

Engineering properties of limestone from Pandan Indah, Kuala Lumpur

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An elevated intersection has been proposed along MRR II at Pandan Indah, Kuala Lumpur. Relevant properties of the *in situ* bedrock are required for the design of this major structure. For this purpose, various types of laboratory test were conducted that include uniaxial compression, Brazilian, point-load and ultrasonic velocity. The tests were conducted on samples collected from 3 locations, Site S1, S2 and S3, at the proposed site. More than 500 fresh (Grade I) rock samples were tested. In the compression test, axial and radial strains of the samples were measured for the determination Young's modulus (E) and Poisson's ratio (ν). Effect of moisture on compressive strength was also investigated by testing saturated samples. The test results show the compressive strength (UCS) of Limestone varies between 14 and 139 MPa. Its tensile strength is between 0.5 to 14 MPa, which is less than 10 % of its UCS. The range of Point-load index strength is between 0.4 and 6 MPa, while its surface compressive strength (based on rebound number R) ranging between 23 and 105 MPa. The rock constant E range between 10 and 88 GPa, and ν between 0.04 and 0.53. Based on the three locations, samples from site S3 seem to exhibit the highest strengths (compressive, point-load and tensile) while samples from site S1 exhibit the lowest strengths. Observation made on samples indicates that the cores from site S1 display small-scale fractures/cracks. These existing fractures may have induced premature failure in some of the samples. In fact these fractures have also contributed to erroneous strain data in a number of tests, consequently resulting in the E and ν value that are lower than expected. There are trends indicating reduction in the samples strength due to saturation, and the range is about 10 to 30% lower than the dry samples. However, for sound and strong rock like limestone this reduction may not necessarily due to moisture content as it could also be contributed by samples variation and accuracy of machine used in the test.