

ABSTRACT:

This paper presents the variation in strength reduction for various weathering grades of granite due to increase of moisture. This problem often associates with the wet tropical region where thick weathering profile and heavy rainfall are expected. Both field and laboratory studies were carried out in order to assess the rock material properties. The field study involved weathering identification and observations at site. Laboratory tests were carried out to determine the strength, weathering grade, petrology of rock material and moisture content of the materials. A total of 300 samples from various weathering grades were tested at a wide range of moisture content varying from oven-dried to saturated condition. The results revealed that the absorption of water is highly dependent on the weathering grade. The petrological analysis revealed that the content of clayey mineral increase with the weathering grade through the decay of feldspar and ferromagnesian minerals. The point load index reduced up to 137.99% with the increase of only 21.40% of moisture content for highly weathered granite (grade IV). However, in a lower weathering grade (Grade II), a strength reduction of only 21.41% was noted with increase of moisture of 0.27%, although samples have been immersed in water for 60 minute. From the field and laboratory test, reductions of rock material strength from various weathering grade with regards of moisture content are suggested.