PROPOSED REINFORCED CONCRETE DESIGN OF A FOUR STOREY HOSPITAL BUILDING IN BARANGAY GALICIA 3 AT MENDEZ, CAVITE

Design Project

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Undergraduate Design Project
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ABSTRACT

NONONG, AUSON WES P., and PAEZ, JOSHUA RYAN D. Proposed Reinforced Concrete Design of a Four Storey Hospital Building In Barangay Galicia 3 at Mendez, Cavite. Undergraduate Thesis. Bachelor of Science in Civil Engineering. Cavite State University, Indang, Cavite. June 2019. Adviser: Engr. Renato B. Cubilla.

The design project entitled, "Proposed Reinforced Concrete Design of a Four Storey Hospital Building in Barangay Galicia 3 at Mendez, Cavite" was conducted from August 2018 to May 2019.

The aim of the study was to provide a plan and proposed design for the hospital building that can be found in Mendez, Cavite and apply what the authors learned from their studies and experiences. The study included the computations of beams, columns, footings and slabs. This included the architectural plan, structural plan, electrical layout, plumbing layout and cost estimate of the proposed building.

The total elevation was 12 meters with each floor having 3 meters in elevation. The floor area of the 4 storey building was 2196 m^2, with each floor having different function for the convenience of the patients and employees. The structural layout and analysis of the plan was computed with the use of STAAD. From the STAAD analysis, four beams were designed, beam 1, beam 2, beam 3 and tie beam, having 350 x 500, 350x500, 300x350 and 350x500 mm respectively. The columns having sizes of 400x400mm and 450x450mm and the footing with a dimension of 3200x3200mm and 5500x2000mm.

The authors used different software such as the Structural Aided Analysis and Design (STAAD) software, Computer Aided Drafting Device (CADD) and Sketchup. The design moment, ultimate shear and ultimate load were calculated with the use of STAAD.

The total cost estimate of the project was 141, 420, 796.65 php with 16,099.82php per square meters.

The authors followed the standards set by the NSCP and after various computations, it is concluded that the design was safe.

It is recommended to integrate green building innovations for the improvement of the 4-storey hospital building and the usage of lightweight but high strength materials. The authors also recommend the upgrade of the 2nd level hospital into a 3rd level hospital to improve and add more facilities for the welfare of the people.

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An undergraduate design project submitted to the faculty of the Department of Civil Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite in partial fulfillment of the degree of Bachelor of Science in Civil Engineering (BSCE) with Contribution No. CEIT-2018-19-2-257. Prepared under the supervision of Engr. Renato B. Cubilla

INTRODUCTION

Hospital is a structure that is very vital in a community to perform health care procedures. According to the World Health Organization, Hospitals are health care institutions that have an organized medical and other professional staff, and inpatient facilities, and deliver services 24 hours per day, 7 days per week. They offer a varying range of acute, convalescent and terminal care using diagnostic and curative services. These institutions help each individual receive the best medical care that they are entitled to. Hospitals are an essential part of health system development. External pressures, health systems shortcomings and hospital sector deficiencies are driving a new vision for hospitals. In this vision, they have a key role to play to support other healthcare providers and for community outreach and home-based services and are essential in a well-functioning referral network.