KWARA STATE POLYTECHNIC

P.M.B 1375, ILORIN NIGERIA
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A TECHNICAL REPORT OF STUDENTS' INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES) REPORT

HELD AT:

KWARA STATE MINISTRY OF ENERGY

PREPARED BY:

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SUBMITTED TO:

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FROM

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PREFACE

This contain a written report of the work done by me during the four-month industrial attachment with one of the best Organization in Ilorin, which is Kwara State Ministry of Energy.

This work goes further to share the experience I had in the station.

This summarize all the things I learnt and the problems encountered by me, my recommendation and conclusion of all my work.

DEDICATION

This report is dedicated to Almighty Allah for his mercy and protection on me throughout the program.

ACKNOWLEDGMENT

All glory, honor and adoration goes to the Almighty Allah for mercy received during the course of my study and when undergirding my Industrial Training.

My appreciation also goes to my industrial based lecturer, whose accessibility, untiring effort, patients and guidance and suggestions fabulously contributed to the Completion of this report, may God continue to guide and protect them and their family.

My special thanks also go to my families (THE SPECIAL ADEGOKE'S) for their support, both morally and financially, before and during my SIWES program, I shall forever be grateful. May you live long enough to reap the fruit of your labour (Amin)

TABLE OF CONTENT

CHAPTER ONE

1.0 INTRODUCTION

For my four months of this program, I was graced with the opportunity to complete this mandated task in the Kwara State Ministry of Energy. During this period, I was exposed to many various tools, machines road construction and maintenance, terminologies, materials, divisions, departments, activities, and many roles were assigned to me. I was also exposed to material like distribution board, junction boxes, looping boxes and equipment's used on sites, and lot more.

1.1 DESCRIPTION OF THE ORGANIZATION

The Kwara State Ministry of Energy is a key governmental body responsible for managing and regulating the energy resources of Kwara State, Nigeria. Its roots date back to 1904, when the Mines Department was established during colonial rule. This department focused on mining activities but gradually evolved to address the broader energy needs of the state as the importance of energy for socio-economic development increased.

The ministry was formally created to oversee the development, distribution, and regulation of energy resources,

ensuring that they align with sustainable practices. One of its primary objectives is to enhance energy access and efficiency across the state, particularly by promoting renewable energy sources such as solar power.

In recent years, the ministry has participated in various initiatives, such as the Presidential Compressed Natural Gas Initiative (PCNG-I), which aims to provide cleaner energy options for households and businesses. Additionally, the ministry conducts public awareness campaigns and educational programs to inform citizens about energy conservation and the benefits of alternative energy sources.

Overall, the Kwara State Ministry of Energy plays a crucial role in shaping the state's energy landscape, working towards a sustainable and efficient energy future for its residents.

In the ministry, there are various departments and offices such as the “Highway Department”, “Geotechnical Department”, “Structure and Material laboratories”, “Electrical Department”, “Mechanical Department”, “Civil Engineering Departments” and many more. During this period.

I was exposed to some of these departments and their works. I was also on the field for practical works whenever I need to be.

1.2 ORGANIZATONAL STRUCTURE

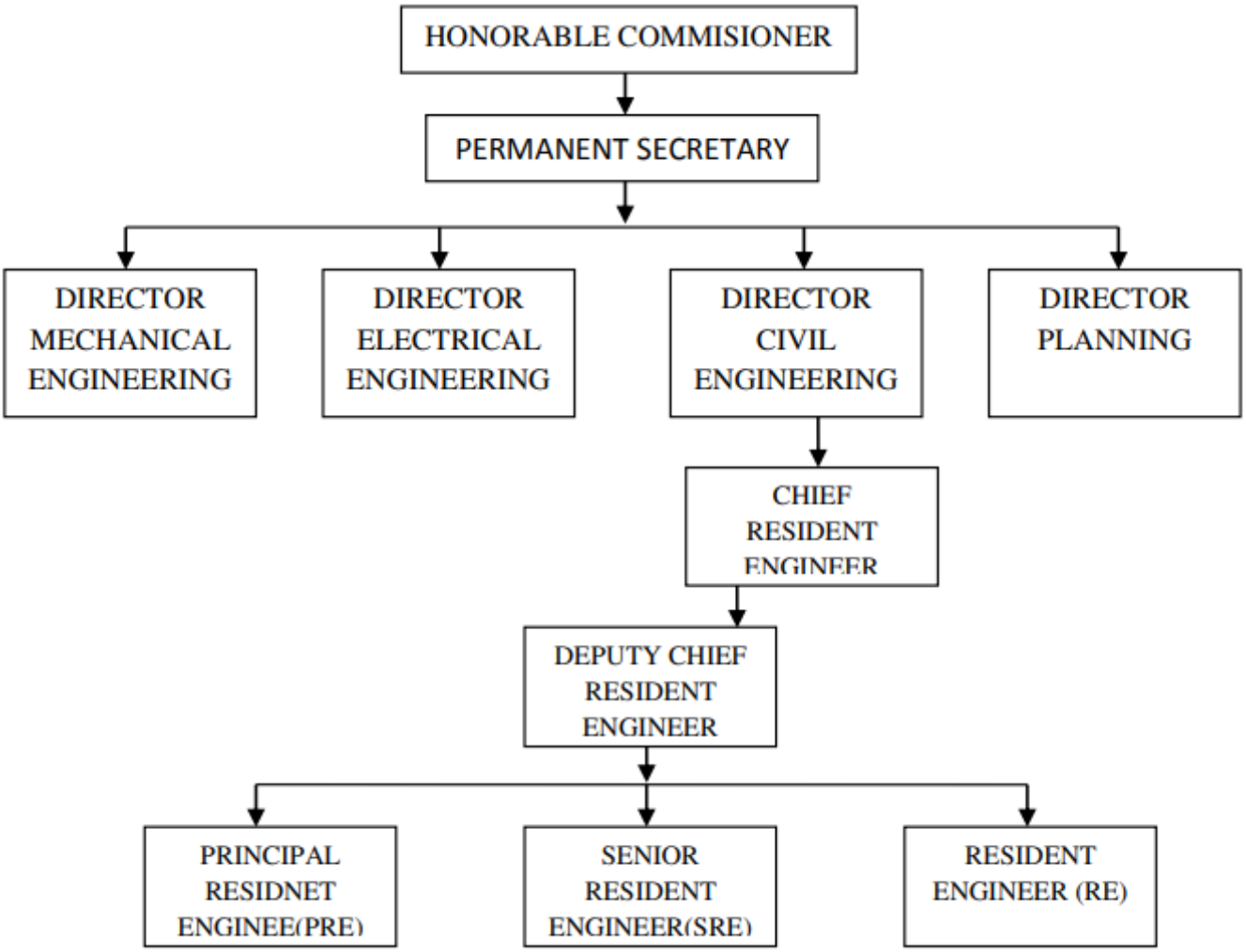


Fig. 1.0 Organizational structure of Kwara State Ministry of Energy

CHAPTER TWO

2.0 SECTIONAL ACTIVITIES AND WORK DONE

In the Kwara State Ministry of Energy, I was able lean and carry out various activities, some of these activities were highlighted below:

- Introduction to the entire ministry departments, my supervisor and activities performed by each of these departments
- Introduction to the ministry of energy and enlightenment the ethics of the ministry as well as the dress code of the ministry.
- Introduction to the transmission of electricity from the generation plant down to the substation and ultimately to the point of consumption.
- Introduction to low tension (LT) and High Tension (HT)

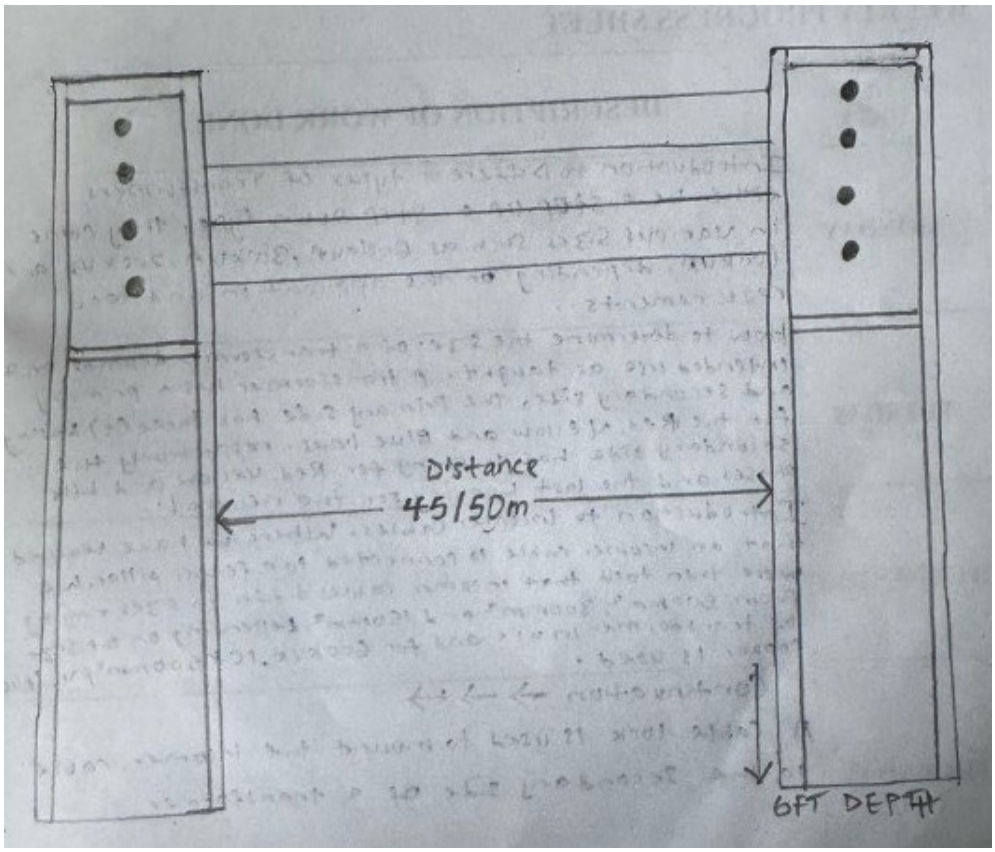
2.1 INTRODUCTION TO THE MINISTRY, SUPERVISORS AND ACTIVITIES

On getting to the Ministry of Energy in Kwara State, I was first introduced to the various departments which are

functioning in the ministry. I was taken to my supervisors: Engr. Bakare .O. Rabiu. After these are done, I was taken to the various places of which activities are being carried out in the ministry. I was introduced to how things are being done under each department. An example of such is the mechanical department which is in charge of repairs that are carried out on all the basic machines, equipments, and tools. Another like it is the construction department which is into the construction and maintenance of the state construction works as building and roads.

2.2 INTRODUCTION TO THE VARIOUS MATERIALS USED IN FOR CONSTRUCTION

After being introduced to the various departments and their functions, I was taken straight to work. I was joined with the construction department where I was first introduced to the transmission of electricity from the generation plant down to the substation and ultimately to the point of consumption. It was explained that during the transmission from the generating plant to the substation, the electricity as kept at high voltage to compensate for voltage drop along the transmission line.

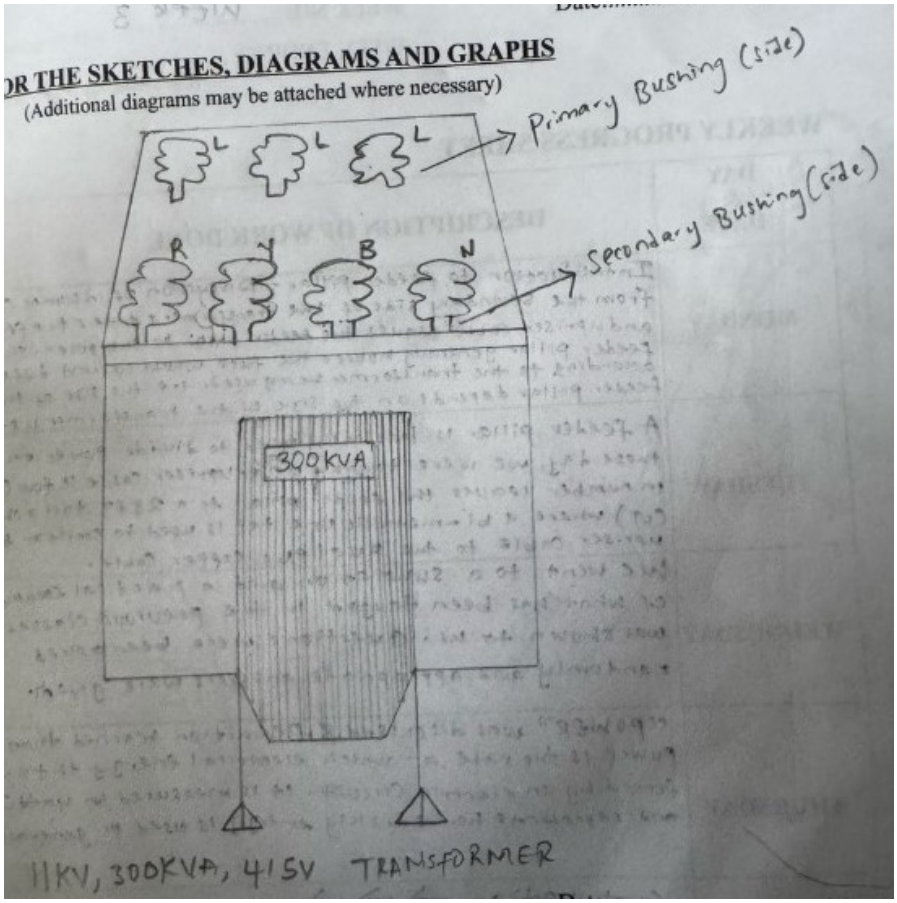


2.3 INTRODUCTION TO DIFFERENT TYPES OF TRANSFORMERS (STEP UP OR STEP DOWN)

I was introduced to different types of transformers either be a step up or step down type, they come in various size such as 500KVA, 300KVA, 200KVA and 100KVA depending on the application and load requirements. Which a transformer has a primary and secondary side.

a. The primary side has three (3) bushing for the red, yellow and blue lines respectively.

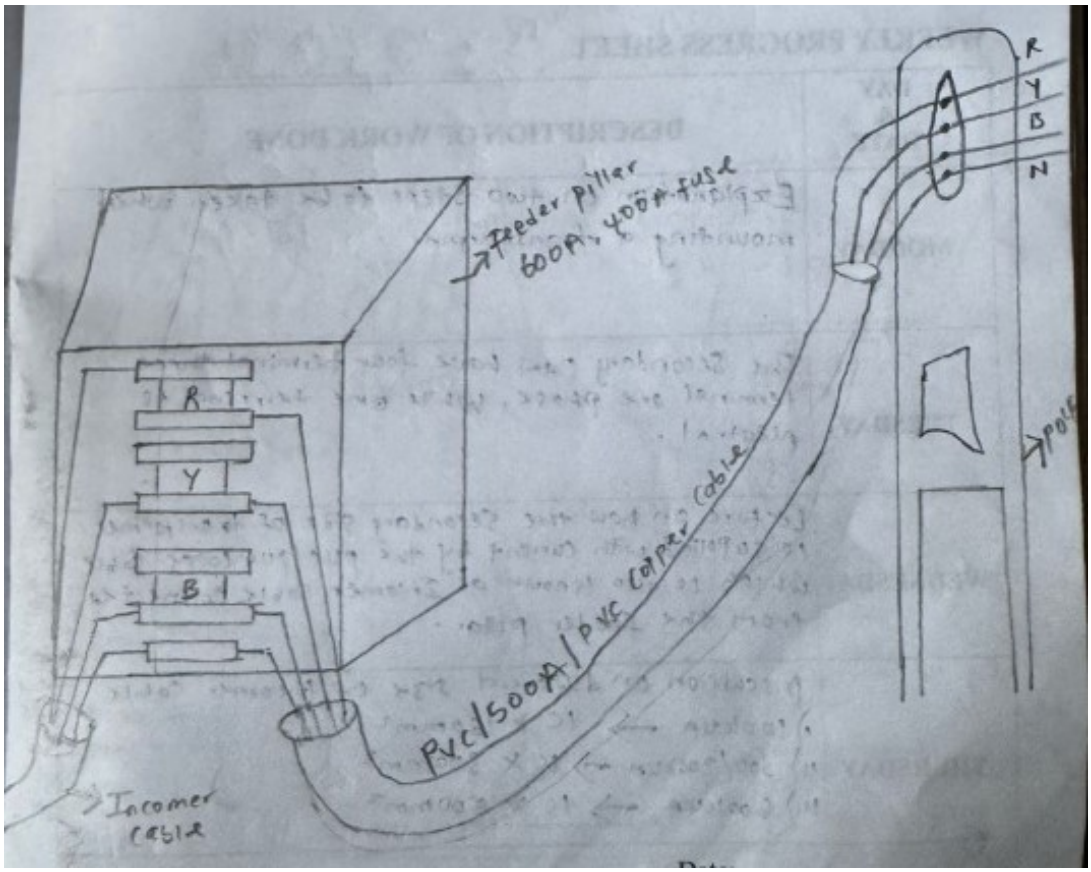
b. The secondary side has bushing for red, yellow and blue phases and the last bushing for the neutral.



2.4 INTRODUCTION TO FEEDER PILLAR

I enlighten on what feeder pillar are which are basically used to divide power on these day, we were taught the upriser cable is four (4) in number leaves the feeder pillar to a 28FT tall pole (LT) where a bi-metallic line tap is used to connect the upriser cable to the puel PVC copper cable. Discussion of

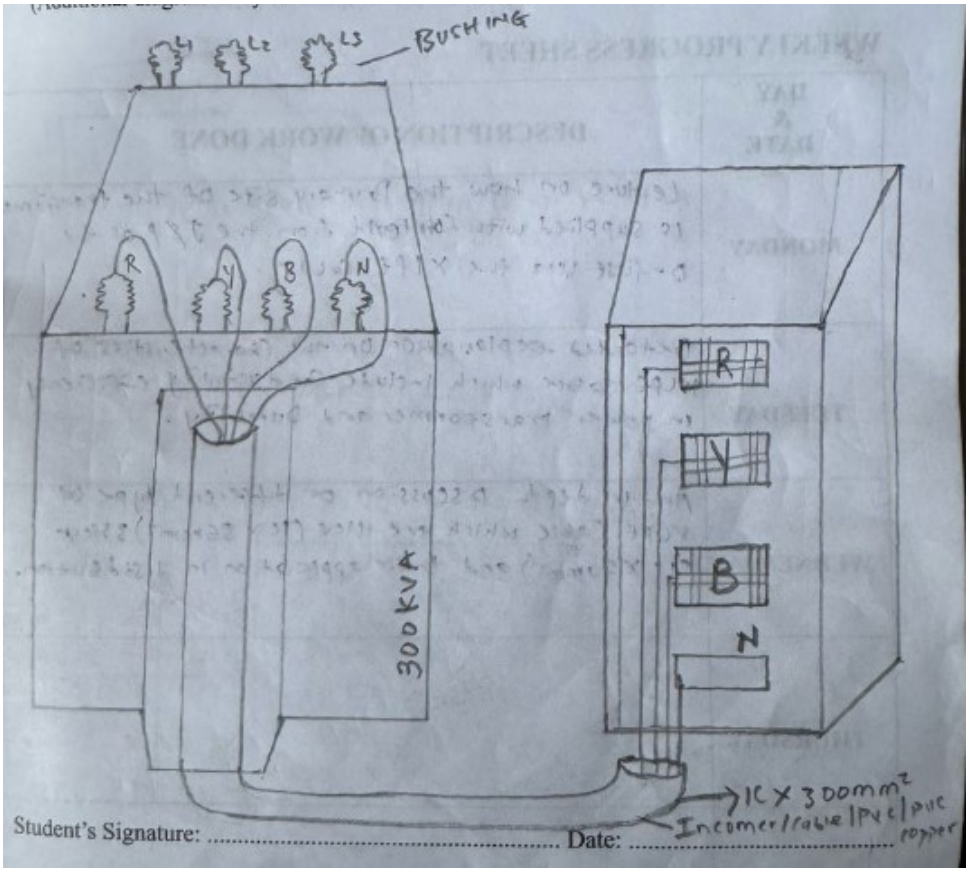
incomer cable from the secondary side of the transformers enters the feeder and upriser cable leaves the feeder pillar to the poles. The feeder pillar generally houses the fuse whose current differ according to the transformer being used i.e the size of the feeder pillar depends on the size of the transformer used.



The secondary part have four terminal three terminal are phase while one terminal is neautral and the secondary side okf transformer is supplied with current by the PVC/PVC copper

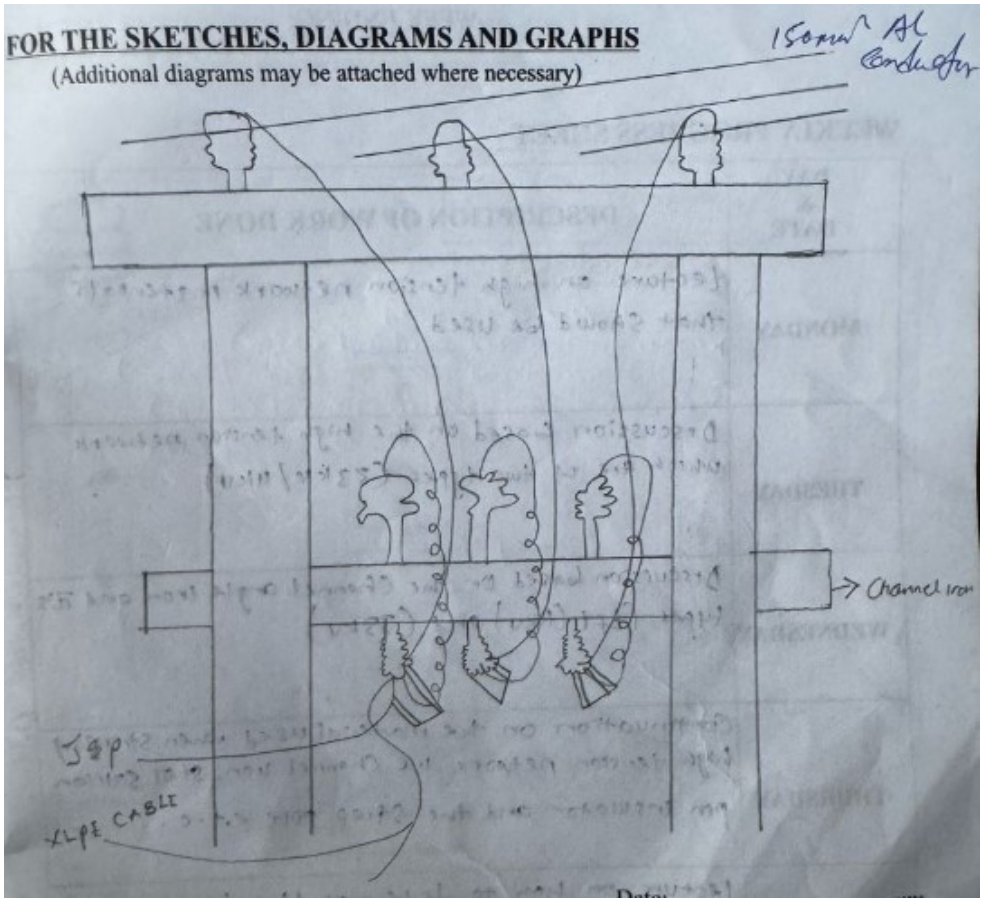
cable whicb is also known as incomer cable connected from the feeder pillar. Different size of incomer cable are

i) 100KVA – 1C x 150mm^2
ii) 300/200KVA – 1C x 300mm^2
iii) 500KVA – 1C x 500mm^2



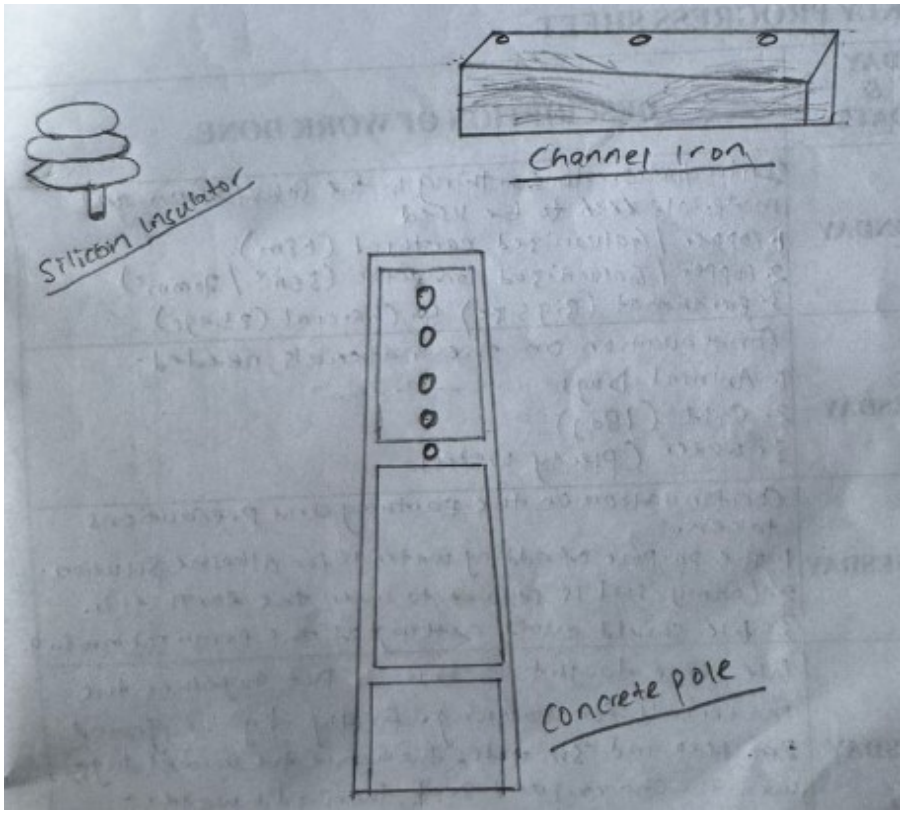
I was also lecture on how the primary size of the transformer is supplied with current from the J & P of the D-fuse via the XLPE cable and the detailed explanation on the characteristics of XLPE cable which include conductivity,

efficiency in power transformers and durability. Also and in depth discussion on different types of XLPE cable which are 11KV (1C x 35mm^2) 33KVC (1C x 70mm^2) and their application in distribution.



Discussion based on the channel angel iron and it's types (6ft (11kv) and (33kv). Lecture on high tension network materials that should be used when stringing high tension

network i.e channel iron, stool silicon, pin insulator and the strap pole e.t.c



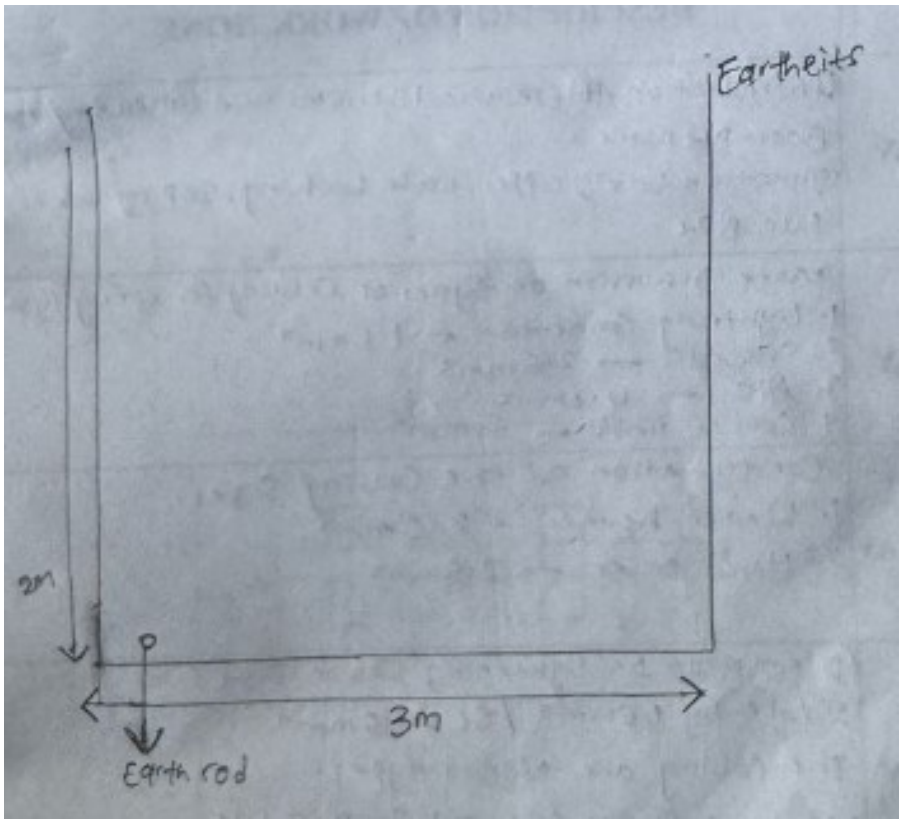
2.5 INTRODUCTION TO EARTHING

Earthing in the substation and materials to be used:

i. Copper/Galvanized earth rod (1.8m)
ii. Copper/Galvanized conductor ($35m^2/70mm^2$)
iii. Earth mat (big size) 4 charcoal (2 bags)
iv. Animal dugs
v. Salt (1bag)
vi. Water (plenty water)

Precautions taken:

1. The purpose of adding water is for alkaine solution.
2. Loamy soil is require to cover the earthiests
3. We should avoid cutting of the earth rod into turd.



2.6 INTRODUCTION TO ELECTRICAL SERVICES AND CONDUCTING MATERIALS

Examples are:

i. Junction boxes
ii. Copper

iii. Male bushing

iv. Looping boxes and

v. PVC pipes

Types of cabling for wiring system were discussed

1. Lightning connection	-	$1.5mm^2$
2. Socket	-	$2.5mm^2$
3. A/C	-	$4.0mm^2$
4. Cooker unit	-	$60mm^2$
5. Water heater	-	$2.5mm^2$
6. Hand drier	-	$2.5mm^2$

CHAPTER THREE

3.0 DEFINITION OF LOGICAL TERMS

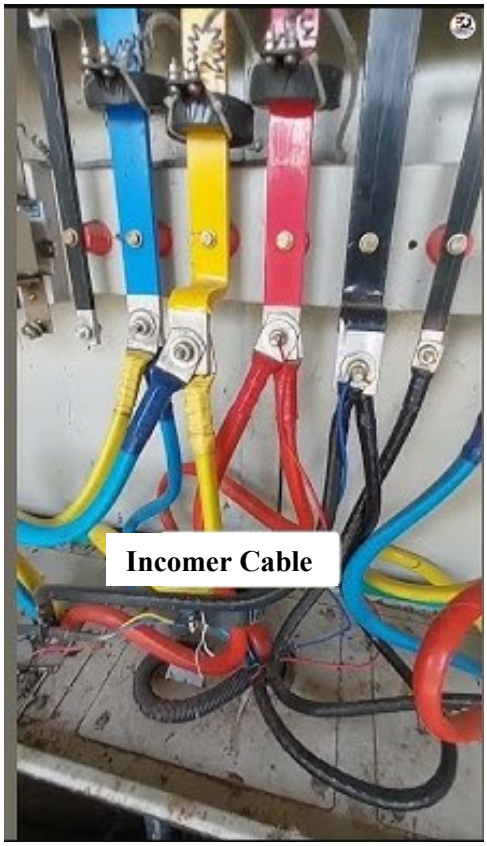
FEEDER PILLAR

Is basically used to dived power on these day, the feeder pillar generally houses the fuse whose current differ according to the transformer being used.

INCOMER CABLE

Is connected to a feeder pillar and its differ in sizes ranging from 500mm^2, 300mm^2, and 150mm^2 depending on the size of

transformer in use and for 500KVA 1C x 500mm^2 PVC copper is used.

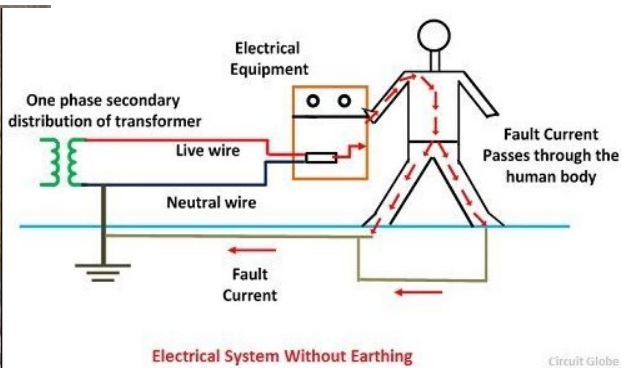


CCTV CAMERA

Is a device/gadget that is use to capture images whether there's light or when there's absence of light. It's commonly used for security purpose to monitor and record activities.

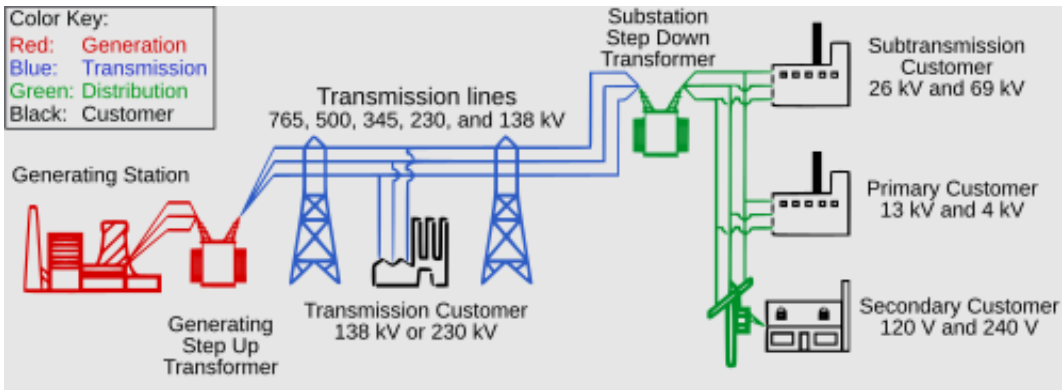
EARTHING

Earthing (also known as grounding) involves connecting electrical equipment and installations to the Earth's conductive surface, creating a safe path for excess electrical current to flow and dissipate harmlessly, preventing electric shocks and equipment damage.



TRANSMISSION OF ELECTRICITY

Is the generation of plant down to the substation and ultimately to the point of consumption which the electricity are kept as high voltage to compensate for voltage drop along the transmission line.



CHAPTER FOUR

4.0 SUMMARY, CONCLUSION AND RECOMMENDATION

4.1 SUMMARY

For the entire time I was in the Kwara State Ministry of Energy, I was able to learn about transmission of electricity, electrical services and conducting materials, the equipment's used in these activities and their operations, carry out series of tests, identify some materials like distribution board, junction boxes which be either 4 ways, 3 ways or Tee etic, looping boxes e.t.c and distinguish between the various departments and their functions.

4.2 RECOMMENDATION

Based on my experience during the industrial training I hereby recommend the following:

- The institution should assist in securing placement for students by liaising with established organization.
- The institution should improve coordination during the SIWES program to help assess the quality of training under gone by the students.

- This kind of program should be conducted often to expose students to the working experience or condition of the broadcast industry.
- The student's supervisor from the institution should try to visit the student regularly during the industrial training
- The student should endeavor to stop truancy towards work and improve their relationship with the employees and their co-workers to make out the best during the training program.
- Lastly I will also like recommend that this program should continue and future participants should develop more attitudes towards the programme because it helps one develop more interest in his or her discipline.

4.3 CONCLUSION

In conclusion, there were many things that I have experience and learnt during this period. The whole training period was very interesting, instructive and challenging. Through this training, I was able to gain new insights and more comprehensive understanding about the real industry working condition and practice. It has also provided me the opportunities to develop and improve myself in this field. All of this valuable experience and knowledge that I have gained were

not only acquired through the direct involvement in task given but also through other aspect of the training such as work observation, interaction with colleagues, superior, and other people related to the field. From what I have undergone, I am very sure that the industrial training program has achieved its entire primary objectives. It's also the best way to prepare students to face the real life task that will surely surface after academic activities. As a result of the program now I am more confident to build my future career which I have already started.