

**DESIGN OF A COMPUTERIZED FENCE AT NYABIKONI CAMPUS KABALE
UNIVERSITY**

BY

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2018/CEK/1490/F

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**A REPORT SUBMITTED TO KABALE UNIVERSITY IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE AWARD OF ORDINARY DIPLOMA IN CIVIL
ENGINEERING**

DECEMBER, 2020

DECLARATION

This report is my original work and has not been presented by any one elsewhere for any other award in any other institution of higher learning.

NAME: TWINAMASI KO JOSHUA.

Signature:

Date:

APPROVAL

This is confirm that this report has been prepared by **TWINAMASI KO JOSHUA** under the supervision of Mr. MUHANGI BRUNO one of the faculty lecturers.

SUPERVISOR: ENG MUHANGI BRUNO

Signature: -----

Date: -----

ABSTRACT

This report is about a design of a perimeter fence for Kabale University Nyabikoni Campus.

The writing here in this report contains three chapters;

Chapter 1 is the introduction of the proposal that states the contents of the background of the project, how the problem was identified and why the project viable.

Chapter 2 contains the literature review, works and related information by other scholars about design mainly architectural working drawings.

Chapter 3 outlines the methodology of how the project was done; these are sequential methods for the process.

Chapter 4 discusses the challenges, recommendations, appendices, reference and other photos related with the project.

ACKNOWLEDGEMENT.

I acknowledge Kabale University for having organized these projects where students get knowledge about what they will go through once they have gone to the field.

I acknowledge the effort of my group members towards achieving this project.

I acknowledge the contribution of my mother, Mr. BYAMUKAMA AMON. They has done a lot where they have helped me financially.

I also want to thank my project supervisors, Mr. MUHANGI Bruno and Mr. PHILIP Tibenderana for their guidance and supervisor of the project.

LIST OF TABLES

Table 1: Showing time schedule of the project.

Table 2: Showing the proposed budget of the project.

Table 3: Showing the actual budget of the project.

LIST OF FIGURES

Figure 1: Showing the description of wall, foundation and columns.

Figure 2: Showing the description of front view.

Figure 3: Showing the ground plan.

Figure 4: Showing the aerial view of the proposed project.

Figure 5: Showing the front aerial view.

Figure 6: Showing the front view of the proposed project.

LIST OF ACROYNOMS AND ABBREVIATIONS

BS:	British Standards
FY	Final Year
EC	Euro Codes
N/A	Not Applicable
DOS	Dean of Students
UACE	Uganda Advance Certificate of Education
URN	Uganda Radio Network

Table of Contents

DECLARATION	i
APPROVAL.....	ii
ABSTRACT	iii
ACKNOWLEDGEMENT.	iv
LIST OF TABLES	v
LIST OF FIGURES.....	vi
LIST OF ACROYNOMS AND ABBREVIATIONS	vii
Table of Contents	1
CHAPTER ONE:	3
INTRODUCTION.....	3
1.1 Introduction	3
1.2 Background of the project	3
1.3 Statement of the problem.....	3
1.4 Main objective of the project.....	4
1.5 Specific objectives of the project.....	4
1.6 Significance of the project	4
1.7 Justification of the project	4
1.8 . Scope of the project	5
1.8.1 Geographical scope.....	5
1.8.2 Content scope	5
1.8.3 Time scope	5
CHAPTER TWO	6
LITERATURE REVIEW	6
2.0 Introduction	6

2.1 Theoretical Review	6
2.2 Actual review	7
2.3 Summary of literature.....	7
CHAPTER THREE.....	9
METHODOLOGY.....	9
3.0 Introduction	9
3.1 Proposal approval.....	9
3.2 Data Reconnaissance survey	9
3.3 Architectural designs.....	9
3.4 Budget	15
4.1 RECOMMENDATIONS.	16
4.2 CHALLENGES FACED DURING THE PROJECT PRACTICE.	16
4.3 CONCLUSION.	17
APPENDICES	19

CHAPTER ONE:

INTRODUCTION

1.1 Introduction

This chapter contains the background of the project chosen, problem statement, objectives of the project, and the scope of the project. The project is “Design of a perimeter wall fence”.

1.2 Background of the project

Kabale University as one of the oldest and biggest institutions in Kabale district needs to have a perimeter fence. The name of was listed among other institutions in Kabale that lack Perimeter wall fence. (URN publication of 21st April 2015)

This university is highly appreciated for the production of Education, Business, and Engineering graduates. Basing on this fact, the university enrolment grows at a higher rate of 25% every academic year.

Due to the growing number of the university students, there is also need to ensure a strong security system that should start with construction of a perimeter wall fence.

1.3 Statement of the problem

With the increasing number of students, it is hypothetical that there can be increase in un wanted moral behaviors which can stretch the university in controlling the students discipline.

Peace, security, and defense are prerequisites for a sustainable socioeconomic transformation, democracy and national unity. (*Uganda vision 2040*).

Irrespective of the discipline of the university students, the university should also be protected from non-staff and non-students. Access to university should be highly controlled for security reasons of both students and university property.

On 2nd April 2015, Garissa University in Kenyan universities was stormed by terrorists (Al-shabaab) leading to loss of 148 lives and many injured. The ease was the attack was due to the inadequate security policies among which included weak perimeter fence

Kabale University has been working on fencing the university however; the type of fencing being used is temporary and cannot offer a stronger solution to some many threats that can arise from issues concerning poor perimeter fencing.

Basing on the above, this we have resolved to design a perimeter wall fence for the university that fits very well in the university's master plan.

1.4 Main objective of the project

The main objective of this project is “To design a perimeter wall fence for Nyabikoni Campus Kabale University”.

1.5 Specific objectives of the project

- To carry out reconnaissance survey of the faculty
- To examine the topography of the proposed site through personal involvement in the surveying process of the proposed area.
- To ascertain how fence will planned and designed (Architectural, and artistic view).
- To design the perimeter wall fence.
- To estimate the cost of the proposed structure and its benefit to the beneficiaries.

1.6 Significance of the project

This project would help in the following when implemented;

- It will add to knowledge to the authors.
- It will reduce the risk of terror attacks.
- It will reduce university expenditure on security in the long run.
- It will promote a clean and better hygiene at the university at all times.
- It will reduce the level of illegal tress pass to the university.

1.7 Justification of the project

In adequate hostels at the university and poor conditioned hostels within the university have a great negative impact on the student's effects through the following ways;

- Poor security at places of residence within the campus
- Risk of terror to the university.

- Increased expenditure by the university on security.
- Poor sanitation within the university
- Increased risk of getting communicable diseases and air borne diseases like Covid 19.

1.8 . Scope of the project

The proposed project will be scoped to three key elements Geographical, content and time scope all listed in the order mentioned.

1.8.1 Geographical scope

The proposed site is located at the Nyabikoni Campus Kabale University.

1.8.2 Content scope

The project will involve getting information about the following in broader context of their scope independently, where necessary dependently;

- Reconnaissance surveying of the proposed area to assess the geographical and surface suitability of the proposed plot for the project.
- Designs (architectural, and Artistic) based on the current design philosophies.
- Estimation of the project cost and its cost benefit analysis to the beneficiaries.

1.8.3 Time scope

The design process for this project is approximated to take **1months**.

Table 1: showing time schedule of the project

1. WEEK ONE	Reconnaissance survey.
2. WEEK TWO	Architectural Drawings and Designs.
3. WEEK THREE	Acquiring and buying materials.
4. WEEK FOUR	Actual modelling.

CHAPTER TWO:

LITERATURE REVIEW

2.0 Introduction

This section reviews the literature that is available in relationship to design consideration to be followed, the codes to use, principles to follow and guidelines to use during the design process.

2.1 Theoretical Review

National physical planning and guidelines 2011 edition considers institutions and universities to be commercial building for which it requires that a standard commercial plot should be 15m wide and 30m long and 7.5m wide and 30 m long as the minimum, part 2.9 of the same documents sets guidelines for design of perimeter walls.

Uganda building regulations act of 2005 under section 3.1.1.1 also requires that, a person intending to carry out any building operation shall make a written application to the Committee for approval and shall, with such application submit the following plans, calculations and other particulars as may be required• location plan;

- site plan
- architectural layout drawings and details
- structural drawings, layouts and details, including bar bending schedules and structural calculations
- water, plumbing and drainage drawings and details
- general arrangement of artificial ventilation
- electrical or mechanical installation layout details and
- Any other particulars, which the applicant feels, would be of assistance to the Committee.
- This section therefore enlightens us to be able to make all the above working drawing as per standards.

- Section 3.1.3.2 of the regulations also requires that plans, drawings and diagrams shall be drawn to suitable scales but not smaller than the scales indicated in the following paragraphs•
- Site Plans:
1:2500, 1:1250, 1:1000, 1:500, 1:250, 1:200, or 1:100
- Drainage installation drawings:
1:200, 1:100, or 1: 50
- Layout drawings (including demolition drawings, if any)
1: 100, 1:50, or 1:20
- Sections & Elevations:
1:100 or 1:150
- General structural arrangements and details:
1: 100, 1:50, 1:20, 1:10, 1:5, 1:2, or 1:1

2.2 Actual review

- In the design process, there are many considerations for example; geotechnical investigations, (Site investigation), surveying and modeling. Out of which the scope of our project shall encompass survey and design.
- Reconnaissance surveys are carried out and they are a necessity for every project because of the following;
- To clearly show fabricated features, physical features of the area that can affect the design of the structure.
- To ascertain the adequacy of the proposed area for a sustainable, occupant and environmentally friendly design of the structure.
- All necessary information regarding the subsurface nature should always be should be taken during design process of structure, to prevent cases of structural failure

2.3 Summary of literature

- Basingon the above literature, we shall design the design the perimeter wall fence in accordance with the requirements of building regulations, We shall engage in enough research to design a perimeter fence that will comply with the hostel design requirement of Uganda and East Africa if possible.

- Based on the relevant literature we believe that a lot needs to be enforced during the design process, due to the day-to-day changes that are occurring in the climate. Changes like Elmina, and the increasing demands for a better security. Such structures like perimeter wall should therefore be designed with higher factors of safety to ensure adequate working life; they should also be monitored for any deformation during and post contract stages for aspects
Safety.

CHAPTER THREE:

METHODOLOGY

3.0 Introduction

This chapter covers the stages that will be involved in this project process. It is written about data collection methods for topographical survey, data collection instruments, validity and reliability of data, data analysis, limitations of the project, time schedule, budget and appendix.

3.1 Proposal approval

This proposal shall undergo an approval by the approval body.

3.2 Data Reconnaissance survey

- The students of the group carried this out inclusive, we used tape measures, chains ranging rods to obtain better results to conclusively support the outcomes, and this will be a policy for proven reliability of the data collected. It will also let us achieve the objective of learning how to carry out such as a survey.

3.3 Architectural designs

The architectural designs included;

- Floor plans
- Elevations
- Artistic impression
- The architectural design was done using soft wares such as auto cad, arch cad and rivet as the figures are shown below.

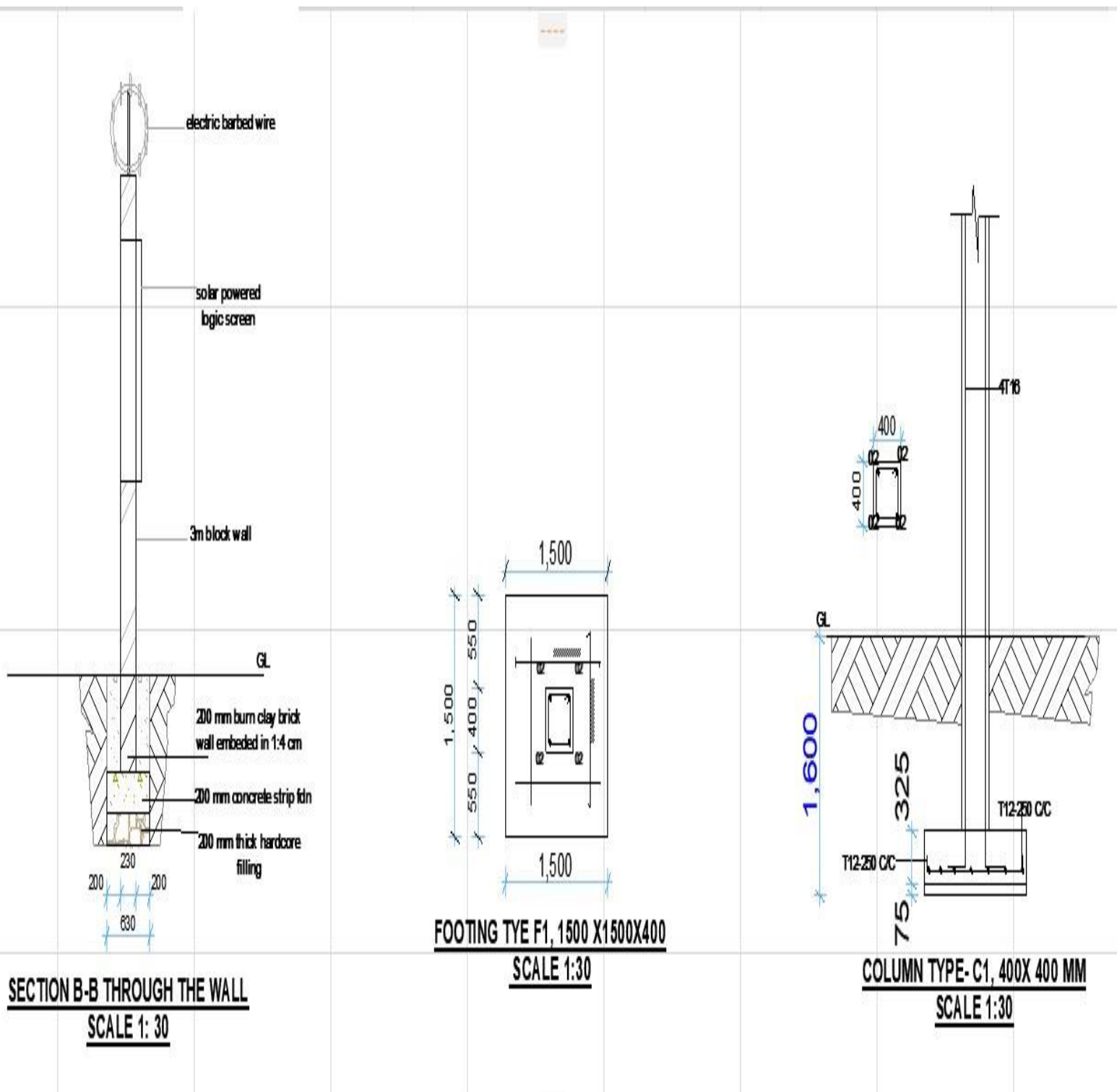


Figure 1: showing the description of the wall, foundation and the columns.

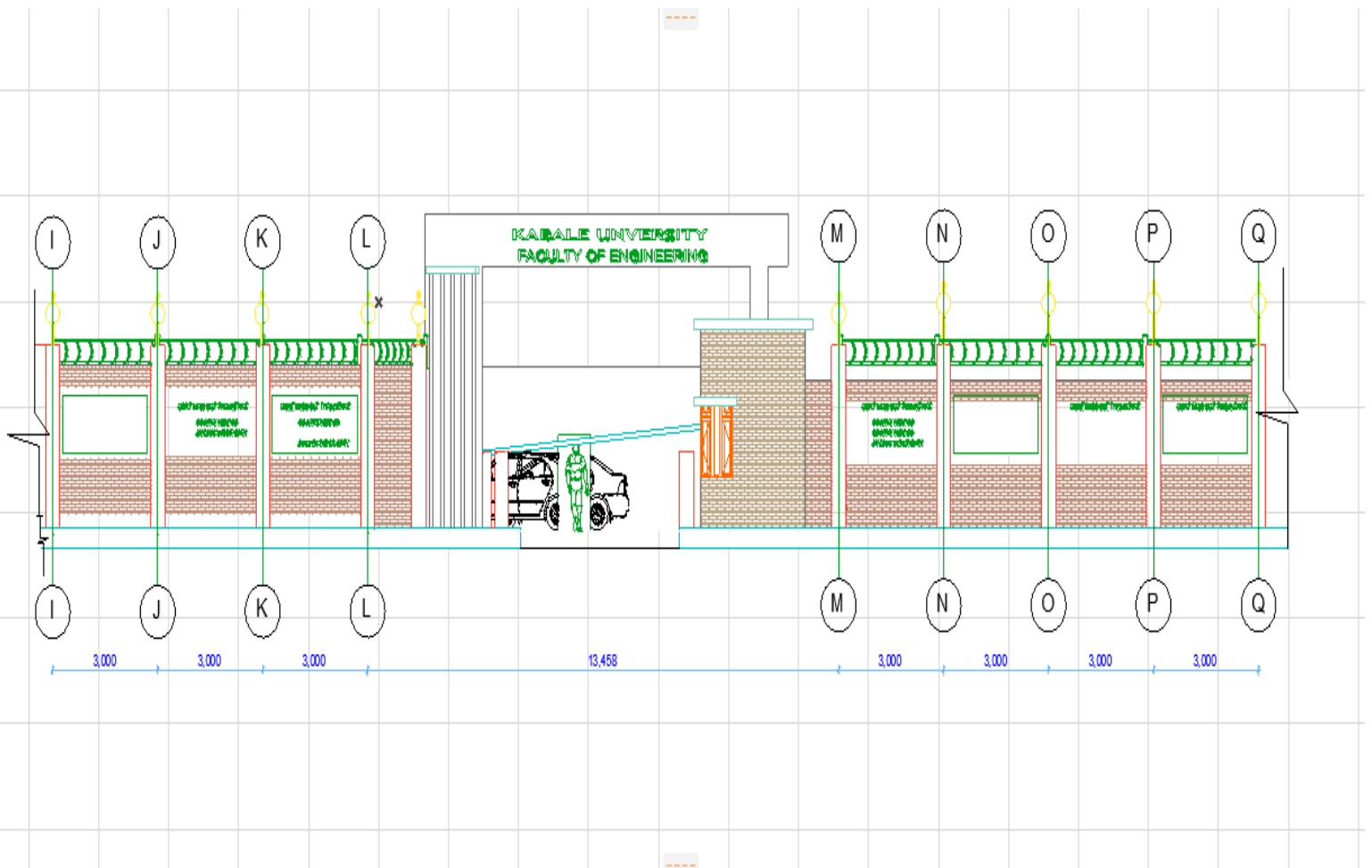
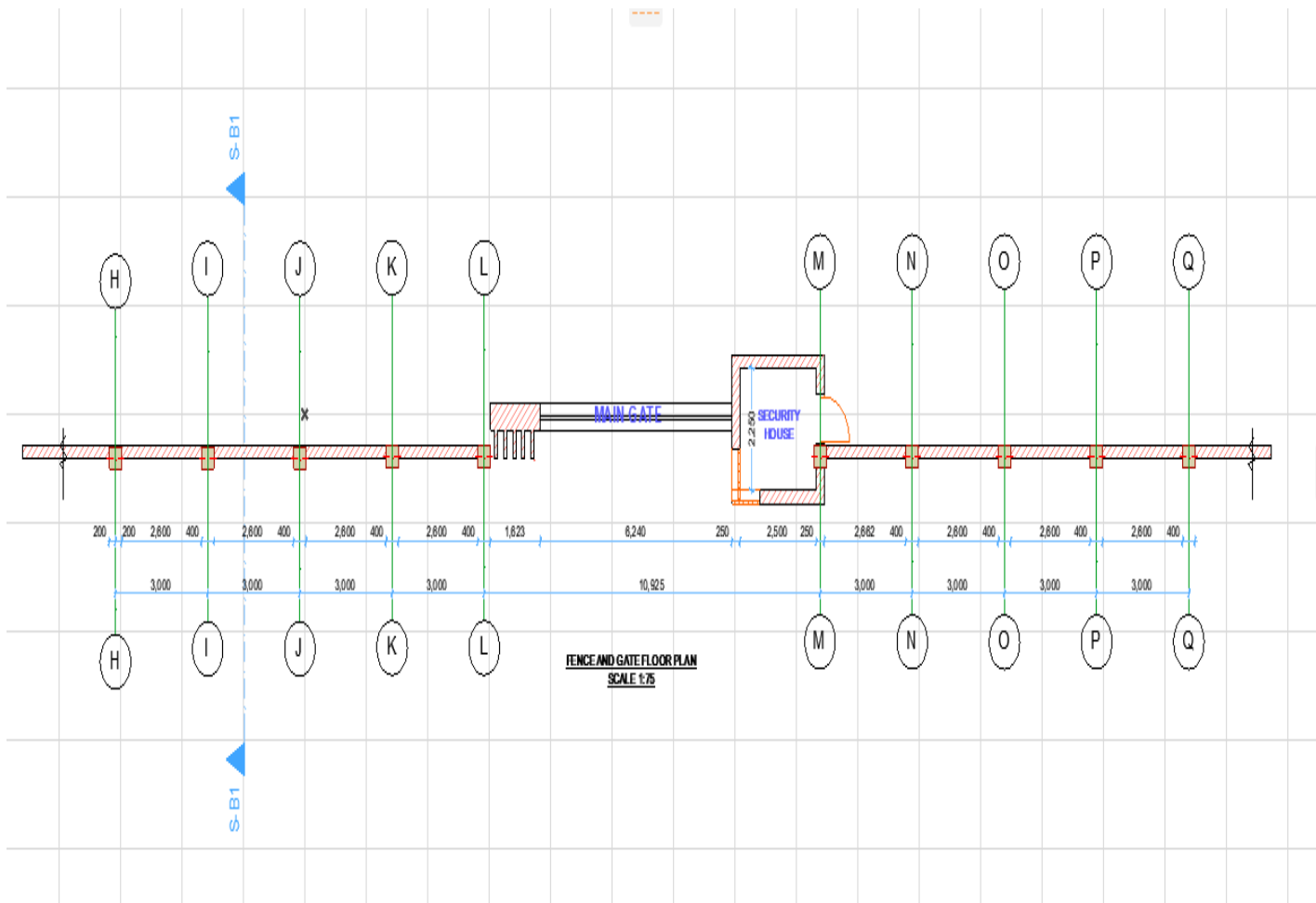


Figure 2: Showing the description of of front view.



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Figure 3: showing the ground plan.



Figure 4: showing the aerial view of the proposed project.



Figure 5: showing the aerial front view of the proposed project.

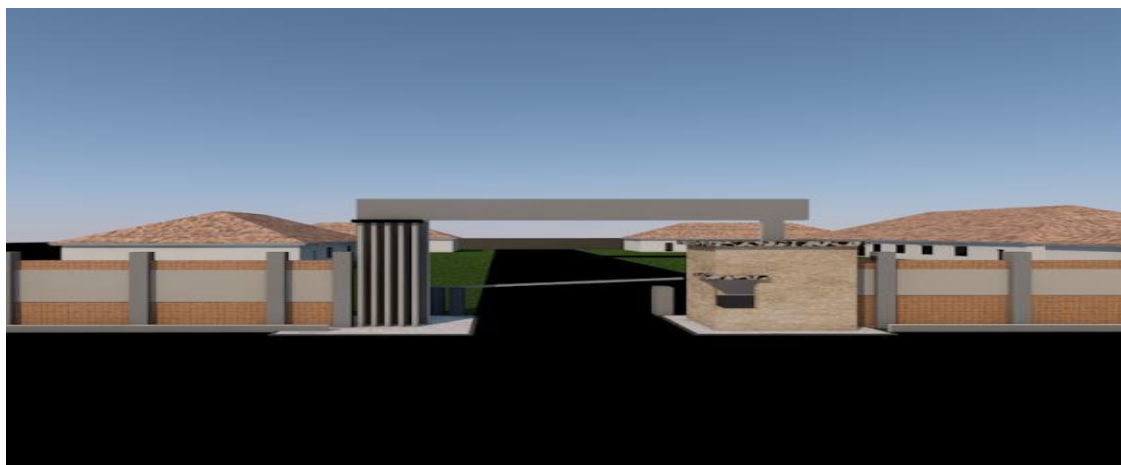


Figure 6 : showing the front view of the proposed project

3.4 Budget

A budget is the list showing estimated expenditures for the project presented as below;.

Table 2 showing the proposed budget

Item no.	Description	Unit	Rate	Amount
1	Preliminary activities	item	100,000=	100,000=
2	Site reconnaissance surveying	item	25,000=	25,000=
3	Architectural designs	item	100,000=	100,000=
4	Modeling	item	50,000=	50,000=
5	Stationery and printing	item	100,000=	100,000=
	Grand Total	NA	NA	375,000=

Table 3 showing the budget of the actual model.

Description	Unit	Rate	Amount
1. Plywood	1 square meter	5000	5000
2. Glue	1 tin	9000	9000
3. Ink and permanent marker	Unit	10000	10000
4. Printing	Unit	2000	2000
5. Soft boards	2 square meters	10000	10000
	TOTAL	NA	36000

CHAPTER FOUR:

RECOMMENDATIONS, CONCLUSION AND CHALLENGES.

4.1 RECOMMENDATIONS.

- I recommend that incase the university decides to construct this computerized fence; it should give the priority its own students to take up the job.
- Also, the university should award the one who come up with this idea of designing a computerized fence at the faculty of engineering as project.
- I also recommend that before starting projects, the university should always give enough training to students such that they come up with satisfying project.
- I case of my financial support needed by students in these projects, the university should always be there to help. This is because, some students normally come up with good ideas but because they are not able financially; they end up quieting the ideas.

4.2 CHALLENGES FACED DURING THE PROJECT PRACTICE.

- Insuffient funds for buying materials and to use while making research.
- Lack of tools like computers for drawing plans
- Limited time due to covid 19
- Lack of enough training about project
-
- Since it was a group project, sometimes we fail to agree on some occasions and at times we could leave the work hanging hence more times would be wasted.

4.3 CONCLUSION.

- This project is good and helpful most especially to engineering faculty where the number of students are increasing every year therefor, the university should consider this project, and to me it will have made the right choice of the project to begin with, because it is the most important

REFERENCES

- *National and Housing Guidelines(2011)*
- *Architectural design guide EMI East Africa*
- *Kyu Website*
- *Architectural standards Ernest and Neufert third edition*

APPENDICES

