

ABSTRACT

Kenya, an East African nation rapidly undergoing urbanization and significant economic growth, faces a challenge in the increased demand for safe and efficient infrastructure in urban areas where land is scarce and relatively expensive. This project takes a multifaceted approach by showcasing an academic and patriotic undertaking to analyse and design a modern high-rise building structurally, the proposed Computer Science/ IT Complex Headquarters at Konza

Technopolis in Machakos County. It applies fundamental engineering principles and procedures in the design of the 8-storey high-rise commercial building. In conjunction with the Eurocodes, the limit state design method, and the Kenyan standards for wind and earthquake loading, every bit of effort is utilized to ensure that the structure is safe, sustainable, durable, and economically viable. The project involves a detailed presentation of load calculations, analysis of the bending moments and shear forces, design of respective structural elements, and output structural drawings. It sets a precedent for engineering education by demonstrating how theory and practice merge seamlessly to create capable professionals ready to meet real-world demands. In addition it utilises advanced BIM design software, Revit 2024, to demonstrate its efficacy in generating complete and innovative design solutions that adhere to set regulatory standards. It hopes to inspire the next generation of engineers and to contribute to the body of knowledge in structural engineering analysis and design.

Keywords: safe, sustainable, durable, infrastructure, urbanisation, high-rise, eurocodes, limit state method, BIM.