Electrical Service Design

Course Code: EEE 254

Submitted to

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By

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The main theme of this project is Design floor by electrical wiring complete layout including electrical appliances, fixture, and switchboard and distribution board. The calculation shows the required electrical power demand in a domestic building floor based on customer needs. Luxurious facilities like air conditioner, TV, geyser is also included in design. The report carries out all the layouts, diagrams, calculations, used and conducted in the project.

Steps of calculations as followed

- Total Current of the Apartment
- Total Square Feet of Apartment
- Wire Thickness of each appliances
- Load Current of each Room
- Wire Calculation from Room to SDB
- Wire Calculation from Heavy load to SDB
- Wire Calculation from SDB to MDB
- Circuit Breaker Requirements
- Final Design

Total Current of the Floor: **31.711 Amps (Hence load more can be added due to other appliances)**

Total Square Feet Calculated: **1192 Sqft**

Living Room

12 Amp 3 pin socket
5 Amp 2 pin socket

Fan 80 watt = **0.5 RM**

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Light: 18 Watt: **0.5 RM**

Light: 18 Watt: **0.5 RM**

Light: 18 Watt: **0.5 RM**

Fluorescent Lamp 60 Watt: **0.5 RM**

Total Load Current: **1.342 Amps (Approx. 8 – 10 Amps)**

Dining Room

12 Amp 3 pin socket
5 Amp 2 pin socket

Fan 80 watt = **0.5 RM**

Light: 18 Watt: **0.5 RM**

Fluorescent Lamp 60 Watt: **0.5 RM**

Refrigerator 350 Watts: **1.0 RM**

Total Load Current: **2.348 Amps (Approx. 8 – 10 Amps)**

Bedroom 1:

12 Amp 3 pin socket
5 Amp 2 pin socket

Fan 80 Watt: **0.5 RM**

Light: 18 Watt: **0.5 RM**

Light: 18 Watt: **0.5 RM**

Fluorescent Lamp 60 Watt: **0.5 RM**

14 Watt LED Veranda: **0.5 RM**

Washroom 14 Watt Led: **0.5 RM**

Washroom Exhaust Fan 40 Watts: **0.5 RM**

Total Load Current: **1.165 amps (Approx. 8 – 10 Amps)**

Bedroom 2:

12 Amp 3 pin socket
5 Amp 2 pin socket

Fan 80 Watt: **0.5 RM**

Light: 18 Watt: **0.5 RM**

Light: 18 Watt: **0.5 RM**

Fluorescent Lamp 60 Watt: **0.5 RM**

14 Watt LED Veranda: **0.5 RM**

Washroom 14 Watt Led: **0.5 RM**

Washroom Exhaust Fan 40 Watts: **0.5 RM**

Geyser 1500 Watts: **1.0 RM**

Total Load Current: **8.335 amps (Approx. 12 – 16 Amps)**

Bedroom 3:

12 Amp 3 pin socket
5 Amp 2 pin socket

Fan 80 Watt: **0.5 RM**

Light: 18 Watt: **0.5 RM**

Light: 18 Watt: 0.5 RM

Fluorescent Lamp 60 Watt: **0.5 RM**

14 Watt LED Veranda: **0.5 RM**

Washroom 14 Watt Led: **0.5 RM**

Washroom Exhaust Fan 40 Watts: **0.5 RM**

TV 30 Watts: **0.5 RM**

Geyser 1500 Watts: **1.0 RM**

AC 2200 Watts: **1.5 RM**

Total Load Current: **18.781 amps (Approx. 12 – 16 Amps)**

Kitchen

15 Watt LED: **0.5 RM**

15 Watt LED: **0.5 RM**

Exhaust Fan 40 Watt: **0.5 RM**

Total Load Current: **0.334 Amps (Approx. 8 – 10 Amps)**

12 Amp 3 pin socket
5 Amp 2 pin socket

Wire Calculation from Room to SDB

Living Room to SDB: **1 RM**

Dining to SDB: **1 RM**

Kitchen to SDB: **0.75 RM**

Bedroom 1 to SDB: **1 RM**

Bedroom 2 to SDB: **1 RM**

Bedroom 3 to SDB: **1 RM**

Heavy Wire Calculation form appliance to SDB

Bedroom 2 Geyser to SDB: **2.0 RM**

Bedroom 3 Geyser to SDB: **2.0 RM**

Bedroom 3 AC to SDB: **2.0 RM**

Single Pole MCB Circuit Break from SDB to Rooms

To Living Room: **10 Amps**

To Dining Room: **10 Amps**

To Kitchen: **10 Amps**

To Bedroom 1: **10 Amps**

To Bedroom 2: **10 Amps**

To Bedroom 3: **10 Amps**

Single Pole MCB Circuit Breaker

16 Amps Circuit Breaker from SDB to Bedroom 3 AC

16 Amps Circuit Breaker from SDB to Bedroom 3 Geyser

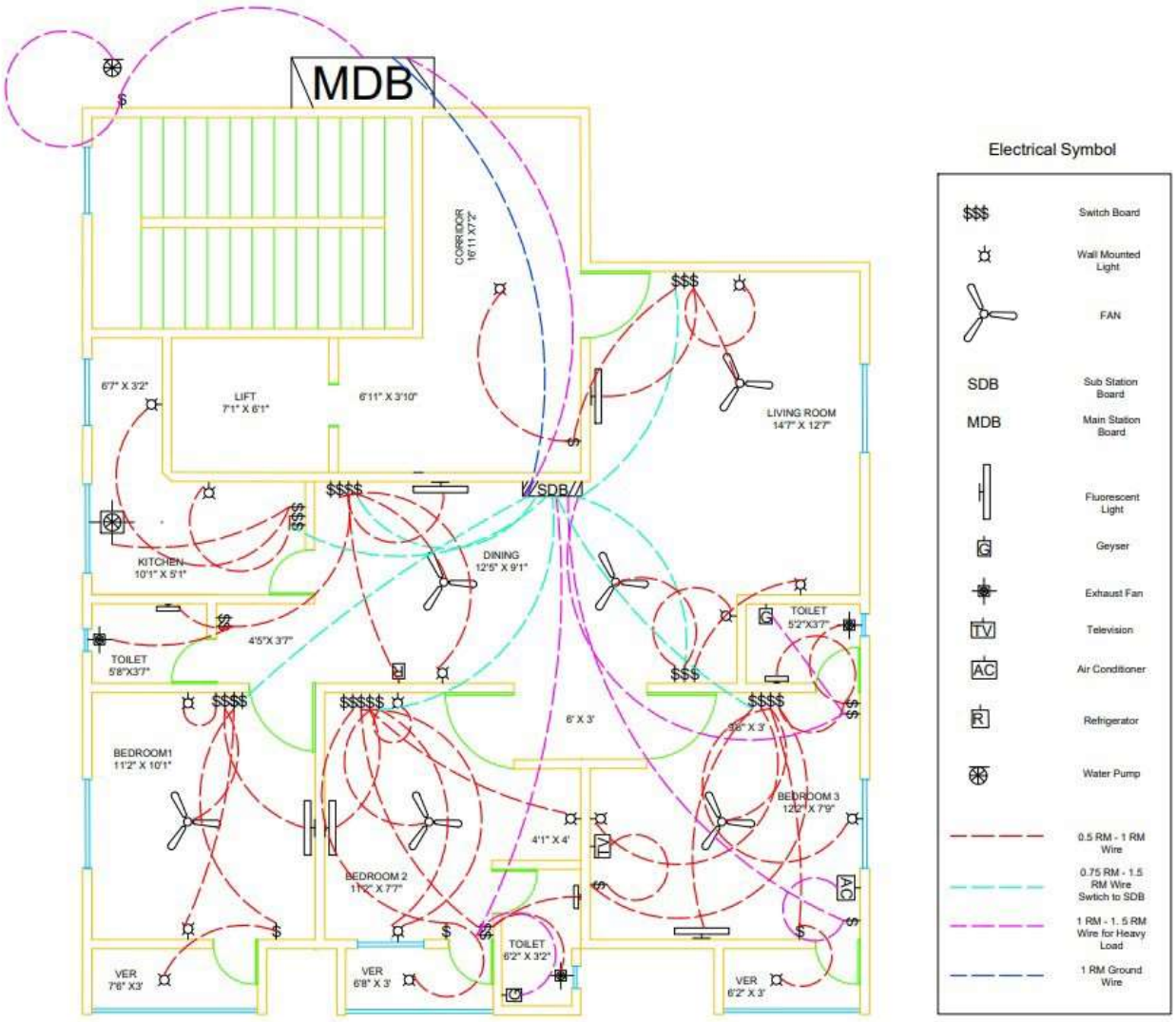
16 Amps Circuit Breaker from SDB to Bedroom 2 Geyser

SDB to MDB Wire Calculation

4.5 RM form SDB to MDB

Other Wire s
MDB to Water Pump 1.5 HP : **2.0 RM**

Approx. 63 Amps (2 Pole MCB) %25 Safety Factor, Depending on Load, Water Motor &
Circuit Breaker from SDB to MDB



Design Layout of Commercial Flat