Rahul Verma, J Geol Geophys 2018, Volume 7
DOI: 10.4172/2381-8719-C1-017

Kinematic analyses of elephant rock section, NH-44A, Aizawl, Mizoram, India

Rahul Verma[1], Seitshiro Lesedi[1] and P C Lainthangpui[2]
[1]Botswana International University of Science and Technology, Botswana
[2]Mizoram University, India

Mizoram, the north eastern state of India is a vast terrain of sedimentary rocks deposited in the Mizoram Geosyncline. The lithology consists of sandstones, siltstone and shale's in varying combination. These rocks are intensely jointed and sheared under the influence of the tectonic stress created by the Indo-Myanmar plate collision in their vicinity. The lithological and geotectonic setup of the region in association with heavy rainfall and high seismic activities triggers the landslides. The frequency of landslides induces during the monsoon and post monsoon period. The present study is a comprehensive analysis of the most vulnerable road section along the National Highway-44A (NH-44A) that connects the state capital Aizawl to the lone airport of the state at Lengpui. The study was carried out along the most dangerous section that is locally known as elephant rock section because of the presence of very big massive sandstone exposures resting upon the shale, siltstone intercalation. These rocks are heavily jointed and have once slide few years ago, that led to the collapse of the road. It was so massive that the road was closed for more than 2 years. The study section, precisely 1878 meters long, extends between the coordinates N 230 49'01.6" E 920 37' 37.8" to N 230 49'10.8" E 920 37'48.8". The slope height varies between 25 to 70 feet. The beds have varying dips from 10° to 45°. Various joints are reported with the joint angle varying from as low as 35° to as high as 88°. The joint volume varies from 1 to 24. The joint spacing varies from<1 inch to 4 inch. The surface is found rough to very rough and weathered slightly/moderately. And the surface is excavated naturally. The data generated through field measurements done manually, is fed in the DIPS 7.0. The DIPS analysis reveals four slope segments viz.: (1) 70°/90°, (2) 68°/168°, (3) 72°/220° and (4) 70°/45° and the respective discontinuity types joints, bedding plane, bedding plane and joints. The analyses reveal that the first segment (70°/90°) has no possibility of failure, the second segment (68°/168°) has a possibility of wedge failure, the third segment (72°/220°) has a possibility of both planer and direct topple type of failure and the fourth segment (70°/45°) again has the possibility of both planer and direct topple type of failure.

Biography

Rahul Verma has an overall teaching and research experience of more than 26 years. He has worked in Himalayan Terrain for his Master's Dissertation in Structural Geology. He has a Doctoral Degree in Petrology and Geochemistry. His current focus is in structure, tectonics and slope stability. He has completed two projects sponsored by government of India in the field of landslide causative factors and hazard zonation. Currently he is handling a BIUST sponsored project on slope stability in Mupane Gold Mine, Botswana. He has published 36 papers/chapters and has authored two books on geology. Currently, he is affiliated to the Department of Mining and Geological Engineering in Botswana International University of Science and Technology.

vermar@biust.ac.bw

Notes: