Supervision And Testing On Electrical System

9 April 2014

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Development & Construction Productivity Department

Building Quality Group

Housing & Development Board

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Supervision

- Conduct periodically
- Observant and vigilant during site visit
- Pay more attention to new and poor-performing contractors
- Feedback and share for improvement

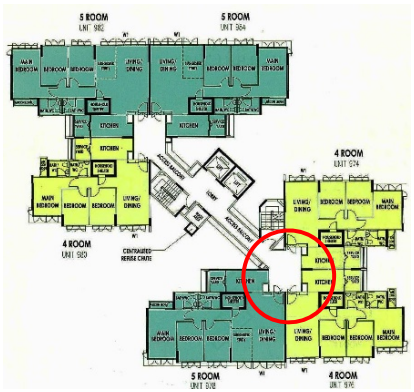
- Layout and Overhang
- 24-hr lighting at ‘enclosed’ staircases, lift lobbies, corridors with photocell devices
- Conduct survey (day) with contractor to identify the dim location and follow up with remedial measures before handover of building

•Insufficient lightings/Dim at corridors / areas outside flats

•Insufficient lightings/Dim at lift lobbies









SUPERVISION

DAYLIGHT PENETRATION

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- **Conduct site (night) survey together with contractor to identify areas / spots which are dim and follow up with remedial measures before handover of building**

•Insufficient lightings/Dim at corridors / areas outside flats

•Insufficient lightings





SUPERVISION

ARTIFICIAL LIGHTING

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- **Select suitable light fixture to avoid glare**
- **Anti-glare louvre**
- **Frosted/Opal diffuser**



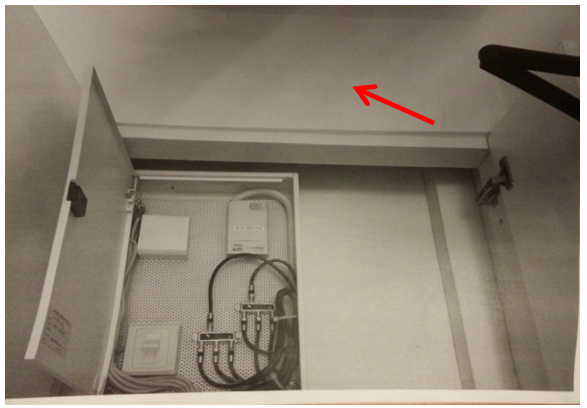
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- **Inadequate clearance or no access for maintenance**









SUPERVISION

ACCESS FOR MAINTENANCE/ADDITION/REPLACEMENT

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- **Not in accordance with the requirement in Design Brief**





SUPERVISION

SOCKET OUTLET(S) BESIDE TV/TELEPHONE/DATA OUTLET

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- **Not provided in accordance with the drawing**





SUPERVISION

UNDERPROVISION OF SOCKET OUTLETS

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- **Electrical accessories should not be located under the window**



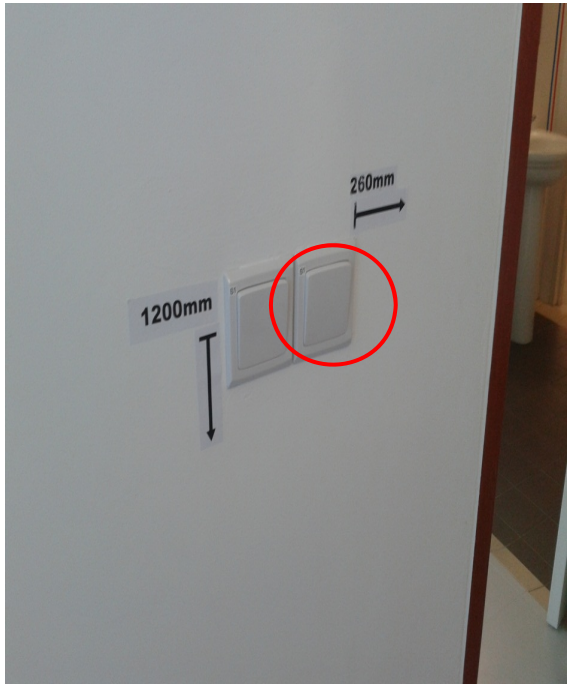


SUPERVISION

ELECTRICAL ACCESSORIES UNDER WINDOW

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- Light switches to be close to entrance door
- Easily accessible
- Free up some wall area





SUPERVISION

ELECTRICAL ACCESSORIES FROM END WALL

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- **Light fixture not suitable**
- **Too close to Building**





SUPERVISION

POSITION OF LIGHT FIXTURE

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- Exposed to weather
- Inappropriate IP rating
- Not visually appealing





SUPERVISION

MOUNTING AND LOCATION OF LIGHT FIXTURE

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- **Light fixture at the edge of the building – inappropriate location**





SUPERVISION

MOUNTING AND LOCATION OF LIGHT FIXTURE

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- **Underground cable exposed**

SUPERVISION

EXPOSED UNDERGROUND CABLE

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- **Exposed to weather**
- **Mindful during design stage**



SUPERVISION

SUBJECT TO WEATHER CONDITION

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- **Strobe light hit by gate**



SUPERVISION

ELECTRICAL ACCESSORIES HIT BY OBJECT

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- Exposed to weather
- Specified weatherproof type
- Not provided in accordance with drawing



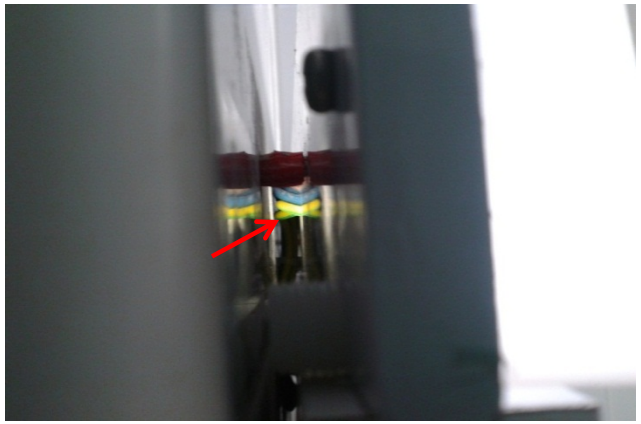


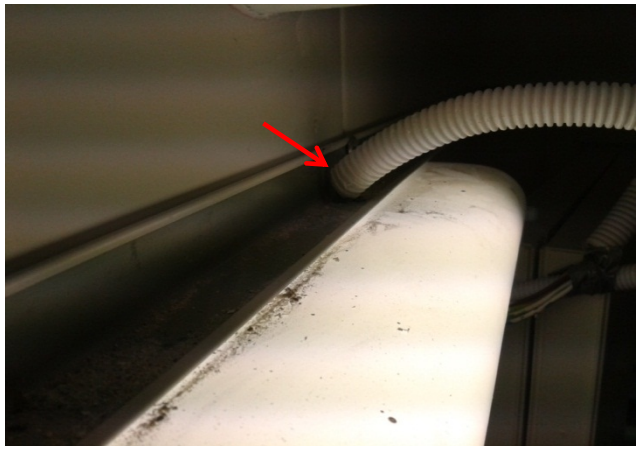
SUPERVISION

IP RATING OF ELECTRICAL ACCESSORIES SUBJECT TO WEATHER

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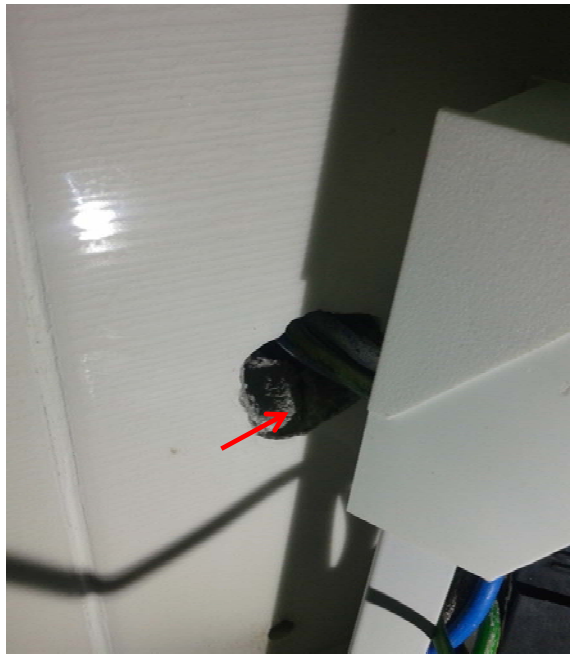
- **No protection for single PVC cables**

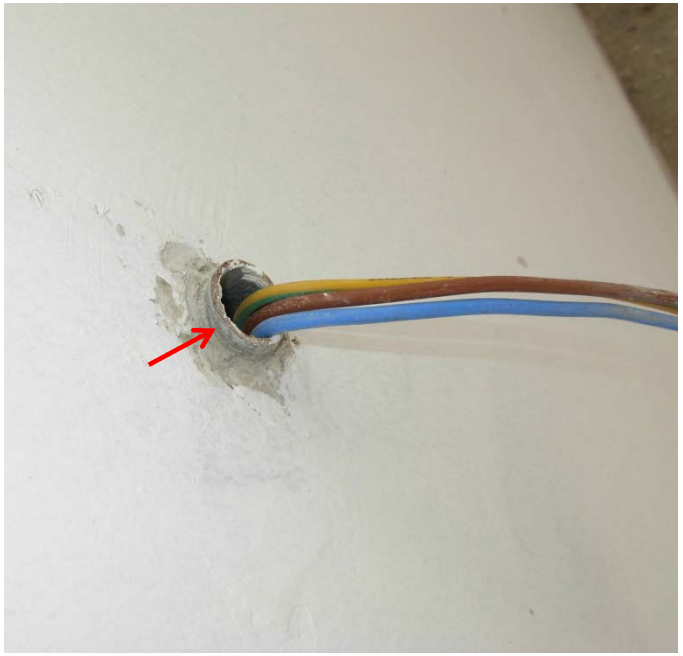




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- **Bushing not provided**





SUPERVISION

PROTECTION OF CABLE

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- Electrical riser not easily accessible for installation work & maintenance
- Reading of PG meter difficult
- Failed Pre-Turn-on
- Install extension bracket



SUPERVISION

DEEP RISER DUCT

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- **Cables laid within no-drill zone**





SUPERVISION

NO DRILL ZONE

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- **Non-IP 55 light fixture in toilet of Studio Apartment**
- **Not in accordance with drawing**





SUPERVISION

IP RATING OF LIGHT FIXTURE

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- Cut lightning tape – reduced contact area
- Re- Entrance loop
- Not properly secured





SUPERVISION

LIGHTNING DOWN CONDUCTOR

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- **Cables not housed in trunking**



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Electrical Testing

- Monitor closely the new and poor-performing contractors
- Witness electrical testing
- Installation tested satisfactorily

- **Concealed PVC conduit with depth < 50 mm – Non-compliance with CP5**
- **G.I conduit for depth < 50mm**



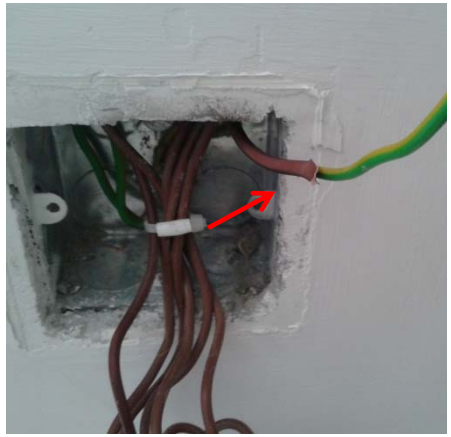


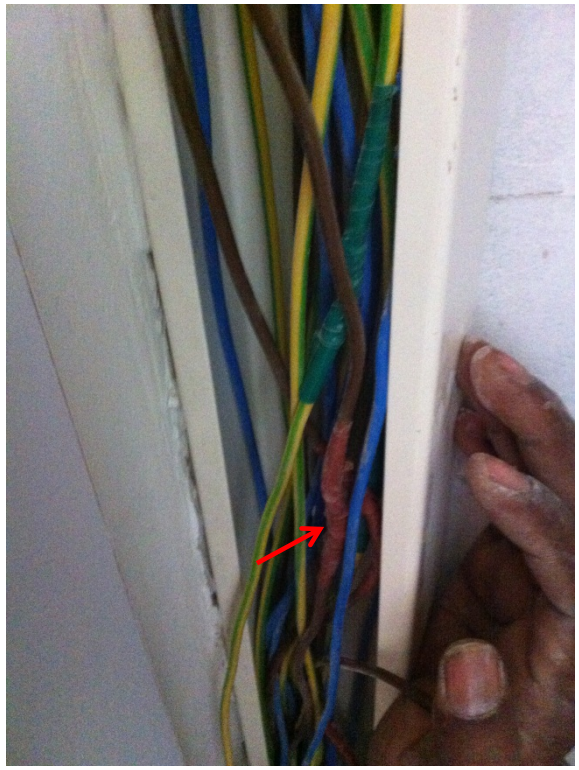
ELECTRICAL TESTING

MECHANICAL PROTECTION OF CABLES

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- **Cable joint / sleeve**

ELECTRICAL TESTING

CABLE JOINT/SLEEVE NOT ALLOWED

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- **No Segregation of LV & ELV cables**





ELECTRICAL TESTING

Segregation of LV & ELV System

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- **Incorrect meter arrangement**



ELECTRICAL TESTING

ARRANGEMENT OF PG METER

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- **Heater is switched on in ‘OFF’ position**



TESTIING

INCORRECT CONNECTION

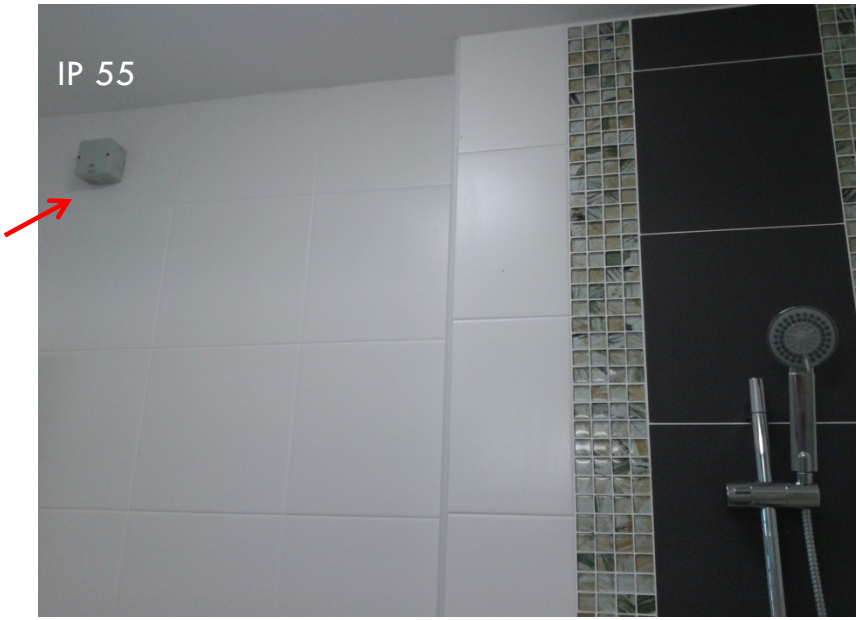
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- **Incomplete installation**





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ELECTRICAL TESTING

Compliance with SPSL's requirement

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Sharing of Good Practices

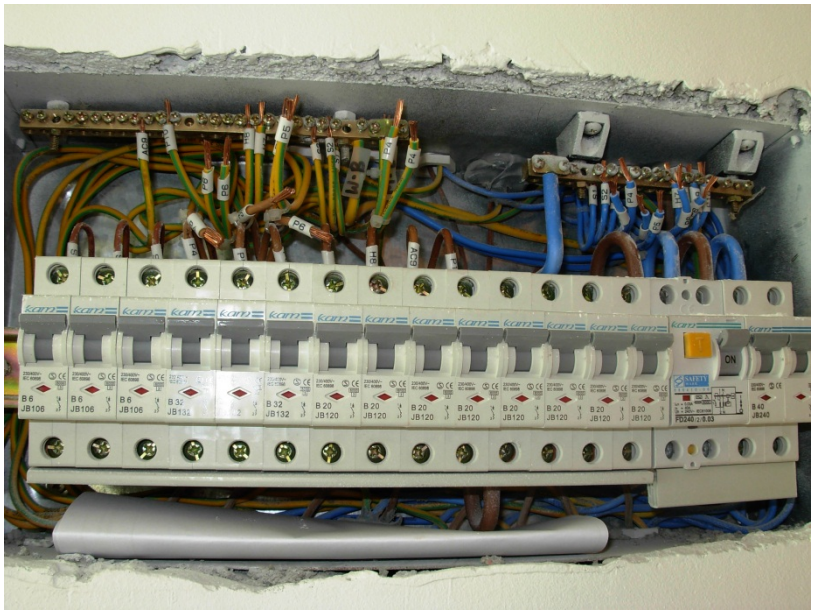
Consumer Control Unit

✔



- **Wiring neat & tidy**

✘



- **Wiring messy & untidy**

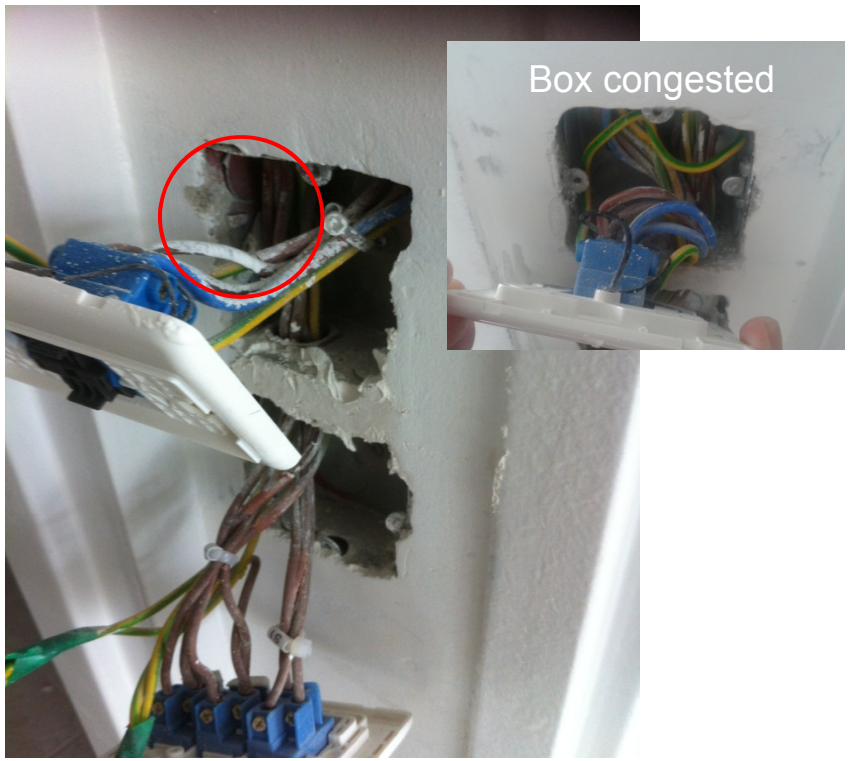
Cable Entry to Different Circuits

✔



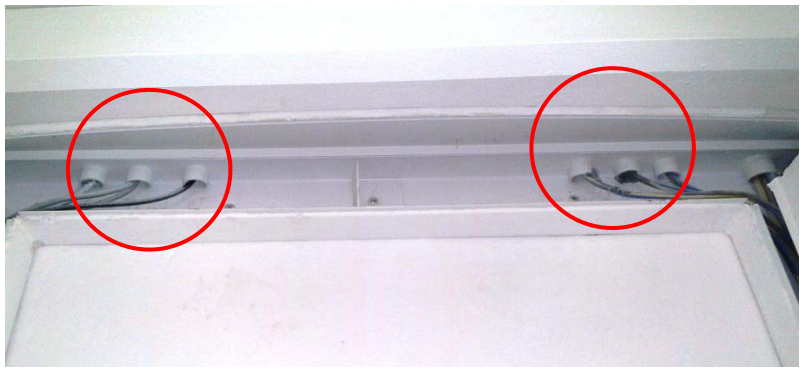
- **Different cable entries for heater and light circuits**

✘



- **Cables for light circuit pass through heater switch**

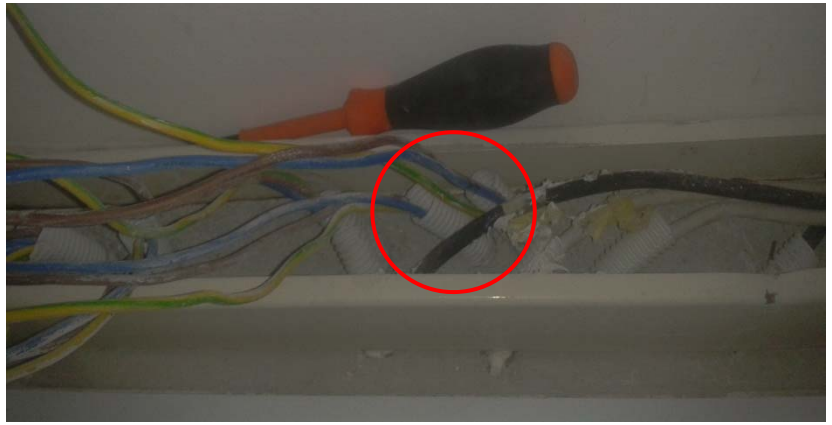
Segregation of LV and ELV Cables





- Proper Segregation of LV and ELV





- Poor Segregation of LV and ELV

Light Fixture with No IP Rating



- IP 20 fixture away from weather



- IP 20 fixture exposed to weather

Outlet at Areas Exposed to Weather

✔





- Weatherproof type

✘



- Non-weatherproof type

Bonding Termination to Metallic Structure



- More secure and better contact



- Minimal contact

Welding of Lightning Protection System To the RC Mess

✔



- Welded to mesh
- More secure and better contact

Meter Panel

Good Practice ✔



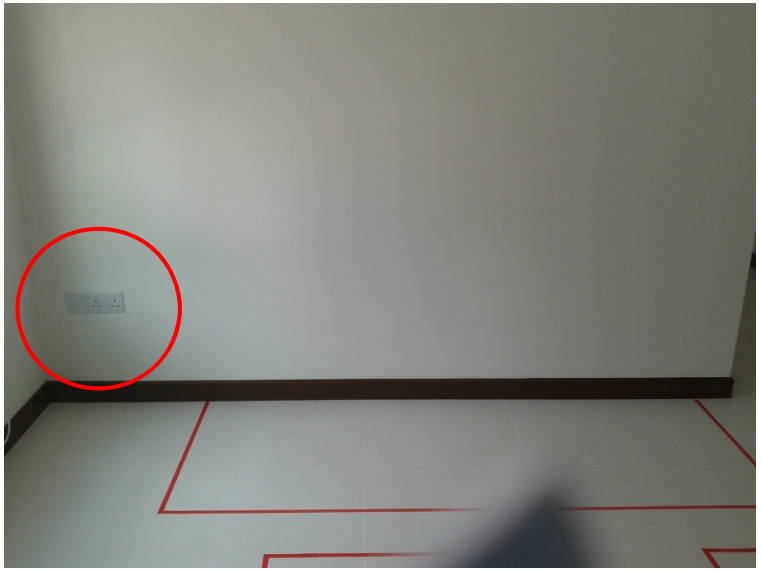


- Extended to the ground
- Prevent residents or children from knocking on it

ELECTRICAL ACCESSORIES FROM END WALL/EDGES



- More space
- Flexibility for rearranging furniture



ELECTRICAL ACCESSORIES FROM END WALL/EDGES

✔



✔

- More space
- Flexibility for rearranging furniture



Accessibility of Electrical Accessories

✔



- Access not obstructed

✘





- Access obstructed by the bed

Mounting height for Ceiling Light

- Easily reached inside toilet



RESIDENTS' FEEDBACK

- 'Heater and toilet light switches poorly located'
- 'Locations of switches and sockets not ideal'
- 'Socket outlets cannot be used as they are blocked by bed'
- 'Socket in the middle of hob/hood/basin'



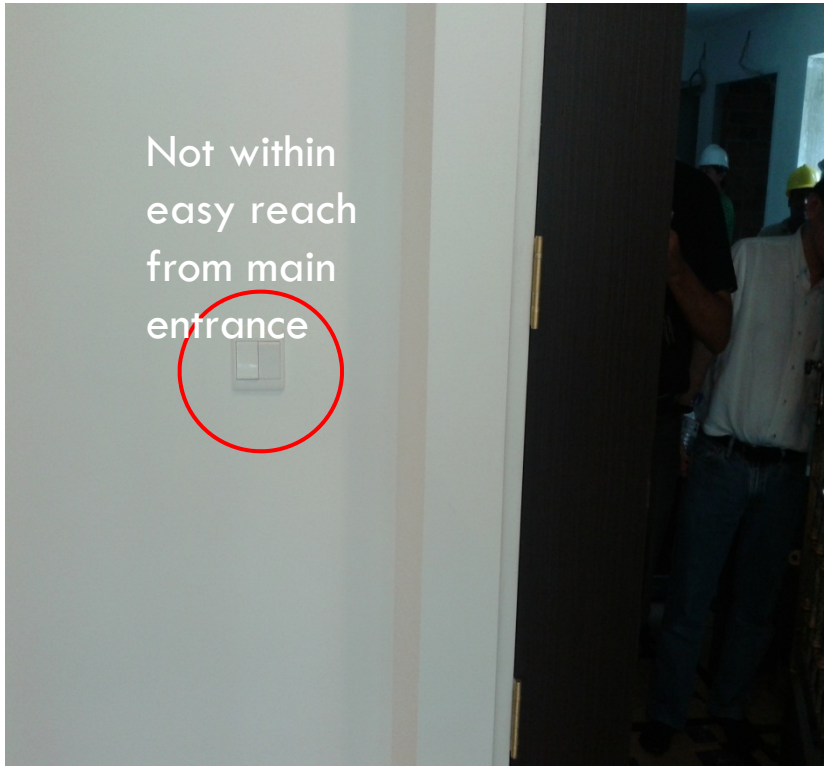




FEEDBACK

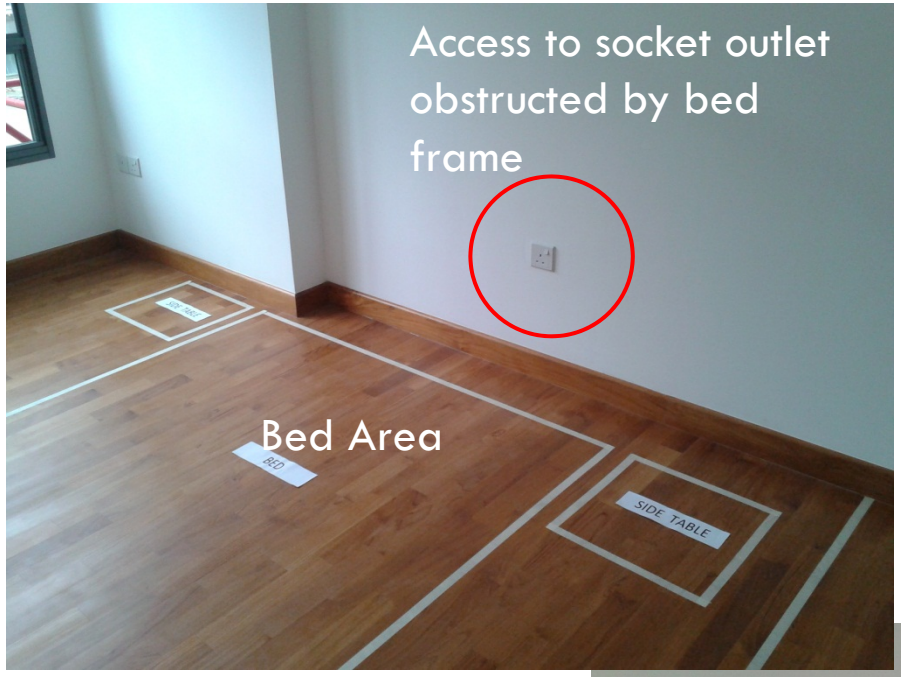
Heater and light switches for toilet

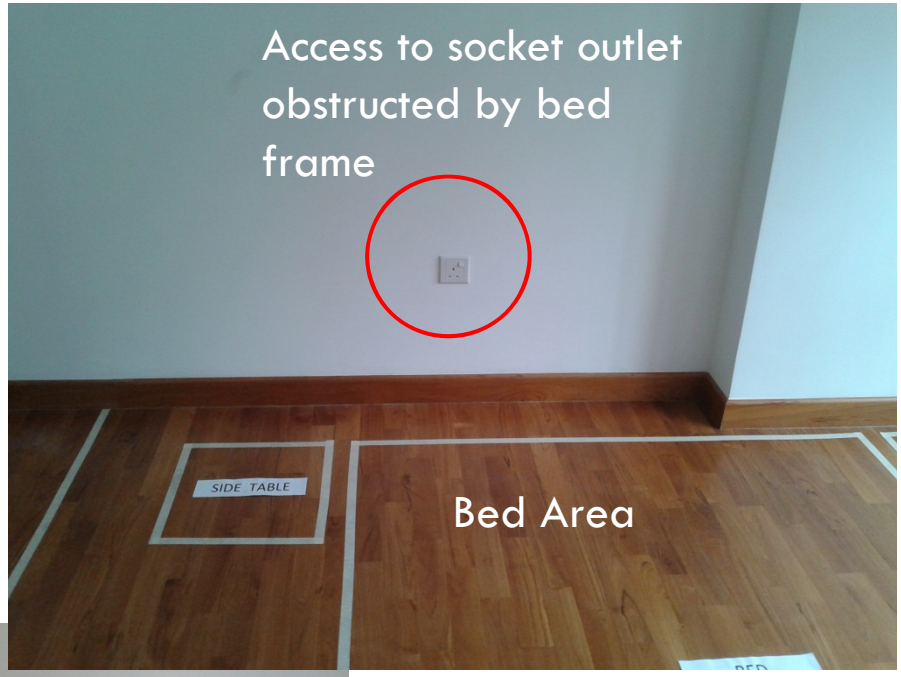


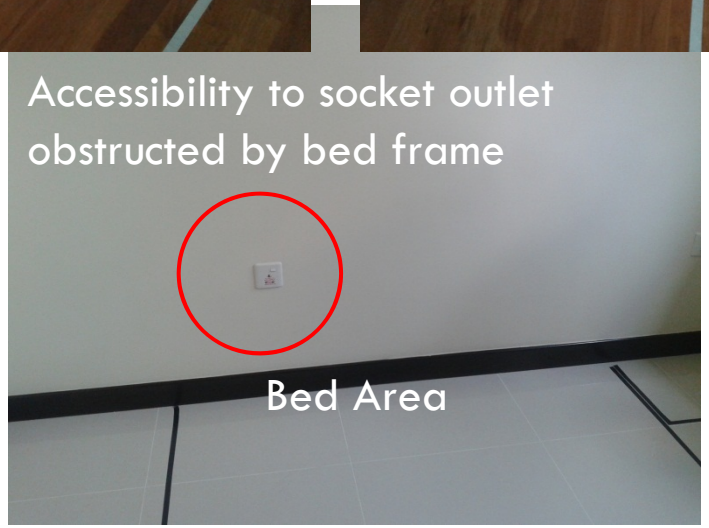


FEEDBACK

Light switches







FEEDBACK

Socket outlets







FEEDBACK

Socket outlets

LED LIGHT FIXTURE

- Batch Testing is required for LED light fixtures for tenders called from 1 Nov 13
- Number of LED downlights at lift lobby

Application for TOP or CSC

- BCA's Circular dated 30 Jan 2014
- Submission of as-built plans and commissioning test reports for lightning protection system when apply for Temporary Occupation Permit (TOP) or Certificate of statutory completion (CSC)"
- Effect from **1 April 2014**

Lightweight Precast Concrete Panel

- Implemented for tenders called from 1 Feb 14
- Briefing on LPCP on 30 Apr 14
- How the M&E services are to be concealed within the Panel
- To incorporate in design

THANK YOU