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Planning and Design of G+2 A Hostel Building

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ABSTRACT

The layout of the hostel has a massive impact on the general experience, consolation, and comfort of its occupants. This summary highlights the key elements and layout standards had to create a friendly and purposeful hostel surroundings that meets college students' evolving wishes. Safety, community involvement, sustainability, and area optimization are all given top precedence inside the design. The essential dreams of a nicely-designed college student residence hall should be inexperienced room preparations, bendy dwelling and look at areas, and not unusual areas that inspire collaboration and social interplay.

The layout have to include sustainable building substances, strength-green structures, and technology which include multiple get entry to, clever room controls, and excessive-pace internet to satisfy the goals of ultra-modern college students. In end, a university dorm layout must enhance the overall student experience by using the usage of providing a solid, exceptional, and network-targeted residing surroundings. The dorm will become an vital a part of campus existence by tackling sustainability, network development, protection, and region usage troubles, assisting students' instructional and private boom.

I. PLAN OF THE STRUCTURE

1. Introduction:

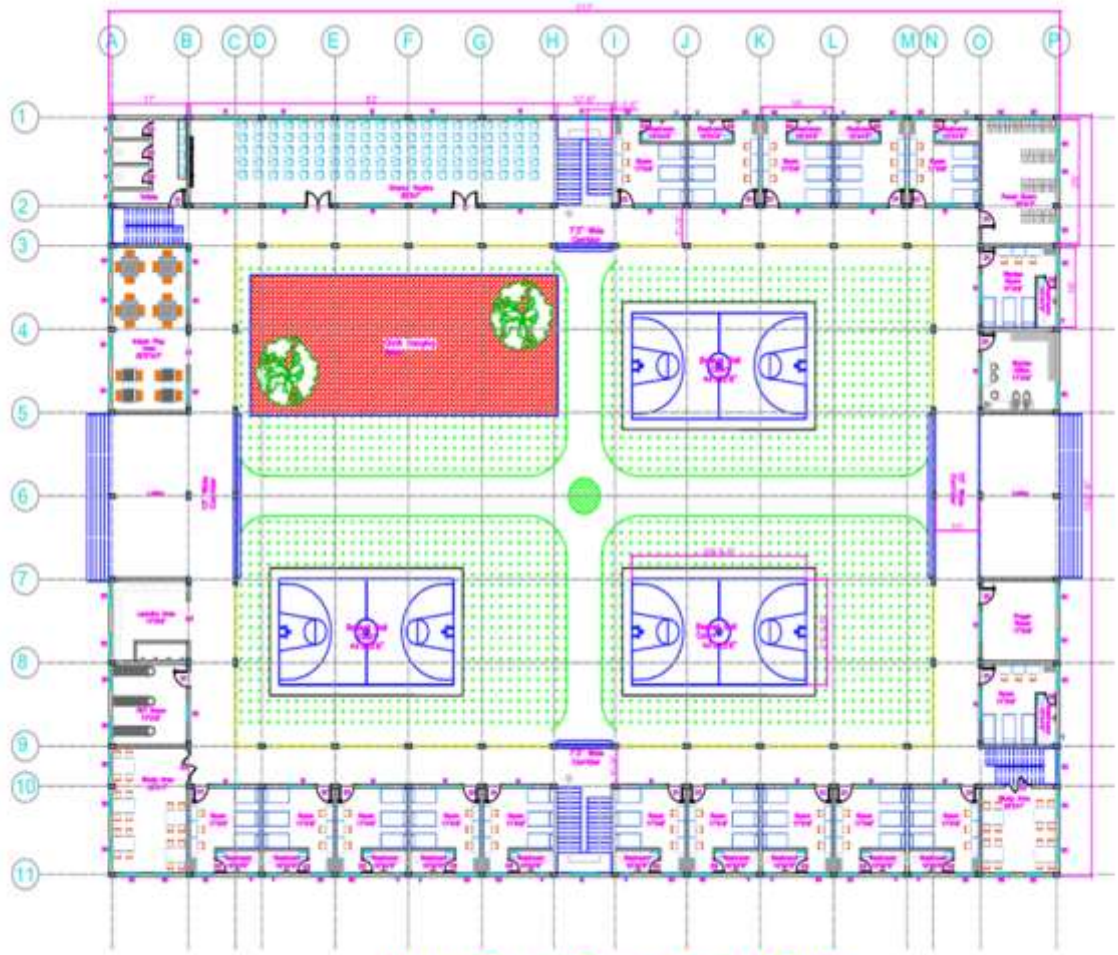
Providing citizens or college students with secure, practical, and cushty housing starts with the design of a G+3 hostel building. In addition to any relevant building norms and recommendations, a well-designed hostel must observe the requirements of structural balance, space optimization, and person-quality layout.
The cause of this undertaking is to format a four-tale hostel building whilst taking critical elements like structural layout, fabric preference, architectural planning, and environmental worries into consideration. Column-beam-slab configurations, load calculations, foundation layout, and carrier provisions like air float, electric, and plumbing are all a part of the layout machine.

The following are this design's most important dreams:

To provide a dependable load-bearing device and a strong, lengthy-lasting structure.

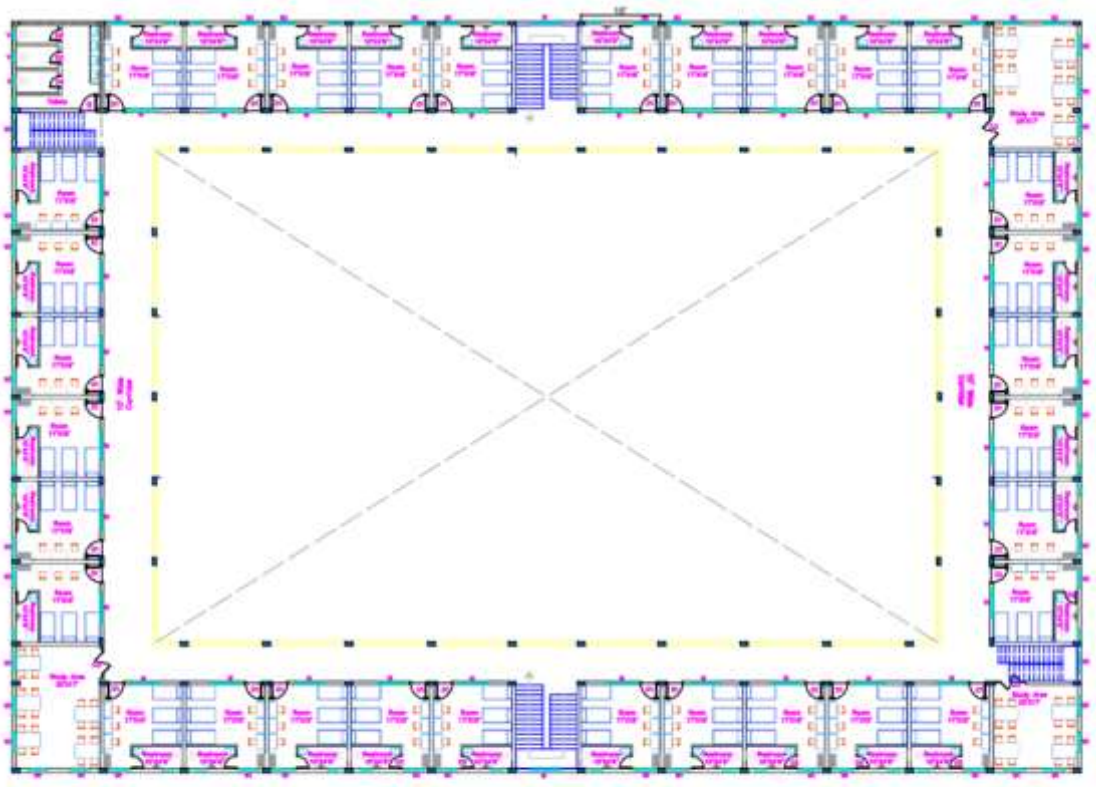
- To maximise occupancy at the equal time as preserving consolation through making the most of the to be had region.
- To guarantee price-effectiveness at the same time as the use of long lasting and green constructing substances.
- To enhance living conditions by using which include regions for stream, lighting fixtures, and air flow.

1.1 Ground Floor Plan:



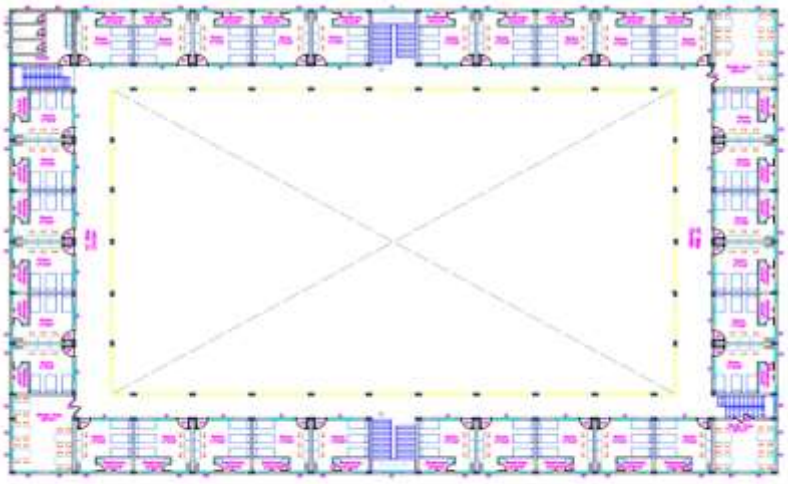
Hostel Block Ground Floor Plan

1.2 First Floor Plan



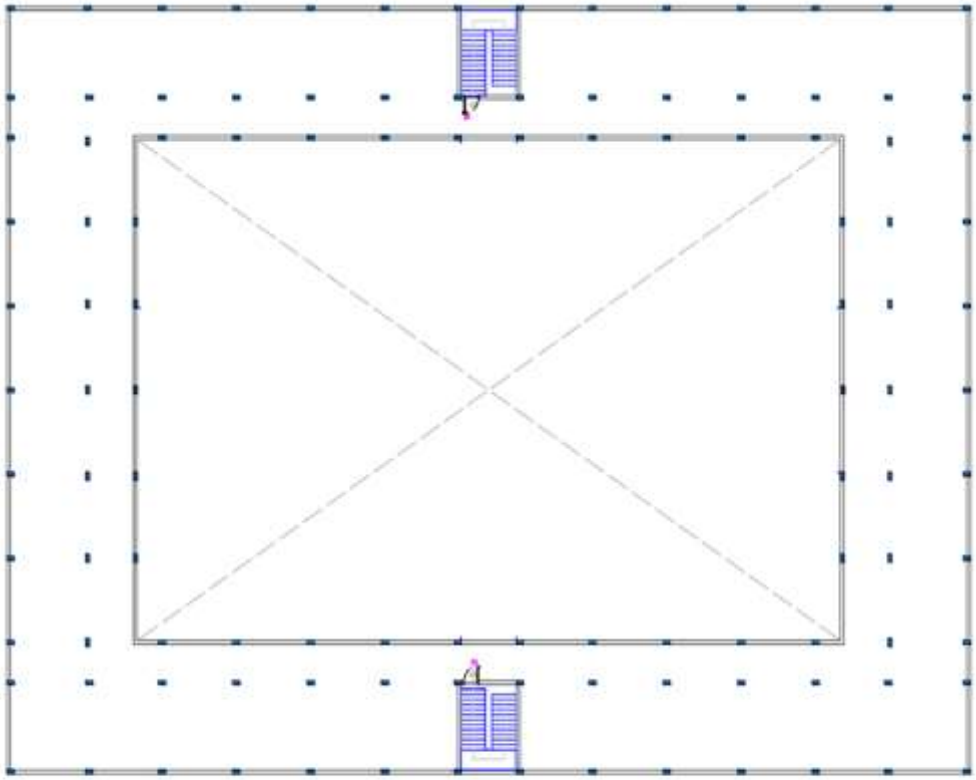
Hostel Block First Floor Plan

1.3 Second Floor Plan



Hostel Block Second Floor Plan

1.4 Terrace Plan



Hostel Block Terrace Floor Plan

2. REQUIREMENTS:

Room - 4.87*5.18m

Prayer Room – 4.87*5.18m

Warden Room – 4.87*5.18m

Warden Office –4.87*5.18m

Laundry Area –4.87*5.18m

PT Room –4.87*5.18m

Study Room 1 – 7.62*5.18m

Power Room - 7.62*5.18m

Toilet 1-(3*1.23m)

Toilet 2-(2.4*1.4m) Toilet 3-(1.7*1.4m) Kitchen-(3.05*4.0m)

Size of Doors and Windows:

Window W –1.82*1.2

Window W1-1.21*1.2

Ventilator -0.6*0.45 Door1 -1.06*2.13

Door 2- 0.81*2.13

Door 3- 1.82*2.13

Staircase Details:

Number of steps: 21 Rise: 150 mm

Tread: 300 mm

III. LAYOUT AND GROUPING

3.1 Slab Layout & Grouping:

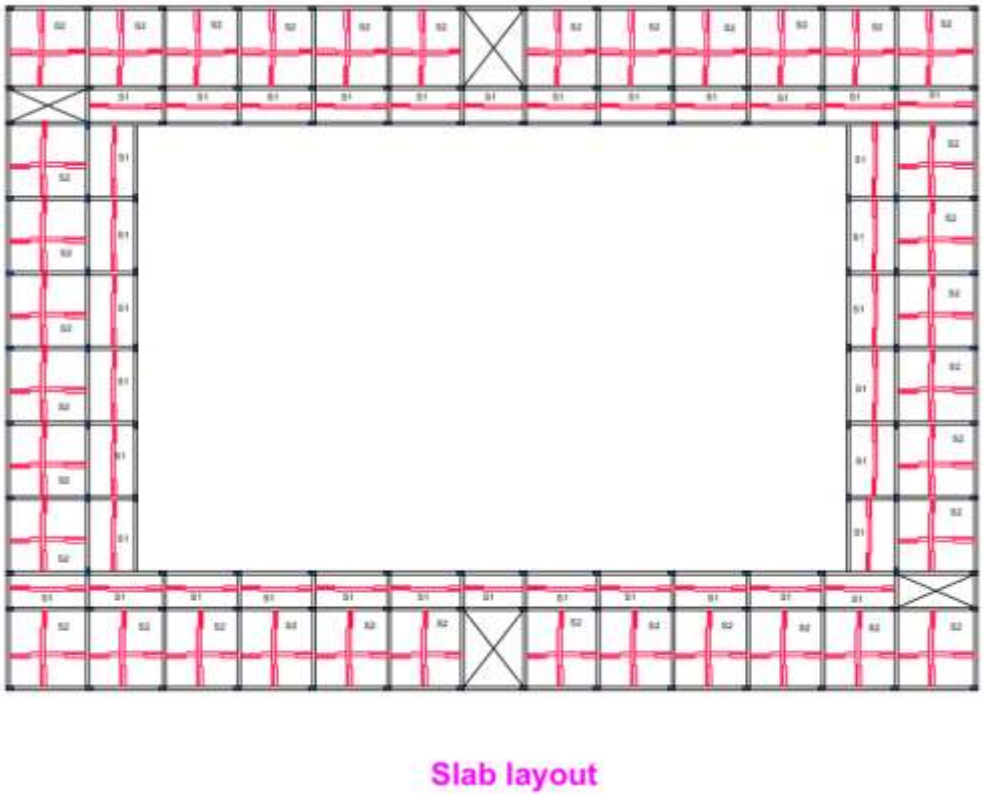


Figure 3.1 Slab layout

3.2 Column Layout and Grouping:

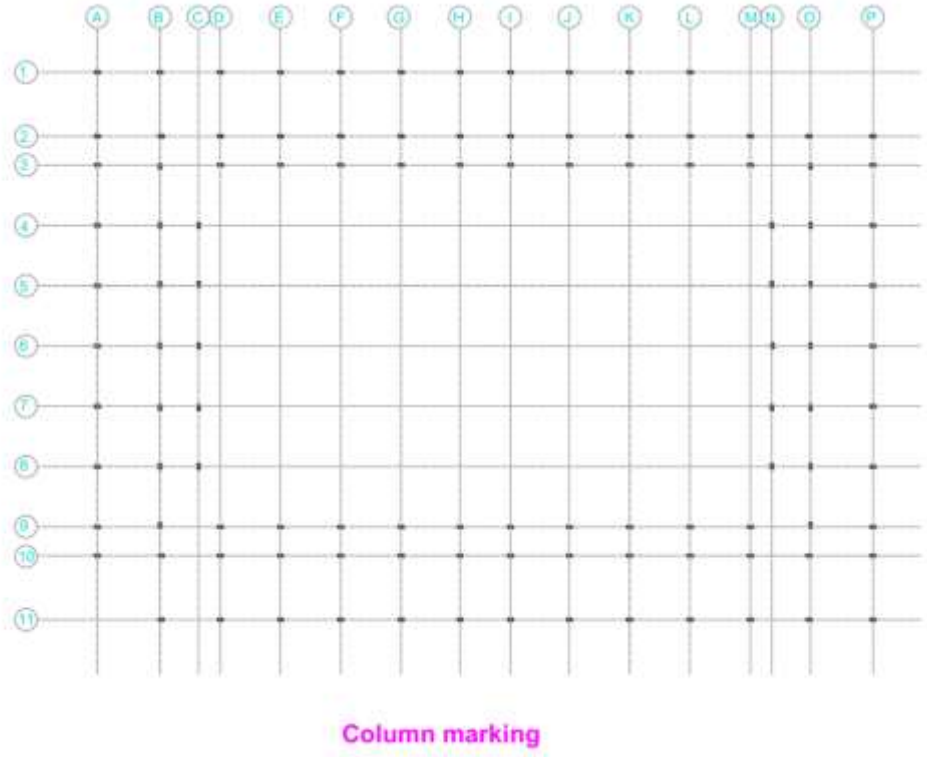


Figure 3.2 column marking and layout

IV. ANALYSIS USING STAAD

4.1 Whole Structure of the Building:

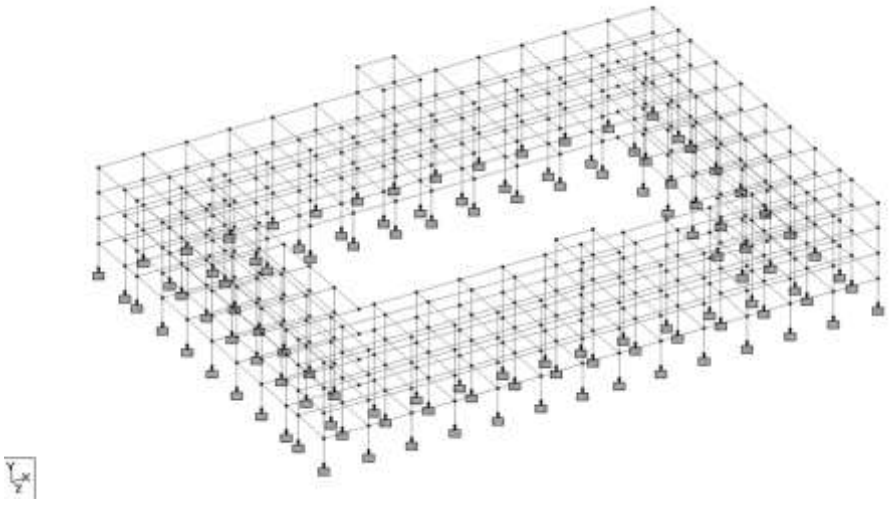


Figure 4.1 Whole structure

4.2 3D View of The Structure:

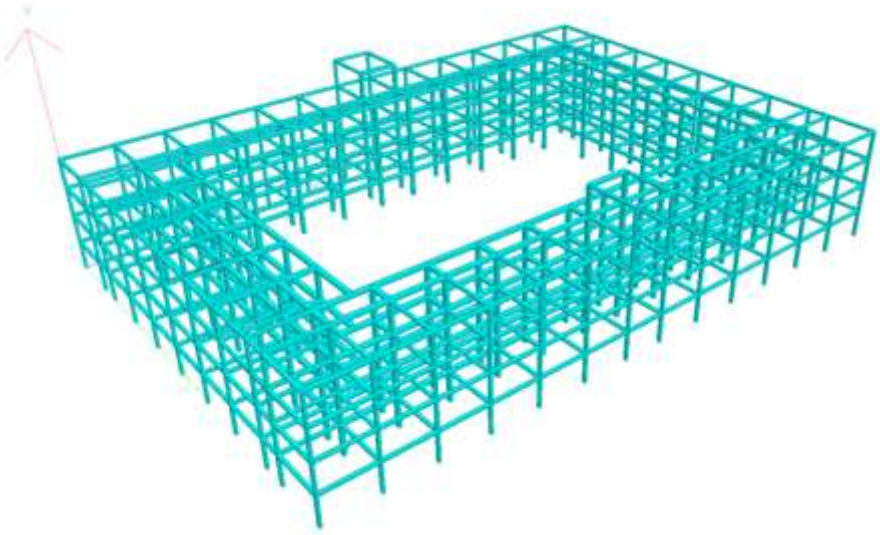


Figure 4.2 3D View

4.3 Column and Beam Definition:

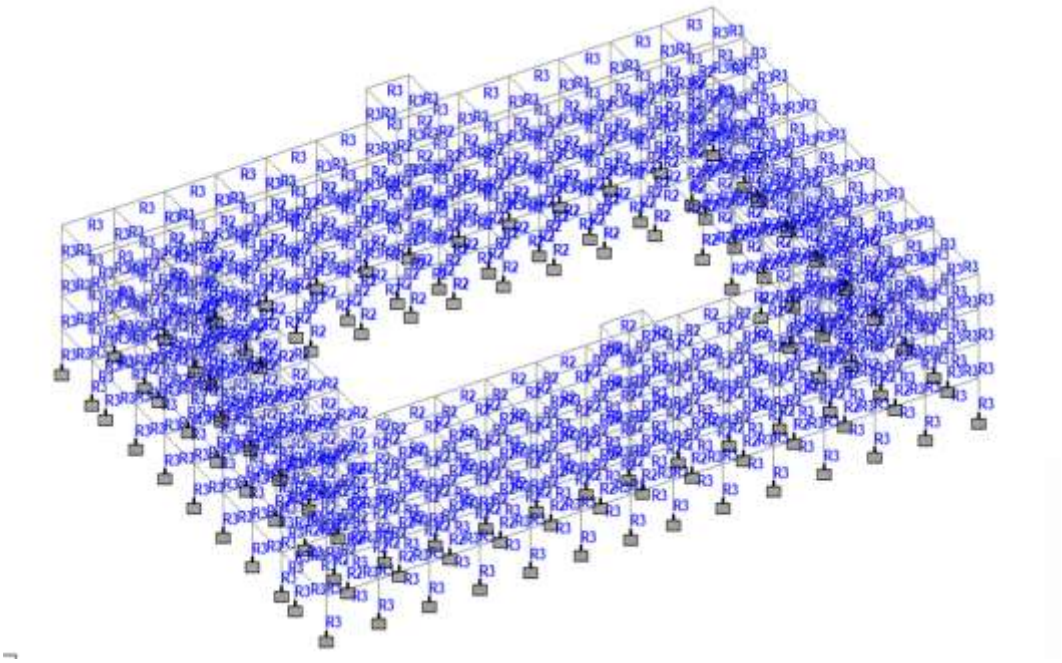


Figure 4.4 beam and column definition

Provided:

Beam Size: 0.23 x 0.3 mm & 0.3 x 0.45 mm

Column Size: 0.23 x 0.3 mm & 0.3 x 0.45 mm

4.4 Bending Moment of The Whole Structure:

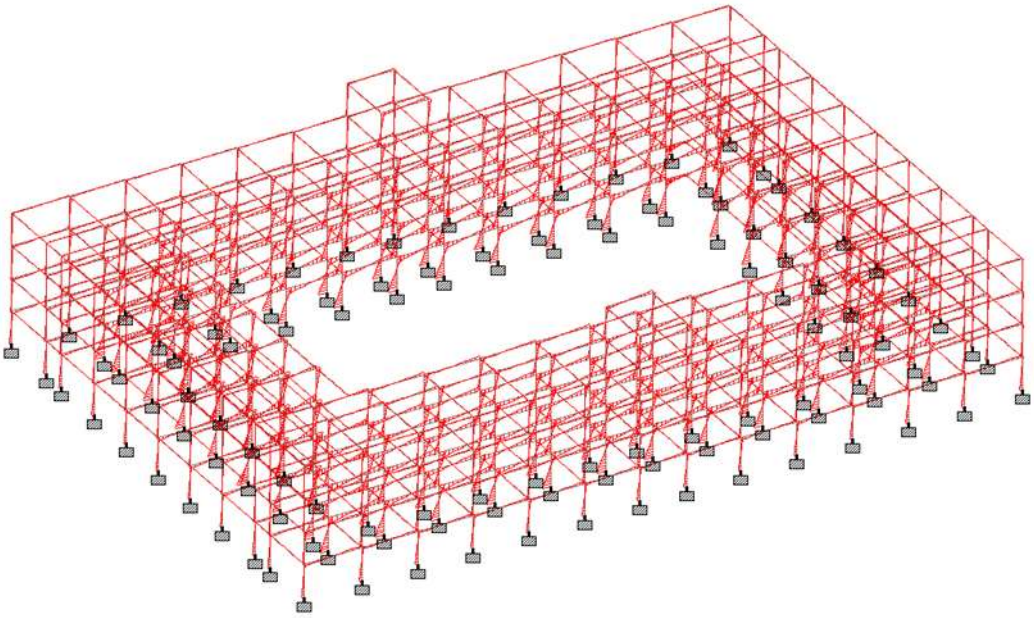


Figure 4.4 Bending Moment

4.5 Shear Force of The Whole Structure:

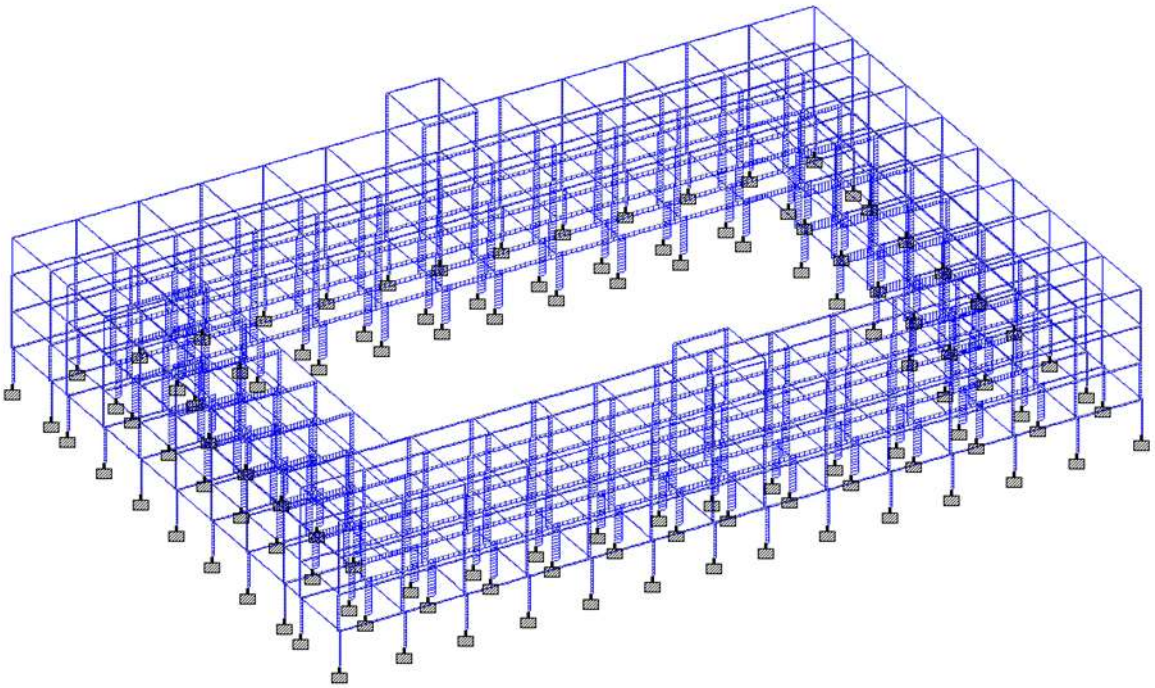
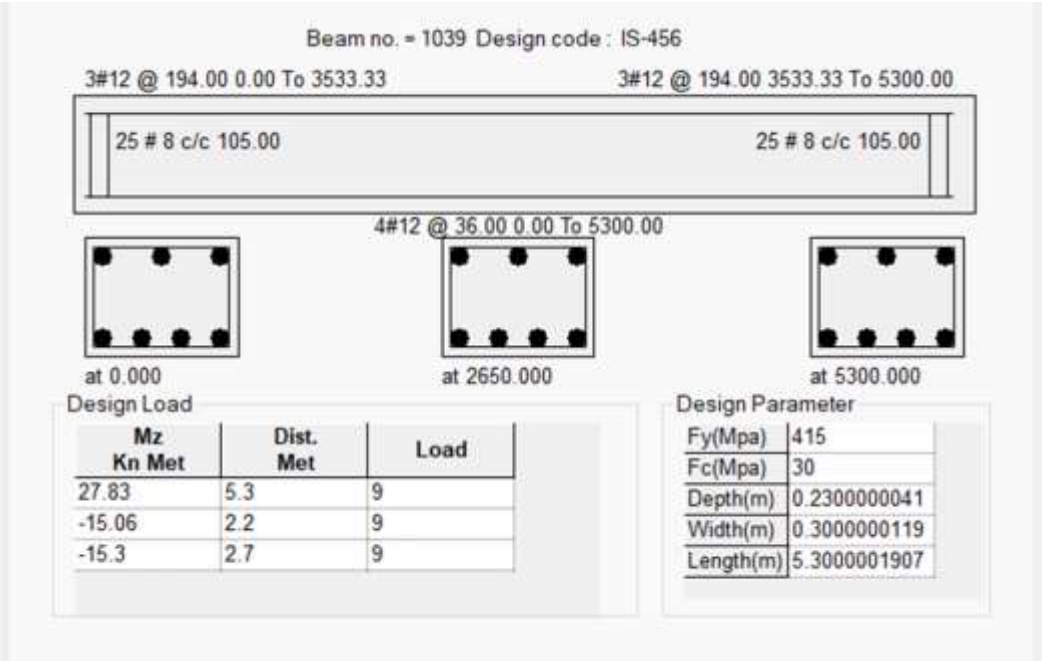
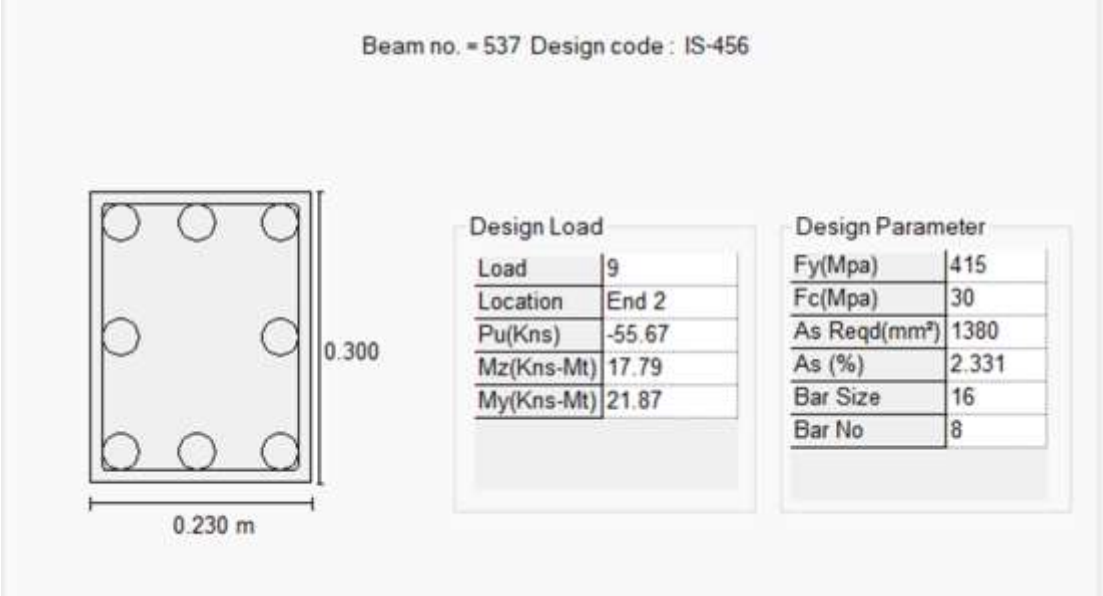


Figure 4.5 Shear Force

4. 6 Beam Reinforcement Details:



4.7 Column Reinforcement Detail:



CONCLUSIONS

In order to provide a practical, secure, and student-friendly living environment, a G+2 (ground plus two storeys) dorm for college students on campus must be carefully planned and designed. In conclusion, the design process yields a number of important results. First and foremost, it's critical to choose a location on campus that fits with the institution's development and zoning plans. Students' convenience and accessibility are improved by the close proximity to educational institutions, leisure centers, and other services. Both practical practicality and aesthetic appeal should be given top priority in the hostel's design, with special emphasis paid to space-efficient layouts and thoughtfully placed common areas for socializing.

Structural stability is crucial, especially in regions that are vulnerable to natural disasters like earthquakes. Resilient foundation systems and sufficient load-bearing capability must be incorporated into the design. properly students' comfort, services including the water supply, sewage management, electrical systems, and climate control must be planned properly. A key component of the design process should be incorporating safety features such emergency exits, security systems, and fire prevention measures.

Another important factor is sustainability, with eco-friendly elements like green spaces, water-saving techniques, and energy-efficient lighting improving residents' quality of life and sense of environmental responsibility. In order to maintain quality standards and stay inside the budget, cost control is essential throughout the project.

In conclusion, a comprehensive strategy that takes into account architectural, structural, environmental, and safety factors is necessary for the successful planning and design of a G+2 dorm facility for college students. In addition to offering a safe and cozy living environment, a well-planned and effectively constructed hostel will foster the social and intellectual growth of the students residing there.

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