ENGINEERING GEOLOGY OF THE CARBONATE ROCKS IN HOPONG AREA, SHAN STATE (SOUTH)

PhD DISSERTATION

WUNNA

DEPARTMENT OF GEOLOGY
UNIVERSITY OF YANGON
MYANMAR

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ABSTRACT

The present study area is well known as Hopong valley, where the western part is Taunggyi Tract and the eastern part is Loilang Range.

Stratigraphically, Molohein group (Cambrian) exposed in eastern part, Nan-on unit, poorly outcrop at the entrance of Hopong and at the base of Pang-pet anticline, Nan-on Formation (Lower Ordovician) is overlain by Linwe Formation (Lower Silurian) and Plateau Limestone Group (Middle Permian to Triassic).

Nam Tamhpak chaung is a major stream and flow in N-S direction. NNE-SSW trending Pang-pet anticline and NNW-SSE trending Htamomon Taung ranges are distinct linear trend. Northernmost part is Sing-Taung (5008'), which is the highest peak in the study area.

In Thitsipin Limestone Formation, exposed rocks are subdivided into eight units, namely, coralline bafflestone (calcirudite), dolostone (dolomite), bioclastic packstone-rudstone (calcirudite), fusulinid-echinoderm bioclastic rudstones (calcirudite), bryozoan bioclastic packstones (calcirudite), micro-vuggy bioclastic mudstone (dolomitic limestone), bioclastic mudstone (calcilutite) and lime mudstone (calcilutite).

In Linwe Formation, three units are identified. Lime mudstone unit (calcilutite), argillaceous limestone unit (silty limestone) and dolomitic mudstone unit (dolomitic limestone) are exposed.

Composition based on engineering rock index properties is determined. Oriented samples are taken according to their nature of exposure. Samples of 10cm x10cm x10cm size cube are used for engineering strength test.

Porosity, density, abrasion and compression strength tests are carried out. Degrees of saturation, compression on parallelism of the faces are controlled during compression strength test. Cube samples are test with air dry and saturated state (four days sink in water). Rock chip samples from each carbonate rocks units are used for abrasion test. From weight difference between air dry and saturated state, water absorption value is calibrated.

From strength results correlation, calcirudite is strongest value because of corals aggregate and silty limestone which composed of different minerals (silica, iron and calcite) gives least compressive strength values.

Strength varies in parallism of the faces; calcirudite gives highest difference value in compression from perpendicular to the bedding plane and parallel to the bedding plane. Silty limestone gives the least variation result.

Saturated strength values are different from air dry strength value. Water saturation is effected to compressive strength.

Composition is also affected to abrasion value, calcilutite and calcirudite composed pure carbonate so the percent of abrasion is high. Silty limestone and dolomitic limestone give low percentage of abrasion.

Economically, black colour calcilutite which joints are filled with white calcite veins are suitable for decorative stone. Limestone chips are used as lime bricks for construction materials. Iron ores of hematite and limonite are exposed at the Pang-pet Taung. This deposit has not been extracted. Brecciated dolomitic limestones are used in road and construction raw materials.

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