

CONSTRUCTION TECHNOLOGY PAST AND PRESENT REPORT

ALEXANDRU NICOLAE SAS

STUDENT NR:1918816

TABLE OF CONTENTS

1.INTRODUCCTION

2.KNOWLEDGE AND UNDERSTANDING OF THE SUBJECT

3.COMPONENTS OF A BUILDING

3.1 SUBSTRUCTURE

3.2 SUPERSTRUCTURE

4.WALLS

4.1 INTRODUCTION

4.2 CATEGORYS OF WALLS

4.3 TYPES OF MATERIALS USED FOR WALLS

4.4 MASONRY WALLS

5.CONCLUSIONS

6.REFERENCES

1.INTRODUCTION

This report simplifies the understanding of the construction process of a building through basic information that applies to any domestic or residential structure. The purpose of this report is to provide information about the construction of a building and a run-through the components of any structure. It will give an overview on the requirements and purposes of a building as well as a detailed perspective on walls. The main proprieties of the components and walls will be discussed through the report.

2.KNOWLEDGE AND UNDESTANDING OF THE SUBJECT

From the beginning of time people have been changing and managed the surroundings in which they live and as civilization progressed so did the complexion of shelter and structures. From a building different requirement need to be achieved such as structural buildability, endurance, steadiness, flexibility and to provide a safe and comfortable dwelling. For a comfortable inside diverse steps need to be taken such as providing windows, insulating building materials, insulating external fabric and sealing the external fabric of the building. In the change to more supportable constructions newest concrete bricks and masonry exterior are used in construction for energy-saving, resistance and alluring appearance. Brickwork materials could be reutilized and reprocessed after their used and can usually supply higher-level of thermal efficiency in comparison to a light-frame structure. For a structure's thermal efficiency, the thermal capacity of the blocks and materials used is verry important (Maysoun Ismaiel, 2021).

3.COMPONENTS OF A BUILDING

Buildings are divided in two important parts, the substructure and the superstructure. The substructure is the part of the construction the resides right below the ground and it cannot be seen unlike the superstructure that is the construction over the ground. The main aim of the substructure is to level the load and provide support for the superstructure. Any construction requires both the substructure and superstructure to be secured so that it can stand firm against the outside nature elements.

3.1 SUBSTRUCTURE

Usually, substructures are constructed from concrete or reinforced concrete and after that is set up more concrete, bricks or stones is put on until the substructure rises to the plinth level.

1.FOUNDATION:

- Lower level of the construction.
- Transferring the load to the soil.
- Gives a stable support.

2.DAMP-PROOF:

- Put on walls and floors.
- Stops water from briefing the structure.
- Dampness is a constant issue for structures.

3.2 SUPERSTRUCTURE

The part of the structure that is bigger in size in regard to the substructure but lighter than it. This part of the structure contains the interior and exterior aspects and spreads the load coming from the top of a building to the substructure.

1.WALLS:

- Placed to separate different parts of the structure.
- They carry the load from the other parts of the structure.
- Usually concrete and brickwork is used for their construction.

2.FLOORS:

- Bottom, horizontal part of the superstructure.
- They differentiate the levels of the superstructure.
- Provides bearing for the furniture and other weight.

3.BEAMS:

- Horizontal elements made from brick or stone.
- They withstand the upright pressure.
- Sometimes is named a lintel.

4.COLUMNS:

- Upright elements that can resist to a lot of load.
- Need to be positioned well to resist more pressure.
- Steel, timber, brick, concrete is normally used for their construction.

5.INSULATION:

- Usually used for the external and internal parts of the structure.
- Prevents noise and heat from circulating through the walls.
- Wood fibre, mineral wool, fiberglass is normally used for thermal insulation.

6.ROOF:

- Covers the structure and provides shelter.
- Normally built out of timber.
- Different shapes of roofs such as pitched, flat, shed and butterfly roof.

7.GUTTER:

- It is constructed on every side of the roof.
- Takes in the water from the roof and carries it to the pipes that lead to the drainage.
- Presents safety on the roof.

8.WINDOWS:

- Are wall openings in the structure.
- Admit light and ventilation into the structure.
- Can be fixed, sliding, pivoted, double-hung and single-hung.

9.DOORS:

- Are wall openings in the structure.
- Give access to the structure and provide safety.
- Can be external or internal and are made from different materials such as steel, glass and timber.

10.INTERNAL FINISHES:

- Are put to cover the structural elements of the building.
- Change the appearance of the interior surfaces.
- Can consist in paint, blinds, tiles and other materials.

4.WALLS

4.1 INTRODUCTION

Walls are normally upright constructions that provides limits to a structure or area and give security and shelter from the external surroundings. The main purpose of the walls is to hold the pressure from the roof and beams and to carry the load of the superstructure to the foundation. Because of the gaps from doors and windows, walls can have a distinct diameter on different parts of the length. For a successful capability of the wall the brickwork and materials used need to correspond to the pressure it needs to withstand.

4.2 CATEGORYS OF WALLS

In building construction walls can be categorized as:

1.LOAD BEARING WALLS: - Retaining wall

- Precast concrete wall
- Masonry wall
- Stone wall
- Engineering brick wall(115mm,225mm)
- Pre panelized load bearing metal stud wall

2.NON-LOAD BEARING WALLS: - Hallow bricks

- Hallow concrete block
- Façade bricks
- Brick wall(115mm,225mm)

3.CAVITY WALL

4.PARTITION WALL

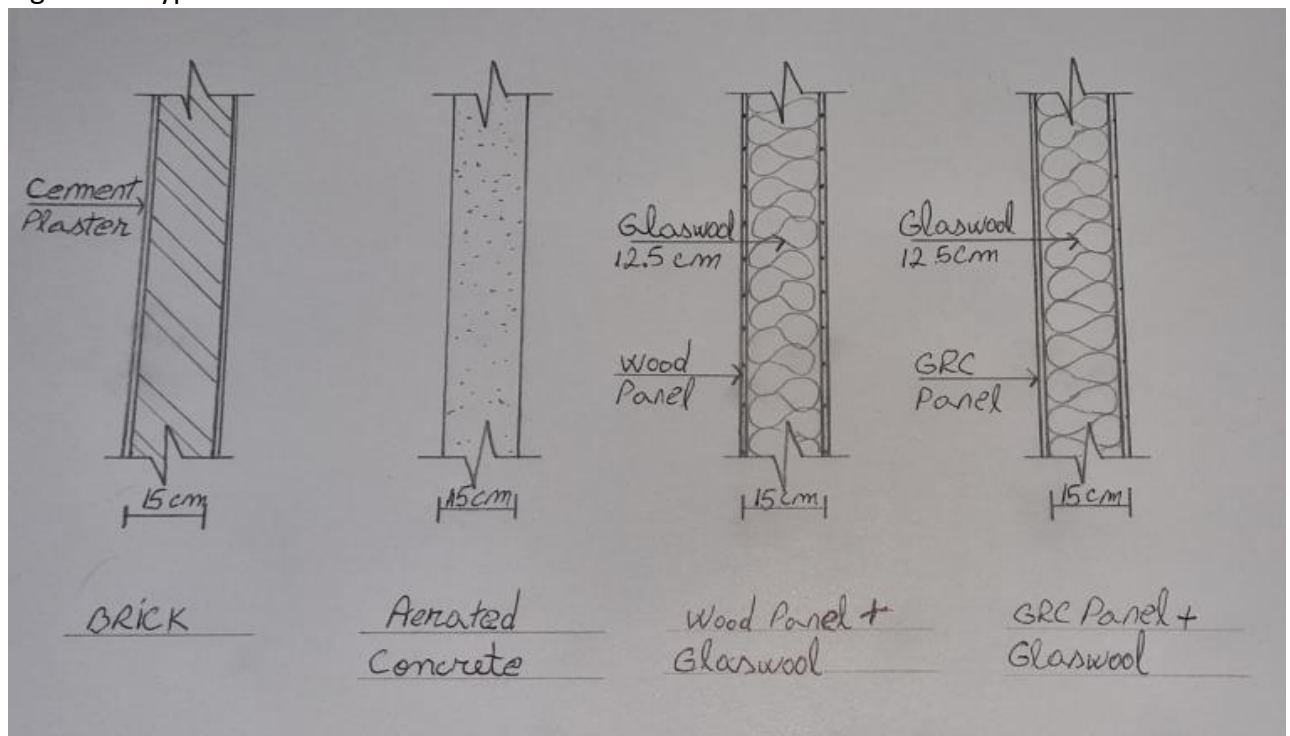
5.SHEER WALL

6.FACED WALL

7.PANEL WALL

8.VENEERED WALL

Figure 1 – Types of walls



4.3 TYPES OF MATERIALS USED FOR WALLS

Exterior walls can be constructed from various materials:

- BRICK Cladding
- METAL Cladding
- WOOD Cladding
- CONCRETE Cladding
- CERAMIC Cladding
- COMPOSITE Cladding
- STONE Cladding
- SOLID SURFACE Cladding
- METAL MESH Cladding
- 3D Cladding
- PLASTIC Cladding

Interior walls also called as partition walls are build using different techniques. Usually, they are built with brick or brickwork, framed and can be referred as stud walls which can be build with timber, aluminium frames and steel.

4.4 MASONRY WALLS

Because masonry walls can last, have a great property for storing heat and flexibility to adjust to multiple insulation plans gives them a great thermal efficiency. The connection linking the architectural loading and resistance for heat of the wall is normally concentrated on exposing the masonry to great heat because it is prone to flex when it is exposed to fire (Hui Su, 2019). There are not a lot of options when it comes to quantifying the thermal values of the materials. In other ways the transmission of heat in the concrete declines in the presence of heat and this decline is influence by the composition of the material (Mamisha Malik, 2021). A key factor of the decline of the transmission of heat would be the contrast between the increasing of heat and dampness. The good thermal quality of the concrete comes from combined cement and fine solid particles of ash along with underweight aggregates (Mamisha Malik, 2021).

5.CONCLUSIONS

The report has defined the major parts and properties of a building construction. The analysis of a structure defined in the report concludes the two major parts of a building and their subcategories. The report presents the reader with knowledge regarding different types of walls, different types of materials and the description of masonry walls. Overall, the key points of the requirements and purposes of a building were explained throughout the report.

References

Hui Su, D. W. M. S. W. C. S. W., 2019. *Development and performance test including mechanical and thermal of new tenon composite block masonry walls*, pp. 69-80.

Mamisha Malik, S. B. S. V. B., 2021. *Thermal and mechanical properties of concrete and its constituents at elevated temperatures: A review*, Volume 270.

Maysoun Ismaiel, Y. C. C. C.-N. M. H., 2021. *Journal of Building Physics*.