

Geotechnical characterization of Mugara site material, its contribution to the building of Goma town

L. Bora Uzima^{1,2,3,*}, G. Shungu^{1,2}, T. Byamungu²

¹University of Goma, Goma, D.R. Congo, ²Centre of Expertise and Geological Survey, ³Geological Society of Africa

*E-mail: bob20lk@gmail.com

Mugara is located at 1°38'S, 29°E in the northern of Goma town (north Kivu, DR Congo). Belonging to Nyiragongo volcano area, Mugara is a volcanic cone lithologically constituted by volcanic slag with varied colors (yellow, red, black) from top to bottom, that are dip-oriented to the south and following disposal. This lithology is essentially concentrated of silica seen mineralogically, that confirms its projection nature. Besides, a relative portion is constituted of a thick layer, like a resemblance of metamorphic zone according to the recent basaltic lava flow at the top of Mugara hill.

This paper consists mainly to the geotechnical survey of Mugara, showing geotechnical properties of the building materials. Field works were completed by laboratory analysis.

The Porchet method have given a low permeability degree (0.004 cm/s to 2.3 cm/s); however, with the identification test (water content, grain size and Atterberg limit) and compaction test (Proctor, CBR). Mugara corresponds to sandy domain, middle to thin sized (a CBR between 7-12%).

The consistence index of Mugara material is between 13-18%. According to HRB, the group index varies from good to excellent.

Geotechnical survey concluded that Mugara materials are usable for any constructions but need each time to be firstly stabilized before any great use.

During 15 years ago, Mugara site is contributing to the building of Goma town, especially in house construction, cement industry and road implantation (after stabilization). In 2015, about 35% of Mugara materials reserve had been used. In spite of it, the need still increased.

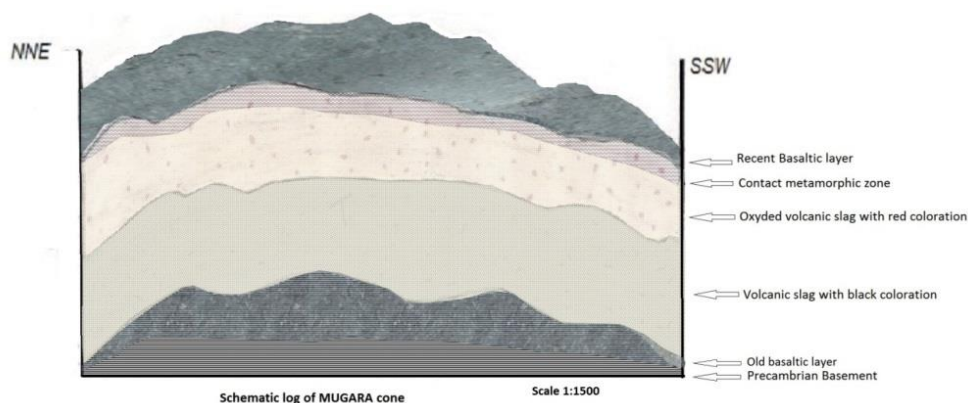


Fig.1. Schematic log of Mugara cone (Bora Uzima et al., 2015)