DESIGN ANALYSIS

E 8-12 SCALE 1:50MTS

1. CONTINOUS LOAD (GENERAL LIGHTING LOAD)
   LIGHTING LOAD = (28M²/FLOOR) x (24VA/M²) = 672 VA
   LAUNDRY : 1 x 1500VA = 1,500 VA
   WATER HEATER : 1 x 3200 VA = 3,200 VA
   OUTLET 6 x 180VA = 1,080 VA
   SUB TOTAL = 6,452 VA

   APPLICATION OF OF DEMAND FACTOR BASE ON (TABLE 2.20.3.3)
   3,000VA @ 100% = 3,000 VA
   0.35 X (6,452-3,000) = 1208.2 VA

2. OTHER LOADS
   RANGE: 4500 VA x 80% (TABLE 2.20.3.16) = 3,600 VA
   AIR-CONDITIONG LOAD: @ 100% D.F
   0.75 HP (6.9A x 230V) = 1,587 VA
   1.5 HP (10A x 230V) = 2,300 VA
   NET LOAD TOTAL = 11,821.2 VA

3. SERVICE FEEDER CONDUCTORS FOR EACH DWELLING UNIT
   (TABLE 3.10.2.6(B)(16))
   IF = (11,821.2)/(230) + 0.25 X (10)
   IF = 53.9 A
   USE 2-8.0mm² THHN WIRE
   2-5.5mm² TW GROUND WIRE
   1-21mmØ IMC CONDUIT

4. SERVICE FEEDER CIRCUIT BREAKER FOR EACH DWELLING UNIT
   ICB = (*11,821.2*/230) + 1.5 X (10)
   ICB = 66.4 A
   USE 2P,MCB 70AT/100AF, 18 KAIC, 240V RMS

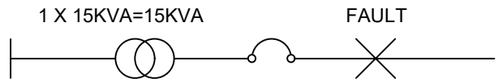
5. VOLTAGE DROP CALCULATION:
   Vd = (I) X √ [(R")² + (X")²] X (L) / (305m)

   NOTE : SINCE THE POWER SOURCE FROM SERVICE POLE TO SERVICE ENTRANCE WITH A DISTANCE OF LESS THAN 10 METERS, VOLTAGE DROP SHOULD NOT MORE THAN 5%
   D - LENGTH FROM THE MAIN SOURCE IS LESS THAN (10meter)
   A - CROSS SECTION AREA OF WIRE IN (8.0 mm2 THHN)
   R" - RESISTIVITY OF COPPER WIRE (0.78 ohm/305meter)
   X" - REACTANCE OF COPPER WIRE (0.065 ohm/305meter)
   I - LOAD CURRENT IS (53.9 AMP)

   Vd % = (53.9AMP) X √ [(0.065)² + (0.78)²] X (10m) / (305m)
   Vd % = 1.383 volts
   Vd % = 1.383/230 x 100%
   Vd % = 0.60%, ACCEPTABLE VALUE, LESS THAN 5%

6. SHORT CIRCUIT ANALYSIS

   KVA CAP. OF TRANFORMER = [(53.9)(230V)] /1000
   = 12.397KVA
   REQUIRED SIZE OF TRANSFORMER MUST BE 15KVA
   Z = 1.2%



Step1: If.l. = 15KVA/[(230)] = 65.22 A
Step 2: Mult. = 100/1.2 = 83.3
Step 3: Is.c. = 65.22 x 83.3 = 5,432.83 A

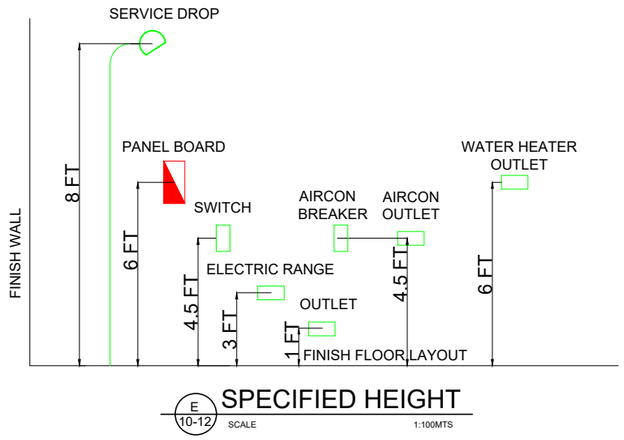
Step 4: "f" factor= $\frac{2 \times L \times I_{L\text{-}L}}{C \times n \times E_{L\text{-}L}}$
at length of 10mtrs or 32.81ft

$f = \frac{2 \times 32.81 \times 5{,}432.83}{10{,}755 \times 1 \times 230V} = 0.1441$

Step 5: $M = \frac{1}{1 + 0.1441} = 0.8740$

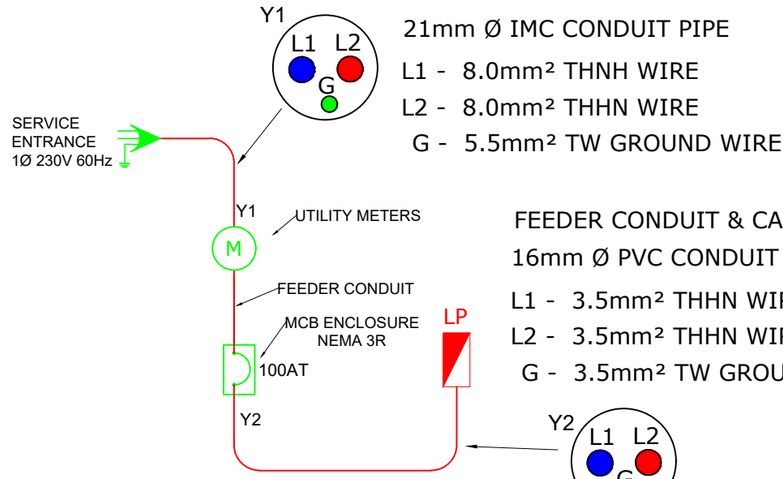
Step 6: $I_{S.C.\ sym\ RMS} = 5{,}432.83 \times 0.0.8740 = 4{,}748.56$ AMP

THEREFORE, USE 10 KAIC MINIMUM INTERRUPTING CAPACITY OF MAIN CIRCUIT T BREAKER FOR SERVICE ENTRANCE AND USE 10 KAIC FOR BRANCH CIRCUIT.



E 10-12 SCALE 1:100MTS
SPECIFIED HEIGHT

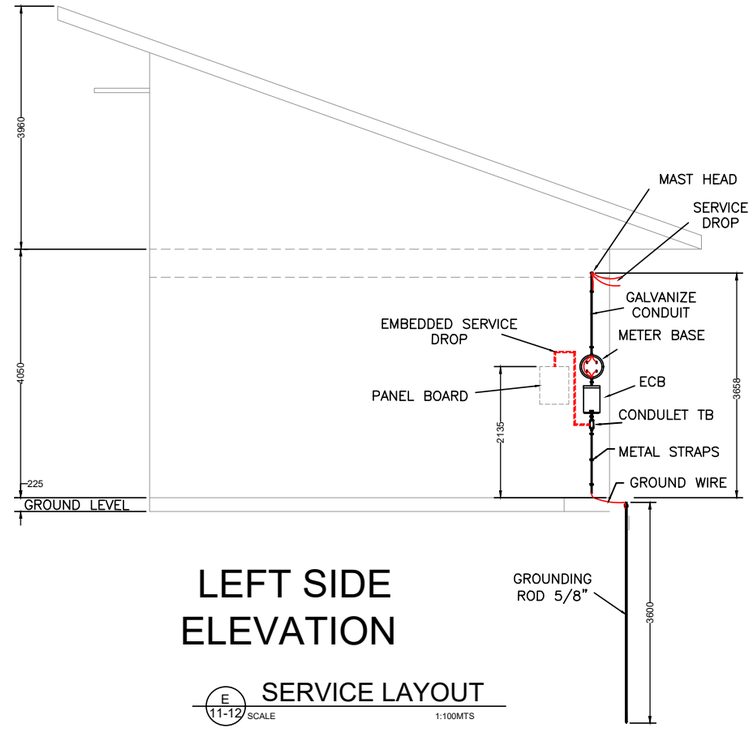
SERVICE CONDUIT & CABLE



21mm Ø IMC CONDUIT PIPE
L1 - 8.0mm² THNH WIRE
L2 - 8.0mm² THHN WIRE
G - 5.5mm² TW GROUND WIRE

FEEDER CONDUIT & CABLE
16mm Ø PVC CONDUIT PIPE
L1 - 3.5mm² THHN WIRE
L2 - 3.5mm² THHN WIRE
G - 3.5mm² TW GROUND WIRE

E 12-12 SCALE 1:50MTS
LINE DIAGRAM



LEFT SIDE ELEVATION

E 11-12 SCALE 1:100MTS
SERVICE LAYOUT

DESIGNER:		PEE:		PROJECT TITLE:	APPROVED BY:	REVISIONS	SHEET CONTENTS:
				PROPOSED 1 STOREY RESIDENTIAL W/ LOFT (TYPE A MODEL HOUSE)		DRAWN BY:	**DESIGN ANALYSIS/ RISER DIAGRAM/ SERVICE LAYOUT/ SPECIFIED HEIGHT/ LINE DIAGRAM/ PERSPECTIVE VIEW**
PRC:	VALID:	PRC:	VALID:			DATE:	
PTR:	DATE:	PTR:	DATE:	LOCATION :	OWNER:	REVISION:	
						REV. DATE:	

SHEET NO.: E 2|2

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