World Academy of Science, Engineering and Technology
International Journal of Structural and Construction Engineering
Vol:14, No:01, 2020

Barclays Bank Zambia: Considerations for Raft Foundation Design on Dolomite Land

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Abstract : Barclays Bank has identified the need for a head office building in Lusaka, Zambia, and construction of a 7200 m2 three-storey reinforced concrete office building with a structural steel roof is currently underway. A unique characteristic of the development is that the building footprint is positioned on dolomitic land. Dolomite rock has the tendency to react with and breakdown in the presence of slightly acidic water, including rainwater. This leads to a potential for subsidence and sinkhole formation. Subsidence and the formation of sinkholes beneath a building can be detrimental during both the construction and operational phases. This paper outlines engineering principles which were considered during the structural design of the raft foundation for the Barclays head office building. In addition, this paper includes multidisciplinary considerations and the impact of these on the structural engineering design of the raft foundation. By ensuring that the design of raft foundations on dolomitic land incorporates the requirements of all disciplines and relevant design codes during the design process, the risk associated with subsidence and sinkhole formation can be effectively mitigated during the operational phase of the building.

Keywords : dolomite, dolomitic land, raft foundation, structural engineering design
Conference Title : ICSEBA 2020 : International Conference on Structural Engineering and Building Analysis
Conference Location : Sydney, Australia
Conference Dates : January 30-31, 2020