



NEDRA CONSTRUCTION COMPANY

BUILDING THE FUTURE, TOGETHER



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Abdikarim Aadan Mohamed



SAFETY
FIRST



QUALITY
WORK



TEAMWORK
EXCELLENCE



ON-TIME
DELIVERY



WE BUILD MORE THAN STRUCTURES,
WE BUILD TRUST.



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INTRODUCTION

This project presents the planning, architectural layout, structural design, and cost estimation of the proposed building development. The study was carried out to apply civil engineering principles in a practical way and to develop a safe, functional, and economical structure. The project includes site analysis, foundation design, column design, beam design, slab design, staircase design, and preparation of drawings such as plans, sections, and elevations. In addition, geotechnical observations and site conditions were considered to ensure the suitability of the area for construction. Overall, the project demonstrates the importance of proper planning, structural analysis, and engineering design in achieving a durable and efficient building project.

SITE PLAN

1.Site Location and Size

The project site is a 20m × 35m rectangular plot, suitable for construction and supporting facilities like parking and circulation, allowing efficient space planning and use.

2.Site Boundary

The site is 20m × 35m and its boundaries help define separation from neighboring plots and guide proper setbacks and efficient internal space planning.

3.Site Orientation

The site faces north, which helps in planning because it controls sunlight exposure and natural airflow. This is useful for designing building openings that improve daylight inside rooms and maintain a comfortable indoor temperature.

4.Road Access and Circulation

The site has two main roads:

1. **Main road:** A paved road along the front of the site, 35m in length.
2. **Side road:** A side road, 8m wide, providing additional access and smooth traffic circulation.

Both roads **increase the site value** by facilitating easy access and movement.

5.Surrounding Land Use

The surrounding area includes:

- **Left side:** Residential apartment building.
- **Right side:** Storage/warehouse building for commercial or service use.

This indicates that the site is located in a **mixed land-use area**, suitable for project development.

6.ENVIRONMENTAL CONSIDERATIONS

The north orientation helps the building to:

- Receive **adequate natural light**.
- Ensure good **natural ventilation**.
- Reduce direct solar heat gain

Nearby roads and buildings may affect **noise levels** and **views**, which should be considered in the design.



ACCESS ANALYSIS

Located on the **north side**, connected to the **Main Road (35m)**. This is the primary entry point for vehicles and pedestrians

2.Secondary / Service Entrance

Located on the **east side**, connected to the **Residential Street**, providing access for service vehicles or secondary traffic.

3.Traffic Direction

Traffic flows are clearly indicated with arrows:

- Vehicles enter from the **Main Road (north)** and can circulate around the site.
- Vehicles can also enter via the **secondary/service entrance** on the **east side**.

Exit routes align with the surrounding junctions to avoid congestion

4.Nearby Junctions:

- **North (Sunrise):** Adjacent to Taraqa and Sigaarka junction.
- **South (Sunset):** Adjacent to Shiirkole Ofiyaale junction.
- **East:** Adjacent to Taraqa and Sigaara junction.
- **West:** Adjacent to Shiirkole junction.

SITE ELEVATION

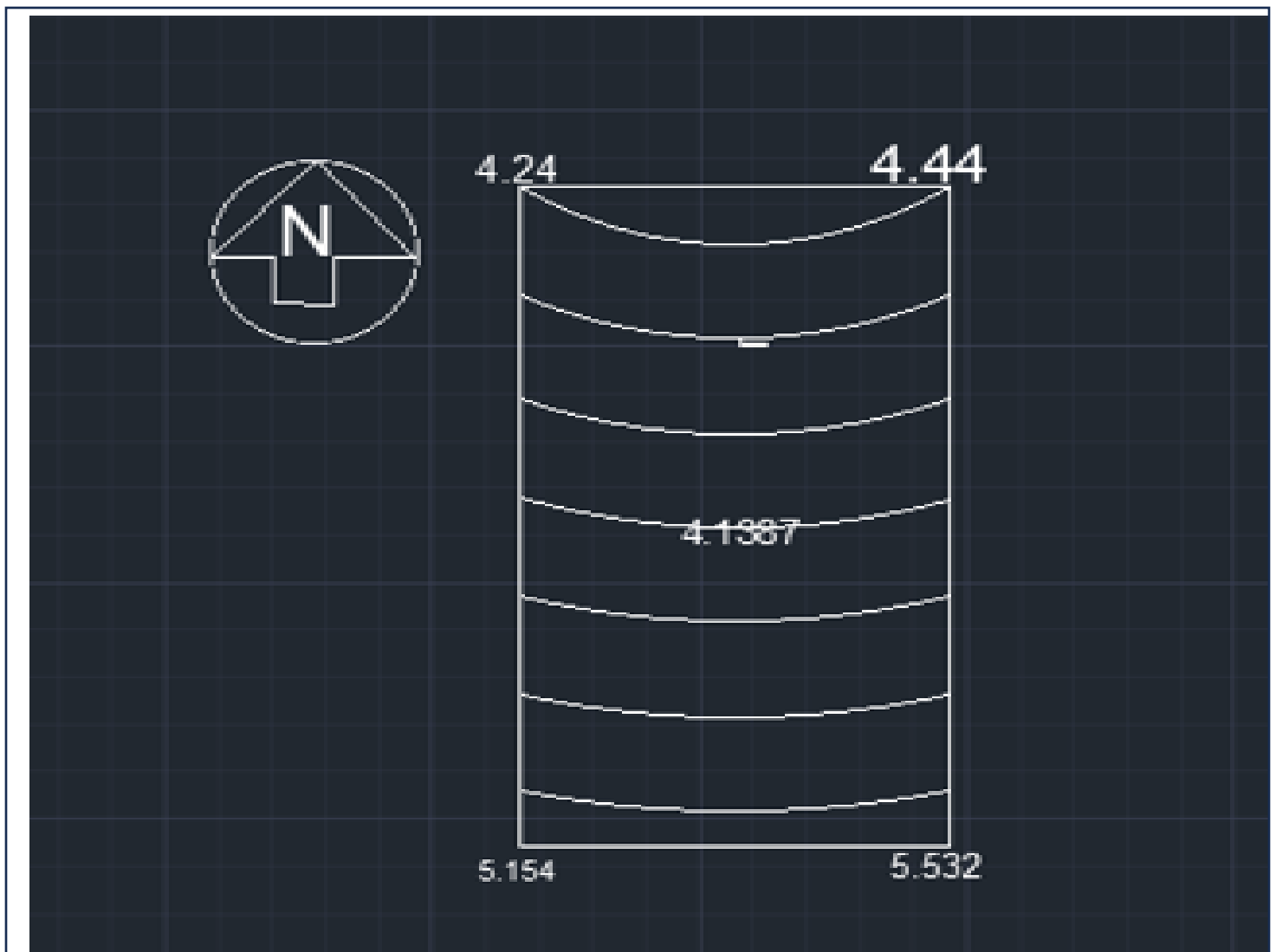
The site is **not flat**; it has noticeable **contour level differences**.

- The higher levels are approximately **4.24m – 4.44m** (on the northern side).
- The lower levels range from **5.154m – 5.532m** (on the southern side).

This indicates that the land has a slope running from North to South.

Therefore, the design should consider:

- A proper drainage system to allow rainwater to flow easily
- An appropriate foundation level to accommodate the change in ground elevation.



THE SITE WHERE WE CONDUCTED THE PROJECT



SURVY WORK

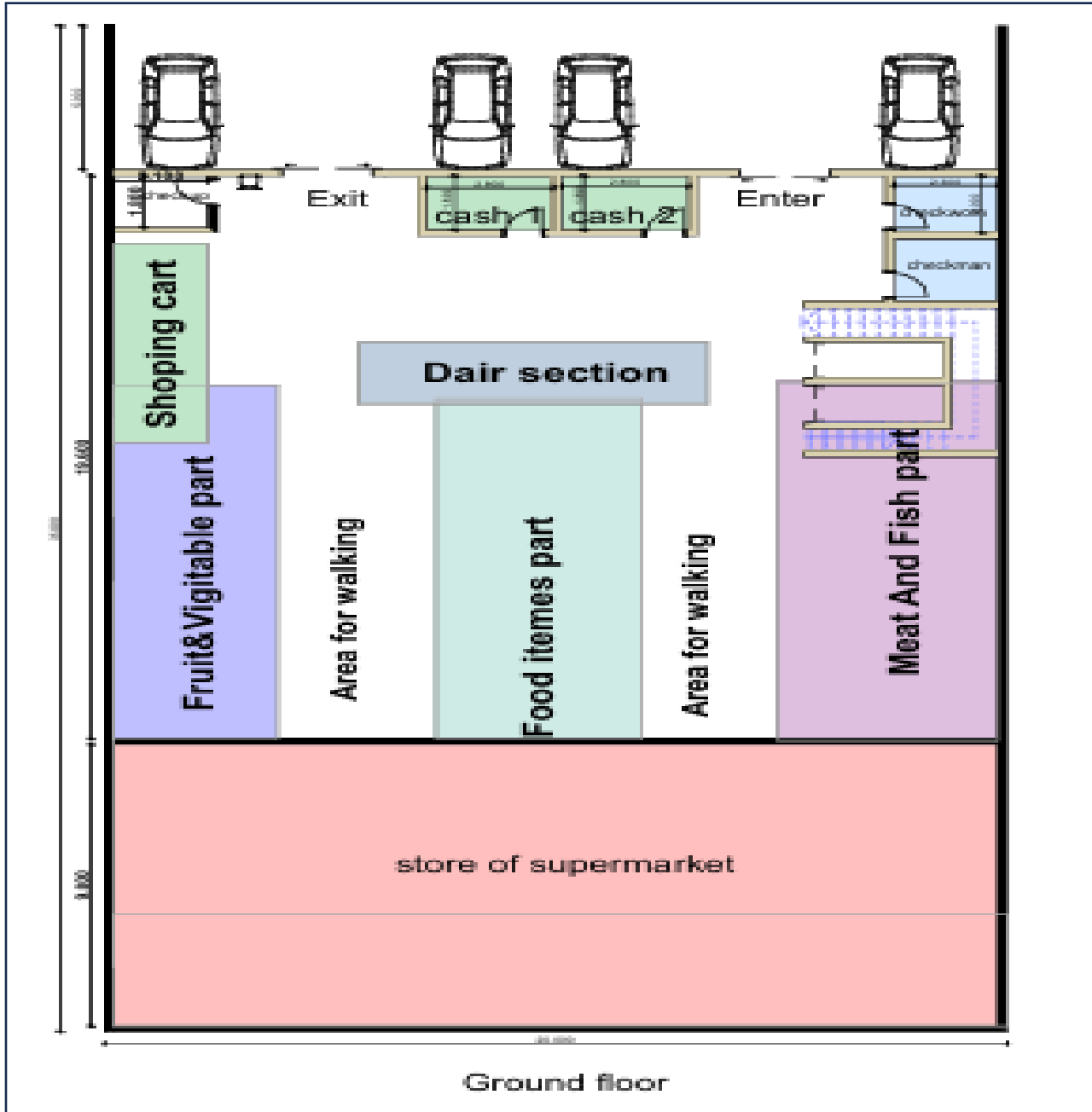




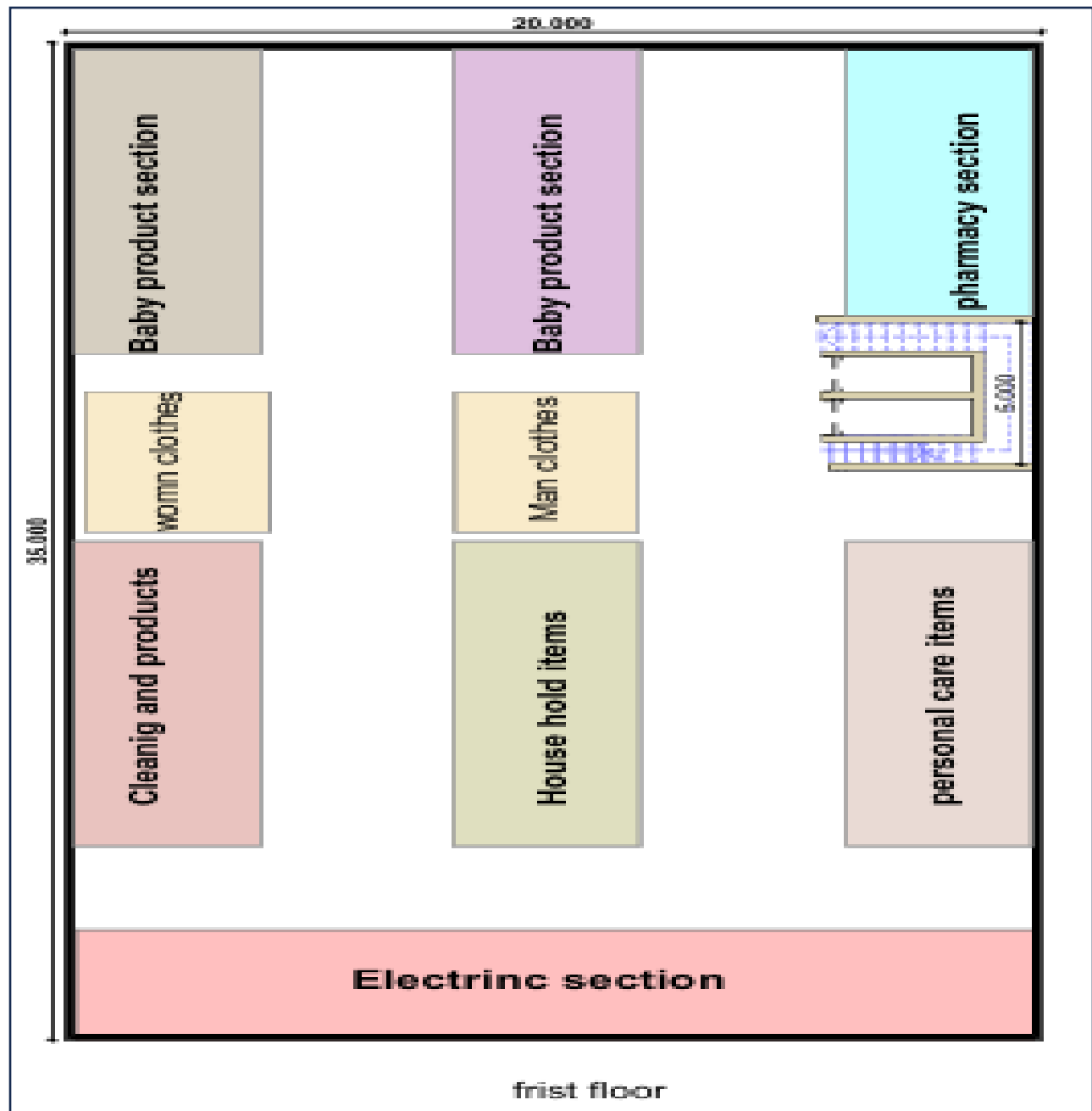
TOPGRAPHICAL AREA



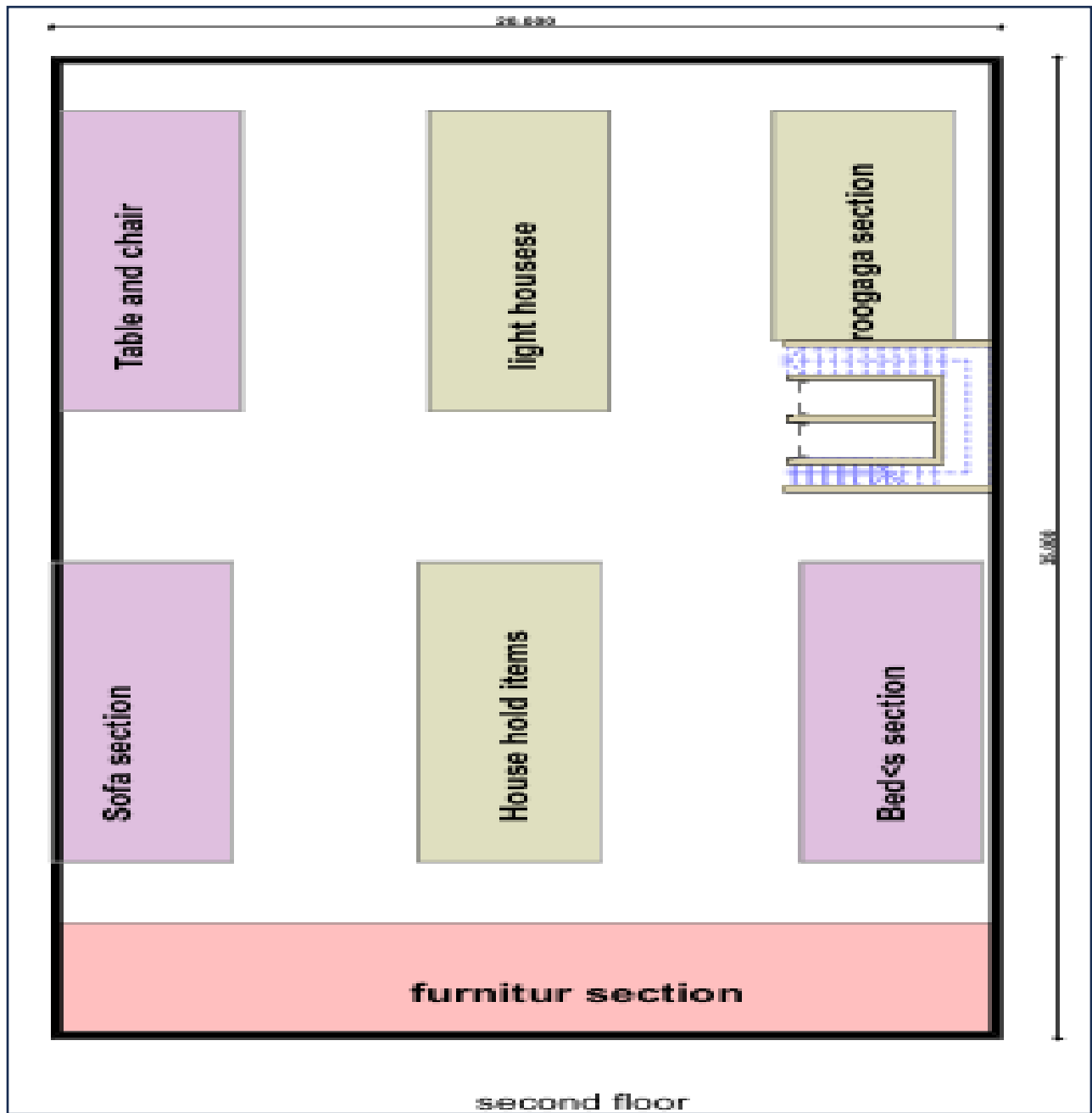
2D PLANE



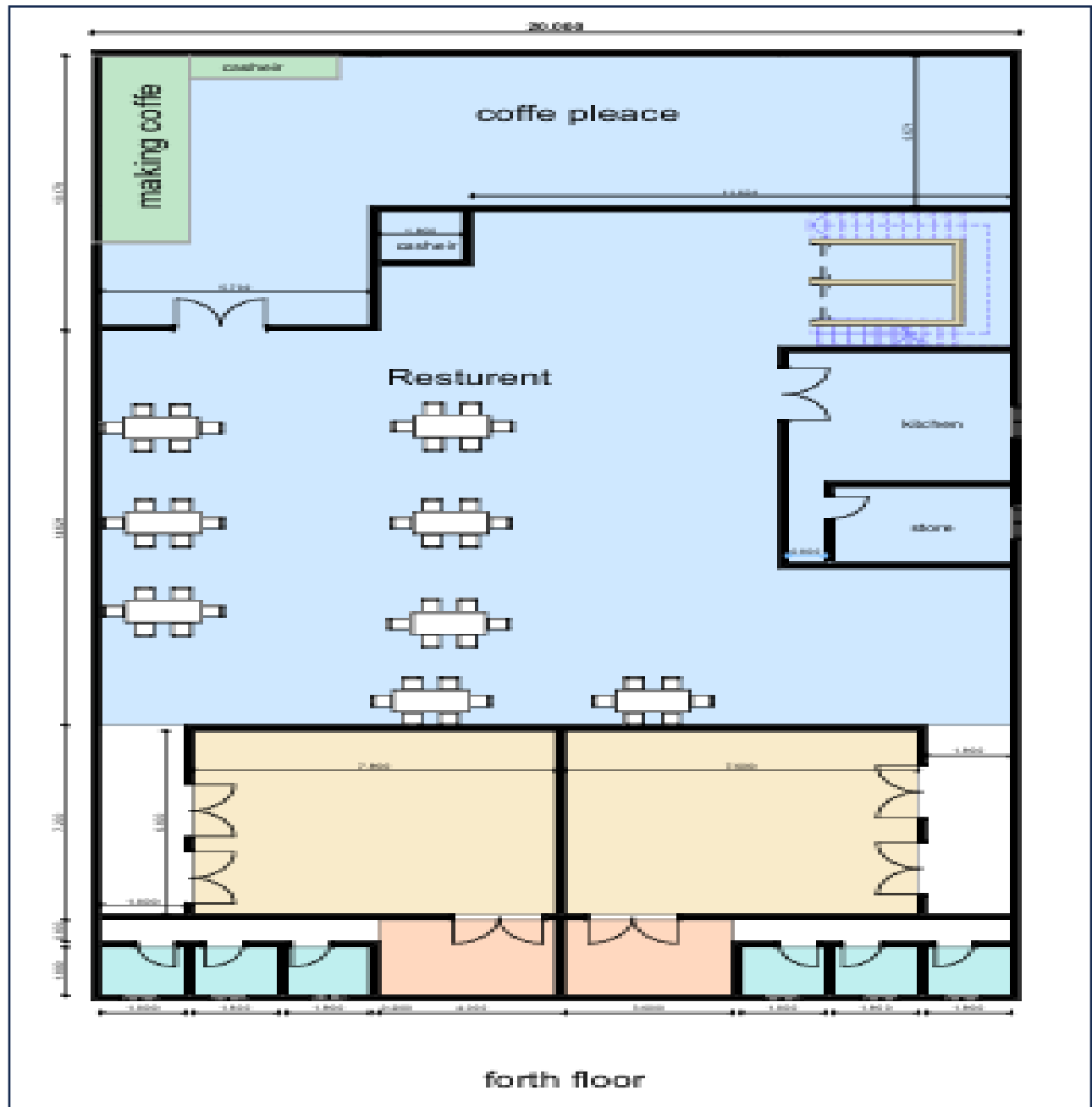
GROUND FLOOR



FRIST FLOOR



SECOND FLOOR



THIERD FLOOR

ELAVATIO VEIW



FRONT VEIW

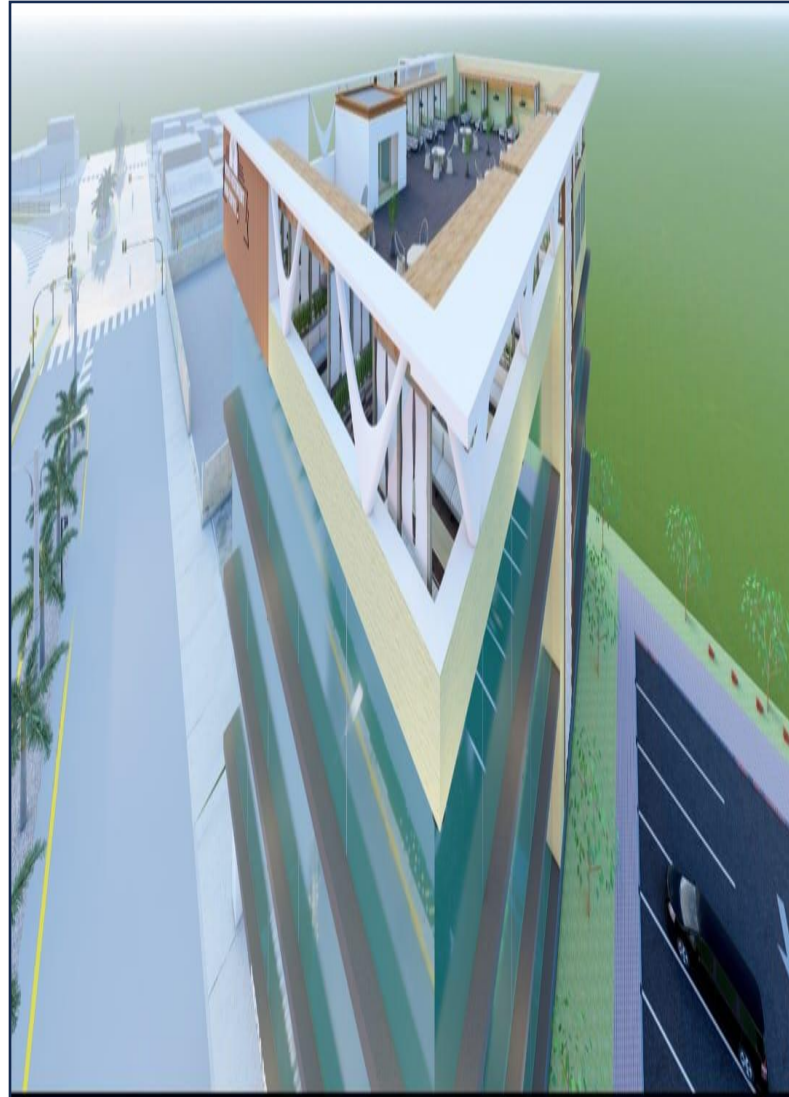


BACK SIDE VEIW

SIDE VEIW



TOP VEIW



SECTIONS



SECTION 1



SECTION 2



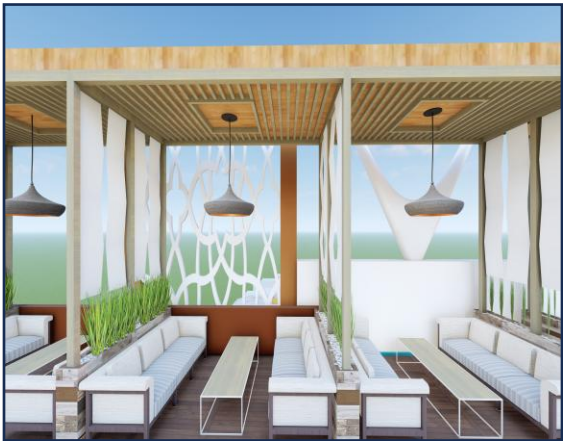
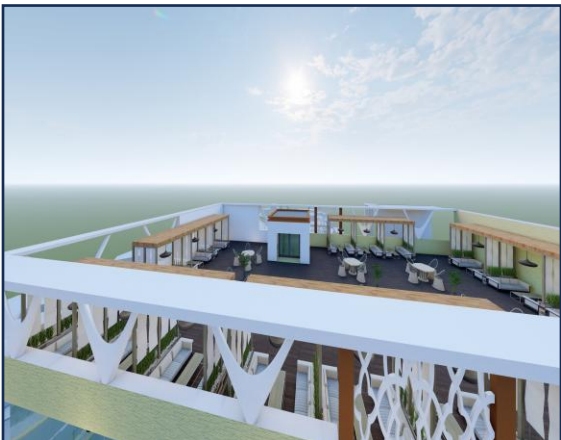
SECTION 3

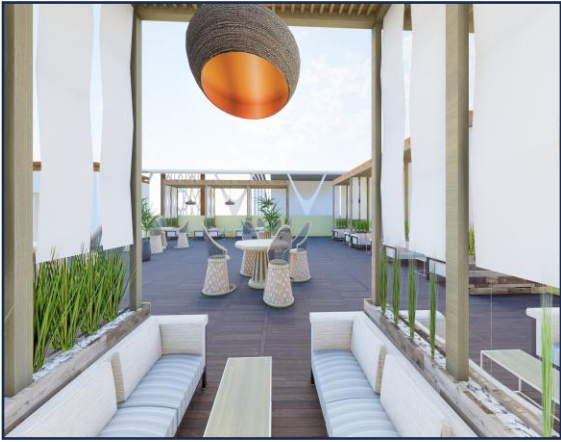


SECTION 4

3D PLANE







GEOTECHNICAL REPORT

2.0 Introduction

This report presents the findings of a preliminary geotechnical assessment conducted through visual observation only. The aim is to evaluate the general soil conditions and identify any potential geotechnical issues.



2.1 Methodology

The site was assessed using visual inspection and manual hand-feel methods, without the use of any laboratory or field testing equipment. The investigation primarily focused on observing the surface characteristics of the soil and the general condition of the site.

Visual inspection included a detailed examination of the ground surface to identify soil color, texture, structure, and the presence of any visible features such as cracks, roots, debris, or signs of erosion. The slope of the terrain, drainage patterns, and surface stability were also carefully

observed.



HAND TESTING METHOD.



SOIL TESTING WORK



SOIL TESTING

2.2 Site Description

The site is located in Holwadaag District, specifically in Shiir Koole Ward. The terrain is not entirely flat; instead, it exhibits a gentle slope with one side of the site being relatively lower than the other. This variation in elevation may influence surface drainage and water flow patterns across the site.

The surrounding area consists of a mix of residential houses and commercial establishments, indicating moderate urban development. In addition, a paved (asphalt) road is situated in front of the site, providing good accessibility and transportation connectivity. The presence of nearby infrastructure suggests that the area is actively utilized and developed



2.3 Surface Conditions

The ground surface is not entirely flat; it shows a gentle slope, with one side of the site being lower than the other. This slight variation in elevation may influence surface runoff and drainage patterns across the area.

The site is covered with predominantly dry soil and minimal vegetation. The soil appears relatively firm and moderately compact. A slight presence of moisture was observed within the soil, indicating limited water retention in the upper layer.



Surface Conditions

2.4 Soil Observation

The soil observed at the site is brown in color and appears to consist predominantly of gravelly soil (coarse-grained material). The presence of gravel indicates relatively larger particle sizes, which may contribute to good drainage characteristics.

The soil is generally hard and well-compacted at the surface, suggesting a relatively dense condition. Due to its coarse nature, the soil exhibits low plasticity and limited cohesion when assessed using the hand.



Excavation



HANDING TEST

2.5 .Groundwater Condition

No groundwater was observed at the surface durin the site visit.



2.6 Potential Problems

During the time I stayed at the site, there were generally no major problems observed in the area. The ground conditions appear to be firm and stable. Additionally, there is no significant risk of flooding in this location.

SITE WORK



SITE OBSEVATION



ADUG HOLE





SOIL TESTING HAND



SOIL TESTING HAND



EXCURVATION



SOIL COLOUR



SOIL TESTING



EXCUCVETION



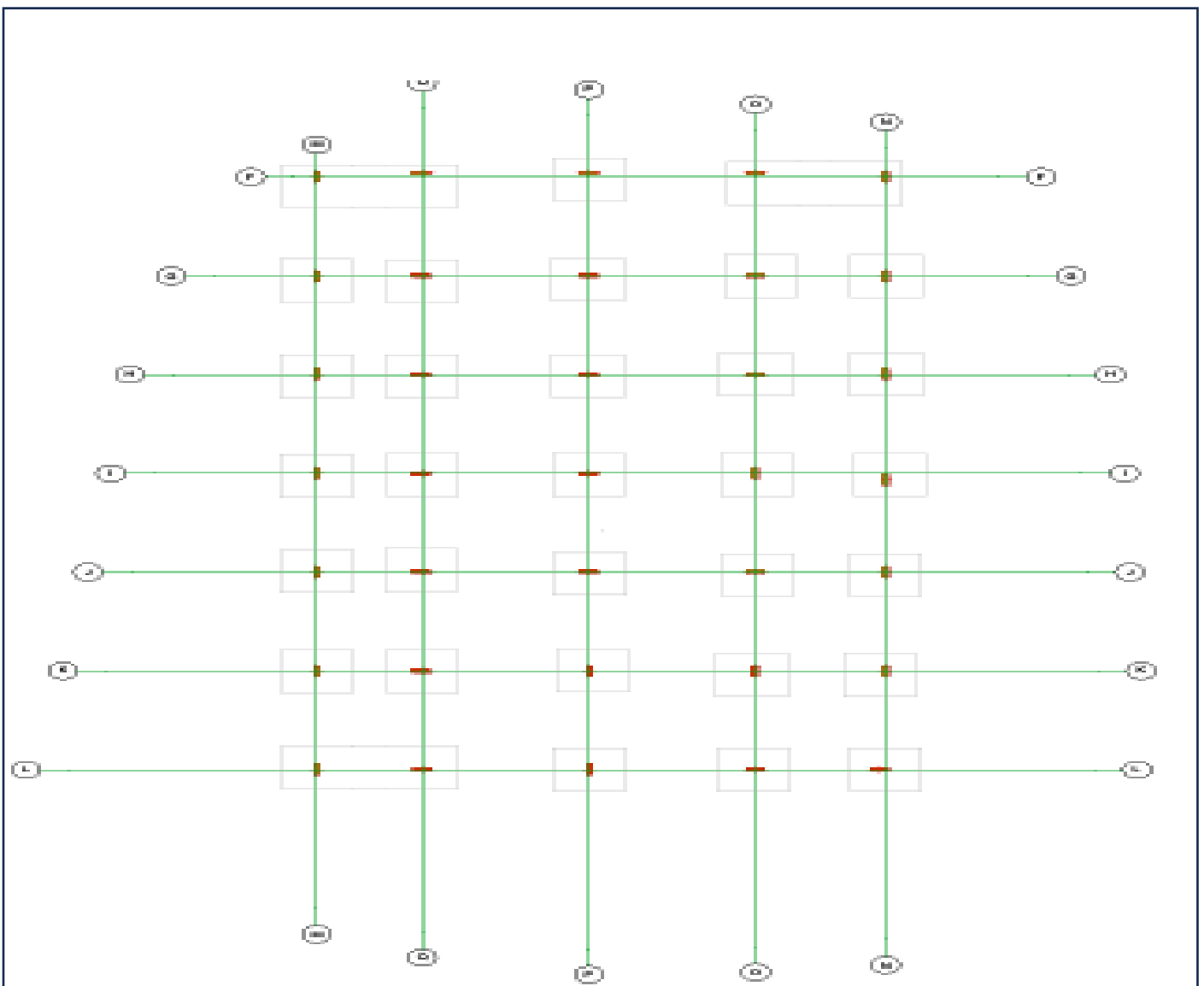
STRUCTURAL DESIGN

3.0 INTRODUCTION

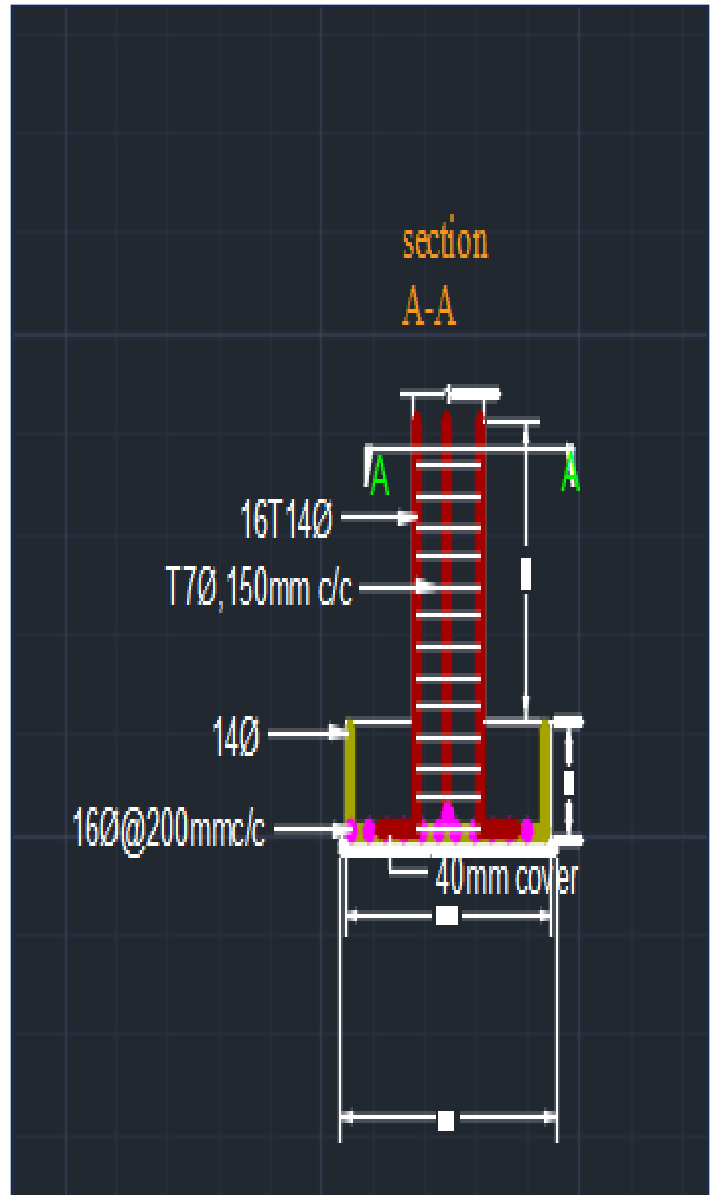
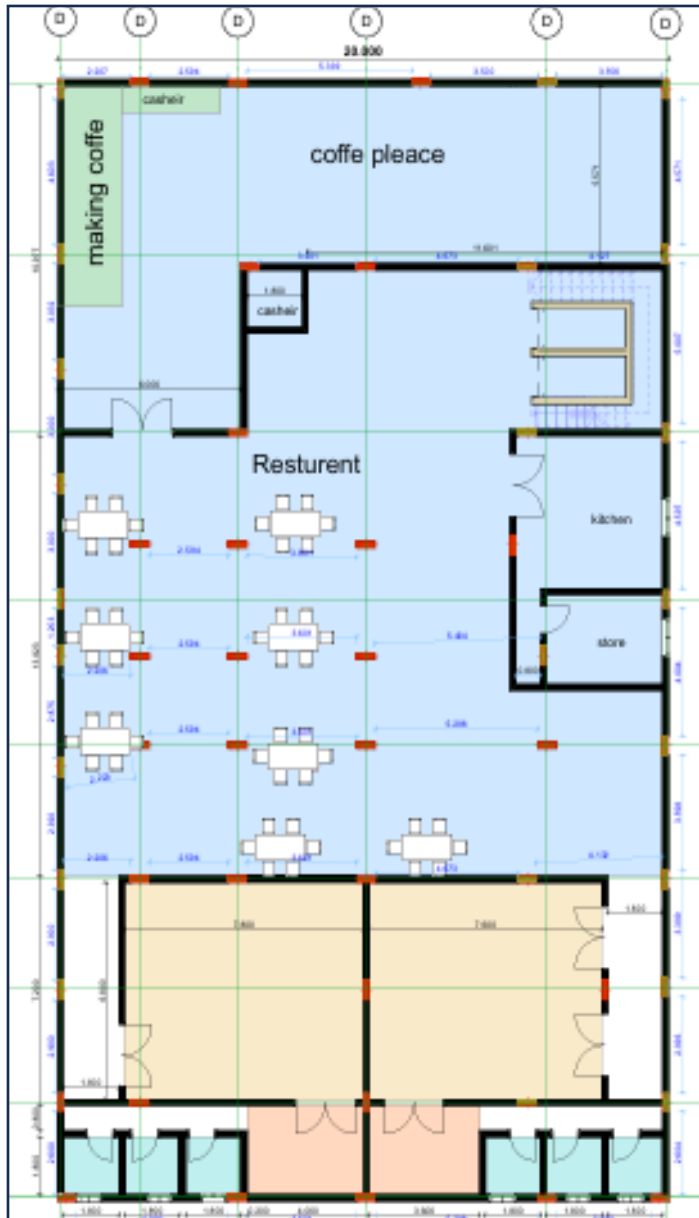
Structural design is a branch of civil engineering that deals with planning and designing safe and strong buildings. It helps structures carry loads like people, furniture, and wind safely. The main goal is to make buildings stable, durable, and safe for use.

3.1.0 Foundation Design

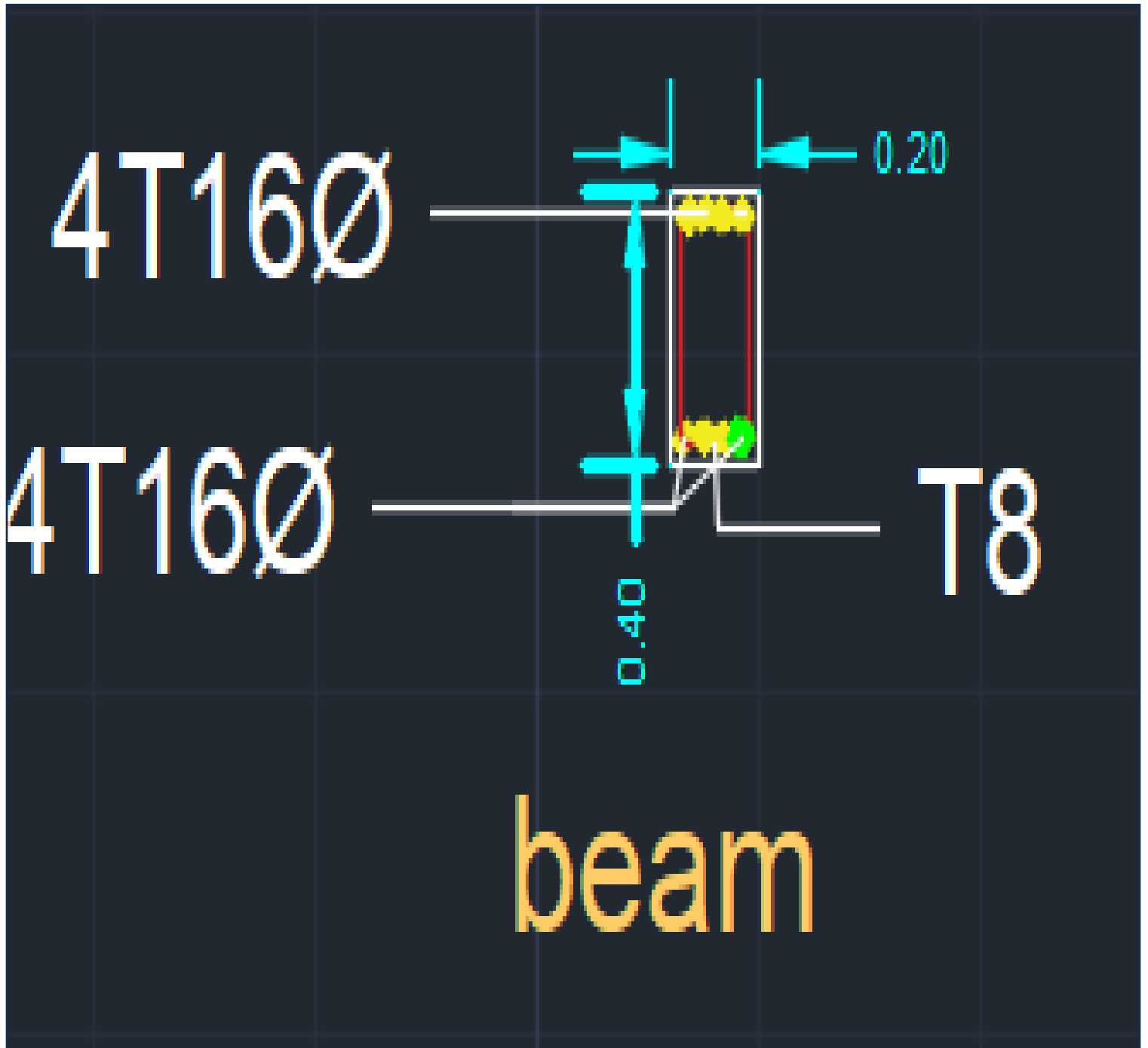
Foundation design is the process of planning and designing the base of a building. It helps transfer the building load safely to the ground and keeps the structure stable and strong.



Column Design is the process of determining the size, shape, and reinforcement of a structural column to safely support and transfer loads from the building to the foundation without failure.



Beam Design is the process of designing a structural beam to safely support loads and transfer them to columns or walls without bending or failure.



Staircase Design is the process of planning and designing stairs to provide safe, comfortable, and efficient movement between different floor levels.



COST ESTIMATION

Cost Estimation is the process of calculating the expected cost of materials, labor, and construction work required to complete a project.

TOTAL COAST ESTIMATION

NO	ITEM DESCRIPTION	QUANTITY	AMOUNT
1	GROUND FLOOR	\$1	355,000.00
2	FIRST FLOOR	\$1	273,000.00
3	SECOND FLOOR	\$1	273,000.00
4	THIRD FLOOR	\$1	280,000.00
GRAND TOTAL			\$ 1,181,000.00

GROUND FLOOR WE USE: $20 \times 35 = 700 \times 390 = 273,000.00 \times 0.3 = \$355,000.00$

FRIST FLOOR WE USE: $20 \times 35 = 700 \times 390 = \$273,000.00$

SECON FLOOR WE USE $20 \times 35 \times 700 \times 390 = \$273,000.00$

THIRD FLOOR WE USE $= 20 \times 35 = 700 \times 390 = \$273,000.00$ ABOVE \$280,000.00

CONCLUSION

This project successfully focused on the planning, analysis, and structural design of the proposed building project. The study included site investigation, architectural planning, structural elements design, and cost estimation to ensure the safety, stability, and functionality of the structure. The site conditions were found suitable for construction, and the selected design provides proper strength, durability, and efficient space utilization. Overall, the project improved understanding of practical civil engineering design procedures and demonstrated the importance of proper planning and structural analysis in achieving a safe and economical building project.