Alpha
Consulting Engineers Pte Ltd

# PROJECT QUALITY PLAN

## REDEVELOPMENT OF ORCHARD EMERALD AT 202/218 ORCHARD ROAD

For

## 218 ORCHARD PRIVATE LIMITED

| Copy No. | 1 |
|---|---|

Prepared By: Loke Yik Mun / Goh Soon Huat

Authorised By: Tan Lai Siong 27/1

Date: 20 January 2011

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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 | 6084-PQP File | 20 January 2011 |
| | | |
| | | |
| | | |
| | | |

## 1.2 Revision Record

| Revision | Date of Issue | Section Reference | Page(s) | Remarks |
|---|---|---|---|---|
| 0 | 12 June 2009 | 1 to 11 | 28 | |
| 1 | 20 January 2011 | 1 to 11 | 28 | +1 pg (Sect 4.1 – Overall Programme) |
| | | | | |
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**SECTION 2**

**PROJECT INFORMATION**

## 2.1 Project Description

| | |
|---|---|
| Type of Development | Retail & Office |

| Statistics of Development | |
|---|---|
| Site Area, m² | 1,444.10 |
| Nett Floor Area, m² | 5,964.99 |
| Gross Floor Area, m² | 9,733.23 + (604.26 for Thoroughfare & Plaza areas) |
| Covered Carpark, m² | Nil. |
| No. of Covered Carpark Lots | 0 |
| 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 | 1 Block of 11 Storey with 2 Basements |
| No. of Phases | 1 |

## 2.2 Project Cost

| M&E Services Cost Plan (S$ x 1K) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Services | EI | ACVI | LEI | FFAI | PSI | SPFI | | | |
| Estimate | 6,500 | 7,300 | 3,600 | 1,500 | 1,400 | 0 | | | |
| Awarded | 5,225 | 3,985 | 1,690 | 960 | 1,200 | - | | | |

| Total Project Construction Cost (S$ x1M) | | | |
|---|---|---|---|
| | Site Clearance | Piling Works | Main Contract |
| Estimate | - | 18 | 90 |
| Awarded | - | Included in Main Contract | 81.88 |

*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

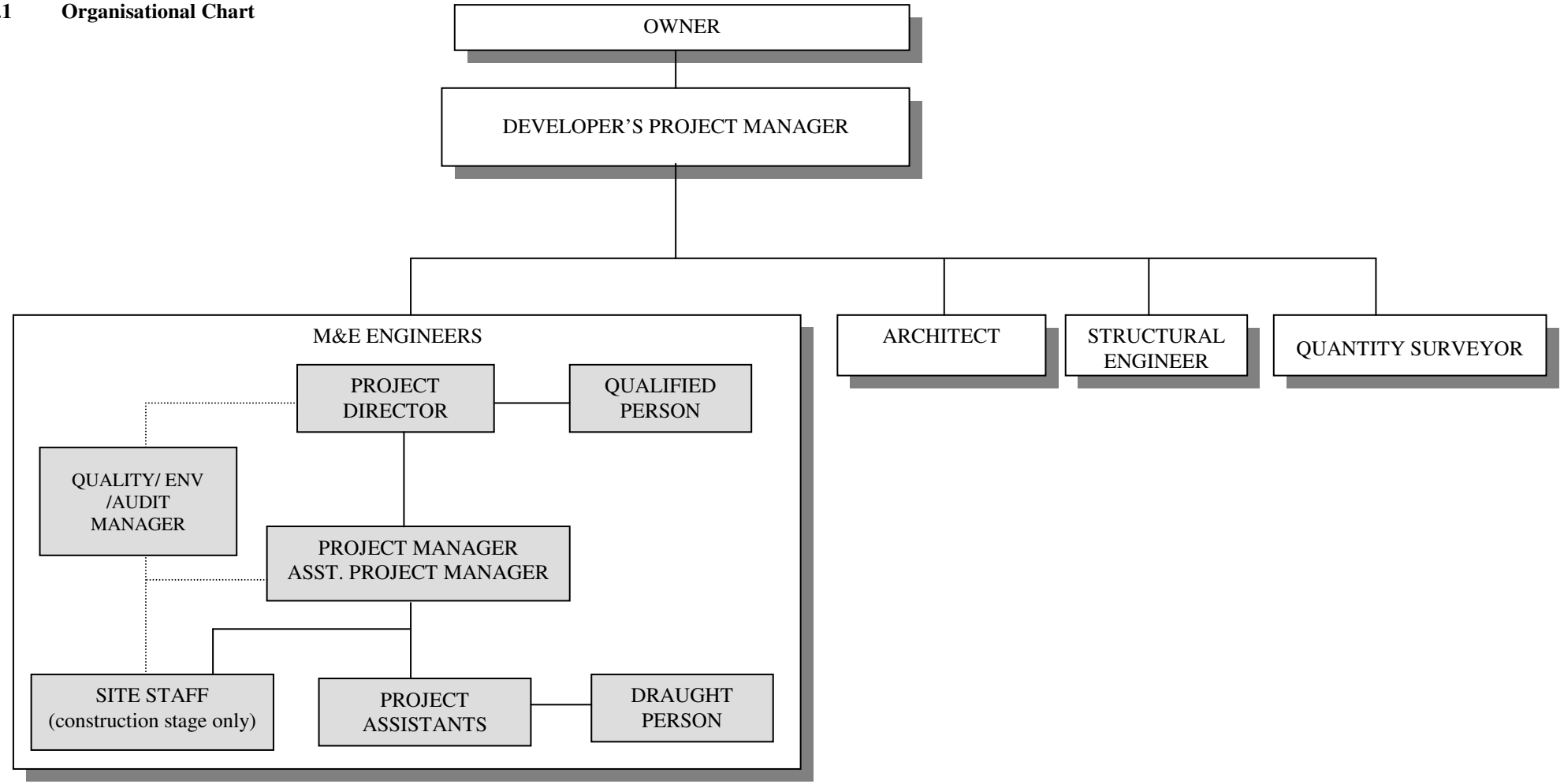
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EJECTOR & DIVERTER | ✓ | SUMP PUMP | | FUEL OIL TANK | | LIFT & ESCALATOR | | PRESSURE VESSEL | | HOISTS | | FOAM | |

(✓*where applicable*)

**SECTION 3**

**ORGANISATION**

**3.1 Organisational Chart**



**SECTION 3**

**ORGANISATION**

### 3.2 ACEPL's Project Team Member

| TITLE | | NAME |
|---|---|---|
| Project Director | | Tan Lai Siong (TLS) |
| Qualified Person | Mechanical | Choong Choon Guan (CCG) |
| | Electrical | Tan Lai Siong (TLS) |
| Project Manager | | Goh Soon Huat (GSH) |
| Assistant Project Manager | | Ms Chong Lai Meng (CLM) |
| Project Assistant (Mech) | | Daryl Choy (DC) |
| Project Assistant (Elect) | | Loke Yik Mun (LYM) |
| Draughtsperson | | Common Pool |
| Resident Engineer (M&E) | | - |
| Assistant Resident Engineer (M&E) | | - |
| Clerk-of-Work (M&E) | | - |

### 3.3 Client/Client's Representatives

Owner:- 218 Orchard Private Limited

Address:- 1 Pickering Street
#16-01 Great Eastern Centre
Singapore 048659

Tel:- 6248 2473

Fax:- 6327 3030

Client's Representatives:-

| Name of Firm | Contact Person | Contact |
|---|---|---|
| 218 Orchard Private Limited | Name : Mr Allan Siow<br>Position: Vice President | Tel: 6248 2473<br>Fax: 6327 3030<br>Handphone: -<br>Email: AllanSiowCA@lifeisgreat.com.sg |
| United Engineers Development Pte Ltd | Name: Mr Samuel Tai<br>Position: Project Director | Tel: 6833 2891<br>Fax: 6732 1677<br>Handphone: 9002 2315<br>Email: samueltai@uesq.uel.com.sg |
| United Engineers Development Pte Ltd | Name: Ms Catherine Chang<br>Position: Vice President (Singapore Project) | Tel: 6833 2891<br>Fax: 6732 1677<br>Handphone: -<br>Email: catherinechang@ued-bts.ueltd.sg |

### 3.4 **Other Consultants** (Local)

| Function / Name of Firm | Contact Person | Contact |
|---|---|---|
| Architect<br>AWP Pte Ltd | Name: Mr Wong Meng Lin<br>Position: Director | Tel: 6337 6777<br>Fax: 6339 6956<br>Email: wml@awp.com.sg<br>Project email :<br>awp060202@awp.com.sg |
| Quantity Surveyor<br>KPK Quantity Surveyors (Singapore) Pte Ltd | Name: Ms Hyacinth Tan<br>Position: Project Director | Tel: 6536 3303<br>Fax: 6263 2633<br>Handphone: 98172082<br>Email : hyacinth@kpkqs.com.sg<br>Project email:<br>1495_schp@kpkqs.com.sg |
| Structural Engineer<br>Meinhardt (Singapore) Pte Ltd | Name: Mr Alan Teo<br>Position : Division Manager | Tel: 6273 5255<br>Fax: 6274 0788<br>Handphone: 9816 3819<br>Email: alteo@meinhardt.com.sg<br>Project e-mail :<br>mscs078008@meinhardt.com.sg |
| Facade Consultant<br>Meinhardt Façade Technology (S) Pte Ltd | Name: Mr. Johnson Wang<br>Position: Senior Façade Consultant | Tel: 6376 3715<br>Fax: 6736 1542<br>Handphone: 9879 3199<br>Email: johnson@meinhardt.com.sg<br>Website: http://www.mfacade.com |
| Landscape Architect | Name:<br>Position: | Tel:<br>Fax:<br>Handphone: -<br>Email: |
| Lighting Consultant<br>Tokyo Shomei Consultant | Name: Ms Susan Yee<br>Position: Project Director | Tel: 6830 8446<br>Fax: 6234 3706<br>Handphone: 9625 2666<br>Email: susan.yee@tokyo-shomei.com |
| Acoustic Consultant<br>CCW Associates Pte Ltd | Name: Mr Cheah Beng Kin<br>Position: Director | Tel: 6278 4918<br>Fax: 6275 7206<br>Handphone: 9818 2289<br>Email: ccw@ccw.com.sg |
| Retail Consultant<br>Savills Residential Pte Ltd | Name: Ms Sulian Tan-Wijaya<br>Position: Senior Director | Tel: 6836 6888<br>Fax: 6836 2668<br>Handphone: -<br>Email: stwijaya@savills.com.sg |
| Green Mark Consultant<br>G-Energy Global Pte Ltd | Name: Mr Leo Cher<br>Position: ESD Engineer | Tel: 6749 6396<br>Fax: 6749 6398<br>Handphone: 9431 8407<br>Email: leocher@genergy.com.sg |

### 3.4 **Other Consultants** (Overseas)

| Function / Name of Company | Contact Person | Contact |
|---|---|---|
| Architect<br>Tange Associates | Name: Mr Phillipe Iliffe-Moon<br>Position: Associate Director | Tel: 6732 1729<br>Fax: 6737 1992<br>Handphone:<br>Email: iliffe-moon@tangeassociates.com<br>Project Email: sin_ocbc@tangeweb.com |
| M&E Consultant | Name:<br>Position: | Tel:<br>Fax:<br>Handphone:<br>Email: |
| Quantity Surveyor | Name:<br>Position: | Tel:<br>Fax:<br>Handphone:<br>Email: |
| Structural Engineer | Name:<br>Position: | Tel:<br>Fax:<br>Handphone:<br>Email: |
| Interior Designer<br>Tange Associates | Name: Mr Phillipe Iliffe-Moon<br>Position: Associate Director | Tel: 6732 1729<br>Fax: 6737 1992<br>Handphone:<br>Email: iliffe-moon@tangeassociates.com<br>Project Email: sin_ocbc@tangeweb.com |
| Lighting Consultant<br>Tokyo Shomei Consultant | Name: Ms K Nakamura<br>Position: Consultant | Tel: +81-3-3251-2030<br>Fax: +81-2-3254-1632<br>Handphone: -<br>Email: kazue@tokyo-shomei.com |
| Acoustic Consultant | Name:<br>Position: | Tel:<br>Fax:<br>Handphone:<br>Email: |
| _____ | Name:<br>Position: | Tel:<br>Fax:<br>Handphone:<br>Email: |

### 3.5 Contractors/Sub-Contractors –

| Function / Name of Firm | Contract * | Contact Person | Contact |
|---|---|---|---|
| Main Contractor<br>Hyundai Engineering & Construction Co Ltd | DC | Name: Mr E S Park<br>Position: Director | Tel: 6337 1577<br>Fax: 6338 6755<br>Handphone:<br>Email: spec@hdec.co.kr |
| Air Conditioning & Ventilation Installation Sub-Contractor<br>United Engineers (Singapore) Pte Ltd | NSC | Name: Mr Eric Kan<br>Position: Project Manager | Tel: 6818 8788<br>Fax: 6818 8787<br>Handphone: 9299 0944<br>Email:erickan@ueec.sg |
| Plumbing & Sanitary Installation Sub-Contractor<br>Magnificent Seven Corporation Pte Ltd | NSC | Name: Mr Tay Gek Seng<br>Position: Executive Project Manager | Tel: 6454 2388<br>Fax: 6455 3222<br>Handphone: 8161 1213<br>Email: gs-tay@mseven.com.sg |
| Electrical Installation Sub-Contractor<br>United Engineers (Singapore) Pte Ltd | NSC | Name: Mr Derrick Sng<br>Position: Project Manager | Tel: 6818 8788<br>Fax: 6818 8787<br>Handphone: 9694 4064<br>Email: soonpeng@ues.com.sg |
| Lift & Escalator Installation Sub-Contractor<br>Fujitec Singapore Corporation Ltd | NSC | Name: Mr Anthony Lim Moh Leong<br>Position: Senior Project Manager | Tel: 6241 6222<br>Fax: 6444 7626<br>Handphone: 9239 0222<br>Email: anthonylim@fujitecsg.com |
| Fire Fighting & Alarm Installation Sub-Contractor<br>United Engineers (Singapore) Pte Ltd | NSC | Name: Mr Alan Lai<br>Position: Senior Engineer | Tel: 6818 8788<br>Fax: 6818 8787<br>Handphone: 9618 9404<br>Email: alanlai@ues.com.sg |
| Swimming Pool Filtration Plant Installation Sub-Contractor | | Name:<br>Position: | Tel:<br>Fax:<br>Handphone:<br>Email: |
| _____ | | Name:<br>Position: | Tel:<br>Fax:<br>Handphone:<br>Email: |

** Type of Contract*

- *NSC (Nominated Sub-Contract)*
- *DSC (Domesticated Sub-Contract)*
- *D&B DSC (Design & Build Domesticated Sub-Contract)*
- *DC (Direct Contract)*
- *NS (Nominated Supplier)*

### 3.6 Authorities

| Authorities/Department | Contact Person | Tel/Fax Nos./E-mail |
|---|---|---|
| SP PowerGrid: | | |
| (a) Sub-Station | Mr Chin Yoke Fah | 6823 8556 |
| (b) Diversion | Mr Ho Jin Cheng | hojc@singaporepower.com.sg |
| SP Services: | | |
| (a) Customer Supply | Mr Chen Wee Yuan | chenwy@singaporepower.com.sg |
| (b) Installation | | |
| (c) Meter Section | | |
| (d) Road Lighting | | |
| TFCC: | | |
| (a) SCV | | |
| (b) SingTel | | |
| (c) IDA | Mr Mohd Adam | 6825 6196 / 6211 2116 |
| BCA: | | |
| (a) Building Plan | | |
| FSSD: | | |
| (a) Building Plan | Mr Cheong Yew Dong | |
| (b) M&E Plan | | |
| PUB (Water Supply) Network Dept: | | |
| (a) Water Conservation | Ms Cheng Kia Yin | cheng_kia_yin@pub.gov.sg |
| (b) Plumbing Plan | | |
| (c) Diversion | | |
| PUB Water Reclamation (Network) Dept: | | |
| (a) Building Plan/CBPU | | |
| (b) M&E Plan | | |
| (c) Diversion | | |
| City Gas Pte Ltd: | | |
| (a) Planning/Submission | Mr Liew Khee Boon | 6578 7603 |
| (b) Installation/Inspection | | |
| PowerGas Pte Ltd | | |
| (a) Diversion | | |
| NEA (Pollution Control) | | |
| (a) Planning/Submission | | |
| (b) Inspection | | |

**SECTION 4**

**PROGRAMME**

### 4.1 Overall Programme (Refer to attached)

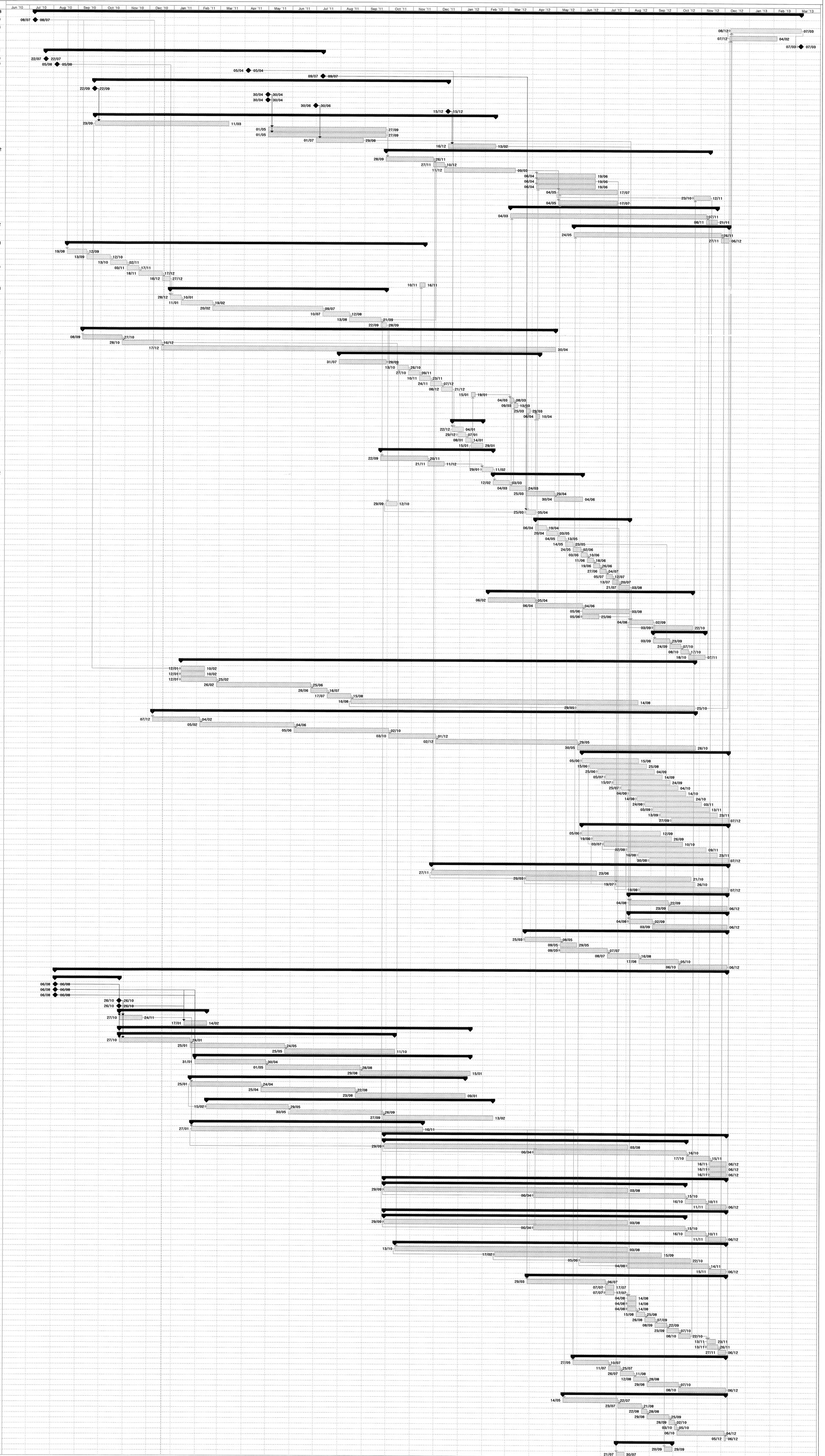
| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ID | TASK NAME | MONTHS | J | F | M | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D |
| 1. | Preliminary 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 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |

ORCHARD EMERALD
HYUNDAI ENGINEERING & CONSTRUCTION CO., LTD.

# MASTER PROGRAMME FOR ORCHARD EMERALD **(Rev. 0)**

20th December 2010

| ID | ACTIVITY | DURATION | START | FINISH |
|---|---|---|---|---|
| 1 | **Milestone** | **973 d** | **Thu 08/07/10** | **Thu 07/03/13** |
| 2 | Project Commencement | 1 d | Thu 08/07/10 | Thu 08/07/10 |
| 3 | TOP | 90 d | Sat 08/12/12 | Thu 07/03/13 |
| 4 | RI Inspection | 60 d | Fri 07/12/12 | Mon 04/02/13 |
| 5 | Project Completion | 1 d | Thu 07/03/13 | Thu 07/03/13 |
| 6 | **C&S Const. Drawing Issuance** | **352 d** | **Thu 22/07/10** | **Sat 09/07/11** |
| 7 | Preliminary Structural Framing Plans | 1 d | Thu 22/07/10 | Thu 22/07/10 |
| 8 | Piling and Diaphragm Wall Plans and Details | 1 d | Thu 05/08/10 | Thu 05/08/10 |
| 9 | Substructure | 1 d | Tue 05/04/11 | Tue 05/04/11 |
| 10 | Superstructure | 1 d | Sat 09/07/11 | Sat 09/07/11 |
| 11 | **NSC Selection (Arch)** | **450 d** | **Wed 22/09/10** | **Thu 15/12/11** |
| 12 | Al. Curtainwall | 1 d | Wed 22/09/10 | Wed 22/09/10 |
| 13 | Stone Work for Retail and Office | 1 d | Sat 30/04/11 | Sat 30/04/11 |
| 14 | ID Works | 1 d | Sat 30/04/11 | Sat 30/04/11 |
| 15 | Exernal Works | 1 d | Thu 30/06/11 | Thu 30/06/11 |
| 16 | Landscaping | 1 d | Thu 15/12/11 | Thu 15/12/11 |
| 17 | **Shop Drawing Submission (Arch)** | **509 d** | **Thu 23/09/10** | **Mon 13/02/12** |
| 18 | Al. Curtainwall | 170 d | Thu 23/09/10 | Fri 11/03/11 |
| 19 | Stone Work for Retail and Office | 150 d | Sun 01/05/11 | Tue 27/09/11 |
| 20 | ID Works | 150 d | Sun 01/05/11 | Tue 27/09/11 |
| 21 | Exernal Works | 60 d | Fri 01/07/11 | Mon 29/08/11 |
| 22 | Landscaping | 60 d | Fri 16/12/11 | Mon 13/02/12 |
| 23 | **Mock Up Units** | **412 d** | **Wed 28/09/11** | **Mon 12/11/12** |
| 24 | Material Selection | 60 d | Wed 28/09/11 | Sat 26/11/11 |
| 25 | Material Order | 14 d | Sun 27/11/11 | Sat 10/12/11 |
| 26 | Material Delivery | 90 d | Sun 11/12/11 | Fri 09/03/12 |
| 27 | Main Entrance Lobby Finishes | 75 d | Fri 06/04/12 | Tue 19/06/12 |
| 28 | Typical Corridor & Typical Lift Lobby | 75 d | Fri 06/04/12 | Tue 19/06/12 |
| 29 | Typical Public Toilets Fixtures and Finishes | 75 d | Fri 06/04/12 | Tue 19/06/12 |
| 30 | Typical Retail Circulation Corridor Floor/Retail/Ceiling | 75 d | Fri 04/05/12 | Tue 17/07/12 |
| 31 | Typical Retail Lift Car Interior | 21 d | Tue 23/10/12 | Mon 12/11/12 |
| 32 | Typical Office Floor (Half of Floor) | 75 d | Fri 04/05/12 | Tue 17/07/12 |
| 33 | **Tower Crane Operation** | **263 d** | **Sun 04/03/12** | **Wed 21/11/12** |
| 34 | Installation and operation | 249 d | Sun 04/03/12 | Wed 07/11/12 |
| 35 | Dismantling | 14 d | Thu 08/11/12 | Wed 21/11/12 |
| 36 | **Material/Passenger Hoist Operation** | **197 d** | **Thu 24/05/12** | **Thu 06/12/12** |
| 37 | Installation and operation | 187 d | Thu 24/05/12 | Mon 26/11/12 |
| 38 | Dismantling | 10 d | Tue 27/11/12 | Thu 06/12/12 |
| 39 | **Demolition** | **455 d** | **Thu 19/08/10** | **Wed 16/11/11** |
| 40 | Subcon Selection | 25 d | Thu 19/08/10 | Sun 12/09/10 |
| 41 | BCA Approval | 30 d | Mon 13/09/10 | Tue 12/10/10 |
| 42 | Racker & Waler Installation | 21 d | Wed 13/10/10 | Tue 02/11/10 |
| 43 | Demolition of Ground Slab | 15 d | Wed 03/11/10 | Wed 17/11/10 |
| 44 | Punching of Basement Slab & Pile Cap | 30 d | Thu 18/11/10 | Fri 17/12/10 |
| 45 | Backfill | 10 d | Sat 18/12/10 | Mon 27/12/10 |
| 46 | Demolition of Basement Slab and Pilecap | 7 d | Thu 10/11/11 | Wed 16/11/11 |
| 47 | **Diaphragm Wall and Bored Piling** | **275 d** | **Tue 28/12/10** | **Wed 28/09/11** |
| 48 | Mobilization | 14 d | Tue 28/12/10 | Mon 10/01/11 |
| 49 | Ultimate Pile Load Test | 40 d | Tue 11/01/11 | Sat 19/02/11 |
| 50 | Diaphragm Wall | 140 d | Sun 20/02/11 | Sat 09/07/11 |
| 51 | Bored Piling | 34 d | Sun 10/07/11 | Fri 12/08/11 |
| 52 | Test Pile | 40 d | Sat 13/08/11 | Wed 21/09/11 |
| 53 | Demobilization | 7 d | Thu 22/09/11 | Wed 28/09/11 |
| 54 | **ERSS** | **601 d** | **Wed 08/09/10** | **Mon 30/04/12** |
| 55 | ERSS Preparation | 50 d | Wed 08/09/10 | Wed 27/10/10 |
| 56 | Getting approval of Authorities(LTA/BCA) | 50 d | Thu 28/10/10 | Thu 16/12/10 |
| 57 | Monitoring | 501 d | Fri 17/12/10 | Mon 30/04/12 |
| 58 | **Earth Works & Temp. Strutting** | **255 d** | **Sun 31/07/11** | **Tue 10/04/12** |
| 59 | Drawing Development | 60 d | Sun 31/07/11 | Wed 28/09/11 |
| 60 | Excavation and Installation of 1st Strutting | 14 d | Thu 13/10/11 | Wed 26/10/11 |
| 61 | Excavation and Installation of 2nd Strutting | 14 d | Thu 27/10/11 | Wed 09/11/11 |
| 62 | Excavation and Installation of 3rd Strutting | 14 d | Thu 10/11/11 | Wed 23/11/11 |
| 63 | Excavation and Installation of 4th Strutting | 14 d | Thu 24/11/11 | Wed 07/12/11 |
| 64 | Excavation and Installation of 5th Strutting | 14 d | Thu 08/12/11 | Wed 21/12/11 |
| 65 | Removal of 5th Strutting | 5 d | Sun 15/01/12 | Thu 19/01/12 |
| 66 | Removal of 4th Strutting | 5 d | Sun 04/03/12 | Thu 08/03/12 |
| 67 | Removal of 3rd Strutting | 5 d | Fri 09/03/12 | Tue 13/03/12 |
| 68 | Removal of 2nd Strutting | 5 d | Sun 25/03/12 | Thu 29/03/12 |
| 69 | Removal of 1st Strutting | 5 d | Fri 06/04/12 | Tue 10/04/12 |
| 70 | **Pile Cap** | **39 d** | **Thu 22/12/11** | **Sun 29/01/12** |
| 71 | Pile Head Cutting | 14 d | Thu 22/12/11 | Wed 04/01/12 |
| 72 | Elev. Pit Slab (Lower B2 Level) | 10 d | Thu 29/12/11 | Sat 07/01/12 |
| 73 | Elev. Pit Wall (Lower B2 Level) | 7 d | Sun 08/01/12 | Sat 14/01/12 |
| 74 | Pile Caps | 15 d | Sun 15/01/12 | Sun 29/01/12 |
| 75 | **Waterproofing** | **143 d** | **Thu 22/09/11** | **Sat 11/02/12** |
| 76 | Sub Contractor Selection | 60 d | Thu 22/09/11 | Sun 20/11/11 |
| 77 | Material Approval | 21 d | Mon 21/11/11 | Sun 11/12/11 |
| 78 | Waterproofing | 14 d | Sun 29/01/12 | Sat 11/02/12 |
| 79 | **Sub Structure** | **114 d** | **Sun 12/02/12** | **Mon 04/06/12** |
| 80 | B2 Floor | 21 d | Sun 12/02/12 | Sat 03/03/12 |
| 81 | B1 Floor | 21 d | Sun 04/03/12 | Sat 24/03/12 |
| 82 | B2 Skin Wall | 36 d | Sun 25/03/12 | Sun 29/04/12 |
| 83 | B1 Skin Wall | 36 d | Mon 30/04/12 | Mon 04/06/12 |
| 84 | Capping Beam | 14 d | Thu 29/09/11 | Wed 12/10/11 |
| 85 | **1st Floor** | 12 d | Sun 25/03/12 | Thu 05/04/12 |
| 86 | **Super Structure** | **120 d** | **Fri 06/04/12** | **Fri 03/08/12** |
| 87 | 2nd Floor | 14 d | Fri 06/04/12 | Thu 19/04/12 |
| 88 | 3rd Floor | 14 d | Fri 20/04/12 | Thu 03/05/12 |
| 89 | 4th Floor | 10 d | Fri 04/05/12 | Sun 13/05/12 |
| 90 | 5th Floor | 10 d | Mon 14/05/12 | Wed 23/05/12 |
| 91 | 6th Floor | 10 d | Thu 24/05/12 | Sat 02/06/12 |
| 92 | 7th Floor | 8 d | Sun 03/06/12 | Sun 10/06/12 |
| 93 | 8th Floor | 8 d | Mon 11/06/12 | Mon 18/06/12 |
| 94 | 9th Floor | 8 d | Tue 19/06/12 | Tue 26/06/12 |
| 95 | 10th Floor | 8 d | Wed 27/06/12 | Wed 04/07/12 |
| 96 | 11th Floor | 8 d | Thu 05/07/12 | Thu 12/07/12 |
| 97 | Roof Floor | 8 d | Fri 13/07/12 | Fri 20/07/12 |
| 98 | Lift Mortor Room Roof | 14 d | Sat 21/07/12 | Fri 03/08/12 |
| 99 | **Roof Steel Structure** | **260 d** | **Mon 06/02/12** | **Mon 22/10/12** |
| 100 | Sub Contractor Selection | 60 d | Mon 06/02/12 | Thu 05/04/12 |
| 101 | Shop Drawing Development & Approval | 60 d | Fri 06/04/12 | Mon 04/06/12 |
| 102 | Structural Steel Fabrication | 60 d | Tue 05/06/12 | Fri 03/08/12 |
| 103 | Scaffolding Erection | 21 d | Tue 05/06/12 | Mon 25/06/12 |
| 104 | Structural Steel Erection | 30 d | Sat 04/08/12 | Sun 02/09/12 |
| 105 | Cladding | 50 d | Mon 03/09/12 | Mon 22/10/12 |
| 106 | **Roof Finish** | **66 d** | **Mon 03/09/12** | **Wed 07/11/12** |
| 107 | Waterproofing | 21 d | Mon 03/09/12 | Sun 23/09/12 |
| 108 | Water Tightness Test | 14 d | Mon 24/09/12 | Sun 07/10/12 |
| 109 | Screeding | 10 d | Mon 08/10/12 | Wed 17/10/12 |
| 110 | Finishing | 21 d | Thu 18/10/12 | Wed 07/11/12 |
| 111 | **Al. Curtain Wall** | **653 d** | **Wed 12/01/11** | **Thu 25/10/12** |
| 112 | Module Confirmation | 30 d | Wed 12/01/11 | Thu 10/02/11 |
| 113 | Cast-in Bracket Design and Layout | 30 d | Wed 12/01/11 | Thu 10/02/11 |
| 114 | Sample Submission | 45 d | Wed 12/01/11 | Fri 25/02/11 |
| 115 | Visual Mock Up | 120 d | Sat 26/02/11 | Sat 25/06/11 |
| 116 | Performance Prototype Test | 21 d | Sun 26/06/11 | Sat 16/07/11 |
| 117 | BCA Submission & Approval | 30 d | Sun 17/07/11 | Mon 15/08/11 |
| 118 | Fabrication | 365 d | Tue 16/08/11 | Tue 14/08/12 |
| 119 | Installation | 150 d | Tue 29/05/12 | Thu 25/10/12 |
| 120 | **BMU** | **690 d** | **Tue 07/12/10** | **Fri 26/10/12** |
| 121 | Subcon Selection | 60 d | Tue 07/12/10 | Fri 04/02/11 |
| 122 | Shop Drawing Development & Approval | 120 d | Sat 05/02/11 | Sat 04/06/11 |
| 123 | Manufacturing | 120 d | Sun 05/06/11 | Sun 02/10/11 |
| 124 | Delivery | 60 d | Mon 03/10/11 | Thu 01/12/11 |
| 125 | Embedment Installation | 180 d | Fri 02/12/11 | Tue 29/05/12 |
| 126 | Installaion | 150 d | Wed 30/05/12 | Fri 26/10/12 |
| 127 | **Finishing Works(Office)** | **186 d** | **Tue 05/06/12** | **Fri 07/12/12** |
| 128 | Wall Partition | 72 d | Tue 05/06/12 | Wed 15/08/12 |
| 129 | Door Sub-Frame | 72 d | Fri 15/06/12 | Sat 25/08/12 |
| 130 | Wall Plastering | 72 d | Mon 25/06/12 | Tue 04/09/12 |
| 131 | Waterproofing/Water Ponding Test | 72 d | Thu 05/07/12 | Fri 14/09/12 |
| 132 | Wall Tile | 72 d | Sun 15/07/12 | Mon 24/09/12 |
| 133 | Ceiling Works | 72 d | Wed 25/07/12 | Thu 04/10/12 |
| 134 | Raised Floor | 72 d | Sat 04/08/12 | Sun 14/10/12 |
| 135 | Floor Tile | 72 d | Tue 14/08/12 | Wed 24/10/12 |
| 136 | Paint (Primer & 1st Coat) | 72 d | Fri 24/08/12 | Sat 03/11/12 |
| 137 | Door Frame | 72 d | Mon 03/09/12 | Tue 13/11/12 |
| 138 | Door Leaf | 72 d | Thu 13/09/12 | Fri 23/11/12 |
| 139 | Paint (Final Coating) | 72 d | Thu 27/09/12 | Fri 07/12/12 |
| 140 | **Lift Lobby & Retail** | **186 d** | **Tue 05/06/12** | **Fri 07/12/12** |
| 141 | Wall Partition | 100 d | Tue 05/06/12 | Wed 12/09/12 |
| 142 | Door Frame | 100 d | Tue 19/06/12 | Wed 26/09/12 |
| 143 | Plastering & Screed | 100 d | Tue 03/07/12 | Wed 10/10/12 |
| 144 | Suspended Ceiling | 100 d | Thu 02/08/12 | Fri 09/11/12 |
| 145 | Misc. Metal Works | 100 d | Thu 16/08/12 | Fri 23/11/12 |
| 146 | Paint & Coating | 100 d | Thu 30/08/12 | Fri 07/12/12 |
| 147 | **Lift Lobby & Retail (Stone Work)** | **377 d** | **Sun 27/11/11** | **Fri 07/12/12** |
| 148 | Block Production/Fabrication | 210 d | Sun 27/11/11 | Sat 23/06/12 |
| 149 | Material Delivery | 210 d | Mon 26/03/12 | Sun 21/10/12 |
| 150 | Wall Stone Installation | 100 d | Thu 19/07/12 | Fri 26/10/12 |
| 151 | Floor Stone Installation | 112 d | Sat 18/08/12 | Fri 07/12/12 |
| 152 | **External Works** | **125 d** | **Sat 04/08/12** | **Thu 06/12/12** |
| 153 | Drainage Works | 50 d | Sat 04/08/12 | Sat 22/09/12 |
| 154 | Paving Works (Plaza & Peranakan Place) | 75 d | Sun 23/09/12 | Thu 06/12/12 |
| 155 | **Landscaping** | **125 d** | **Sat 04/08/12** | **Thu 06/12/12** |
| 156 | Soil Filling | 30 d | Sat 04/08/12 | Sun 02/09/12 |
| 157 | Installation | 95 d | Mon 03/09/12 | Thu 06/12/12 |
| 158 | **Conservation House** | **257 d** | **Sun 25/03/12** | **Thu 06/12/12** |
| 159 | Subcontractor Selection | 45 d | Sun 25/03/12 | Tue 08/05/12 |
| 160 | Structural Investigation | 21 d | Wed 09/05/12 | Tue 29/05/12 |
| 161 | Shop Drawing Development & Approval | 60 d | Wed 09/05/12 | Sat 07/07/12 |
| 162 | Structural Works | 40 d | Sun 08/07/12 | Thu 16/08/12 |
| 163 | M&E Works | 50 d | Fri 17/08/12 | Fri 05/10/12 |
| 164 | Interior Finishes & External Works | 62 d | Sat 06/10/12 | Thu 06/12/12 |
| 165 | **M&E Installation** | **853 d** | **Fri 06/08/10** | **Thu 06/12/12** |
| 166 | **NSC Selection** | **81 d** | **Fri 06/08/10** | **Tue 26/10/10** |
| 167 | Plumbing, Sanitary, Gas | 1 d | Fri 06/08/10 | Fri 06/08/10 |
| 168 | Fire Fighting | 1 d | Fri 06/08/10 | Fri 06/08/10 |
| 169 | ACMV | 1 d | Fri 06/08/10 | Fri 06/08/10 |
| 170 | Electric | 1 d | Tue 26/10/10 | Tue 26/10/10 |
| 171 | Lift | 1 d | Tue 26/10/10 | Tue 26/10/10 |
| 172 | **Mobilization** | **111 d** | **Wed 27/10/10** | **Mon 14/02/11** |
| 173 | Plumbing,sanitary,gas,Electric | 29 d | Wed 27/10/10 | Wed 24/11/10 |
| 174 | Fire fighting, ACMV,Lift | 29 d | Mon 17/01/11 | Mon 14/02/11 |
| 175 | **Shop drawing Submission** | **446 d** | **Wed 27/10/10** | **Sun 15/01/12** |
| 176 | **Plumbing,sanitary,gas,Electric** | **350 d** | **Wed 27/10/10** | **Tue 11/10/11** |
| 177 | Underground~B1F | 90 d | Wed 27/10/10 | Mon 24/01/11 |
| 178 | 1F~4F | 120 d | Tue 25/01/11 | Tue 24/05/11 |
| 179 | 5F~Roof | 140 d | Wed 25/05/11 | Tue 11/10/11 |
| 180 | **Fire fighting, ACMV,Lift** | **350 d** | **Mon 31/01/11** | **Sun 15/01/12** |
| 181 | B2F~B1F | 90 d | Mon 31/01/11 | Sat 30/04/11 |
| 182 | 1F~4F | 120 d | Sun 01/05/11 | Sun 28/08/11 |
| 183 | 5F~Roof | 140 d | Mon 29/08/11 | Sun 15/01/12 |
| 184 | **CSD Submission** | **350 d** | **Tue 25/01/11** | **Mon 09/01/12** |
| 185 | Underground~B1F | 90 d | Tue 25/01/11 | Sun 24/04/11 |
| 186 | 1F~4F | 120 d | Mon 25/04/11 | Mon 22/08/11 |
| 187 | 5F~Roof | 140 d | Tue 23/08/11 | Mon 09/01/12 |
| 188 | **CSD Approval from consultant** | **364 d** | **Tue 15/02/11** | **Mon 13/02/12** |
| 189 | Underground~B1F | 104 d | Tue 15/02/11 | Sun 29/05/11 |
| 190 | 1F~4F | 120 d | Mon 30/05/11 | Mon 26/09/11 |
| 191 | 5F~Roof | 140 d | Tue 27/09/11 | Mon 13/02/12 |
| 192 | **RAM** | **294 d** | **Thu 27/01/11** | **Wed 16/11/11** |
| 193 | All M&E Service | 294 d | Thu 27/01/11 | Wed 16/11/11 |
| 194 | **Plumbing, Sanitary, Gas** | **435 d** | **Thu 29/09/11** | **Thu 06/12/12** |
| 195 | **Installation work** | **384 d** | **Thu 29/09/11** | **Tue 16/10/12** |
| 196 | sleeve installation | 310 d | Thu 29/09/11 | Fri 03/08/12 |
| 197 | Piping equipment and sanitary ware installation. | 194 d | Fri 06/04/12 | Tue 16/10/12 |
| 198 | Test & Commissioning. | 30 d | Wed 17/10/12 | Thu 15/11/12 |
| 199 | Sanitary Clearance | 21 d | Fri 16/11/12 | Thu 06/12/12 |
| 200 | Water Turn-on | 21 d | Fri 16/11/12 | Thu 06/12/12 |
| 201 | Gas Turn-on | 21 d | Fri 16/11/12 | Thu 06/12/12 |
| 202 | **Fire Fighting** | **435 d** | **Thu 29/09/11** | **Thu 06/12/12** |
| 203 | **Installation work** | **383 d** | **Thu 29/09/11** | **Mon 15/10/12** |
| 204 | Sleeve installation | 310 d | Thu 29/09/11 | Fri 03/08/12 |
| 205 | Piping equipment and finishing acc'y installation. | 193 d | Fri 06/04/12 | Mon 15/10/12 |
| 206 | Test & Commissioning. | 26 d | Tue 16/10/12 | Sat 10/11/12 |
| 207 | Combine Test | 26 d | Sun 11/11/12 | Thu 06/12/12 |
| 208 | **ACMV** | **435 d** | **Thu 29/09/11** | **Thu 06/12/12** |
| 209 | **Installation work** | **383 d** | **Thu 29/09/11** | **Mon 15/10/12** |
| 210 | Sleeve installation | 310 d | Thu 29/09/11 | Fri 03/08/12 |
| 211 | Piping,ducting, equipment and duct acc'y installation. | 193 d | Fri 06/04/12 | Mon 15/10/12 |
| 212 | Test & Commissioning. | 26 d | Tue 16/10/12 | Sat 10/11/12 |
| 213 | Combine Test | 26 d | Sun 11/11/12 | Thu 06/12/12 |
| 214 | **Electrical Installation** | **421 d** | **Thu 13/10/11** | **Thu 06/12/12** |
| 215 | Elec. Conduit, Trunking & Tray | 296 d | Thu 13/10/11 | Fri 03/08/12 |
| 216 | Electrical Cabling | 212 d | Fri 17/02/12 | Sat 15/09/12 |
| 217 | Electrical 2nd Fixes | 140 d | Tue 05/06/12 | Mon 22/10/12 |
| 218 | Electrical Final Fixes | 103 d | Sat 04/08/12 | Wed 14/11/12 |
| 219 | Test & Commissioning. | 22 d | Thu 15/11/12 | Thu 06/12/12 |
| 220 | **Lift Installation** | **253 d** | **Thu 29/03/12** | **Thu 06/12/12** |
| 221 | Delivery of Equipment | 100 d | Thu 29/03/12 | Fri 06/07/12 |
| 222 | Scaffold erection & Plumbing | 11 d | Sat 07/07/12 | Tue 17/07/12 |
| 223 | Guilde rail ordering & Installation of brackets | 11 d | Sat 07/07/12 | Tue 17/07/12 |
| 224 | Guilde rail Installation & adjustment | 11 d | Sat 04/08/12 | Tue 14/08/12 |
| 225 | Entrance jambs Installation | 11 d | Sat 04/08/12 | Tue 14/08/12 |
| 226 | Hoistway wiring works | 11 d | Sat 04/08/12 | Tue 14/08/12 |
| 227 | Jamb brickwork & grouting(by MC) | 11 d | Wed 15/08/12 | Sat 25/08/12 |
| 228 | Landing door fixing | 13 d | Sun 26/08/12 | Fri 07/09/12 |
| 229 | Traction Machine Installation | 15 d | Sat 08/09/12 | Sat 22/09/12 |
| 230 | Car frame, wire rope & c/w fixing | 15 d | Sun 23/09/12 | Sun 07/10/12 |
| 231 | Car panels installation with car top wiring work | 15 d | Mon 08/10/12 | Mon 22/10/12 |
| 232 | Car Interior Installation | 11 d | Tue 13/11/12 | Fri 23/11/12 |
| 233 | Test & Commissioning. | 14 d | Tue 13/11/12 | Mon 26/11/12 |
| 234 | Combine test | 10 d | Tue 27/11/12 | Thu 06/12/12 |
| 235 | **Escalator Installation** | **194 d** | **Sun 27/05/12** | **Thu 06/12/12** |
| 236 | Delivery of Equipment | 45 d | Sun 27/05/12 | Tue 10/07/12 |
| 237 | Hoisting & Assembly Truss | 15 d | Wed 11/07/12 | Wed 25/07/12 |
| 238 | Setting | 17 d | Thu 26/07/12 | Sat 11/08/12 |
| 239 | Installation of step, side guard panel & etc | 17 d | Sun 12/08/12 | Tue 28/08/12 |
| 240 | Cladding Works | 40 d | Wed 29/08/12 | Sun 07/10/12 |
| 241 | Test & Commissioning. | 60 d | Mon 08/10/12 | Thu 06/12/12 |
| 242 | **Sub-Station Hand-over** | **207 d** | **Mon 14/05/12** | **Thu 06/12/12** |
| 243 | Internal Arch.Work | 70 d | Mon 14/05/12 | Sun 22/07/12 |
| 244 | Internal M&E Work | 30 d | Mon 23/07/12 | Tue 21/08/12 |
| 245 | Power Grid inspection | 7 d | Wed 22/08/12 | Tue 28/08/12 |
| 246 | Rectification Work | 28 d | Wed 29/08/12 | Tue 25/09/12 |
| 247 | Power Grid final inspection | 7 d | Wed 26/09/12 | Tue 02/10/12 |
| 248 | Hand-over | 3 d | Wed 03/10/12 | Fri 05/10/12 |
| 249 | Power Grid Installation | 60 d | Sat 06/10/12 | Tue 04/12/12 |
| 250 | Power Turn on | 2 d | Wed 05/12/12 | Thu 06/12/12 |
| 251 | **M & E Room Hand-over to NSC** | **71 d** | **Sat 21/07/12** | **Sat 29/09/12** |
| 252 | HT & LV Switch Room, Transformer Room(5F) | 10 d | Thu 20/09/12 | Sat 29/09/12 |
| 253 | MDF Room(2F) | 10 d | Sat 21/07/12 | Mon 30/07/12 |



**SECTION 4**

**PROGRAMME**

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

| Service | Authority | Original Submission | | Comments/Resubmission | | | | | | Approval/ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Scheduled | Actual | Comment | Resubmit | Comment | Resubmit | Comment | Resubmit | Clearance |
| Application for Electricity Supply | SP Services Ltd | 1/12/08 | 24/06/08 | | | | | | | 1/7/08 |
| Power Supply Substation | SP PowerGrid Ltd | 1/03/09 | 11/07/08 | 5/08/08 | 15/8/08 | | | | | 1/9/08 |
| Metering Layout | SP Services Ltd | 1/12/11 | | | | | | | | |
| Sanitary Installation | PUB Water Reclamation (Network) Dept | | 10/12/10 | | | | | | | |
| Domestic Water Supply | PUB (Water Supply) Network Dept | | 15/11/10 | 15/11/10 | 12/1/11 | | | | | |
| Gas Supply Installation | City Gas Pte Ltd | | 15/11/10 | 22/11/10 | 12/1/11 | | | | | |
| Air Conditioning & Ventilation Inst. | FSSD | 24/03/11 | | | | | | | | |
| Fire Fighting & Alarm Installation | FSSD | 17/03/11 | | | | | | | | |
| Telephone Installation | TFCC | 1/01/10 | 18/11/10 | 20/12/10 | 6/1/11 | | | | | |
| Broadband Co-axial Cable System (BCS) | Starhub Cable Vision | | | | | | | | | |
| Fuel Storage (By Sub-contractor) | FSSD | | | | | | | | | |
| | NEA (Pollution Control ) | | | | | | | | | |

**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 / Other Consultants | ✓ | - Architect | ✓ |
| - Authorities | ✓ | - Other Consultants | |
| - Contractors | ✓ | - CC | |
| - CF / CF | ✓ | - PQP/QSP | ✓ |

**Project Files to be initiated by PM as and when required**

| File Ref: | | File Ref: | | File Ref: | |
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(✓*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 | LYM |
| Incoming Architectural Sketches/Details | LYM |
| Incoming Structural Drawings | LYM |
| M&E Drawings | |
| - Electrical Installation | Softcopy (Server) |
| - Lift & Escalator Installation | Softcopy (Server) |
| - Air Conditioning & Ventilation Installation | Softcopy (Server) |
| - Fire Fighting & Alarm Installation | Softcopy (Server) |
| - Plumbing & Sanitary Installation | Softcopy (Server) |
| - Swimming Pool & Filtration Installation | - |
| Other Drawings | |
| - Interior Design | LYM |
| - Landscape/Waterscape | LYM |
| | |
| | |
| | |

**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 | ✓ |
| | Ad-Hoc Meeting | ✓ |
| | 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 |
|---|---|---|---|---|---|
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** Information required by INTERNAL DESIGN TEAM MEMBERS*

**SECTION 6**

**INTERFACING**

### 6.3 Circulation of Documents to External Parties

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

| | | | | | | |
|---|---|---|---|---|---|---|
| Electrical Wiring | ~~BS~~ | **SS** | ~~IEE~~ | ~~NFPA~~ | | |
| Lightning Protection System | ~~BS~~ | **SS** | | | | |
| Emergency Voice Communication System | ~~BS~~ | SS | ~~NFPA~~ | | | |
| Air Conditioning & Ventilation Installation | ~~BS~~ | ~~AS~~ | ~~NFPA~~ | **SS** | ~~MS~~ | |
| Lift & Escalator Installation | ~~BS~~ | **SS** | | | | |
| Sprinkler System | ~~BS~~ | **SS** | ~~NFPA~~ | ~~AS~~ | ~~LPC~~ | |
| Wet Riser System | ~~BS~~ | ~~SS~~ | ~~NFPA~~ | ~~AS~~ | ~~MS~~ | |
| Automatic Fire Alarm System | ~~BS~~ | **SS** | ~~NFPA~~ | ~~AS~~ | ~~MS~~ | |
| Sanitary System | ~~BS~~ | **SS** | ~~NFPA~~ | ~~AS~~ | ~~MS~~ | |
| Plumbing System | BS | **SS** | ~~NFPA~~ | ~~AS~~ | ~~MS~~ | |
| Town Gas/~~LPG Supply System~~ | ~~BS~~ | **SS** | ~~NFPA~~ | ~~AS~~ | | |
| ~~Boiler and Steam Supply System~~ | ~~ASME~~ | ~~BS~~ | ~~SS~~ | ~~AS~~ | | |
| Mechanical Smoke Control System | ~~BS~~ | ~~NFPA~~ | SS | ~~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 | 5.0 | 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 | Gold |
| Green Design Features | Energy Efficiency Index, Electrical Sub-metering, Energy Efficient Features, Water Usage, CO monitoring, Luminance Level, Innovation |

### 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: | Nil |

### 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 | C |
| M&E Cost Estimate Report | C |
| Pre-Qualification of Tenderers | C, A |
| Tender Documents | C |
| Tender Report | C, A |
| Payment Valuation for QS | By KPK |
| 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 |
|---|---|---|
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