THE INFLUENCE OF MACRO TEXTURE OF GRANITE AGGREGATES TO PAVEMENT SKID RESISTANCE

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DECLARATION BY THE CANDIDATE

I (Tuan Juliana Tuan Sulong, 2001498655) confirm that the work is my own and that appropriate credit has been given where reference has been made to the works of others.

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ABSTRACT

The Polished Stone Value (PSV) of aggregates gives a measure of resistance to the polishing action of vehicle tires either under dry or wet conditions similar to those occurring on the surface of a road. The aggregate properties are the main factors affecting the pavement skid resistance. Resistance to this polishing action is determined principally by the inherent qualities of the aggregate itself. Besides, pavement macro texture is necessary to prevent hydroplaning by helping water escape from the tire-pavement interface.

The study focuses on the measuring of the Polished Stone Value of granite aggregates from 3 quarries in Penang, those are Kuad Quarry Sdn. Bhd., Saw Chong Teik Quarry Sdn. Bhd. and Foo Yen Soo & Sons Quarry Sdn. Bhd. 6 specimens of granite aggregates, which will be performed for Polished Stone Value and skid resistance test, were assessed from each quarry while three other major tests were carried out. The tests include aggregate properties test, sand patch method test and petrographic test. PSV is determined and the results for every sample were then analyzed and discussed.

The granite aggregate used in this research has a mineral composition of feldspar (50%), quartz (25%), biotite (15%) and matrix (10%) according to petrographic test, thus noticeable that the aggregate used is *Porphyritic Biotite Granite.* The result on PSV shows variance. The skid resistance of a wide range of dry surfaces shows high and fairly constant value. However, the skid resistance drops as the surfaces get wet. The pattern of PSV in wet condition is almost as same as in dry condition but the values of skid resistance number reduce to almost 39% to 41% from dry to the wet condition. Because pavement skid resistance is tied to surface macro texture, it is important to measure the texture depth and relating it with skid resistance number. Hence, the correlation between skid resistance value and average texture depth were made and shows a very dependent characteristic. As the average texture depth is getting deeper, a higher value of skid resistance will be shown for that aggregates.