

PREFACE

National Highway No.39 is the connecting link between the two states, Nagaland and Manipur. It is the sole means of surface transportation and the life line connecting the two states. Due to frequent landslides, particularly during monsoon season, traffic along this highway is often disrupted varying from one to two weeks, sometimes even a month. In view of this, the present investigation has been taken up to map the landslide occurrences, their causes and governing factors.

This study is carried out following the recommendations of the Bureau of Indian Standard that has been duly modified suiting the study area. Extensive field surveys have been conducted to map geological structures, litho-units, groundwater condition, and land use/land cover. Satellite imagery is used to identify structural features and landslide incidences are marked with a hand-held GPS.

The present study is an attempt to generate the Landslide Hazard Zonation (LHZ) map using Geographical Information Systems. It includes preparation of various thematic layers including slope morphometry, relative relief, lithology, structure, ground water condition, land use/land cover using IRS LISS-III satellite data and topographical maps so as to make a risk assessment of some weak zones along the highway to provide mitigation measures.

A LHZ map of 1:4000 scale is generated based on the results of the above mentioned parameters. Landslide incidences are overlaid on LHZ to study their relationships and validated the results. Rock and Slope Mass Rating of slope material in the slide areas have been estimated and kinematic analysis performed to understand the probable mode of failure. Data generated have been interpreted in terms of failure type and potential failure. Suitable recommendations have been proposed for such areas.

Geotechnical analyses were conducted to identify geotechnical parameters of soils in the unstable areas. In order to understand the firmness of the soils, consistency limits of the soils in the slide area were evaluated. Direct Shear Test is conducted in order to determine the shear strength of soil.

It is hoped that the concerned agencies will use the LHZ map as a basis while planning for any future developmental activities by way of adopting recommendations provided to enhance slope stability and to reduce risk.