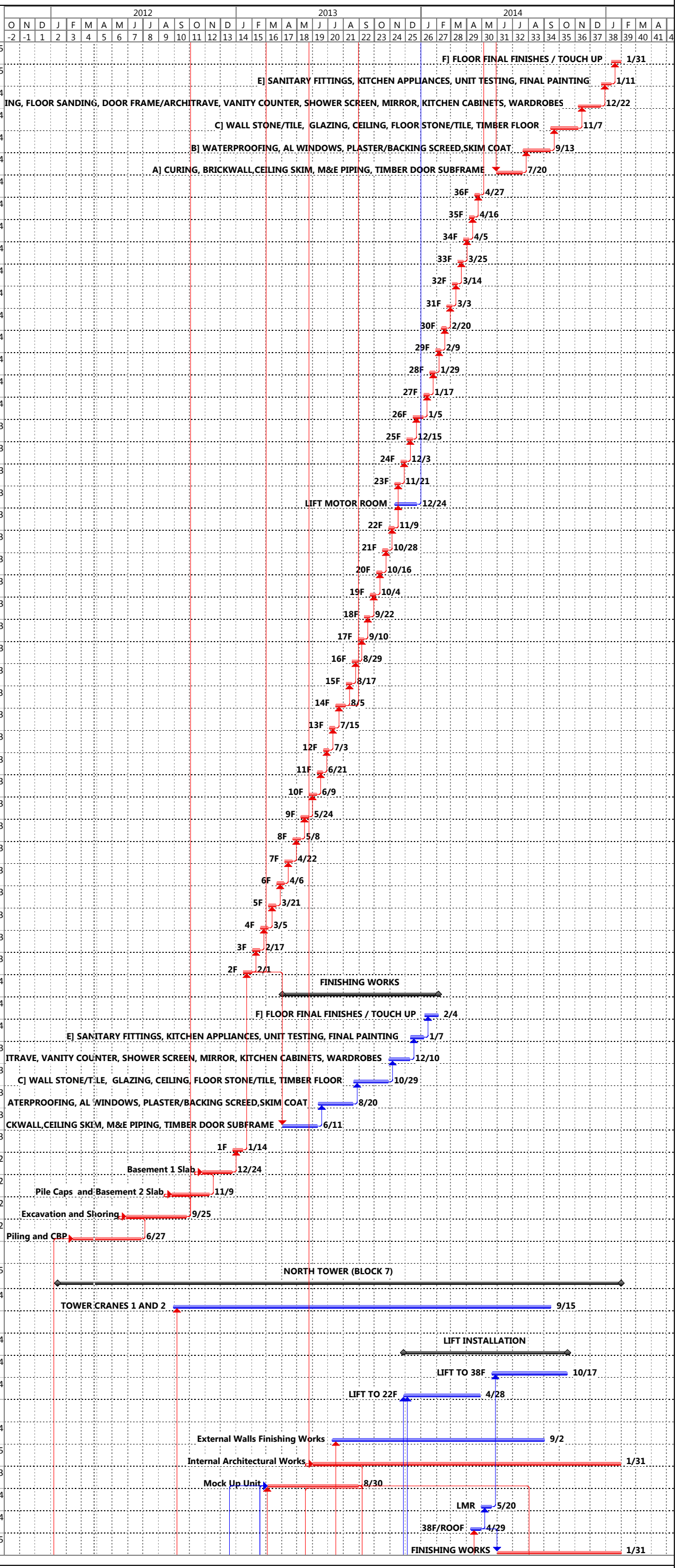
SHIMIZU CORPORATION
BISHAN CONDOMINIUM PROJECT
MASTER SCHEDULE

REV. B

ID	Task Name	Start	Finish
1	**MILESTONE DATES**	Thu 12/1/11	Fri 1/30/15
2	COMMENCEMENT DATE	Thu 12/1/11	Thu 12/1/11
3	HANDING OVER OF SUBSTATION TO POWERGRID	Sat 3/1/14	Sat 3/1/14
4	POWER TURN ON	Sun 6/1/14	Sun 6/1/14
5	MDF/SCV ROOMS	Mon 9/1/14	Mon 9/1/14
6	ENV INSPECTION	Sun 11/30/14	Sun 11/30/14
7	WATER TURN ON	Tue 9/30/14	Tue 9/30/14
8	GAS TURN ON	Thu 1/1/15	Thu 1/1/15
9	M&E RI INPECTION	Mon 12/29/14	Mon 12/29/14
10	ARCHI RI INSPECTION	Wed 1/7/15	Wed 1/7/15
11	HOUSEHOLD SHELTER COMMISSIONING	Sat 1/10/15	Sat 1/10/15
12	LTA VEHICLE PARKING INSPECTION	Fri 1/30/15	Fri 1/30/15
13	**BCA TOP INSPECTION**	Mon 2/2/15	Sat 2/28/15
14	BCA 1ST INSPECTION	Mon 2/2/15	Mon 2/2/15
15	BCA 2ND INSPECTION [RE-INSPECTION]	Sun 2/15/15	Sun 2/15/15
16	EXPECTED TOP	Sat 2/28/15	Sat 2/28/15
17	**UNIT / COMMON AREA INSPECTIONS**	Tue 8/19/14	Sat 2/28/15
18	HANDING OVER INSPECTION	Mon 12/1/14	Sat 2/28/15
19	TESTING AND COMMISSIONING	Mon 9/15/14	Sat 2/21/15
20	QM INSPECTIONS	Tue 8/19/14	Sat 2/14/15
21			
22	**DESIGN DEVELOPMENT**	Wed 11/23/11	Sat 12/15/12
23	**STRUCTURAL SUBMISSIONS**	Wed 11/23/11	Sat 12/1/12
24	BORED PILING	Wed 11/23/11	Wed 11/23/11
25	ERSS	Thu 3/15/12	Thu 3/15/12
26	SUB-STRUCTURE	Mon 4/2/12	Mon 4/2/12
27	HOUSEHOLD SHELTER	Mon 4/2/12	Mon 4/2/12
28	1ST STOREY BLOCK 7	Fri 6/1/12	Fri 6/1/12
29	1ST STOREY BLOCK 9	Fri 6/1/12	Fri 6/1/12
30	SUPERSTRUCTURE BLOCK 7	Fri 6/1/12	Fri 6/1/12
31	SUPERSTRUCTURE BLOCK 9	Fri 6/1/12	Fri 6/1/12
32	ROOF	Sat 12/1/12	Sat 12/1/12
33	SUBSTATION	Fri 6/1/12	Fri 6/1/12
34	**MECHANICAL & ELECTRICAL**	Thu 3/15/12	Sat 12/15/12
35	SUB-STATION (POWER GRID)	Wed 5/2/12	Wed 5/2/12
36	MDF (TFCC/IDA)	Mon 4/2/12	Mon 4/2/12
37	FSSD (AC & MV)	Mon 9/3/12	Mon 9/3/12
38	FSSD (FIRE PROTECTION)	Wed 8/1/12	Wed 8/1/12
39	BCA (DUCTLESS SYSTEM FOR BASEMENT & CARPARK)	Sat 12/15/12	Sat 12/15/12
40	GAS SERVICE (CITY GAS)	Wed 8/15/12	Wed 8/15/12
41	PUB (WATER SERVICES)	Thu 3/15/12	Thu 3/15/12
42	CBPU (SANITARY)	Wed 8/1/12	Wed 8/1/12
43			
44	**LINK BRIDGES**	Fri 3/28/14	Tue 2/3/15
45	FINISHING WORKS	Sat 9/27/14	Tue 2/3/15
46	RC WORKS	Tue 7/29/14	Sun 10/26/14
47	**FABRICATION AND LAUNCHING**	Fri 5/30/14	Fri 9/26/14
48	14F	Tue 7/29/14	Fri 9/26/14
49	26F	Sun 6/29/14	Wed 8/27/14
50	38F	Fri 5/30/14	Mon 7/28/14
51	ACCESS AND AREA PREPARATION	Fri 3/28/14	Mon 5/26/14
52			
53	**SOUTH TOWER (BLOCK 9)**	Tue 2/14/12	Sat 1/31/15
54	TOWER CRANES 3 AND 4	Wed 9/26/12	Tue 9/30/14
55			
56	**LIFT INSTALLATION**	Wed 12/25/13	Thu 11/13/14
57	LIFT TO 38F	Tue 6/17/14	Thu 11/13/14
58	LIFT TO 22F	Wed 12/25/13	Fri 5/23/14
59			
60	External Walls Finishing Works	Sat 8/31/13	Tue 9/30/14
61	Internal Architectural Finishing Works	Fri 5/31/13	Sat 1/31/15
62	Mock Up Unit	Sat 3/2/13	Wed 8/28/13
63	LMR	Fri 5/30/14	Mon 6/16/14
64	38F/ROOF	Fri 5/9/14	Thu 5/29/14
65	FINISHING WORKS	Sun 6/1/14	Sat 1/31/15
66	37F	Mon 4/28/14	Thu 5/8/14
67	FINISHING WORKS	Fri 5/30/14	Sat 1/31/15



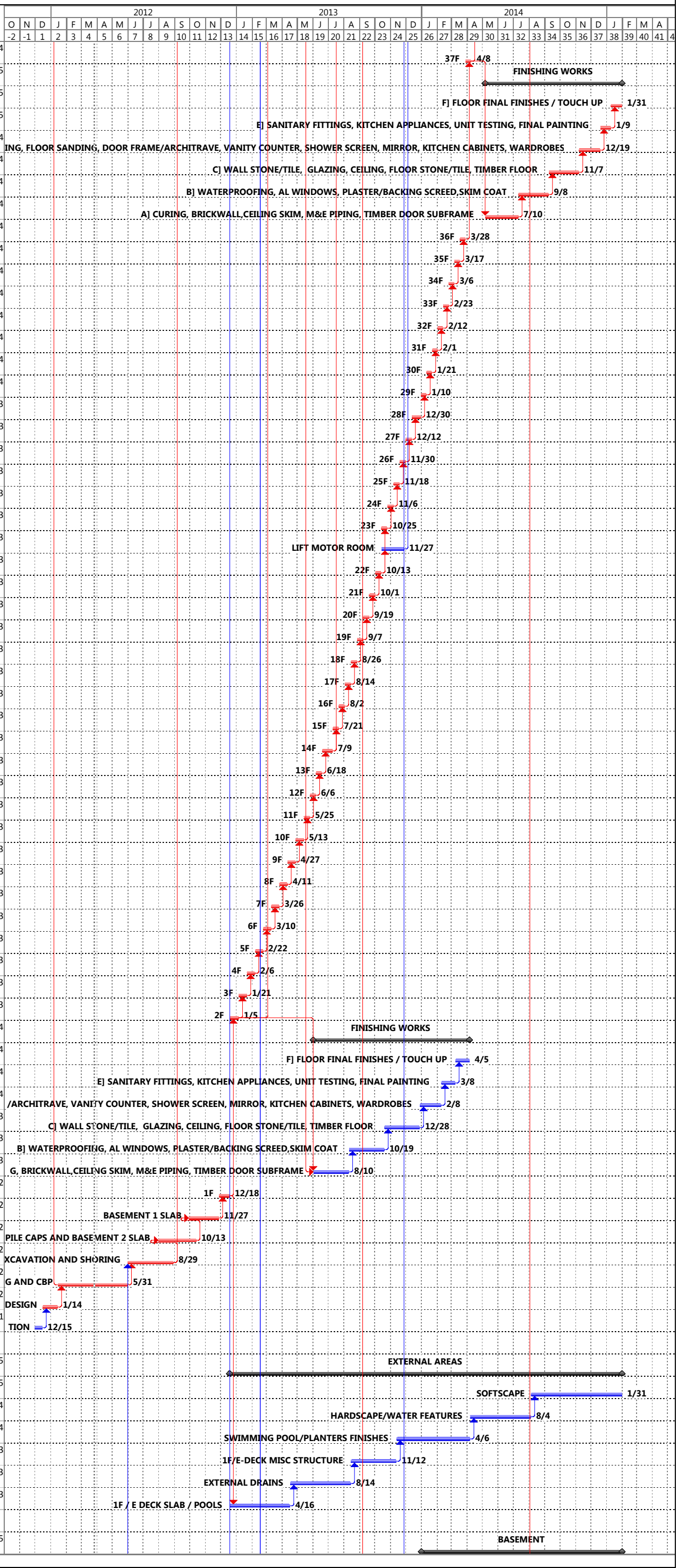
ID	Task Name	Start	Finish
68	F] FLOOR FINAL FINISHES / TOUCH UP	Mon 1/12/15	Sat 1/31/15
69	E] SANITARY FITTINGS, KITCHEN APPLIANCES, UNIT TESTING, FINAL PAINTING	Tue 12/23/14	Sun 1/11/15
70	D] PAINTING, FLOOR SANDING, DOOR FRAME/ARCHITRAVE, VANITY COUNTER, SHOWER	Sat 11/8/14	Mon 12/22/14
71	C] WALL STONE/TILE, GLAZING, CEILING, FLOOR STONE/TILE, TIMBER FLOOR	Sun 9/14/14	Fri 11/7/14
72	B] WATERPROOFING, AL WINDOWS, PLASTER/BACKING	Mon 7/21/14	Sat 9/13/14
73	A] CURING, BRICKWALL,CEILING SKIM, M&E PIPING, TIMBER DOOR SUBFRAME	Fri 5/30/14	Sun 7/20/14
74	36F	Thu 4/17/14	Sun 4/27/14
75	35F	Sun 4/6/14	Wed 4/16/14
76	34F	Wed 3/26/14	Sat 4/5/14
77	33F	Sat 3/15/14	Tue 3/25/14
78	32F	Tue 3/4/14	Fri 3/14/14
79	31F	Fri 2/21/14	Mon 3/3/14
80	30F	Mon 2/10/14	Thu 2/20/14
81	29F	Thu 1/30/14	Sun 2/9/14
82	28F	Sat 1/18/14	Wed 1/29/14
83	27F	Mon 1/6/14	Fri 1/17/14
84	26F	Mon 12/16/13	Sun 1/5/14
85	25F	Wed 12/4/13	Sun 12/15/13
86	24F	Fri 11/22/13	Tue 12/3/13
87	23F	Sun 11/10/13	Thu 11/21/13
88	LIFT MOTOR ROOM	Sun 11/10/13	Tue 12/24/13
89	22F	Tue 10/29/13	Sat 11/9/13
90	21F	Thu 10/17/13	Mon 10/28/13
91	20F	Sat 10/5/13	Wed 10/16/13
92	19F	Mon 9/23/13	Fri 10/4/13
93	18F	Wed 9/11/13	Sun 9/22/13
94	17F	Fri 8/30/13	Tue 9/10/13
95	16F	Sun 8/18/13	Thu 8/29/13
96	15F	Tue 8/6/13	Sat 8/17/13
97	14F	Tue 7/16/13	Mon 8/5/13
98	13F	Thu 7/4/13	Mon 7/15/13
99	12F	Sat 6/22/13	Wed 7/3/13
100	11F	Mon 6/10/13	Fri 6/21/13
101	10F	Sat 5/25/13	Sun 6/9/13
102	9F	Thu 5/9/13	Fri 5/24/13
103	8F	Tue 4/23/13	Wed 5/8/13
104	7F	Sun 4/7/13	Mon 4/22/13
105	6F	Fri 3/22/13	Sat 4/6/13
106	5F	Wed 3/6/13	Thu 3/21/13
107	4F	Mon 2/18/13	Tue 3/5/13
108	3F	Sat 2/2/13	Sun 2/17/13
109	2F	Tue 1/15/13	Fri 2/1/13
110	FINISHING WORKS	Wed 4/3/13	Tue 2/4/14
111	F] FLOOR FINAL FINISHES / TOUCH UP	Wed 1/8/14	Tue 2/4/14
112	E] SANITARY FITTINGS, KITCHEN APPLIANCES, UNIT TESTING, FINAL PAINTING	Wed 12/11/13	Tue 1/7/14
113	D] PAINTING, FLOOR SANDING, DOOR FRAME/ARCHITRAVE, VANITY COUNTER, SHOWER	Wed 10/30/13	Tue 12/10/13
114	C] WALL STONE/TILE, GLAZING, CEILING, FLOOR STONE/TILE, TIMBER FLOOR	Wed 8/21/13	Tue 10/29/13
115	B] WATERPROOFING, AL WINDOWS, PLASTER/BACKING	Wed 6/12/13	Tue 8/20/13
116	A] CURING, BRICKWALL,CEILING SKIM, M&E PIPING, TIMBER DOOR SUBFRAME	Wed 4/3/13	Tue 6/11/13
117	1F	Tue 12/25/12	Mon 1/14/13
118	Basement 1 Slab	Fri 10/26/12	Mon 12/24/12
119	Pile Caps and Basement 2 Slab	Mon 8/27/12	Fri 11/9/12
120	Excavation and Shoring	Tue 5/29/12	Tue 9/25/12
121	Bored Piling and CBP	Tue 2/14/12	Wed 6/27/12
122			
123	**NORTH TOWER (BLOCK 7)**	Sun 1/15/12	Sat 1/31/15
124	TOWER CRANES 1 AND 2	Thu 8/30/12	Mon 9/15/14
125			
126	**LIFT INSTALLATION**	Thu 11/28/13	Fri 10/17/14
127	LIFT TO 38F	Wed 5/21/14	Fri 10/17/14
128	LIFT TO 22F	Thu 11/28/13	Mon 4/28/14
129			
130	External Walls Finishing Works	Wed 7/10/13	Tue 9/2/14
131	Internal Architectural Works	Sun 6/2/13	Sat 1/31/15
132	Mock Up Unit	Mon 3/4/13	Fri 8/30/13
133	LMR	Wed 4/30/14	Tue 5/20/14
134	38F/ROOF	Wed 4/9/14	Tue 4/29/14
135	FINISHING WORKS	Sun 6/1/14	Sat 1/31/15



SHIMIZU CORPORATION
BISHAN CONDOMINIUM PROJECT
MASTER SCHEDULE

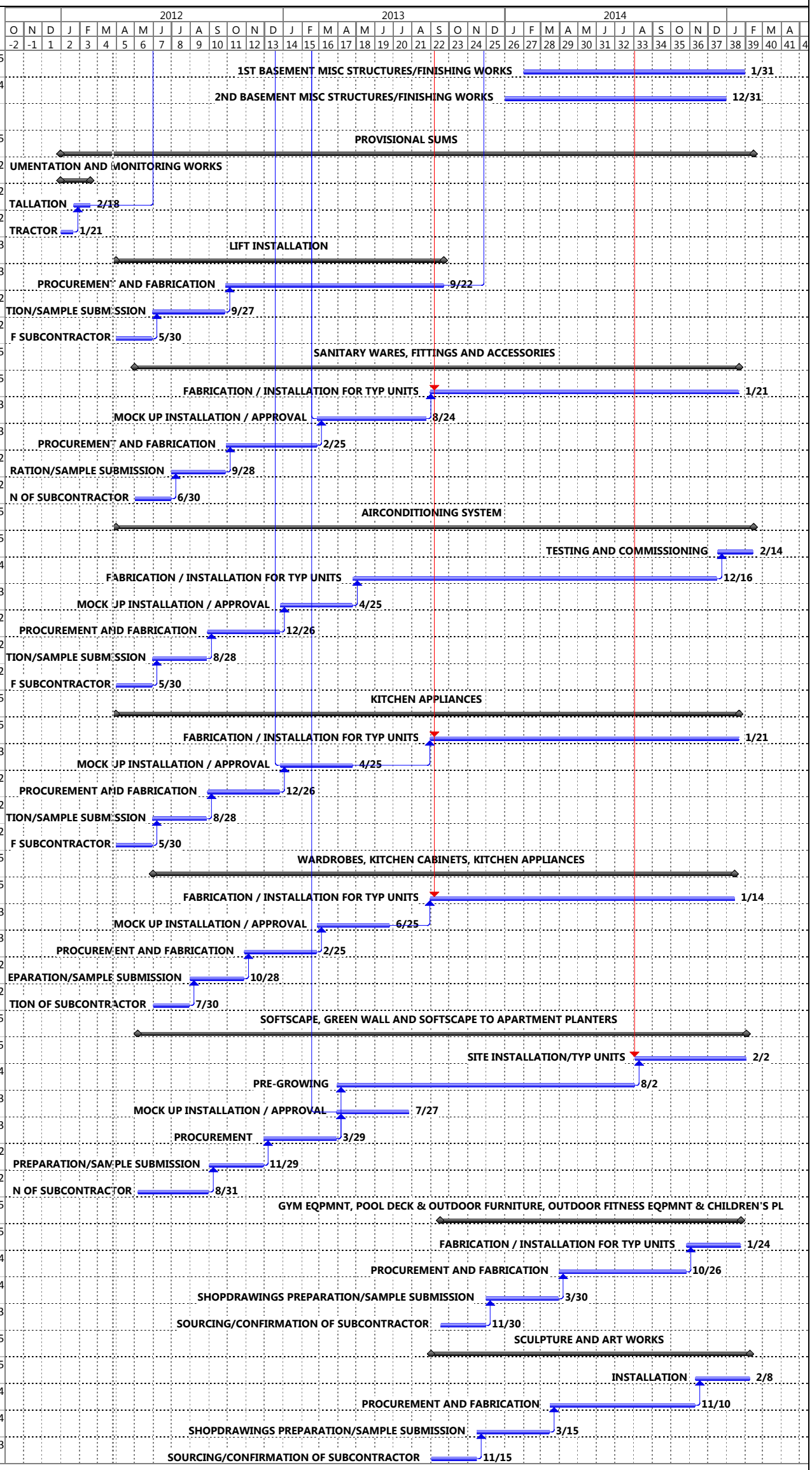
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ID	Task Name	Start	Finish
136	37F	Sat 3/29/14	Tue 4/8/14
137	FINISHING WORKS	Wed 5/7/14	Sat 1/31/15
138	F] FLOOR FINAL FINISHES / TOUCH UP	Sat 1/10/15	Sat 1/31/15
139	E] SANITARY FITTINGS, KITCHEN APPLIANCES, UNIT TESTING, FINAL PAINTING	Sat 12/20/14	Fri 1/9/15
140	D] PAINTING, FLOOR SANDING, DOOR FRAME/ARCHITRAVE, VANITY COUNTER, SHOWER SCREEN, MIRROR, KITCHEN CABINETS,	Sat 11/8/14	Fri 12/19/14
141	C] WALL STONE/TILE, GLAZING, CEILING, FLOOR STONE/TILE, TIMBER FLOOR	Tue 9/9/14	Fri 11/7/14
142	B] WATERPROOFING, AL WINDOWS, PLASTER/BACKING SCREED,SKIM COAT	Fri 7/11/14	Mon 9/8/14
143	A] CURING, BRICKWALL,CEILING SKIM, M&E PIPING, TIMBER DOOR SUBFRAME	Wed 5/7/14	Thu 7/10/14
144	36F	Tue 3/18/14	Fri 3/28/14
145	35F	Fri 3/7/14	Mon 3/17/14
146	34F	Mon 2/24/14	Thu 3/6/14
147	33F	Thu 2/13/14	Sun 2/23/14
148	32F	Sun 2/2/14	Wed 2/12/14
149	31F	Wed 1/22/14	Sat 2/1/14
150	30F	Sat 1/11/14	Tue 1/21/14
151	29F	Tue 12/31/13	Fri 1/10/14
152	28F	Fri 12/13/13	Mon 12/30/13
153	27F	Sun 12/1/13	Thu 12/12/13
154	26F	Tue 11/19/13	Sat 11/30/13
155	25F	Thu 11/7/13	Mon 11/18/13
156	24F	Sat 10/26/13	Wed 11/6/13
157	23F	Mon 10/14/13	Fri 10/25/13
158	LIFT MOTOR ROOM	Mon 10/14/13	Wed 11/27/13
159	22F	Wed 10/2/13	Sun 10/13/13
160	21F	Fri 9/20/13	Tue 10/1/13
161	20F	Sun 9/8/13	Thu 9/19/13
162	19F	Tue 8/27/13	Sat 9/7/13
163	18F	Thu 8/15/13	Mon 8/26/13
164	17F	Sat 8/3/13	Wed 8/14/13
165	16F	Mon 7/22/13	Fri 8/2/13
166	15F	Wed 7/10/13	Sun 7/21/13
167	14F	Wed 6/19/13	Tue 7/9/13
168	13F	Fri 6/7/13	Tue 6/18/13
169	12F	Sun 5/26/13	Thu 6/6/13
170	11F	Tue 5/14/13	Sat 5/25/13
171	10F	Sun 4/28/13	Mon 5/13/13
172	9F	Fri 4/12/13	Sat 4/27/13
173	8F	Wed 3/27/13	Thu 4/11/13
174	7F	Mon 3/11/13	Tue 3/26/13
175	6F	Sat 2/23/13	Sun 3/10/13
176	5F	Thu 2/7/13	Fri 2/22/13
177	4F	Tue 1/22/13	Wed 2/6/13
178	3F	Sun 1/6/13	Mon 1/21/13
179	2F	Wed 12/19/12	Sat 1/5/13
180	FINISHING WORKS	Sun 6/2/13	Sat 4/5/14
181	F] FLOOR FINAL FINISHES / TOUCH UP	Sun 3/9/14	Sat 4/5/14
182	E] SANITARY FITTINGS, KITCHEN APPLIANCES, UNIT TESTING, FINAL PAINTING	Sun 2/9/14	Sat 3/8/14
183	D] PAINTING, FLOOR SANDING, DOOR FRAME/ARCHITRAVE, VANITY COUNTER, SHOWER SCREEN, MIRROR, KITCHEN CABINETS,	Sun 12/29/13	Sat 2/8/14
184	C] WALL STONE/TILE, GLAZING, CEILING, FLOOR STONE/TILE, TIMBER FLOOR	Sun 10/20/13	Sat 12/28/13
185	B] WATERPROOFING, AL WINDOWS, PLASTER/BACKING SCREED,SKIM COAT	Sun 8/11/13	Sat 10/19/13
186	A] CURING, BRICKWALL,CEILING SKIM, M&E PIPING, TIMBER DOOR SUBFRAME	Sun 6/2/13	Sat 8/10/13
187	1F	Wed 11/28/12	Tue 12/18/12
188	BASEMENT 1 SLAB	Sat 9/29/12	Tue 11/27/12
189	PILE CAPS AND BASEMENT 2 SLAB	Tue 7/31/12	Sat 10/13/12
190	EXCAVATION AND SHORING	Fri 6/1/12	Wed 8/29/12
191	BORED PILING AND CBP	Sun 1/15/12	Thu 5/31/12
192	TEST PILE, LOAD TEST AND DESIGN	Fri 12/16/11	Sat 1/14/12
193	MOBILIZATION	Thu 12/1/11	Thu 12/15/11
194			
195	**EXTERNAL AREAS**	Wed 12/19/12	Sat 1/31/15
196	SOFTSCAPE	Tue 8/5/14	Sat 1/31/15
197	HARDSCAPE/WATER FEATURES	Mon 4/7/14	Mon 8/4/14
198	SWIMMING POOL/PLANTERS FINISHES	Wed 11/13/13	Sun 4/6/14
199	1F/E-DECK MISC STRUCTURE	Thu 8/15/13	Tue 11/12/13
200	EXTERNAL DRAINS	Wed 4/17/13	Wed 8/14/13
201	1F / E DECK SLAB / POOLS	Wed 12/19/12	Tue 4/16/13
202			
203	BASEMENT	Wed 1/1/14	Sat 1/31/15



SHIMIZU CORPORATION
BISHAN CONDOMINIUM PROJECT
MASTER SCHEDULE

ID	Task Name	Start	Finish
204	1ST BASEMENT MISC STRUCTURES/FINISHING WORKS	Sat 2/1/14	Sat 1/31/15
205	2ND BASEMENT MISC STRUCTURES/FINISHING WORKS	Wed 1/1/14	Wed 12/31/14
206			
207	**PROVISIONAL SUMS**	Sun 1/1/12	Sat 2/14/15
208	GROUND INSTRUMENTATION AND MONITORING WORKS	Sun 1/1/12	Sat 2/18/12
209	SITE INSTALLATION	Sun 1/22/12	Sat 2/18/12
210	SOURCING/CONFIRMATION OF SUBCONTRACTOR	Sun 1/1/12	Sat 1/21/12
211	LIFT INSTALLATION	Sun 4/1/12	Sun 9/22/13
212	PROCUREMENT AND FABRICATION	Fri 9/28/12	Sun 9/22/13
213	SHOPDRAWINGS PREPARATION/SAMPLE SUBMISSION	Thu 5/31/12	Thu 9/27/12
214	SOURCING/CONFIRMATION OF SUBCONTRACTOR	Sun 4/1/12	Wed 5/30/12
215	SANITARY WARES, FITTINGS AND ACCESSORIES	Wed 5/2/12	Wed 1/21/15
216	FABRICATION / INSTALLATION FOR TYP UNITS	Sat 8/31/13	Wed 1/21/15
217	MOCK UP INSTALLATION / APPROVAL	Tue 2/26/13	Sat 8/24/13
218	PROCUREMENT AND FABRICATION	Sat 9/29/12	Mon 2/25/13
219	SHOPDRAWINGS PREPARATION/SAMPLE SUBMISSION	Sun 7/1/12	Fri 9/28/12
220	SOURCING/CONFIRMATION OF SUBCONTRACTOR	Wed 5/2/12	Sat 6/30/12
221	AIRCONDITIONING SYSTEM	Sun 4/1/12	Sat 2/14/15
222	TESTING AND COMMISSIONING	Wed 12/17/14	Sat 2/14/15
223	FABRICATION / INSTALLATION FOR TYP UNITS	Fri 4/26/13	Tue 12/16/14
224	MOCK UP INSTALLATION / APPROVAL	Thu 12/27/12	Thu 4/25/13
225	PROCUREMENT AND FABRICATION	Wed 8/29/12	Wed 12/26/12
226	SHOPDRAWINGS PREPARATION/SAMPLE SUBMISSION	Thu 5/31/12	Tue 8/28/12
227	SOURCING/CONFIRMATION OF SUBCONTRACTOR	Sun 4/1/12	Wed 5/30/12
228	KITCHEN APPLIANCES	Sun 4/1/12	Wed 1/21/15
229	FABRICATION / INSTALLATION FOR TYP UNITS	Sat 8/31/13	Wed 1/21/15
230	MOCK UP INSTALLATION / APPROVAL	Thu 12/27/12	Thu 4/25/13
231	PROCUREMENT AND FABRICATION	Wed 8/29/12	Wed 12/26/12
232	SHOPDRAWINGS PREPARATION/SAMPLE SUBMISSION	Thu 5/31/12	Tue 8/28/12
233	SOURCING/CONFIRMATION OF SUBCONTRACTOR	Sun 4/1/12	Wed 5/30/12
234	WARDROBES, KITCHEN CABINETS, KITCHEN APPLIANCES	Fri 6/1/12	Wed 1/14/15
235	FABRICATION / INSTALLATION FOR TYP UNITS	Sat 8/31/13	Wed 1/14/15
236	MOCK UP INSTALLATION / APPROVAL	Tue 2/26/13	Tue 6/25/13
237	PROCUREMENT AND FABRICATION	Mon 10/29/12	Mon 2/25/13
238	SHOPDRAWINGS PREPARATION/SAMPLE SUBMISSION	Tue 7/31/12	Sun 10/28/12
239	SOURCING/CONFIRMATION OF SUBCONTRACTOR	Fri 6/1/12	Mon 7/30/12
240	SOFTSCAPE, GREEN WALL AND SOFTSCAPE TO APARTMENT PLANTERS	Mon 5/7/12	Mon 2/2/15
241	SITE INSTALLATION/TYP UNITS	Sun 8/3/14	Mon 2/2/15
242	PRE-GROWING	Sat 3/30/13	Sat 8/2/14
243	MOCK UP INSTALLATION / APPROVAL	Sat 3/30/13	Sat 7/27/13
244	PROCUREMENT	Fri 11/30/12	Fri 3/29/13
245	SHOPDRAWINGS PREPARATION/SAMPLE SUBMISSION	Sat 9/1/12	Thu 11/29/12
246	SOURCING/CONFIRMATION OF SUBCONTRACTOR	Mon 5/7/12	Fri 8/31/12
247	GYM EQPMNT, POOL DECK & OUTDOOR FURNITURE, OUTDOOR FITNESS EQPMNT & CHILDREN'S PLAYGROUND	Tue 9/17/13	Sat 1/24/15
248	FABRICATION / INSTALLATION FOR TYP UNITS	Mon 10/27/14	Sat 1/24/15
249	PROCUREMENT AND FABRICATION	Mon 3/31/14	Sun 10/26/14
250	SHOPDRAWINGS PREPARATION/SAMPLE SUBMISSION	Sun 12/1/13	Sun 3/30/14
251	SOURCING/CONFIRMATION OF SUBCONTRACTOR	Tue 9/17/13	Sat 11/30/13
252	SCULPTURE AND ART WORKS	Mon 9/2/13	Sun 2/8/15
253	INSTALLATION	Tue 11/11/14	Sun 2/8/15
254	PROCUREMENT AND FABRICATION	Sun 3/16/14	Mon 11/10/14
255	SHOPDRAWINGS PREPARATION/SAMPLE SUBMISSION	Sat 11/16/13	Sat 3/15/14
256	SOURCING/CONFIRMATION OF SUBCONTRACTOR	Mon 9/2/13	Fri 11/15/13



SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services - 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)									

SHIMIZU CORPORATION
SKY HABITAT PROJECT
M&E AUTHORITY SUBMISSIONS SUMMARY

- APPROVED

NO	DEPARTMENT	ITEM	ACTION BY	SUBMISSION		ADVICE RECEIVED				TARGET RE-SUBMISSION	ACTUAL RESUBMISSION DATE				APPROVAL			REMARKS
				TARGET	ACTUAL	1ST	2ND	3RD	4TH		1ST	2ND	3RD	4TH	EXPECTED 1ST	EXPECTED 2ND	ACTUAL	
1	PUB	WATER SERVICES	ACE	15-Mar	16-Mar	27-Apr					17-May						11-Jun	
2	TFCC / IDA	MDF	ACE	2-Apr	16-Apr												17-May	
3	POWER GRID	SUB-STATION	ACE	1-May	14-Apr	10-May	20-Jun				4-Jun	19-Jul					6-Aug	
4	FSSD	FIRE PROTECTION	ACE	31-Oct TBA	8-Feb												5-Mar	
5	CBPU	SANITARY	ACE	6-Aug	6-Aug												7-Aug	
6	CITY GAS	GAS SERVICE	ACE	30-Aug	10-Sep					8-Jan-2013	21-Dec						15-Jan	
7	FSSD	AC & MV	ACE	31-Oct 8-Nov	8-Nov												19-Nov	
8	FSSD/BCA	DUCTLESS SYSTEM FOR BASEMENT	SC	31-Jan														In principle approval obtained based on pre-consultation with FSSD on 26-Dec-12. Official submission to FSSD tentatively 6 months before TOP or earlier.
WAIVER																		
1	FSSD	FIRE PROTECTION	ACE		21-May	6-Jun												
2	FSSD	ACMV JET FAN FRESH AIR	ACE		21-May	7-Jun												
3	FSSD	FIRE PROTECTION	ACE		2-Nov	19-Nov												

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) – 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	Lim Chai Hoon
- Lift & Escalator Installation	Lim Chai Hoon
- Air Conditioning & Ventilation Installation	Khor Bee Khoon
- Fire Fighting & Alarm Installation	Khor Bee Khoon
- 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 - NOT USED

Item No.	Description*	Required From	Required By	Date Required	Remarks

** Information required by INTERNAL DESIGN TEAM MEMBERS*

SECTION 6

INTERFACING

6.3 Circulation of Documents to External Parties

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

SECTION 7

WORK AUTHORISATION

Activity \ Authorised Signatories	PD	QP	PM	AE	SS
General Correspondences with Client	✓	✓	✓		
General Correspondences with Other Consultants			✓	✓	
M&E Cost Estimate Report					
M&E Design Report	✓	✓			
Check Prints		✓			
Tender Drawing Approval					
Tender Specification Approval					
List of Tenderers					
Tender Questionnaires					
Tender Reports					
Draft Letter of Award					
Review of Contractor's Shop Drawing			✓	✓	
Review of Contractor's Technical Submittal			✓	✓	
Review of Contractor's Sample Submittal			✓	✓	
Contractor's Request for Deviation					
Progress Payment Valuation Form					
Final Account Valuation					
Draft Variation Order					
Engineer/Architect's Instruction/Direction					
Site Instruction/Direction					
Correspondence/Submission to Authorities		✓			

(✓*where authorised*)

Key to abbreviations:-

PD : Project Director
QP : Qualified Person
PM : Project Manager/Assistant Project Manager
AE : Assistant Engineer
SS : ACEPL Site Staff

SECTION 8

DESIGN INPUT & METHODOLOGY

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

ITEM	KEPT BY

8.2 List of Applicable Code of Practice and Regulations

Services	Title of Code of Practice/Standard
Electrical Wiring	CP 5
Lightning Protection System	SS 555
~~Emergency Voice Communication System~~	-
Air Conditioning & Ventilation Installation	CP 13
Lift & ~~Escalator~~ Installation	SS 550
Sprinkler System	CP 52/Fire Code 2007
Wet Riser System	CP 29/Fire Code 2007
Automatic Fire Alarm System	CP 10/Fire Code 2007
Sanitary System	CP on Sewerage & Sanitary Works
Plumbing System	CP 48
Town Gas/~~LPG Supply System~~	CP 51
~~Boiler and Steam Supply System~~	-
~~Mechanical Smoke Control System~~	-

SECTION 8

DESIGN INPUT & METHODOLOGY

8.3 List of Design Guide or Handbook Used

Carrier's Handbook of Air Conditioning System Design

ASHRAE Handbooks

Institute of Plumbing's Plumbing Services Design Guide

8.4 List of Pre-Consultation and Waiver

S/N	Description	Date of Application	Date of Approval	Remarks
1	Gas pipe running within Fire Fighting Lift Lobby Consultation Ref No. CON/C03645/13 Waiver Ref. No. -	11 Jun 2013	11 Jun 2013	No objection to run gas pipe in pipe jacketing only
2	a) Sanitary installation above dry area of unit below b) Floor trap depth of more than 600 mm Consultation Ref No. - Waiver Ref. No. -	18 Jul 2013	11 Sep 2013	No objection
3	Sanitary pipe running at 1 : 140 gradient Consultation Ref No. - Waiver Ref. No. -	31 Jul 2012	15 Aug 2012	No objection
4	a) Y-Junction connection detail for backdrop at basement 1 carpark b) Discharge from bin centre to be connected to ejector pit at basement 2 Consultation Ref No. - Waiver Ref. No. -	9 May 2013	10 Sep 2013	No objection

*To fill in actual information

8.5 List of Applicable Quality System Procedures

Alpha Consulting Engineers Pte Ltd's Quality Management System Procedures

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

8.6 List of Software Used For Design/Analysis

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

(✓*where applicable*)

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.1 Sustainable Design Features / Criteria

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

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

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

SECTION 9

ENVIRONMENTAL CONSIDERATIONS

9.4 Reporting of Environmental Non-conformances

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

9.5 List of Applicable Environmental management system Procedures

Alpha Consulting Engineers Pte Ltd's Environmental Management System Procedures

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

SECTION 10

CLIENT'S REQUIREMENTS

10.1 List of Output Required by Client:-

Item	* Remarks
M&E Design Report	-
M&E Cost Estimate Report	-
Pre-Qualification of Tenderers	-
Tender Documents	-
Tender Report	-
Payment Valuation for QS	-
Certificates of Supervision for TOP/CSC	Re

** Remarks*

A: for approval *C: for comment* *I: for Information* *Re: for record*

Other purposes and for action: please specify.

10.2 Specific Procedures Required By Client *(If applicable)*

SECTION 11

LIST OF SUB-JOB

11.1 List of Sub-Job Numbers - NOT USED

Sub Job No	Description	Allocation Details