SURVEY OF SLOPE FAILURES FOR A RURAL ROAD IN SARAWAK

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During the construction of a rural roadway from the KJD/Sarikei/Bintangor Junction to the Julau Junction in Sarawak, a series of cut-slope failures have occurred. A survey of the slope failures was thus undertaken to better understand the problems, and to seek possible remedial measures. Some 20 cut-slopes were investigated and they were categorised into three classes A, B, and C depending on the severity of the problems. Factors considered relevant to the stability of the slopes and incorporated in the study include lithology, grade of weathering and structures.

The roadway traverses rocks of the Belaga Formation (Lower Tertiary) which comprises argillite, slate, rare phyllite, graywacke and graywacke conglomerate. For the roadway surveyed, the predominant rock type is shale, with some sandstone being encountered in only a few of the cut-slopes. The beds are mainly steeply dipping (> 70°) and highly folded. The breakdown in slope categories is as follows: 2 category A slopes (severe slope failures), 12 category B slopes (minor soil slips or localised bench failures only), and 6 category C slopes (stable). Stereoplots of the bedding planes and faults indicate that the failures are controlled by unfavourable bedding plane orientations relative to the cut-slope surface. Intersection by faults further aggravates the problem. Possible remedial measures proposed include: cutting back to flatter slopes; providing retaining structures such as gabion wall; and allowing for a wider berm at the base of the slope.