

# **GEOLOGICAL FACTORS AFFECTING FOR BUILDING CRACKING IN VIJAYA SRI GAMA AREA - DIGANA, KANDY**

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From the recent decades the impact of natural disasters such as landslides, floods, draughts, cyclones, etc. in Sri Lanka have been increased drastically with the changes in climate, weather patterns and also due to environment disturbances. And landslides are threatening the central highlands' human settlement often with intense rain during monsoon and inter-monsoon seasons. Buildings start to crack with activation of land instability and it is a common phenomenon. Before 2003 houses and other buildings situated in Wijaya Sri Gama Grama Niladhari division – Digana, Kandy started to crack and villages had been suffered. Therefore necessity of an investigation on the unusual behavior of cracking houses in Vijaya Sri Gama area is highlighted to find out whether it is a hazardous situation or a negligible situation.

This study has been conducted considering the situation and part of the Grama Niladhari division (about 360,000 m<sup>2</sup> area) was selected for the study. Limitation necessitated neglect most aspects of cracking problem due to various reasons and four factors, that are subsurface erosion, landslide toe bulging effect, presence of expansive soils and collapses of cavities were judgmentally suspected for the situation. The investigation was conducted using field observations and many testing. Testing of expansive nature of underlying soil, crack monitoring, geophysical investigations (2 Dimensional resistivity tomography) and collecting rainfall data were used for the investigation.

According to the observations gathered during the study show that the subsurface erosion and landslide toe bulging were not be the typical causes for the situation. Free swell indexes of all soil samples were in very low (<50%) to low (50%-100%) range. Therefore an underlying shrinkable clay formation could not be the driving factor of building cracking problem in this area.

Two dimensional resistivity tomography results were much helpful in identifying the subsurface geological conditions and indicated a clear presence of cavities in the area. And study area is underlying by dolomitic marble. Therefore cracking building in this area is possibly an initial indication of ground subsidence due to cavities and caves formed as a result of chemical weathering of subsurface rock formations. Further investigations have to be conducted to assess the hazardous level of the problem and early action should be taken for the safety of people as well as properties.

