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UNIVERSITI
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ECS358

CIVIL ENGINEERING DESIGN PROJECT

TECHNICAL REPORT

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TABLE OF CONTENT

PROJECT	CONTENT	PAGE
1	REINFORCED CONCRETE BUILDING DESIGN PROJECT	
	1.1 INTRODUCTION	
	1.1.1 Requirements of building-by-law, fire safety regulations	
	1.1.2 Architecture drawings of the building with TITLE BLOCK	
	1.1.3 Project background/ details	
	1.1.4 Design parameters for every element	
	1.1.5 Weights of materials used in the building	
	1.2 PROJECT SCHEDULE	
	1.2.1. List of activities and time frame	
	1.2.2 Project schedule using Microsoft Project	
	1.3 DESIGN OF STRUCTURE ELEMENT (MANUAL DESIGN)	
	1.3.1. Structural Key Plans of the building with TITLE BLOCK	
	1.3.2. Slab design calculations and detailing (AutoCAD with TITLE BLOCK)	
	1.3.3 Continuous beam design calculations and detailing (AutoCAD with TITLE BLOCK)	
	1.3.3. Column design calculations and detailing (AutoCAD with TITLE BLOCK)	
	1.3.4. Pad footing design calculations and detailing (AutoCAD with TITLE BLOCK)	
	1.3.5. Staircase design calculations and detailing (AutoCAD with TITLE BLOCK)	

1.1.1. REQUIREMENTS OF BUILDING-BY-LAW, FIRE SAFETY REGULATIONS

Space/Area	Requirement	Explanation	Reference
Fire Access Roads	Minimum width of 6 meters to support 25-ton loads and gradient not exceeding 1:12.	Required for the driveway and main road near the house for fire truck access.	UBBL 1984
Building Spacing	Distance between buildings must comply with Schedule Six of UBBL 1984.	Ensures sufficient space between adjacent buildings to prevent fire spread.	UBBL 1984, Schedule Six
Living Room	Emergency exits/windows must be accessible and meet fire safety standards.	Requires windows with proper dimensions for escape during emergencies.	UBBL 1984
Bedrooms	Partition walls must have at least 2-hour fire resistance and emergency exit windows.	Ensures the rooms are fireproof for a certain duration, providing time for safe evacuation.	UBBL 1984
Kitchen	Fire-resistant materials for walls and ceilings; proper ventilation.	Prevents the spread of fire from common ignition sources in the kitchen.	UBBL 1984
Bathrooms	Use of waterproof and fire-rated materials for walls and ceilings.	Fire safety and durability due to wet conditions.	UBBL 1984
Corridors and Stairs	A minimum width of 1 meter for evacuation routes; non-slip flooring; fire-resistant materials.	Ensures safe evacuation during emergencies and reduces fire spread risk through these areas.	UBBL 1984
Windows	Must use fire-rated glass and aluminum frames approved by the Fire Department.	Prevents fire from spreading to or entering the house through external windows.	UBBL 1984

3.1 SUMMARY OF DESIGN WORKS

This project has given me a great deal of experience in handling real-world problems while constructing a two-story home. Making sure that every component can withstand loads and pressures in accordance with design standards and building rules required me to do intricate design calculations for important structural parts such as slabs, beams, columns, pad footings, and stairs. Furthermore, meticulous planning and the creation of a Bill of Quantities were necessary for the project's budget and material assessment. This allowed me to use the Bill of Quantities to create a realistic budget and quantify each component individually.

It also developed my technical skill in using software package AutoCAD, Microsoft project, and word every skill called in construction. The practical use such as software program as esteem, AutoCAD and Microsoft office suite prepared me to apply theory in real life practical design project, internship and quickly to the latest trends in the use of technology within industry.

3.2 CONSEQUENCES TO SAFETY, CONSTRUCTION

PRACTICALITY, COSTING AND ECONOMICAL ASPECTS OF STRUCTURE/ BUILDING/ PROJECT

Inaccurately estimating a building's structural design can have several serious repercussions, such as increased costs, decreased economic viability, safety hazards, and inefficient construction. Inaccurate estimates might lead to fractures, deflections, or even structural collapse from a safety standpoint if the structure can't sustain its weight or endure external stresses like powerful winds or small earthquakes. The stability and longevity of the structure might be jeopardized by incorrect load or wind resistance ratings.

Practically speaking, badly planned elements might cause confusion during construction and force contractors to use makeshift fixes, which could result in delays, inefficiencies, or lower-quality work. Another crucial area that is influenced by design flaws is costing. Overestimation or underestimate of resources due to miscalculations can result in waste and inefficiency. Designs that are too cautious may employ more concrete and steel than necessary, increasing project expenses.