SCHEDULE OF LOADS AND DESIGN COMPUTATION

PB1

CKT.NO.	DESCRIPTION	NO. OF OUTLETS	VOLTS	VA	AMPERES			PROTECTION	SWITCHES				SIZE OF WIRE	SIZE OF CONDUIT
					A	B	C	PER CIRCUIT	S1	S2	S3	S3W		
1	LIGHTING OUTLET	8	230	800	3.48			15					2 - 2.0 MM^2 THHN COPPER WIRE	20 MMØ
2	LIGHTING OUTLET	5	230	500	2.17			15					2 - 2.0 MM^2 THHN COPPER WIRE	20 MMØ
3	CONVENIENCE OUTLET	4	230	1440	6.26			20					2 - 3.5 MM^2 THHN COPPER WIRE	20 MMØ
4	ACU 1.5 HP	1	230	2300		10		30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
5	ACU 2.0 HP	1	230	2760			12	30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
6	SPARE	1	230					30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
	TOTAL			7,800 VA	11.91 A	10 A	12 A							

TOTAL LINE CURRENT:
It = 1.732 [12 + 0.25(12)]
It = 25.98 AMPERE

SUB- FEEDER WIRE USE:
3-8mm^2 THHN/THW COPPER WIRE 25MM DIA. RSC.

PROTECTION USE:
40AT CIRCUIT BREAKER 3-PHASE, 60Hz, BOLT-ON TYPE
1-5.5mm^2 THHN/THW COPPER WIRE FOR GROUNDING

PB2

CKT.NO.	DESCRIPTION	NO. OF OUTLETS	VOLTS	VA	AMPERES			PROTECTION	SWITCHES				SIZE OF WIRE	SIZE OF CONDUIT
					A	B	C	PER CIRCUIT	S1	S2	S3	S3W		
1	MOTOR 5 HP	1	230	6440	28			40					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
2	MOTOR 3 HP	1	230	3910		17		30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
3	MOTOR 3 HP	1	230	3910			17	30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
4	MOTOR 3 HP	1	230	3910	17			30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
5	MOTOR 3 HP	1	230	3910		17		30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
6	MOTOR 3 HP	1	230	3910			17	30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
7	MOTOR 3 HP	1	230	3910		17		30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
8	MOTOR 2 HP	1	230	2760		12		30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
9	MOTOR 2 HP	1	230	2760			12	30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
10	MOTOR 2 HP	1	230	2760	12			30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
11	MOTOR 0.5 HP	1	230	1127		4.9		30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
12	MOTOR 2 HP	1	230	2760			12	30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
13	MOTOR 1.5 HP	1	230	2300	10			30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
14	MOTOR 1.5 HP	1	230	2300			10	30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
15	MOTOR 0.25 HP	1	230	667	2.9			30					2 - 5.5 MM^2 THHN COPPER WIRE	20 MMØ
	TOTAL			47,794 VA	69.9 A	67.9 A	68 A							

TOTAL LINE CURRENT:
It = 1.732 [69.9 + 0.25(28)]
It = 133.19 AMPERE

SUB-FEEDER WIRE USE:
3-60mm^2 THHN/THW COPPER WIRE ON 63mmØ RSC.

PROTECTION USE:
200AT CIRCUIT BREAKER 3-PHASE, 60Hz, BOLT-ON TYPE
1-22mm^2 THHN/THW COPPER WIRE FOR GROUNDING

MPB

PB.NO.	DESCRIPTION	NO. OF OUTLETS	VOLTS	VA	AMPERES			PROTECTION	SWITCHES				SIZE OF WIRE	SIZE OF CONDUIT
					A	B	C	PER CIRCUIT	S1	S2	S3	S3W		
1	PB1		230	7800	11.91	10	12	15					2 - 8.0 MM^2 THHN COPPER WIRE	25 MMØ
2	PB2		230	47794	69.9	67.9	68	15					2 - 60 MM^2 THHN COPPER WIRE	63 MMØ
	TOTAL			55,594 VA	81.81 A	77.9 A	80 A							

TOTAL LINE CURRENT:
It = 1.732 [81.81 + 0.25(28)]
It = 153.82 AMPERE

MAIN FEEDER WIRE USE:
3-80mm^2 THHN/THW COPPER WIRE ON 63mmØ RSC.

PROTECTION USE:
250AT MAIN CIRCUIT BREAKER 3-PHASE, 60Hz, BOLT-ON TYPE
1-22mm^2 THHN/THW COPPER WIRE FOR GROUNDING

NOTE:
3-PHASE CIRCUIT BREAKER TYPE PANEL BOARD FOR BALANCED DISTRIBUTION OF SINGLE PHASE LOADS.

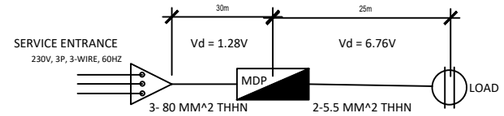
SIZING OF TRANSFORMER:
ASSUMING A UTILIZATION FACTOR @ PEAK HOUR IN ANY GIVEN TIME IS 80%:

KVA RATING = $\frac{153.82 \times 230 \times 1.732}{1000}$ = 61.275 KVA

USED:
3-25 KVA TRANSFORMER THREE PHASE, 60HZ,
POLE MOUNTED, OIL IMMERSED TYPE

VOLTAGE DROP CALCULATION

UTILITY PROVIDER TO MCB <2%
MCB TO BRANCH CIRCUIT <3%



VD= $\frac{K \times L \times It \times z}{305m}$

%VD= Vd/Vs x 100

WHERE:
K : constant 2 for single phase
L : lenght of wires (m)
It : line current
Z : cable impedance

Assuming a distance of service entrance @ 30m & 80mm2 Cu. wire

Vd = $\frac{1.732 \times 30m \times 80.07 \times 0.094}{305m}$ = 1.28 V

%Vd = 1.28/230 x 100 = 0.56%

MCB to farthest load @30m & 5.5mm^2 Cu. wire

Vd = $\frac{1.732 \times 25m \times 28 \times 1.7}{305m}$ = 6.76V

%Vd = 6.76/230 x100 = 2.94%

Total %Vd = 0.56% + 2.94% = 3.5%

The computed voltage drop of the building with the total 3.5 percentage (%) of voltage drop meet the required allowable VD of the Philippine Electrical Code.

SHORT CIRCUIT CALCULATION

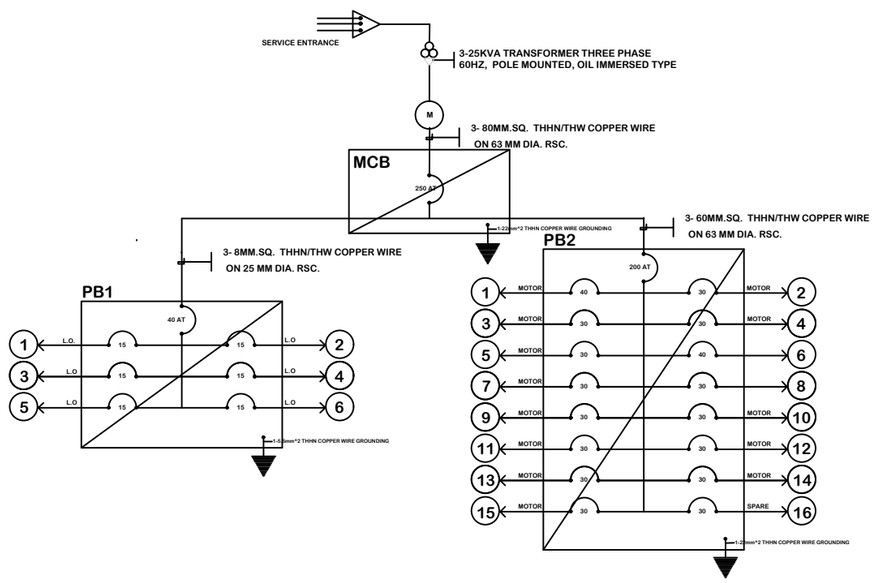
Isc = $\sqrt{\frac{P \times .8}{Z}} \times \frac{305 \times K}{L}$

Isc = $\sqrt{\frac{55{,}594VA \times .8}{0.094}} \times \frac{305 \times 1.732}{30}$ = 12,112 AIC

Isc= 12.112 KAIC

USED CIRCUIT BREAKER W/ ATLEAST 20KAIC RATING

SINGLE LINE DIAGRAM



REPUBLIC OF THE PHILIPPINES MUNICIPALITY OF MANOLO FORTICH MUNICIPAL ENGINEER'S OFFICE	SEAL:	PROFESSIONAL ELECTRICAL ENGINEER PRC REG. NO: / PTR NO: TIN: / DATE ISSUED:	PREPARED BY: NORLYN P. DAWAT DRAFTSMAN	REVIEWED BY: CEDRICK A. SESTOSO ENGINEER- I	CHECKED BY: BERNABE C. AUXTERO JR. MUNICIPAL ENGINEER	PROJECT TITLE: ELECTRIFICATION OF BAMBOO PROCESSING HUB LOCATION: TANKULAN, MANOLO FORTICH BUKIDNON	RECOMMENDING APPROVAL BY: JOIE CAESAR M. GAID MUNICIPAL ADMINISTRATOR	APPROVED BY: ROGELIO N. QUIÑO MUNICIPAL MAYOR	SHEET CONTENTS: SCHEDULE OF LOADS VOLTAGE DROP & SHORT CIRCUIT ANALYSIS SINGLE LINE	SHEET NO. 4 5