

Modular Construction of COVID-19 Hospital

Mustafa Salsal Yousif Al-Ani

Undergraduate student, Department of Civil Engineering,
British Applied College, Umm Al Quwain, UAE
2010071@acuq.ae

Saleema Panda

Assistant Professor, Department of Civil Engineering,
British Applied College, Umm Al Quwain, UAE
saleema.p@acuq.ae

Abstract

The impact of the COVID-19 pandemic is well known to everyone around the globe. This has increased the need for hospital beds to accommodate a large number of COVID patients. Thus, the main objective of this paper is the rapid building of a hospital considering sustainability and risks in the construction. The authors have presented detailed planning which includes project life cycle, work breakdown structure (WBS), and cost analysis of a COVID-19 care hospital to be constructed in 45 days. The hospital is a single-storied building planned to accommodate 200 patients. The roof structure and external walls are made of lightweight sandwich panels. Columns, beams, and truss elements present in the interior are made of lightweight and high-strength steel. The estimation and PERT analysis to construct the project is included. While comparing the cost of all the activities during the construction phase, it is found that most of the expenditure is on the construction of grade slabs. The maximum time is allocated for MEP work as it needs a lot of coordination between civil and mechanical engineers. A network diagram is presented for understanding the sequence of all the activities to be followed.

Keywords

Modular construction, Lightweight steel, Sandwich panel, and PERT

Biographies

Mustafa Salsal is an undergraduate student in the Department of Civil Engineering at British Applied College, Umm Al Quwain, UAE for a Bachelor's degree. He completed his AS-Level and O-Level of a British curriculum CIE (Cambridge International Examination) and Pearson Edexcel in Westminster School, Dubai, UAE in 2020. He is working as an intern for quantity surveyor and site supervision with M/s Latinum Green Contracting, Dubai, UAE. His research interests include modular construction and management.

Dr. Saleema Panda has a Bachelor's degree in Civil Engineering (2011) from Indira Gandhi Institute of Technology, Sarang, India. She received her Ph.D. in Structural Engineering (2018) from the National Institute of Technology Rourkela, India. She worked as a Senior Design Engineer for 2.5 years in Larsen & Toubro-ECC, Chennai, India, and one year as a Research fellow in the Department of Mechanical Engineering, National University of Singapore. She is presently working as an Assistant Professor in the Department of Civil Engineering, British Applied College, Umm Al Quwain, UAE. Her research interests include structural dynamics, granular flow, nonlinear finite element method, discrete