Updates On Electrical Requirements

29 April 2016
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Development & Construction Productivity Department
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Housing & Development Board

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1.0 Consultant's Duties

- To provide adequate, cost effective and optimal design
- Familiarize with design brief and owner's requirements
- Work closely with Lead Architect and ensure that regulatory and owner's requirements are incorporated in M&E design
- M&E System shall be designed for minimal and ease of maintenance, and the design shall not result in high cost of upgrading / replacement in future, either carried out by residents or managing agents

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1.0 Consultant's Duties

- Timely submission for Engineering Review, and Technical Review, and to e-CORENET
- Mindful of the comments given and measures to ensure no recurrences
- System in place to effectively retain and disseminate information/feedback gathered and experiences gained
- Diligently check drawings to ensure complete, consistent, practical and workable design with adequate details incorporated before submission

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2.0 M&E Submission Requirements

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2.0 Design Submission Requirements

- The **Electrical Design Load Data (in Annex A) and Lift Traffic Analysis shall be submitted** to HDB BQG DCP3 (M&E) Section for comment **as early as possible**, before substation and lift provision are finalised.

- Consultant **shall also arrange Conceptual Briefing sessions with HDB BQG DCP3 (M&E) Section to review their design progressively** before submitting the tender drawings

- **E-Corenet Drawing to HDB BQG DCP3 (M&E) Section shall not be later than six weeks before the tender date.**

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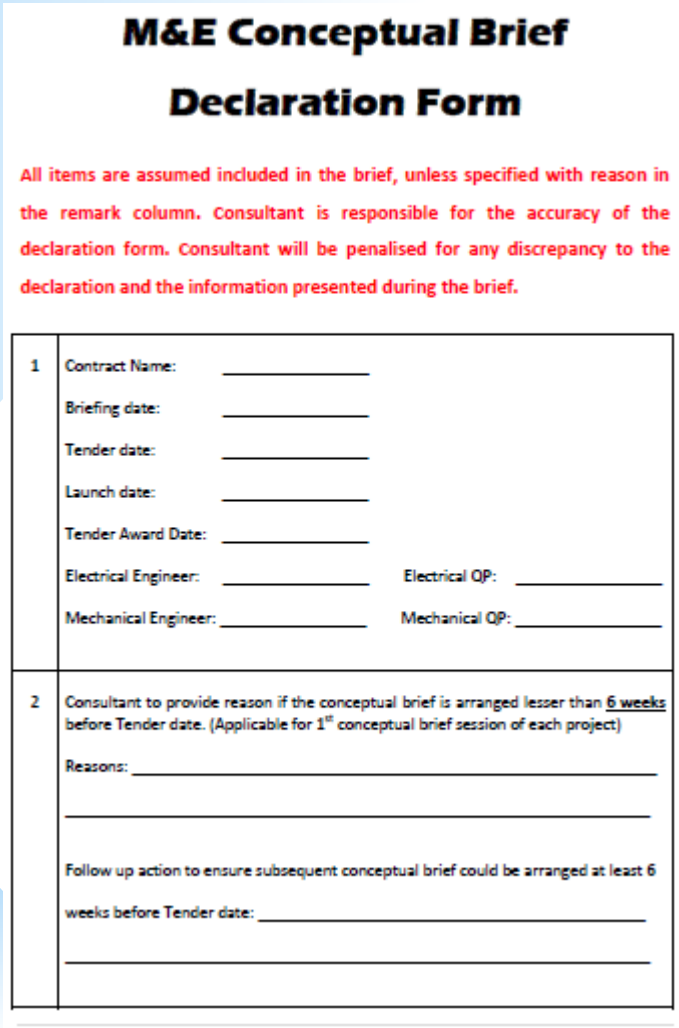
Conceptual Brief Requirement



M&E Conceptual Brief

Declaration Form

All items are assumed included in the brief, unless specified with reason in the remark column. Consultant is responsible for the accuracy of the declaration form. Consultant will be penalised for any discrepancy to the declaration and the information presented during the brief.

1	Contract Name: _____ Briefing date: _____ Tender date: _____ Launch date: _____ Tender Award Date: _____ Electrical Engineer: _____ Electrical QP: _____ Mechanical Engineer: _____ Mechanical QP: _____
2	Consultant to provide reason if the conceptual brief is arranged lesser than 6 weeks before Tender date. (Applicable for 1st conceptual brief session of each project) Reasons: _____ _____ Follow up action to ensure subsequent conceptual brief could be arranged at least 6 weeks before Tender date: _____ _____

Electrical:

Electrical Load Design Data

Lift Traffic Analysis

Layout plan with details on the following:

- UPS
- Location of ESS
- Location and dimension of CSR
- Location and dimension of SPF
- Location and dimension of Elect. Riser duct
- Cable routing from CSR to Elect. Riser duct (1st storey)
- Cable routing from Elect. Riser duct to Unit (Typical storey)
- Cable routing from CSR to Commercial (Supermarket, Shops, etc.)

Telecom:

Layout plan with details on the following:

- UTS
- Location and dimension of MDF/TER
- Location and dimension of Telecom riser
- Cable routing from MDF/TER to Telecom riser (1st storey)
- Cable routing from Telecom riser to Unit (Typical storey)
- Cable routing from MDF to Commercial (Supermarket, Shops, etc.)

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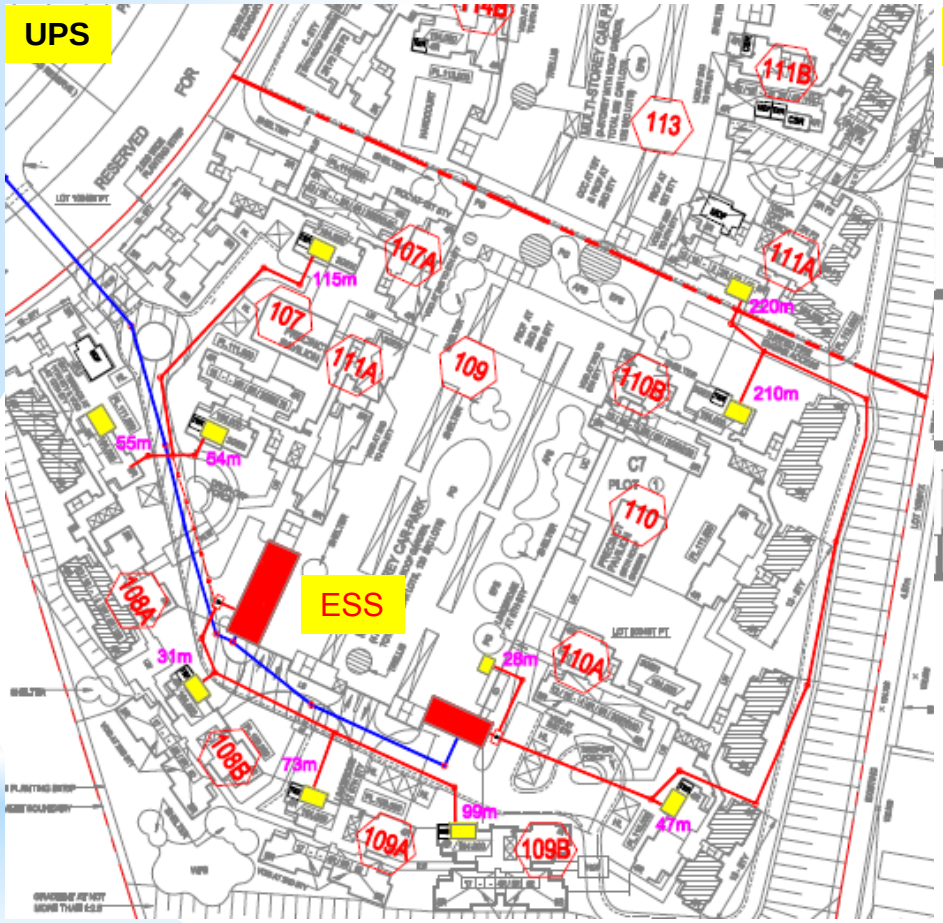
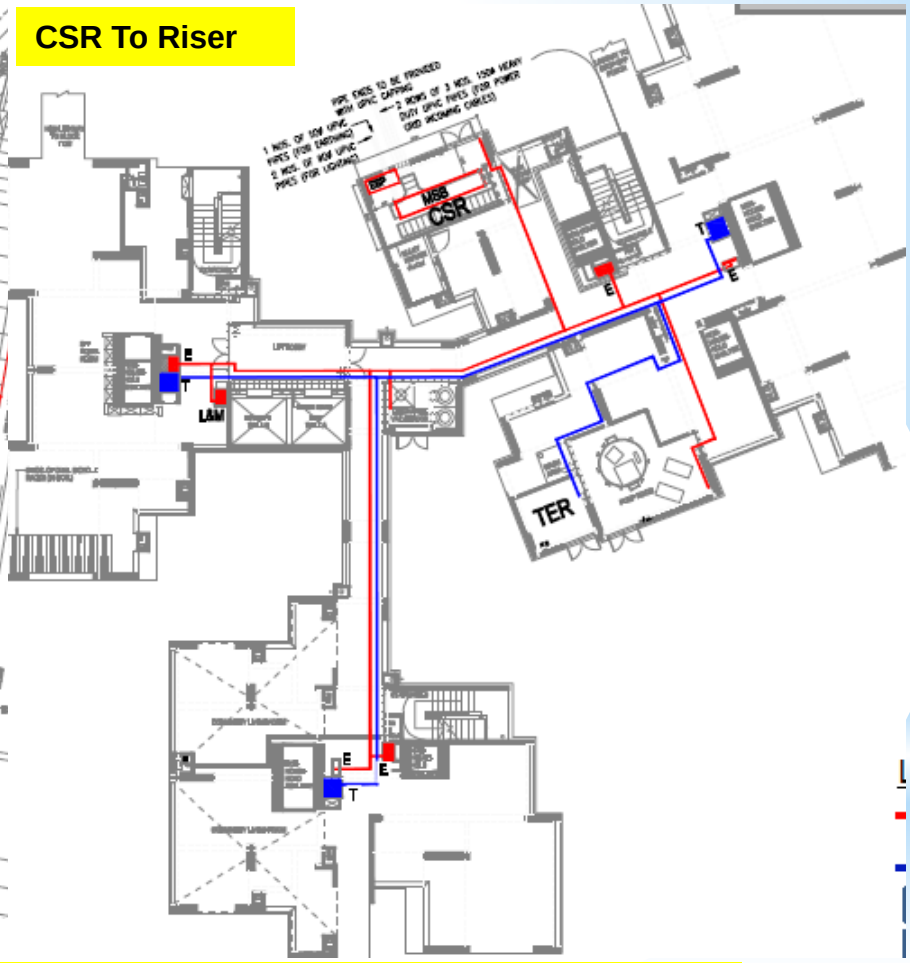
Conceptual Brief Requirement





Before Arrangement of Conceptual Briefing, Submit All Routing Drawing!

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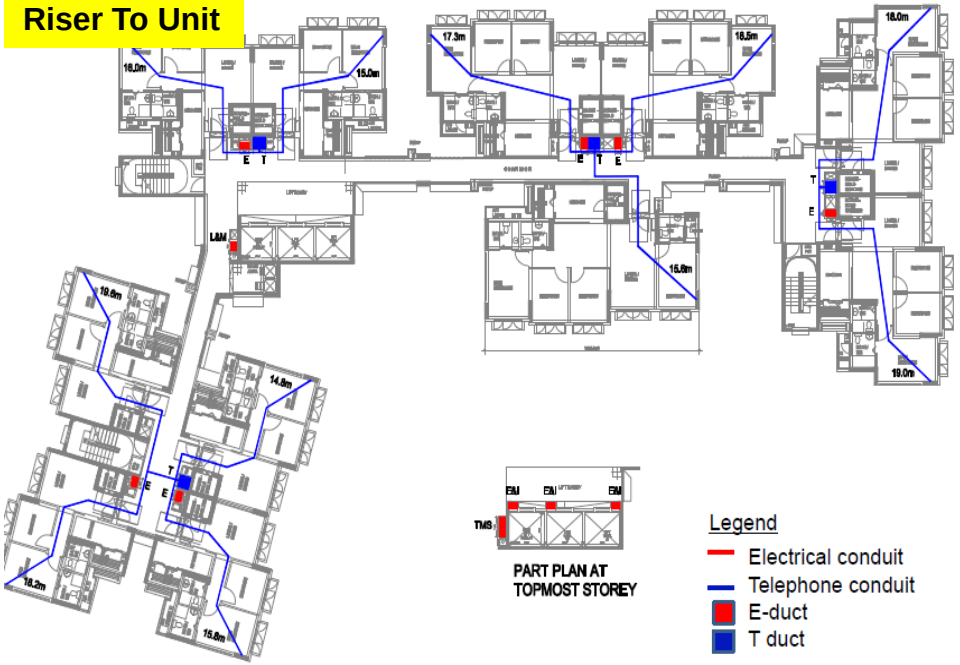
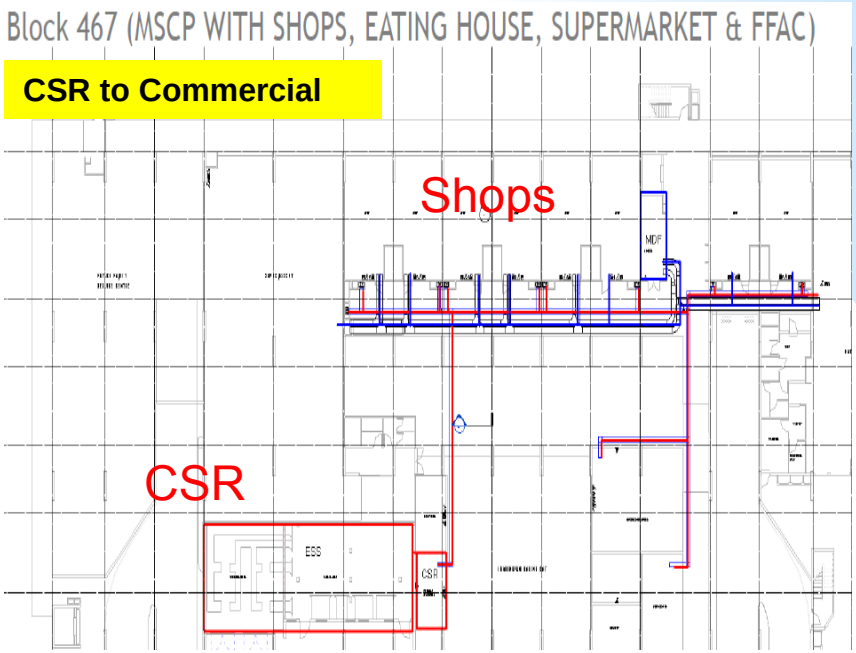
Conceptual Brief Requirement

Riser To Unit



CSR to Commercial



Before Arrangement of Conceptual Briefing, Submit All Routing Drawing!

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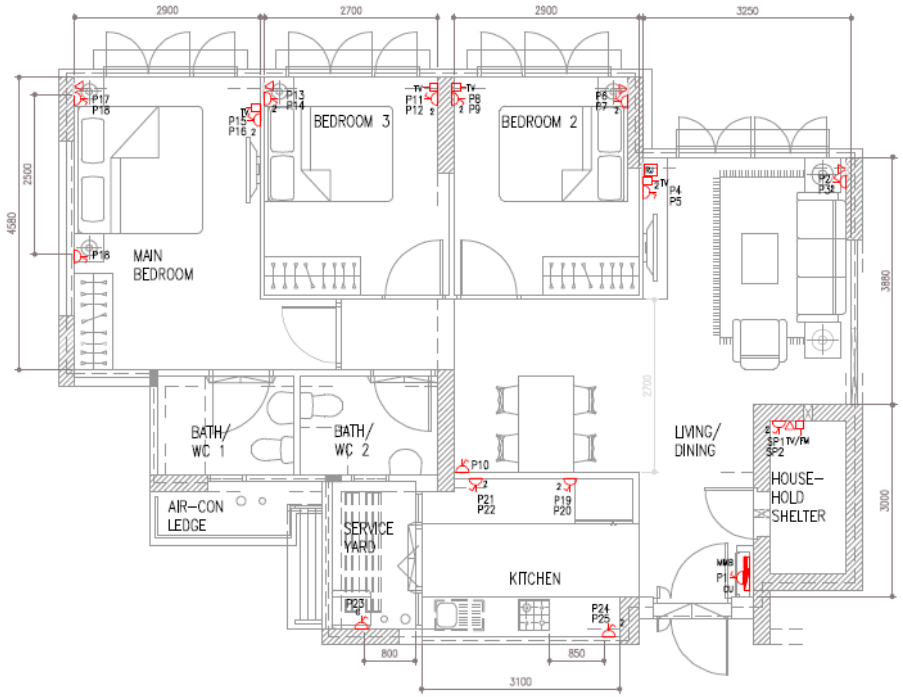
Conceptual Brief Requirement

* Briefing on Unit Layout Design

* Indicate Electrical Accessories on Lighting Layout & Power Layout



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3.0 Telecommunication Requirements

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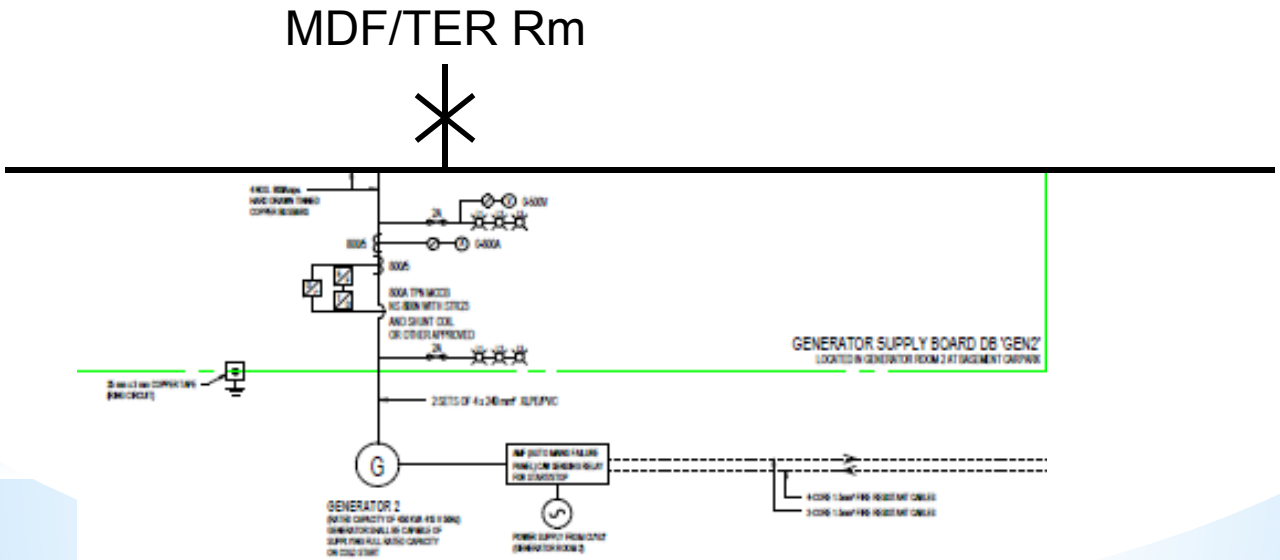
3.1 COPIF 2013 - Generator Supply

7.2.9 **Where a standby power generator is provided** in the relevant development, the power supply to the **main distribution frame room** shall be connected to such standby power generator.

7.5.15 **Where a standby power generator is provided** in the relevant development, the power supply to the **telecommunication equipment room** shall be connected to such standby power generator.



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3.1 COPIF 2013 – Lead in Pipes

11.4.1 Every developer or owner who is required to provide lead-in pipes shall –

Construct **all lead-in pipes at a depth of no less than 1m from the base of** (i.e. to under-cross) **the existing or proposed roadside drain** in accordance with the requirements of the relevant authorities except that where it is not possible for the lead-in pipes to under- cross the roadside drain, the owner shall consult IDA on the construction of such lead-in pipes and comply with such requirements as may be imposed by IDA.

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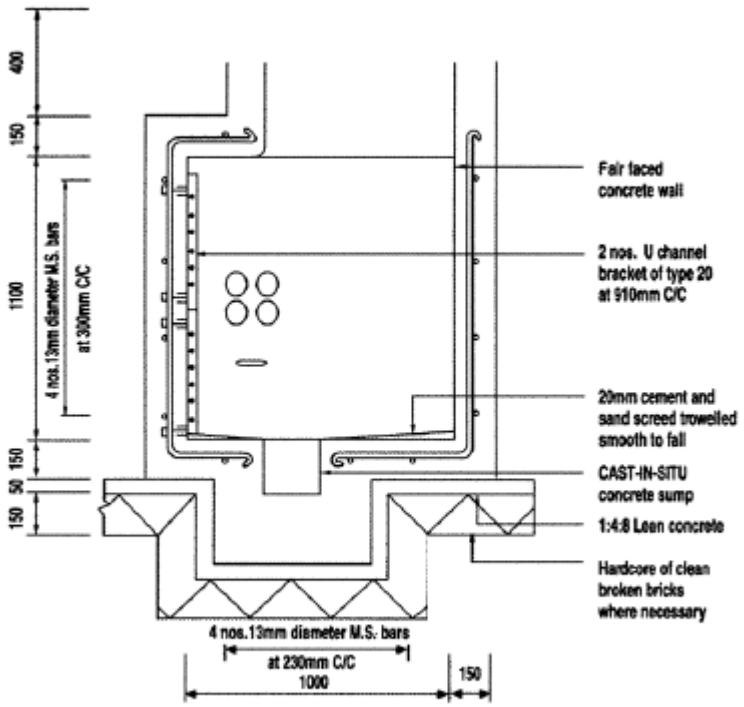
3.1 COPIF 2013 - Manholes

Design and Provide:

11.6.3 (k) 1 uPVC pipe of nominal diameter of 50mm with a 1-way trap is constructed at the neck of the manhole and connected to the nearest drain that is situated at a lower level than the manhole;

FIGURE 11.14: MANHOLE DRAWINGS - TYPE MX2



SECTION B-B
(FRAME AND COVER OMITTED)
SCALE : NTS

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3.2 Telecommunications For Commercial Block

Commercial Premises

Copper multi-pair cabling from the distribution point (DP) in Telecom Duct shall be provided and terminated to the 5-pair block terminal (BT) inside each shop.

Social Communal Facility

Fibre cabling from Telecom Duct shall be provided and terminated to FTP. Patch panel, RJ45 outlets for office room shall also be provided.

Consultant shall design cable routing and provide cable tray from Telecom Duct to the commercial premises and SCF. Adequate space shall be considered for both copper and fibre cables on the cable tray for commercial and social communal facility.

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3.3 SPF Equipment Room

- **Tender from 1st Jan 16 onwards**, Singapore Police Force's (SPF) Equipment Room for CCTV is required.
- A room of minimum clear internal size of 1200mm (width) x 1100mm (depth) shall be provided at each block and MSCP to house the SPF equipment.
- Use of Precast Household Shelter Wall at void deck and shall be near to MDF/TER room.
- 4-way consumer unit, Supply shall be taken from meter supply busbar of the MCCB main switch board
- T5 fluorescent batten luminaire(s) which is/are controlled by a switch
- 13A switch socket outlet
- Wiring inside the room shall be surface mounted.

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3.4 RJ45 Advisory Note

To provide and stick the advisory note on every RJ 45 outlet in the dwelling units of HDB residential blocks for projects which are still in time to do so before the handover of the first block of the project.

Specifications of advisory note:

- Appro. size: 20mm X 45mm
- Font: Arial, size 8
- Colour: 1C (Black)
- Material: **Transparent adhesive label**

Transparent adhesive label !!! ✓



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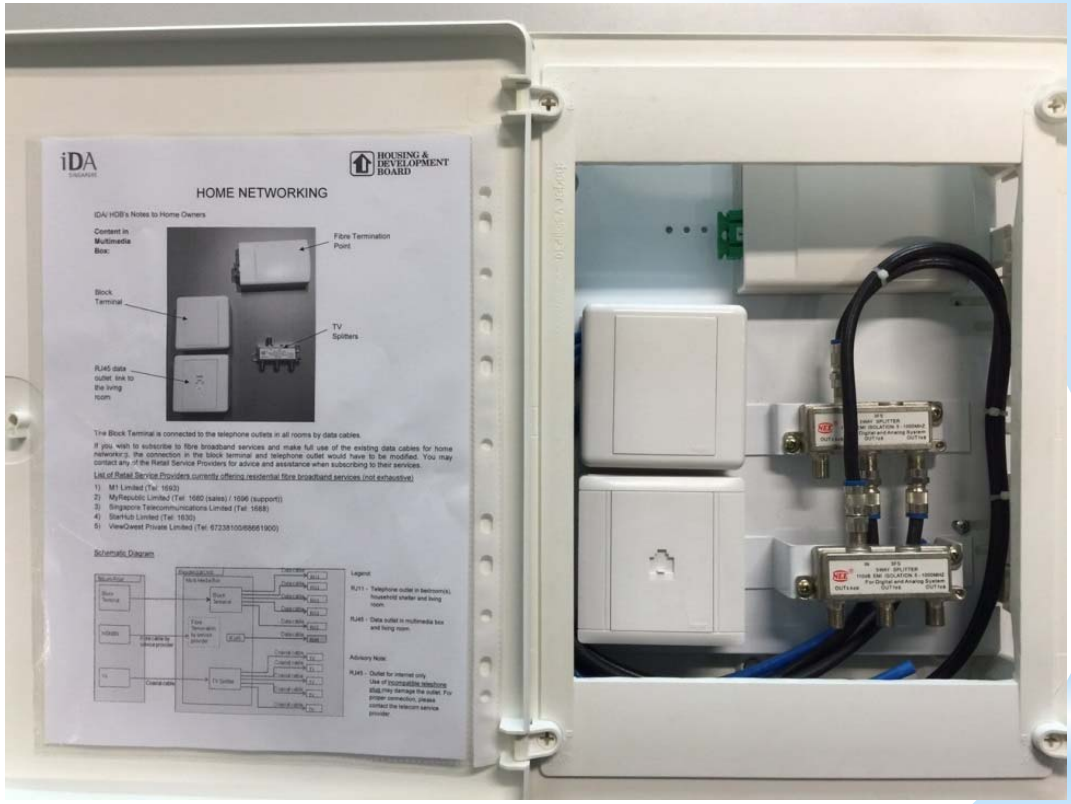
3.5 MMB Home Networking

- To place the notice in the Multimedia Box (MMB) for projects (compliance with COPIF 2008) which are still in time to do so before the handover of the first block of the project.



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4.0 Lighting Requirements

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4.1 Specifying Category In Tender Drawings

Tender from 1st May 15 onwards, Consultants shall specify category of luminaires instead of brand name in Tender Drawings.

	Existing	Proposed
F8 	**DRIVEWAY/SERVICE ROAD** **~~AEC Logika 1~~, C/W 1x70W CERAMIC METAL HALIDE LAMP, E27 LAMP HOLDER, SUPPORT FRAME AND LOWER COVER IN DIE CAST ALUMINIUM ALLOY, TEMPERED GLASS DIFFUSER (IK08), ANODISED AND POLISHED ALUMINIUM REFLECTOR OR OTHER APPROVED, TO BE MOUNTED ON 6M LIGHTING COLUMN WITH 0.6M BRACKET ARM, IP66, COLOUR OF FITTING TO ARCHITECT'S APPROVAL**	**DRIVEWAY/SERVICE ROAD** **CAT A, LUMINAIRIE c/w 70W CERAMIC METAL HALIDE LAMP TO BE MOUNTED ON A 6M LIGHTING COLUMN WITH 0.6M BRACKET ARM, IP66.**

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Outdoor Luminaires Categorisation

Category A – Driveway / Service Road

Category B - Hardcourt

Category C - Landscape / Playground

- Category C-1 - Ambience Lighting
- Category C-2 - Functional Lighting

Category D – Linkway/Linkbuilding

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Selection of Outdoor Luminaires

1. In Tender Drawing, Consultant Team shall specify the category of luminaires.
   (E.g. Driveway/Service Road →CAT. A-1)

2. Upon award of contract, Contractor shall propose at least 3 luminaires for each category for selection.

3. Consultant Team reserve the right to ask Contractor to offer other outdoor lighting luminaire of the same category from the Material List (E.g to be consistent with luminaires used in adjacent project)

4. Luminaires selected from the same category do not need cost adjustment.

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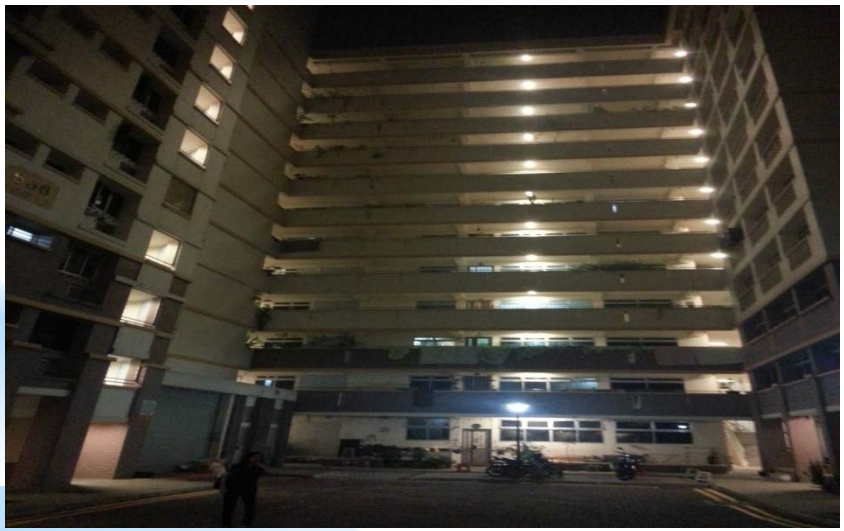
4.2 Emergency Lighting

In accordance with SS 563 for buildings in HDB projects of which the Plans are submitted to FSSD from 1 Sep 2015 onwards.

- Emergency lighting for external corridors shall be provided
- Emergency lighting shall be provided at the driveways





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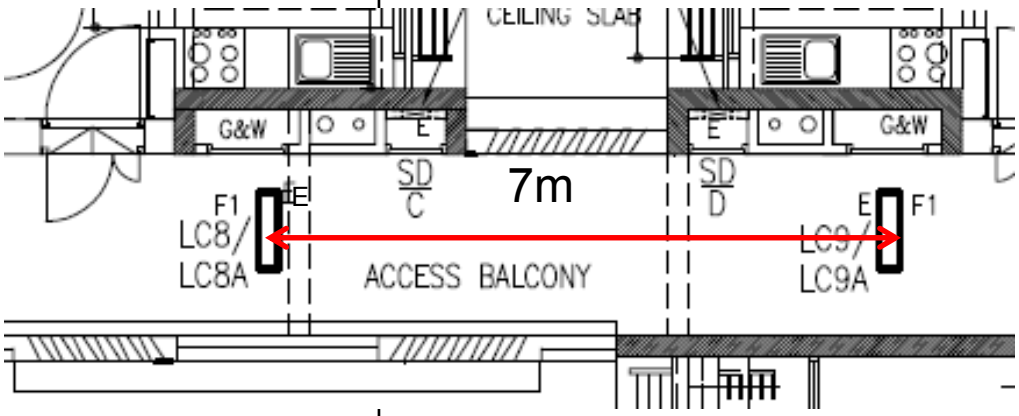
Design Guide

Typical Floors		
Location	**Luminaire**	**Remarks**
Access Corridor	2-ft LED tubular light fitting with integrated battery pack for emergency lighting	1. Where main gate is in line with the corridor wall, to space the luminaire: i. 7m apart; and ii. Not more than 2.5m away from the centre of main gate. 2. Where main gate is set back ≤1.5m: i. The luminaire shall be spaced not more than 2m away from the centre of main gate. 3. Where main gate is set back >1.5m: i. Luminaire shall be at the recess area.



The proposals in Design Guide are for reference by Consultants.

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Design Guide

Typical Floors		
Location	**Luminaire**	**Remarks**
Lift Lobby (duplex lifts)	2 nos. of 2-ft LED tubular light lightings	At least one of the luminaires with integrated battery pack
Refuse Chute Area	1 no. of 2-ft tubular light fitting	With motion sensor
Staircase:		
Half Landing	1 no. of 2-ft tubular light fitting	With motion sensor
Storey Level	1 no. of 2-ft tubular light fitting	Luminaire with integrated battery pack

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Design Guide

Ground Floor		
Location	**Luminaire**	**Remarks**
Void Deck/Play Area **i. Ceiling** **ii. Wall**	For every 3m bay: 1 no. of 4-ft LED tubular light fitting 1 no. of 35W Ceramic Metal Halide	 Mounting height: 3m
Lift Lobby (duplex lifts)	i. 12W LED down light ii. Separate recess-mounted emergency luminaire	Minimum average lighting level shall be 80 lux (Allow flexibility on the number of down lights as long as the design illumination met the lighting level of minimum average of 80 lux)

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5.0 Design Requirements

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5.1 LIFT TRAFFIC ANALYSIS

- Software base on Monte-Carlo Simulation method e.g Elevate or other equivalent

ELEVATOR DATA

No of Elevators	3
Type	Single Deck
Capacity (kg)	885
Car area (m²)	2.12
Door Pre-opening Time (s)	0.00
Door Open Time (s)	4.50
Door Close Time (s)	4.50
Door Dwell 1 (s)	3.00
Door Dwell 2 (s)	2.00
Speed (m/s)	1.75
Acceleration (m/s²)	0.70
Jerk (m/s³)	1.40
Start Delay (s)	0.00
Levelling Delay (s)	0.00
Home Floor	Level 1

PASSENGER DATA

Arrangement	Conventional for Single Deck elevators
Template	Constant traffic (% building pop per 5 mins)
Demand (% pop per 5 mins)	6.00
Incoming (%)	88.00
Outgoing (%)	12.00
Interfloor (%)	0.00
Start Time (hrs:mins)	07:30
End Time (hrs:mins)	08:00
Passenger Mass (kg)	6
Passenger Area (m²)	0.17
Loading Time (s)	0.50
Unloading Time (s)	1.30
Stair Factor (%)	0.00
Capacity Factor by Mass (%)	80.00
Capacity Factor by Area (%)	100.00

Floor Name	Entrance Bias
Level 1	100.00

a) 63kg for Passenger Mass
b) 0.17m^2 for Passenger area
c) Table for Acceleration and Jerk with respect to lift speed

Storey	Lift Speed (m/min)	Acceleration	Jerk
2 to 7	90 (1.5 m/s)	0.4	0.8
8 to 16	90 (1.5 m/s)	0.4	0.8
17 to 20	105 (1.75 m/s)	0.7	1.4
21 to 25	120 (2 m/s)	0.7	1.4
26 to 30	150 (2.5 m/s)	0.8	1.6
31 to 40	180 (3 m/s)	0.8	1.6
41 to 50	210 (3.5 m/s)	1	1.6

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5.1 Dimensions of lifts & lift wells

- Refer to “Annex E – March 2016 Design Brief” for the updated dimensions of lifts and lift wells.

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ANNEX E

Machine Roomless Lift		Simplex						
Capacity	Speed	Lift Car Dimensions		Lift Well Dimensions (typical)				Lift Counterweight Location
		Width	Depth	Width	Depth	Pit Depth	Overhead	
(person/kg)	(m/min)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(side/rear)
10/680	60	1250	1400	2250	2150	1800	5100	Side
	90	1250	1400	2250	2150	2150	5100	Side
13/885	60	1500	1500	2550	2200	1800	5100	Side
	90	1500	1500	2550	2200	2150	5100	Side
	105	1500	1500	2550	2200	2300	5100	Side
	120	1500	1500	2550	2200	2300	5200	Side
16/1090	60	1650	1600	2800	2200	1800	5700	Side
	90	1650	1600	2800	2200	2150	5700	Side
	105	1650	1600	2800	2200	2300	5700	Side
	120	1650	1600	2800	2200	2300	5700	Side

Machine Roomless Lift		Duplex						
Capacity	Speed	Lift Car Dimensions		Lift Well Dimensions (typical)				Lift Counterweight Location
		Width	Depth	Width	Depth	Pit Depth	Overhead	
(person/kg)	(m/min)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(side/rear)
10/680	60	1250	1400	4700	2150	1800	5100	Side
	90	1250	1400	4700	2150	2150	5100	Side
13/885	60	1500	1500	5300	2200	1800	5100	Side
	90	1500	1500	5300	2200	2150	5100	Side
	105	1500	1500	5300	2200	2300	5100	Side
	120	1500	1500	5300	2200	2300	5200	Side
16/1090	60	1650	1600	5600	2200	1800	5700	Side
	90	1650	1600	5600	2200	2150	5700	Side
	105	1650	1600	5600	2200	2300	5700	Side
	120	1650	1600	5600	2200	2300	5700	Side

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5.2 2Room Flexi

From Nov 2015 BTO Launch

STUDIO APARTMENT

All fittings and finishes are provided
(move-in condition)

2R FLEXI FLATS
(Short Lease, 15 -45 years)

3 OCS packages
*grab bars provided upfront

2R FLAT

2 OCS packages

2R FLEXI FLATS
(99 year lease)

2 OCS packages

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OCS Package	Short Lease (15 to 45 Years)		99-Year Lease	
	36m²	45m²	36m²	45m²
Package 1 Flooring for Living/Dining & Bedrooms#				
Package 2 Sanitary Fittings, i.e. washbasin with tap mixer and shower set with bath/shower mixer				
Package 3^ Lighting (Whole unit),Window grilles (whole unit), Built in kitchen cabinets with gas hob and cooker hood, kitchen sink, tap and dish drying rack, Built-in wardrobe, Water heater, Mirror and toilet roll holder			N.A	



Note:

Polished porcelain floor tiles are provided for 99-year 2-room Flexi flats while glazed porcelain floor tiles are provided for short-lease 2-room Flexi flats.

^ Buyers who opt for Package 3 must opt for Package 1 as well.

* Buyers who are wheel-chair bound may choose to have a lower kitchen countertop.

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Design Guidelines For Electrical Accessories in 2-Room Flexi-Flat

Area	No. Of Socket Outlets	
	2-room Flexi Flat (99-year lease) (≈35m² & 45m²)	2-room Flexi Flat (Short-lease*) (≈35m² & 45m²)
Bedroom	4	4
Living Room	4	4
Kitchen	6	4+2 (4 socket outlets + Hob & Hood switches)

Area	No. Of Lighting Switch	
	2-room Flexi Flat (99-year lease) (≈35m² & 45m²)	2-room Flexi Flat (Short-lease*) (≈35m² & 45m²)
Bedroom	1 Lighting Switch	1 Lighting Switch 1 2way lighting Switch

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5.3 OCS with (Kitchen Partition Wall)

3-, 4-, 5-ROOM AND 3GEN FLATS

(a) **Floor finishes for living/ dining room and bedrooms**

(b) **Internal doors + sanitary fittings** - wash basin with tap mixer/ vanity top* with tap mixer
- shower set with bath/ shower mixer

* For attached bathroom of 5-room and 3Gen Flats.



Vanity top wash basin with tap mixer in attached bathroom (5-room and 3Gen flats)



Wash basin with tap mixer



Handheld shower set with bath/ shower mixer

Disclaimer: All displays and images shown here are strictly for reference only and are subject to change without notice. The displays and images shown here are conceptual and indicative only and the colour schemes, design, dimensions, type, tonal differences and specifications may differ from the actual fittings installed in the flat.

(c) **Kitchen Partition Wall (where feasible)**

To provide buyers greater flexibility in terms of layout and design, some flats will come with an open kitchen concept. You can opt-in to have a partition wall between the living/ dining area and kitchen, if you do not want an open kitchen concept.

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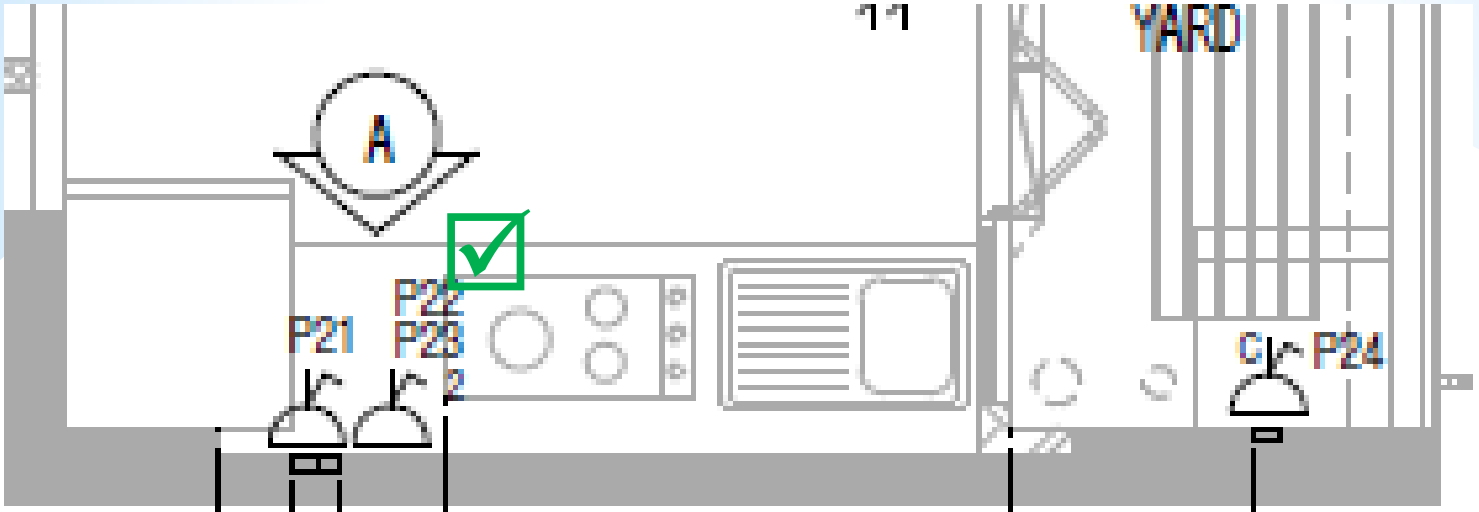
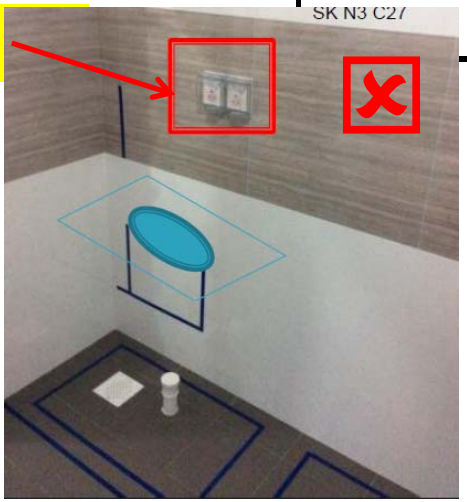
Design Guidelines For Electrical Accessories in 3,4,5 Rm & 3Gen Flat



- Avoid Socket outlets above sink!!



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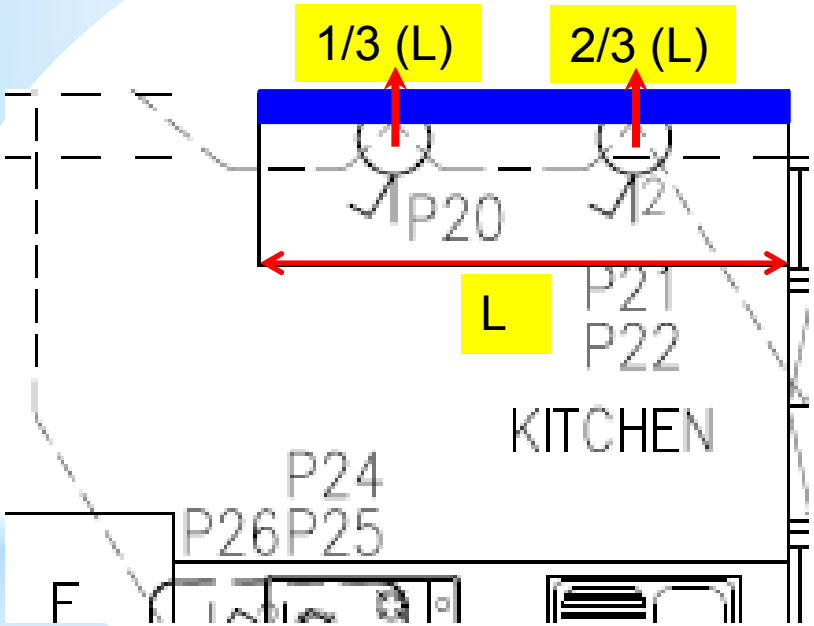
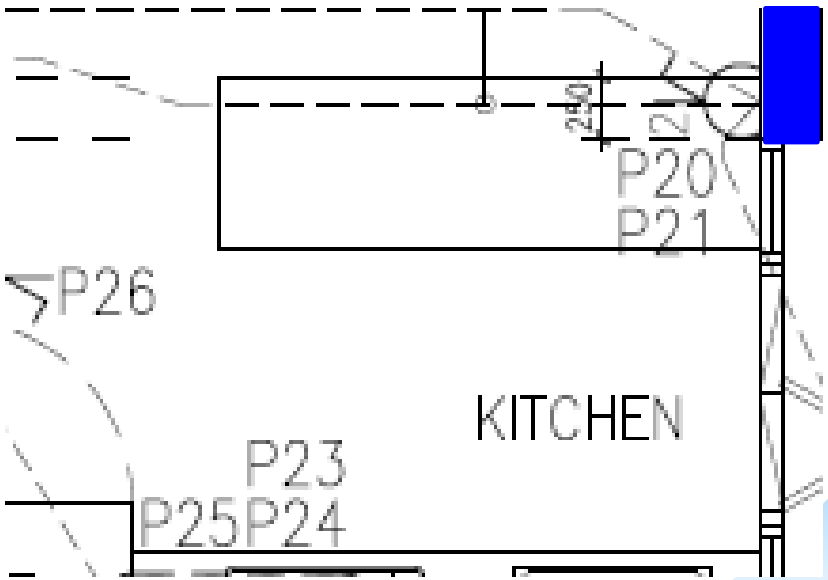
Design Guidelines For Electrical Accessories in 3,4,5 Rm & 3Gen Flat

Kitchen Partition Wall



Open Kitchen Concept



- At least two socket outlets shall be provided and well distributed over the entire counter top.

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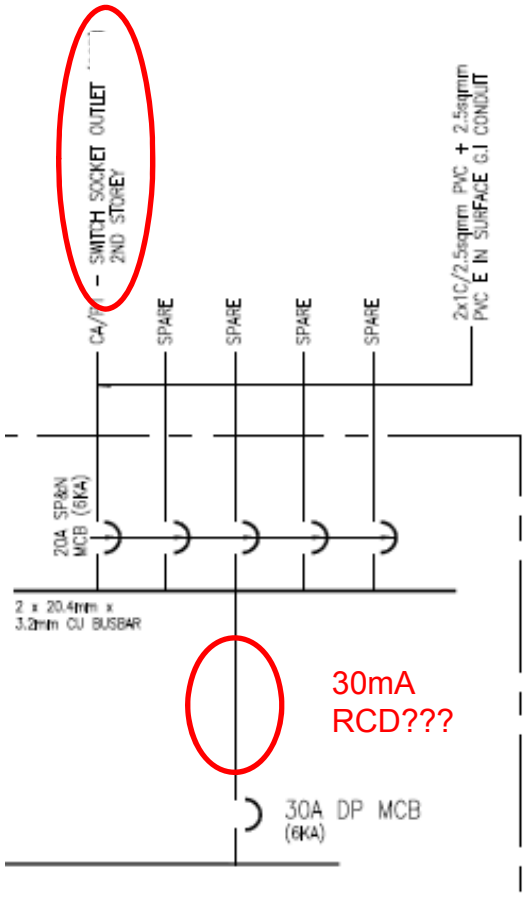
5.4 Provision of RCD for Socket outlets



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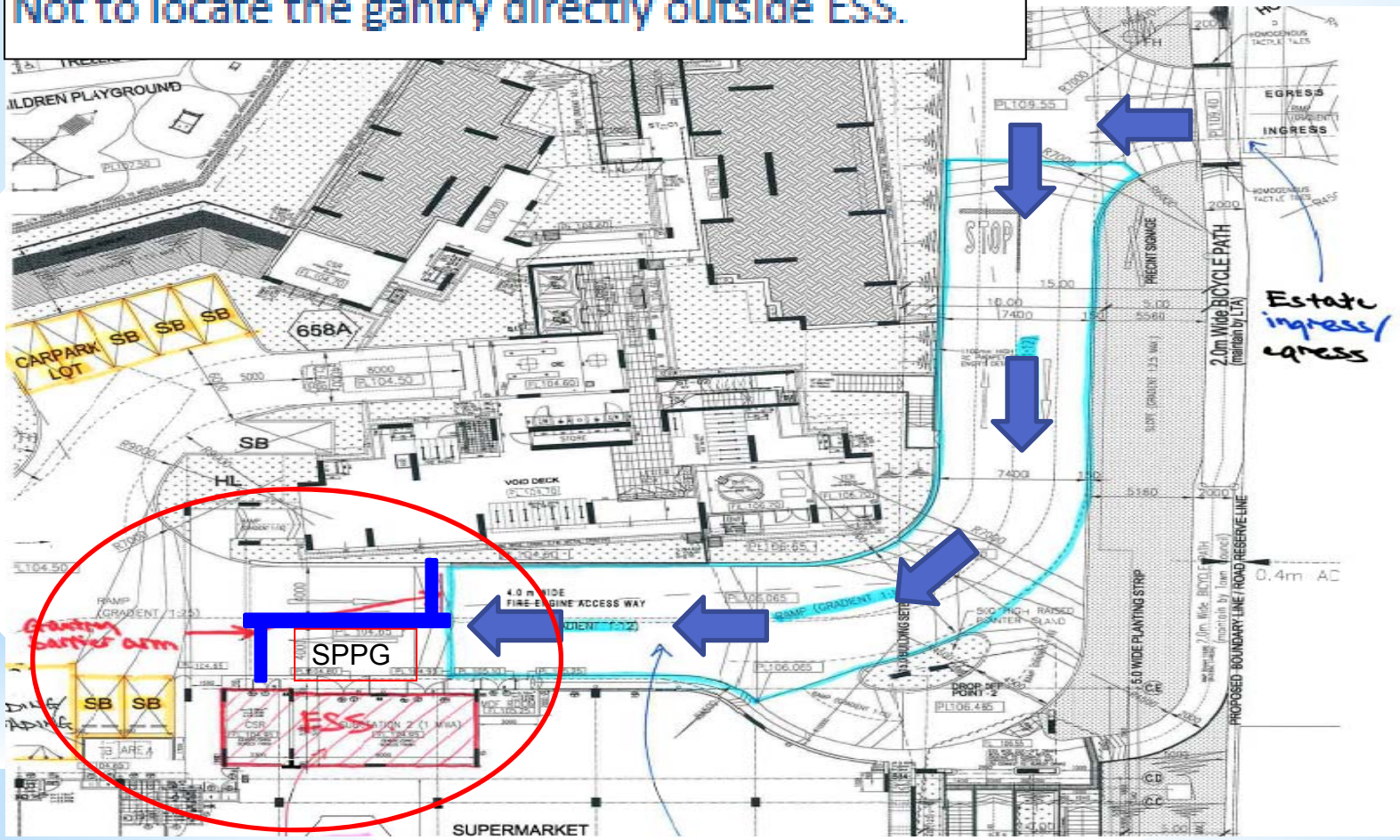
5.5 EPS Gantry Along Service Road / Driveway

Not to locate the gantry directly outside ESS.



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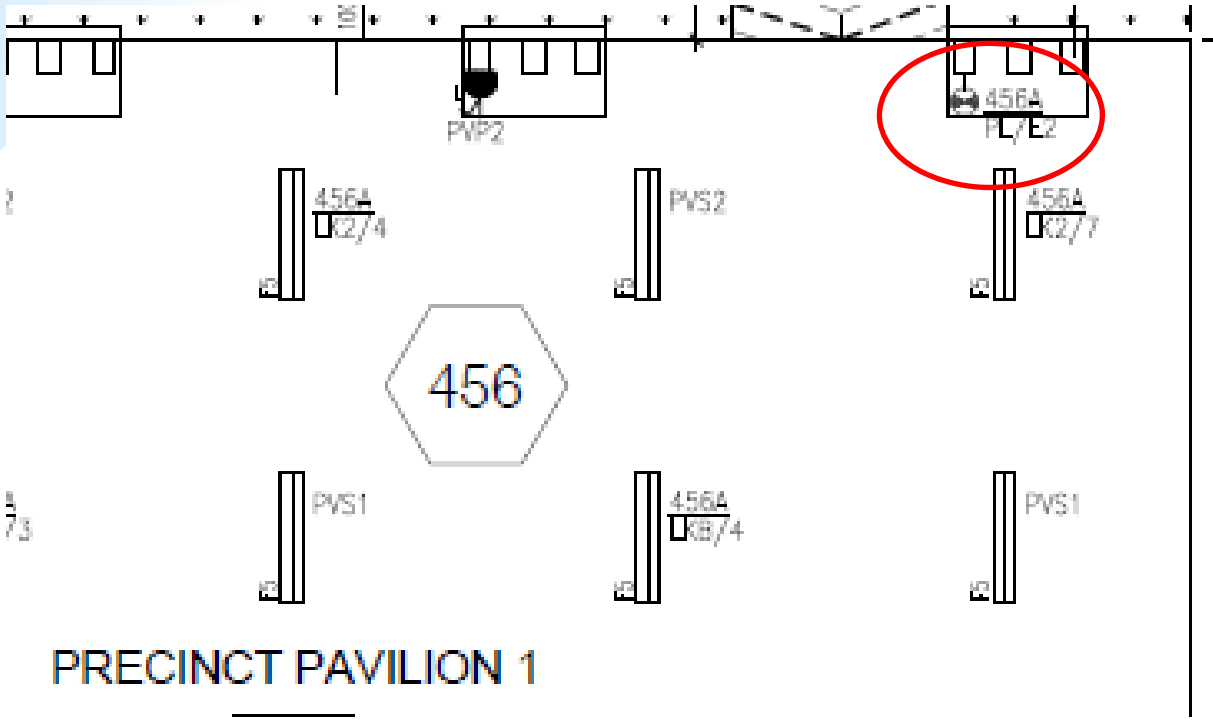
5.6 Precinct Pavillion

- Not required to provide emergency lighting & exit light to precinct pavilion





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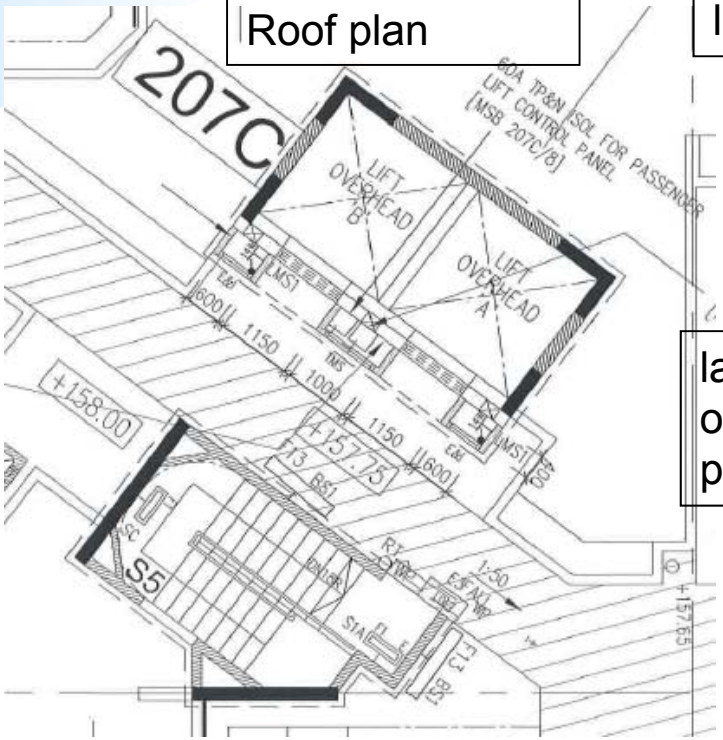
5.7 Shelter for E&I and TMS Closet on Roof

Roof plan



Inadequate shelter (space constraint) due to the provision of ladder over pipes for access

ladder over pipes



- **To provide adequate shelter in front of E&I and TMS duct on the roof top.**

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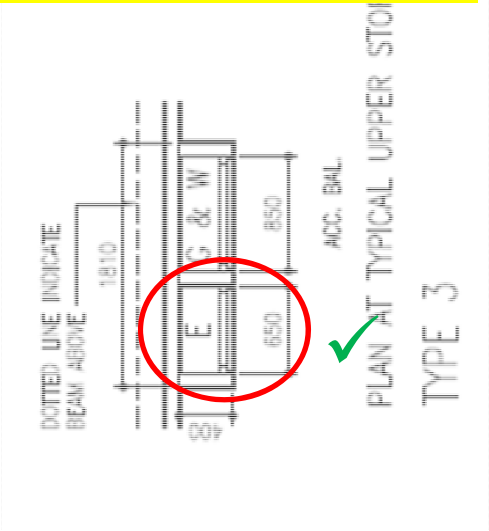
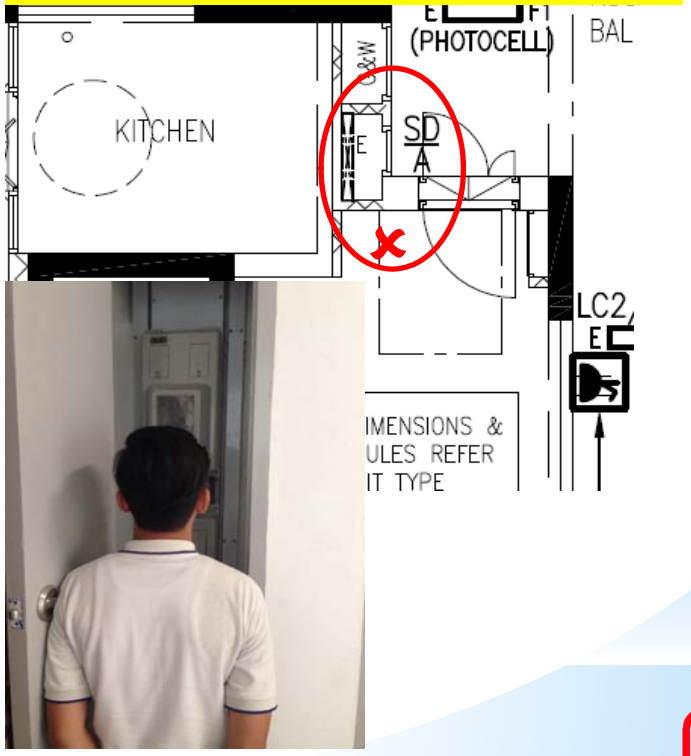
5.8 Electrical Service Duct & Door Dimensions

The minimum sizes of the electrical duct shall not be less than (650mm by 400mm) with a full door width of service duct

Full Door Width for Service Duct Required!!



Do Not Reduce Service Duct Door Width!!



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5.9 Electrical Service Duct

Surface Mounted Meter Box outside Rental Units



Meter Board Inside Electrical Service Duct for Sold Units



Do not install surface mounted meter box inside Electrical Riser Duct!!!

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Thank You

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