13A Switch Socket Outlets in HDB Flat
(Ring/Radial circuit)

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DCP3 BQD

Summary

Design Provision : 5rm - 28nos of switch socket outlets

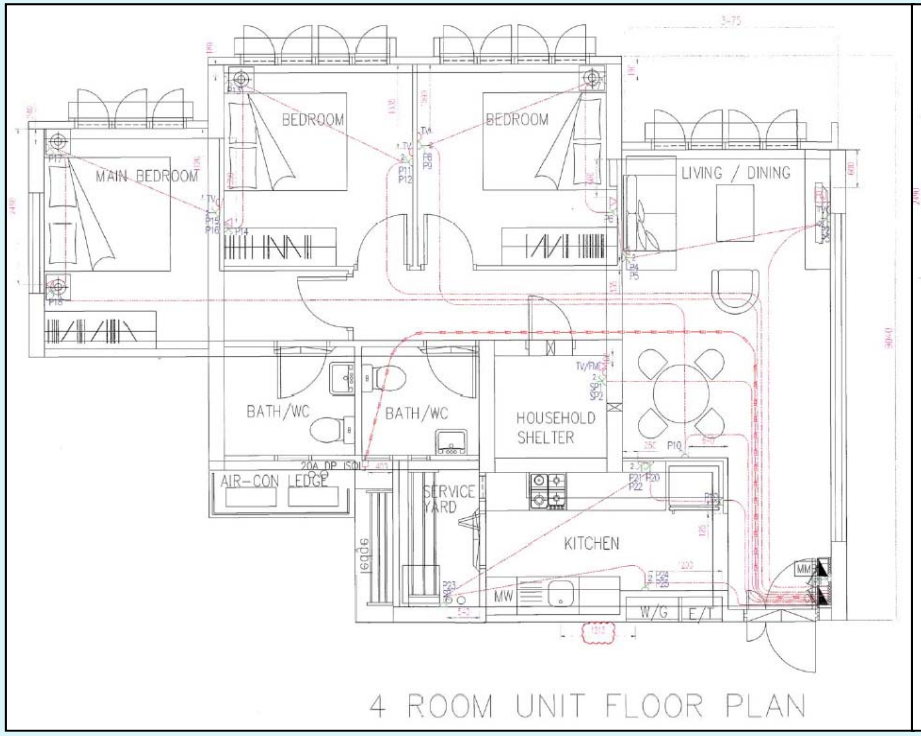
4rm - 26nos of switch socket outlets

Circuit Design	CP5 1998	
	5rm	4rm
Ring	3nos	3nos
Radial	6nos	6nos
Design criteria To save material and labour	Proposed Radial Circuit Design (between 5-6 socket outlets)	

CASE STUDY (WIRING FOR SWITCH SOCKET OUTLETS)

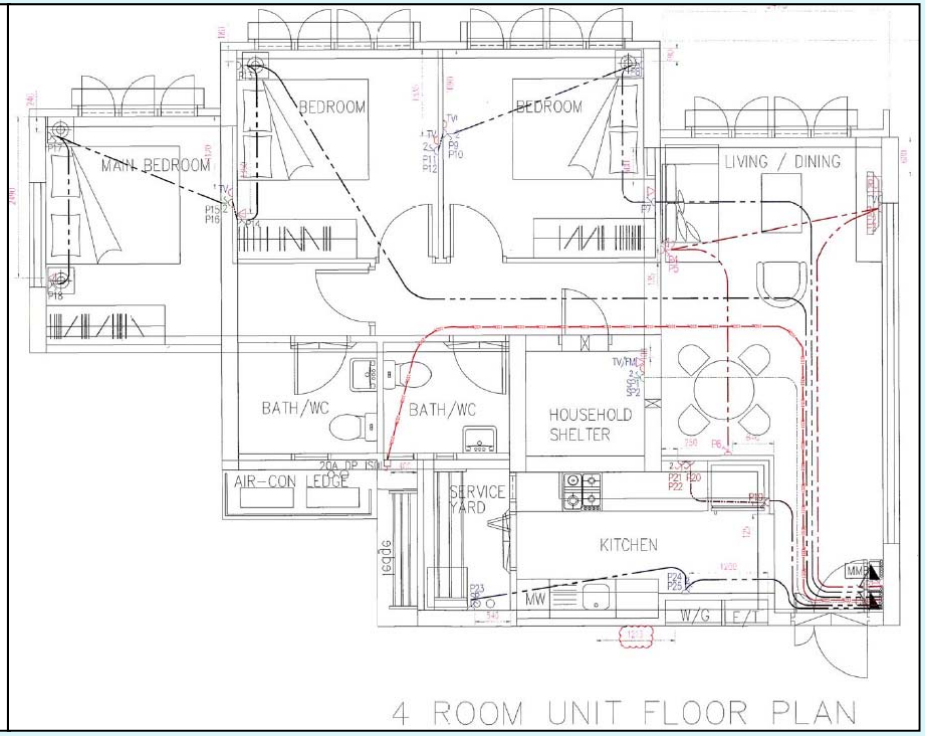
4 Rm flat at Block Chai Chee Road

Current Ring Circuit Design



10 Nos of Switch Socket Outlet

Proposed Radial Circuit Design

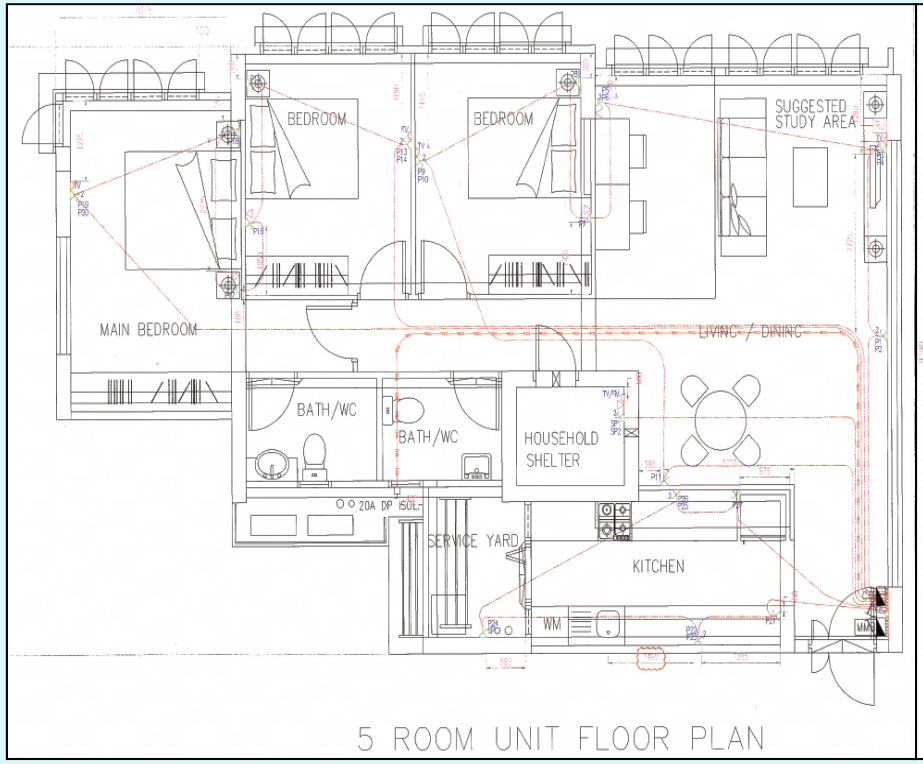


5 to 6 Nos of Switch Socket Outlet

CASE STUDY (WIRING FOR SWITCH SOCKET OUTLETS)

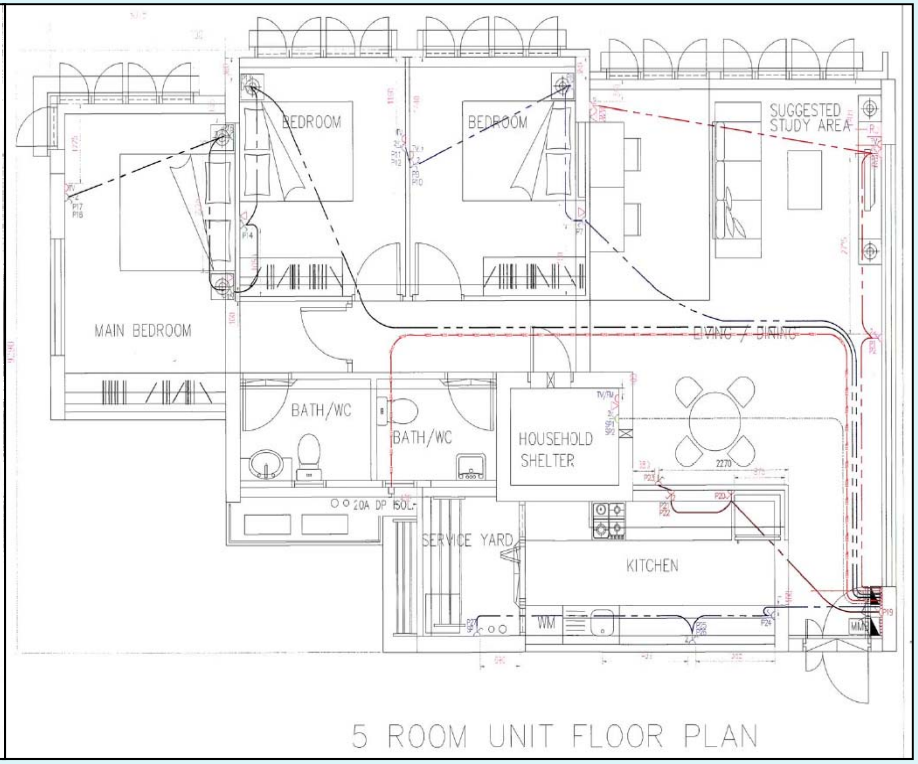
5 Rm flat at Block Chai Chee Road

Current Ring Circuit Design



10 Nos of Switch Socket Outlet

Proposed Radial Circuit Design

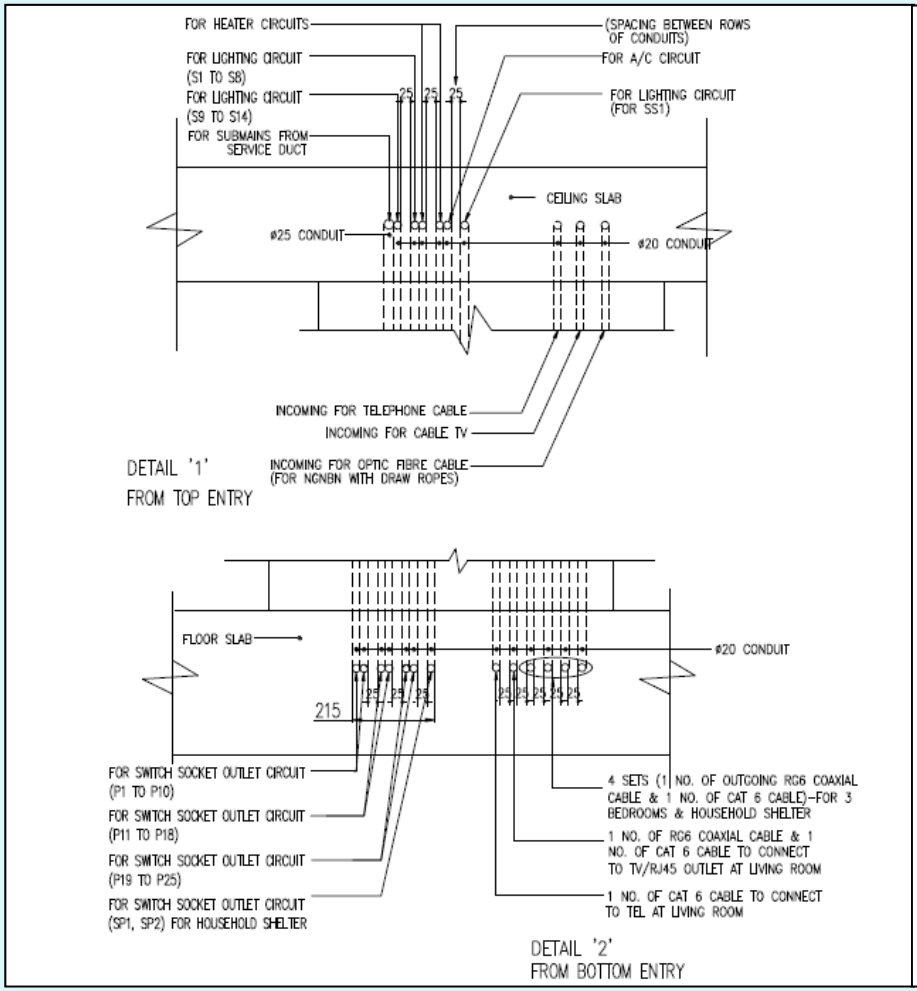


5 to 6 Nos of Switch Socket Outlet

CASE STUDY (CONDUIT ARRANGEMENT FOR SWITCH SOCKET OUTLETS)

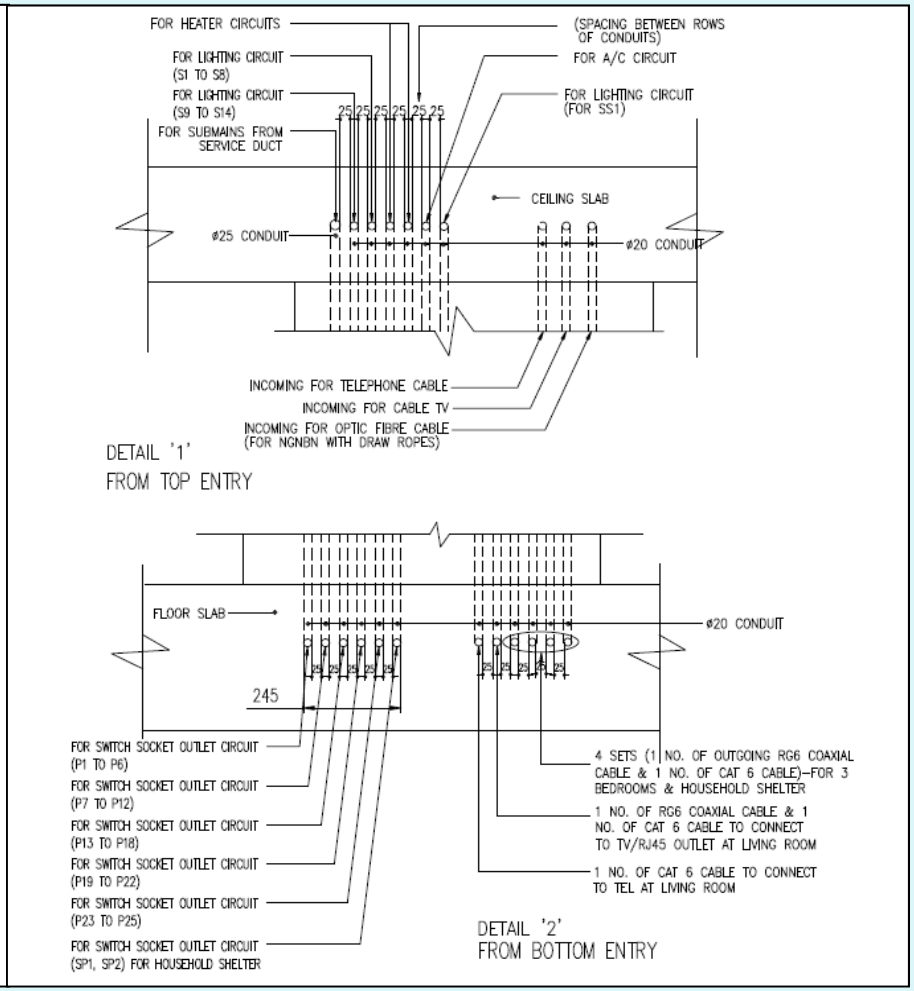
4 Rm flat at Block Chai Chee Road

Current Ring Circuit Design



7 Nos of GI conduit for Switch Socket Outlet

Proposed Radial Circuit Design



6 Nos of GI conduit for Switch Socket Outlet

CASE STUDY (CONDUIT ARRANGEMENT FOR SWITCH SOCKET OUTLETS)

4 Rm flat at Block Chai Chee Road

Current Ring Circuit Design

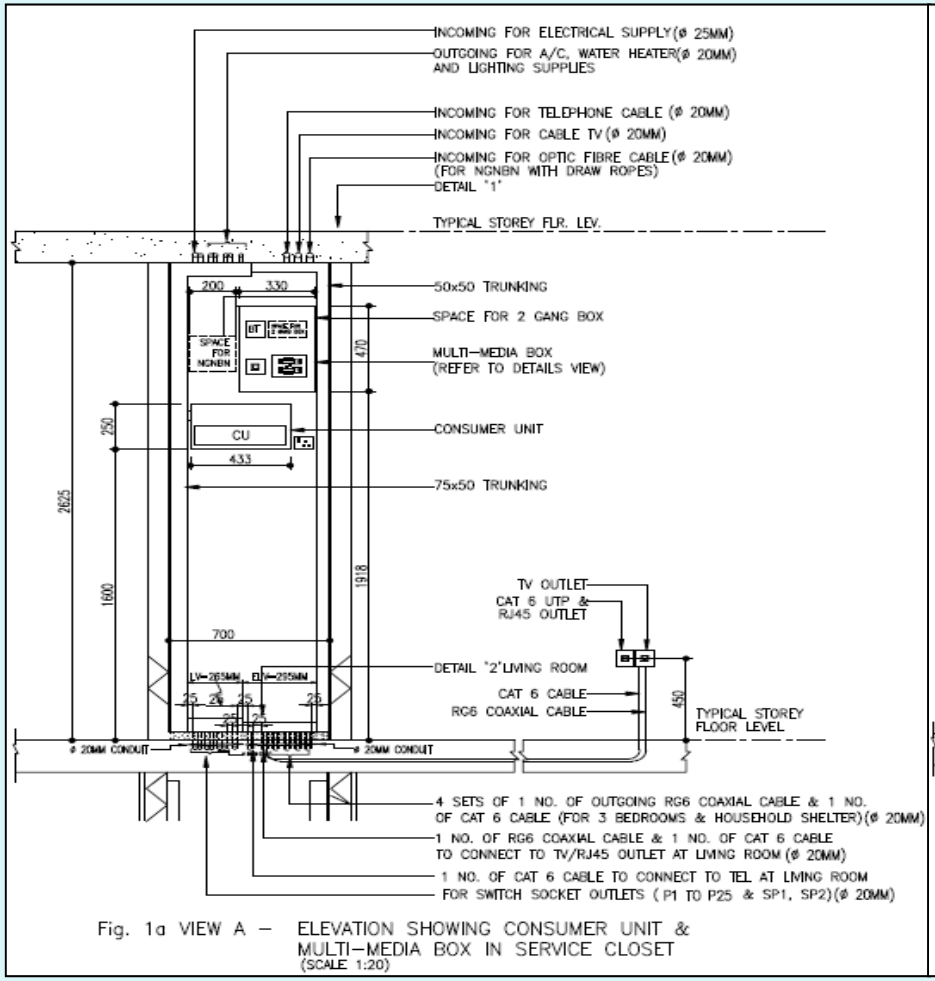


Fig. 1a VIEW A – ELEVATION SHOWING CONSUMER UNIT & MULTI-MEDIA BOX IN SERVICE CLOSET (SCALE 1:20)

Proposed Radial Circuit Design

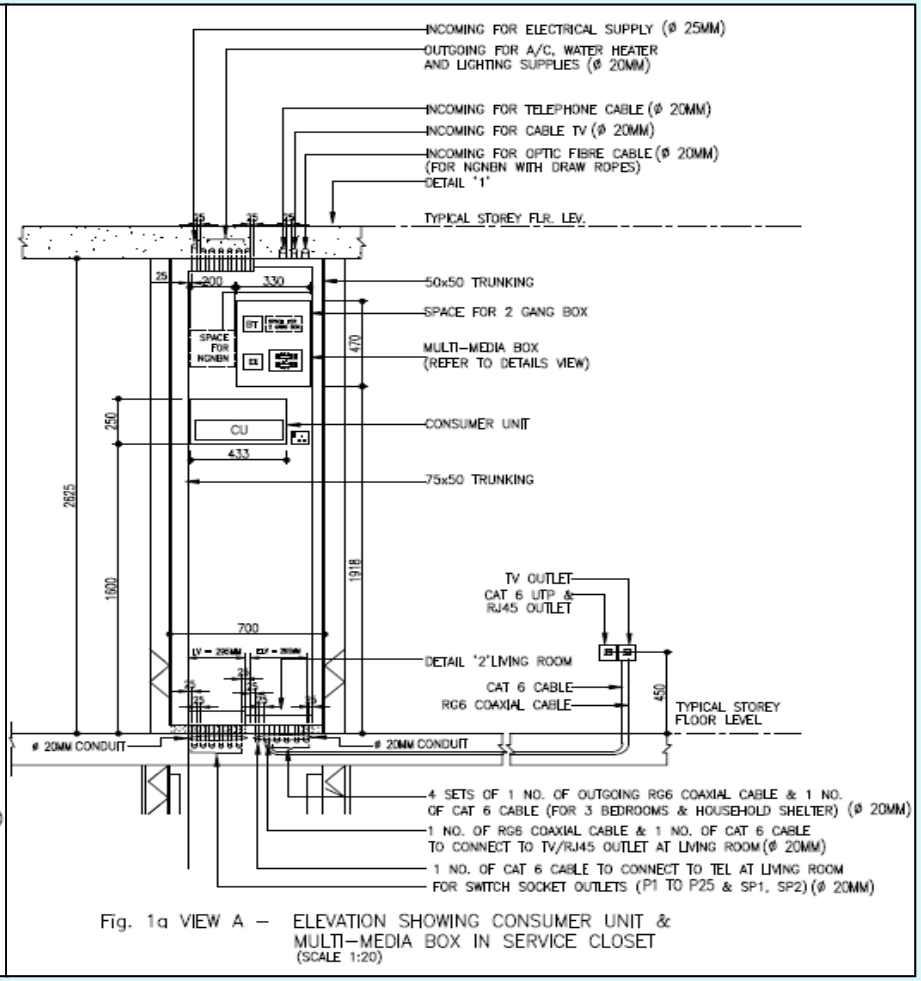


Fig. 1a VIEW A – ELEVATION SHOWING CONSUMER UNIT & MULTI-MEDIA BOX IN SERVICE CLOSET (SCALE 1:20)

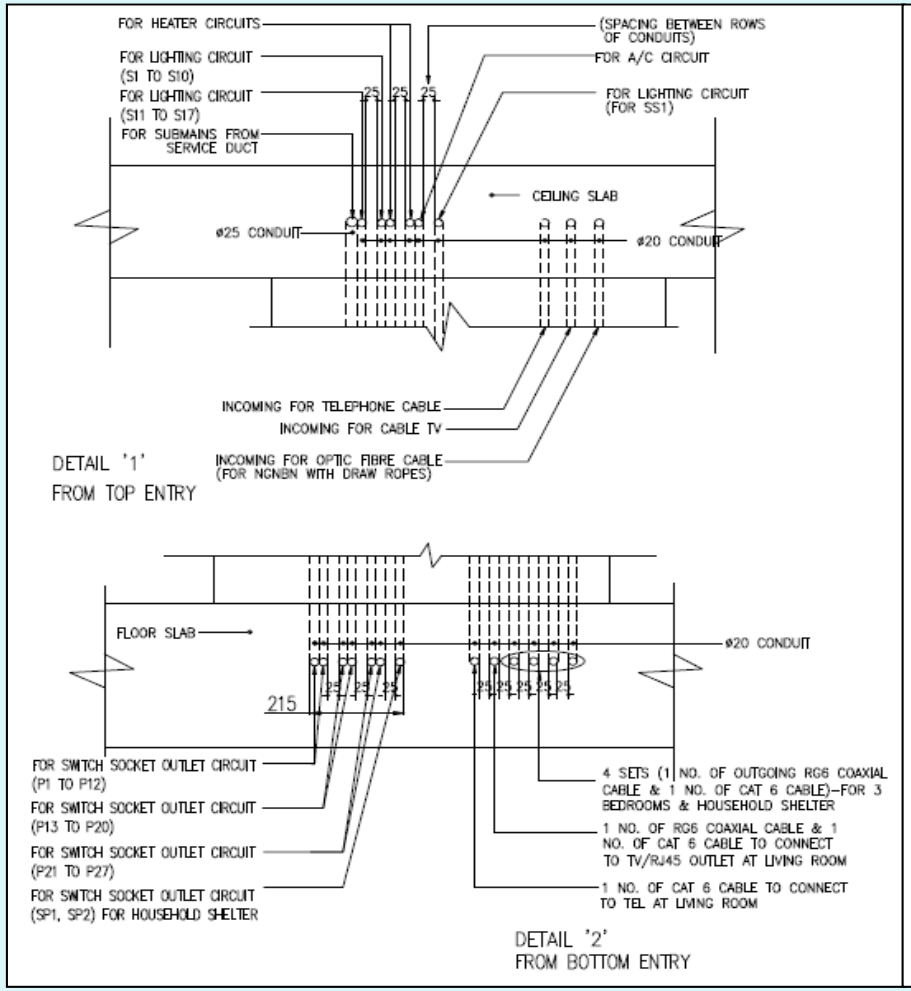
7 Nos of GI conduit for Switch Socket Outlet

6 Nos of GI conduit for Switch Socket Outlet

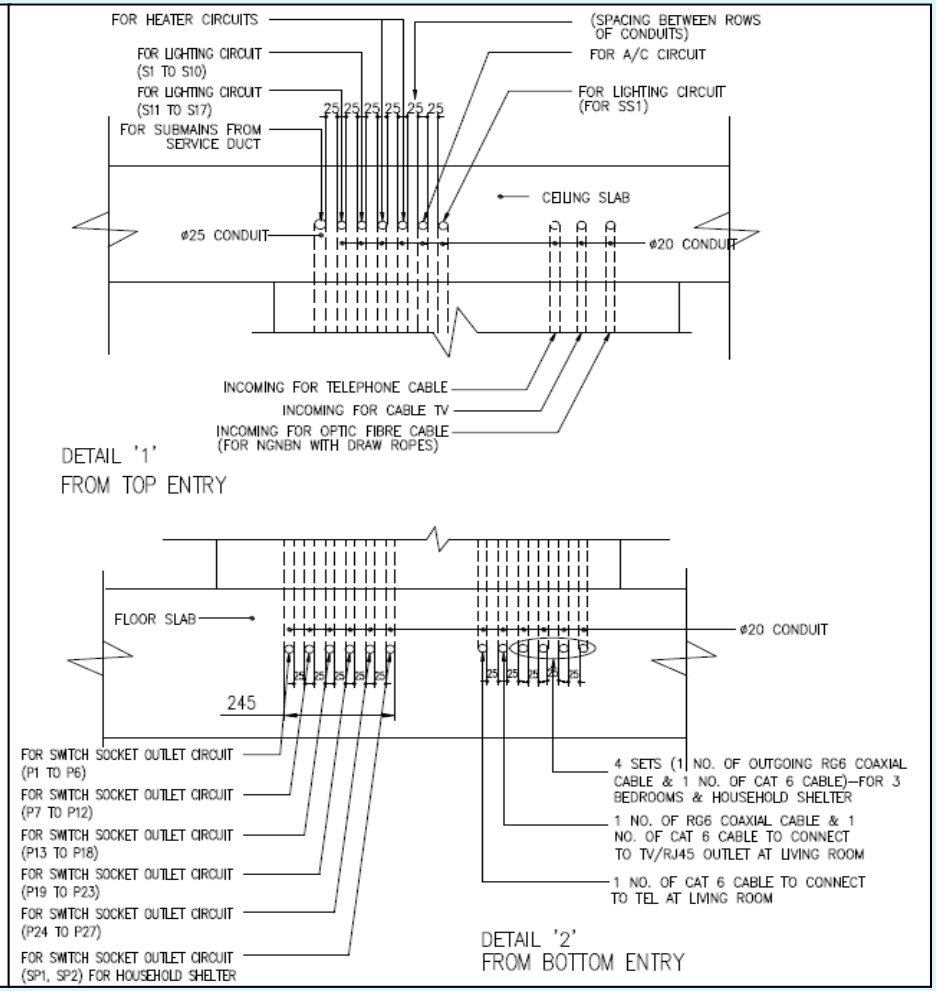
CASE STUDY(CONDUIT ARRANGEMENT FOR SWITCH SOCKET OUTLET)

5 Rm flat at Block Chai Chee Road

Current Ring Circuit Design



Proposed Radial Circuit Design



7 Nos of GI Conduit for Switch Socket Outlet

6 Nos of GI Conduit for Switch Socket Outlet

CASE STUDY (CONDUIT ARRANGEMENT FOR SWITCH SOCKET OUTLETS)

5 Rm flat at Block Chai Chee Road

Current Ring Circuit Design

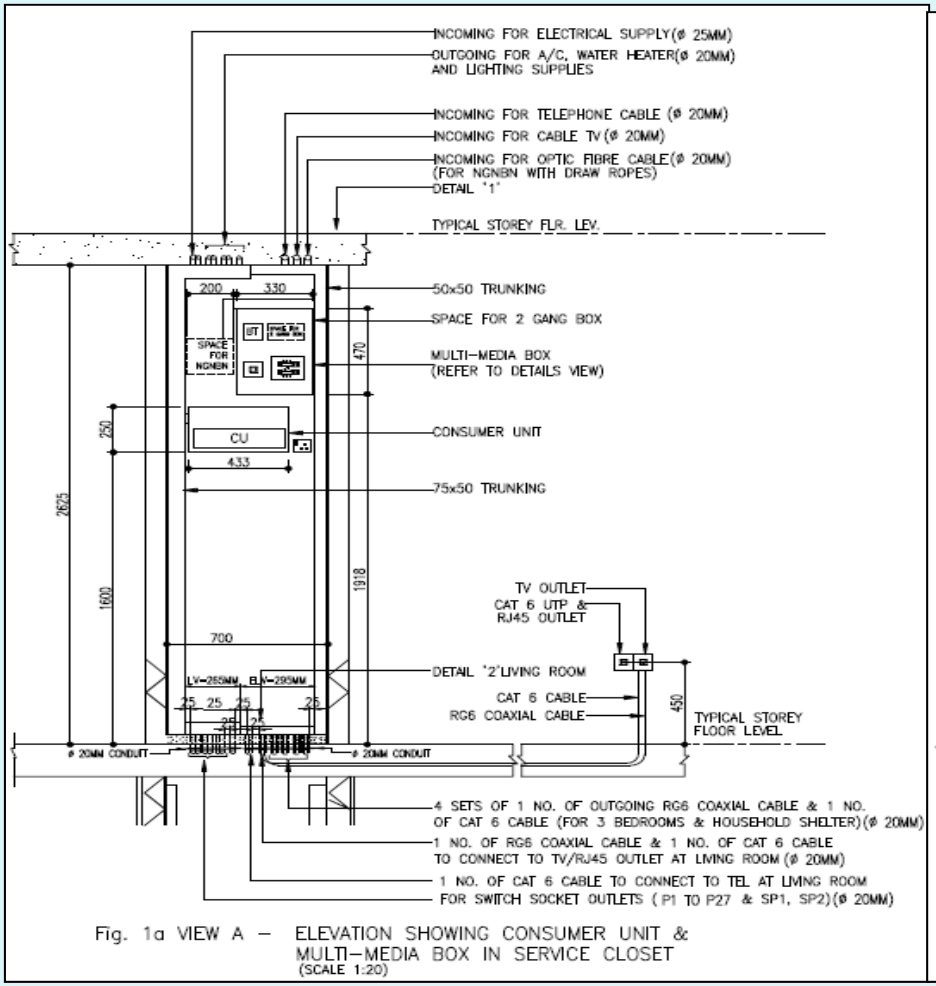


Fig. 1a VIEW A – ELEVATION SHOWING CONSUMER UNIT & MULTI-MEDIA BOX IN SERVICE CLOSET (SCALE 1:20)

7 Nos of GI conduit for Switch Socket Outlet

Proposed Radial Circuit Design

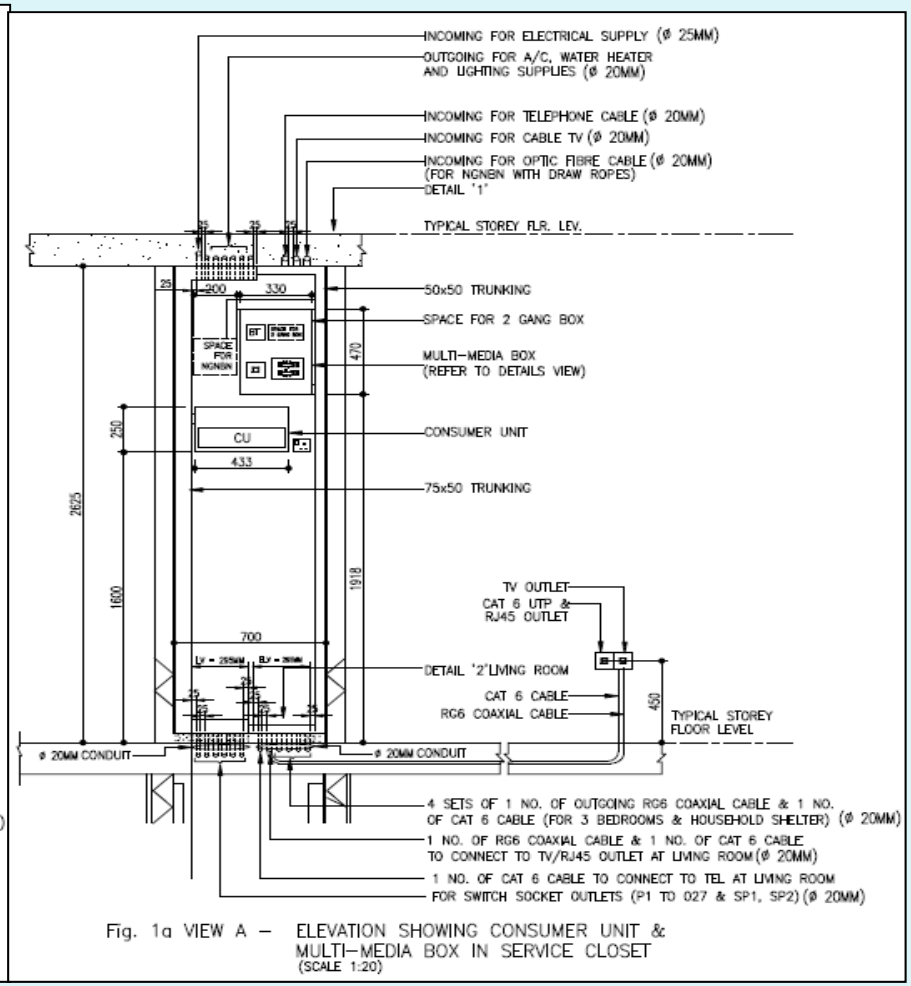


Fig. 1a VIEW A – ELEVATION SHOWING CONSUMER UNIT & MULTI-MEDIA BOX IN SERVICE CLOSET (SCALE 1:20)

6 Nos of GI conduit for Switch Socket Outlet

Case study

Current Ring Circuit Design versus the Proposed Radial Circuit Design

For 13A s/s/o Installed In 4rm and 5 rm Flat

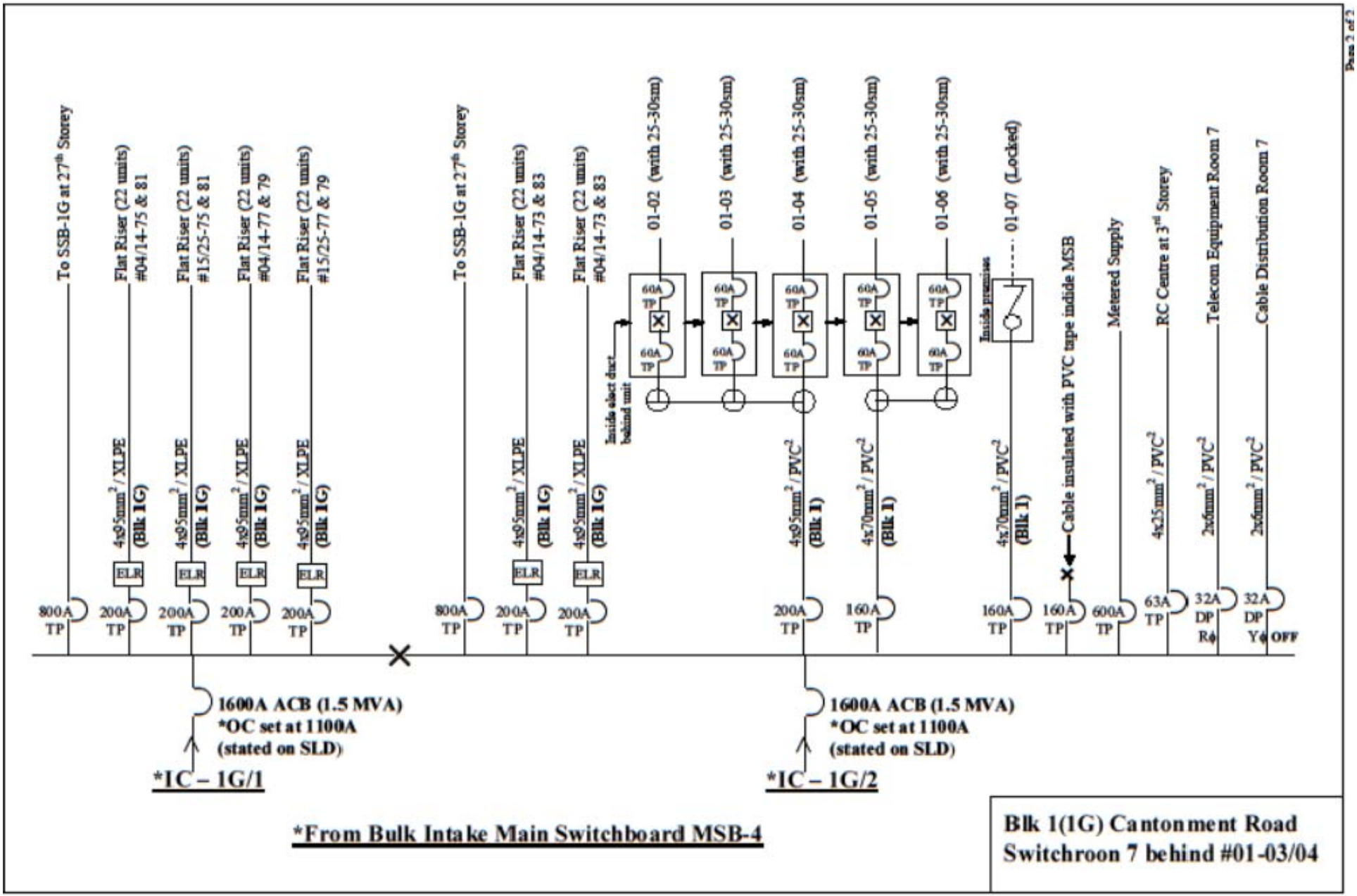
Block Chai Chee Road	4room flat		5 room flat	
Kitchen Living/Dining Main Bedroom Bedroom 1 Bedroom 2 Kitchen Household Shelter	Current Ring Circuit Design	Proposed Radial Circuit Design (with 5-6 s/s/o)	Current Ring Circuit Design	Proposed Radial Circuit Design (with 5-6 s/s/o)
	3 nos	6nos	3 nos	6nos

Date of Implementation

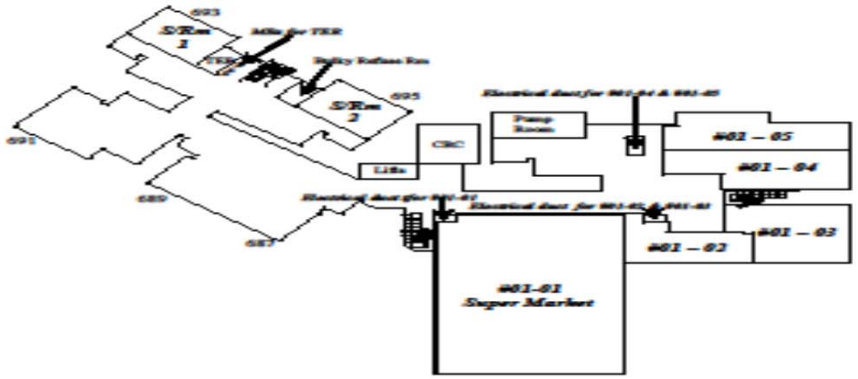
- For new BTO Tenders from 1 June 2016, radial circuit design for residential flat shall be used.

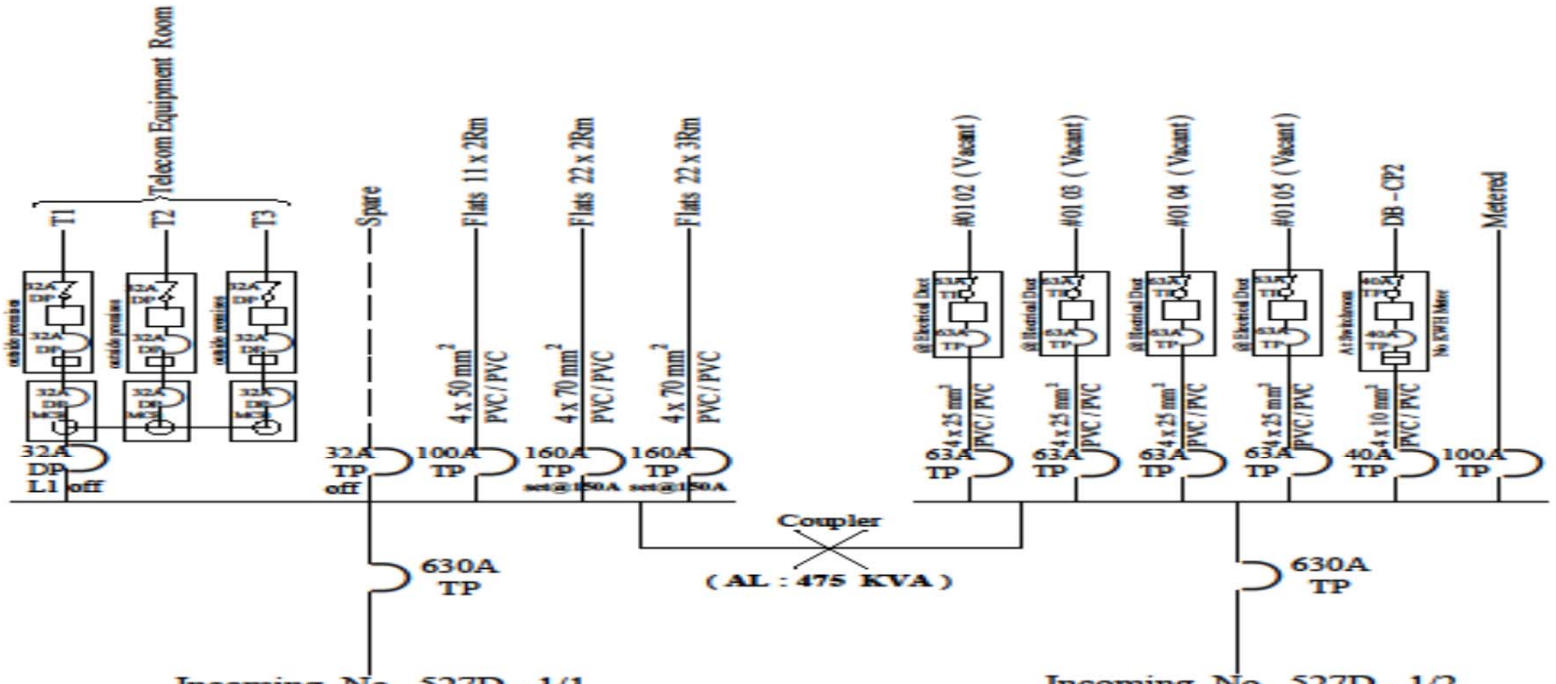
HDB DESIGN LOAD
(Without centralised Air-con):

(1)SHOP
(2)COMMERCIAL PREMISES
(3)OFFICES


To SSB-1G at 27th Storey
Flat Riser (22 units) #04/14-75 & 81
Flat Riser (22 units) #15/25-75 & 81
Flat Riser (22 units) #04/14-77 & 79
Flat Riser (22 units) #15/25-77 & 79
To SSB-1G at 27th Storey
Flat Riser (22 units) #04/14-73 & 83
Flat Riser (22 units) #04/14-73 & 83
01-02 (with 25-30sm)
01-03 (with 25-30sm)
01-04 (with 25-30sm)
01-05 (with 25-30sm)
01-06 (with 25-30sm)
01-07 (Locked)
Inside elect duct behind unit
Inside premises
Cable insulated with PVC tape indide MSB
Metered Supply
RC Centre at 3rd Storey
Telecom Equipment Room 7
Cable Distribution Room 7
4x95mm² / XLPE (Blk 1G)
4x95mm² / PVC² (Blk 1)
4x70mm² / PVC² (Blk 1)
4x25mm² / PVC²
2x6mm² / PVC²
ELR
60A TP
800A TP
200A TP
160A TP
600A TP
63A TP
32A DP
R
Y
OFF
1600A ACB (1.5 MVA)
*OC set at 1100A
(stated on SLD)
*1C – 1G/1
*1C – 1G/2
*From Bulk Intake Main Switchboard MSB-4
Blk 1(1G) Cantonment Road
Switchroon 7 behind #01-03/04

3) Single line diagram of incoming and all sub-mains. For each sub-mains indicate the cable size, phasing, unit no. and type of business.



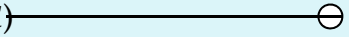
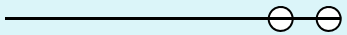
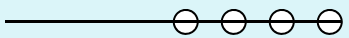
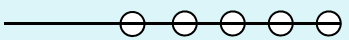
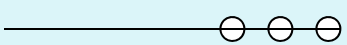
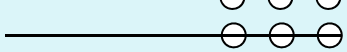
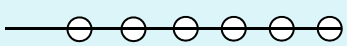


Block 527D Pasir Ris Street 51
Switchroom 1 Below #02 – 693

(1)HDB SHOP DESIGN LOAD

Shops (up to 100sm) Including F & B /eateries	**Overall Design Load Calculation**		**Meterboard rating**
Estate Type	1phase 60A	3phase 60A	
Precinct	70%	30%	1phase 60A
NH	50%	50%	1phase 60A
TC	30%	70%	1phase 60A
Shops (bet 100sm to 150sm)			3phase 40A
Shops (bet 150sm to 200sm)			3phase 60A

Bigger submain serving row of shops (up to 100sm)@ 1phase 60A meterboard

Number of Shops	Horizontal Submain Configuration	No shops able to take 3phase 60A	No shops taking 1phase 60A
1	3-phase 60A (4 x 25 mm² PVC/PVC) 	1	
2	3-phase 125A (4 x 50 mm² PVC/PVC) 	2	
3	3-phase 200A (4 x 95 mm² PVC/PVC) 	3	
4	3-phase 200A (4 x 95 mm² PVC/PVC) 	3	1
5	3-phase 200A (4 x 95 mm² PVC/PVC) 	3	2
6	3-phase 200A (4 x 95 mm² PVC/PVC)  3-phase 200A (4 x 95 mm² PVC/PVC) 	6	
7	**3phase 300A (4x 150mm² PVC/PVC)** 	4	2

(2)HDB Commercial Premises Design Load

Premises	**Design Load**	**Remark**	**Additional spare load in switchroom**
Supermarket/Electronic	3phase 1A/sm		
Mini-market (100sm)	3phase 80A		
Eating House (200sm to 300sm)	3phase 200A	Above 300sm + 1phase 0.6A/sm	*3phase 200A for every 2units for conversion to fast food
Restaurant / F & B (200sm)	3phase 400A	Above 200sm + 1phase 0.6A/sm	
Fast Food (200sm to 300sm)		Above 300sm + 1phase 0.6A/sm	
Food Court (1000sm)	3phase 600A	Above 1000sm + 1phase 0.6A/sm	
Child Care centre/ Education centre	1phase 0.74A/sm	Minimum 3phase 60A	
*Void deck facilities or Future social community facilities	1phase 0.74A/sm	Minimum 3phase 60A	Minimum 1phase 60A for meterboard
Total Switchroom Load			
*15% Spare at CSR (Subject to ESS capacity)			
Total Switchroom Load			

HDB Commercial Premises Design Load (Without centralised Air-con)

- For future conversion of either eating house or restaurant to fast food :

  (a)Every 1 to 2 units, add 3phase 200A to S/R
  (b)Every 3 to 4 units, add 3phase 400A to S/R

- 15% spare at the CSR subject to ESS capacity wherever possible

- Design load for either Void ESS facilities or Future social community facilities

i.e. If there is a Future social community facilities allocated, there will be no design load provision for void deck facilities

(3) HDB OFFICE DESIGN LOAD

Office	**Design Load (No Diversity Factor)**
Up to 100sm	1phase 60A
Above 100sm	1phase 74A/sm

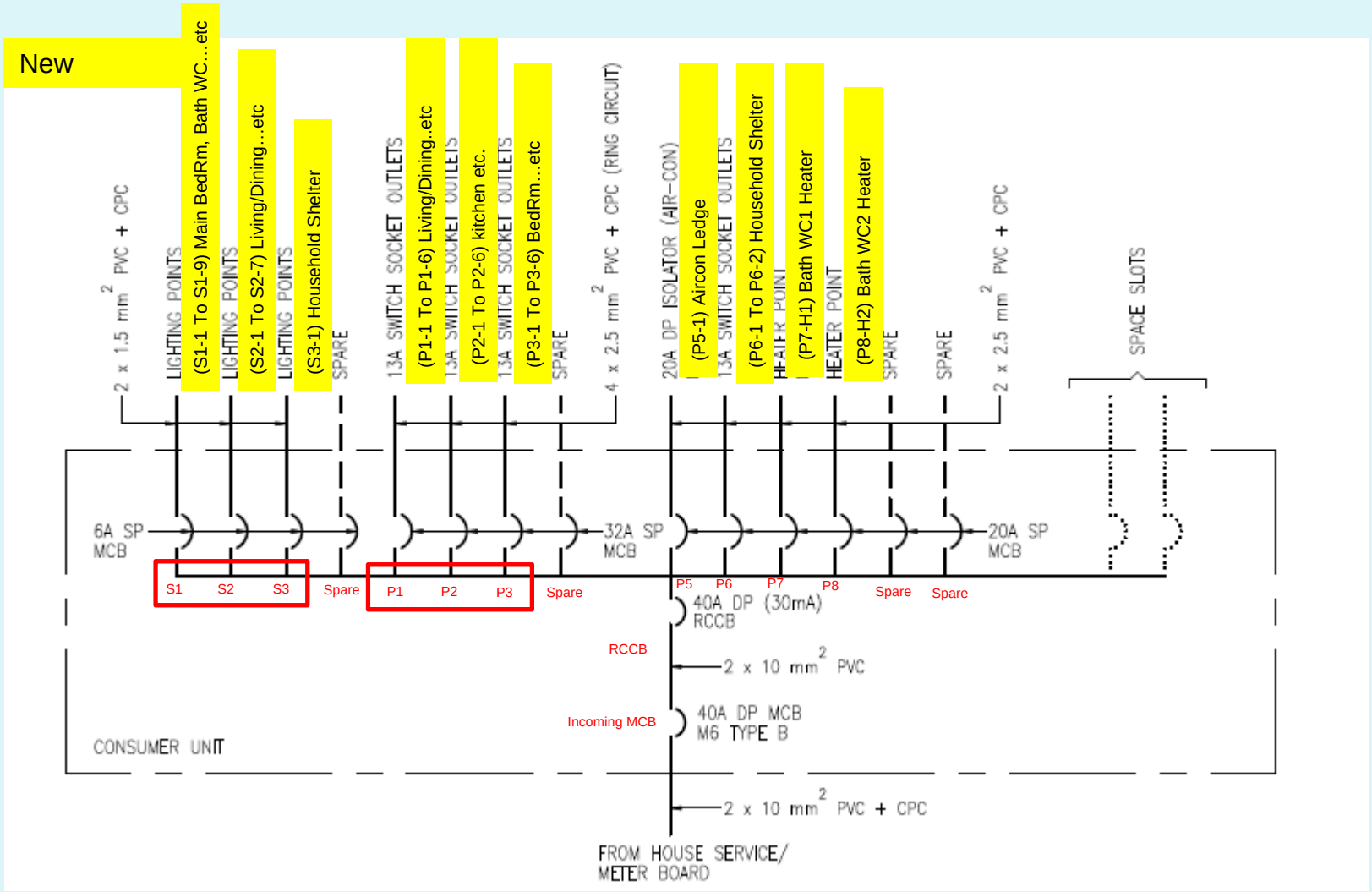
Design Requirements

- Typical Circuit (Numbers and description) in SLD for HDB Flat
- LPCP For ESS wall
- Switches/Socket Outlet below waterpipe joint/Valve
- Incoming MCCB Of HDB Switchboard For Residential Block
- Cable Buffer Distance
- UPS Outside Project Boundary (eg in the LTA road)

Proposal-1

1)Typical Circuit (Numbers and Description) in SLD For HDB Flat

- **Unique identifier label between MCB Circuit on Consumer Unit & Lighting Points / Socket outlets**



2)Light weight Precast Concret Panel (LPCP) for ESS Wall (Bukit Panjang N6 C15)

- BCA's direction to eliminate the current brick/block wall to reduce wet trade on site
- The latest construction material technology
- Will increase construction productivity

3) Switches/Socket outlet is allowed to be directly below joint, but not valve

- Copper pipe/stainless steel pipe using fitting
- Copper pipe using welding
- UPVC pipe jointing using glue
- PP-R thermoplastic (Polyproplylene Random Co-polymer resins) Pipe
  PP-R pipe joint is homogeneous with the pipe
  (Punggol East C44)

4) INCOMING MCCB FOR HDB SWITCHBOARD FOR RESIDENTIAL BLOCK

- Either 4P or TP & N
- SPSL has no objection

5)Cable buffer distance

Cable Buffer distance	**4 plinth (LT room length 13.9m)**	**2 plinth (LT room length 5.5m)**	**Accountability**
Inside the ESS	15m	10m	SPPG
Outside the ESS	6m	6m	SPPG
Turning radius at each drawpit	By HDB consultant (0.5m ??)	By HDB consultant (0.5m ??)	HDB
At HDB switchroom	By HDB consultant	By HDB consultant	HDB

5)UPS Cable distance Table

S/No	Cable distance	Block	Block	Block	Block	Block	Block
1	Buffer at ESS required by SPPG						
2	Buffer at Drawpits						
3	UPS length						
4	At HDB switchroom						
5							
6							
Total cable length							

6)UPS Outside Project Boundary (eg in the LTA road)

- UPS and ESS will be handed over to SPPG for maintenance

- Portion of UPS turn into LTA road (HIP G20B)

  HDB has no objection subject to SPPG approval