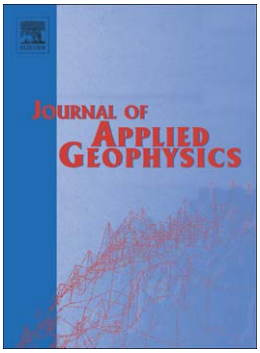

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Subsurface Soil Characterization using Geoelectrical and Geotechnical Investigations at a Bridge Site in Uttarakhand Himalayan Region

Anita Devi[a], M. Israil[a,*], R. Anbalagan[a], Pravin K. Gupta[a]

[a]*Department of Earth Sciences, Indian Institute of Technology Roorkee, Roorkee, 247667, India*

Abstract

Geoelectrical characterization of subsurface soil has been done at a bridge foundation site on the banks of Bhagirathi River at Tehri reservoir site, Uttarakhand, India. For this purpose, the Electrical Resistivity Tomography (ERT) and the Standard Penetration Test (SPT) data, recorded at both banks of Bhagirathi River are analyzed. A total of six ERT profiles, recorded on both the West and East banks, were interpreted to determine an electrical resistivity image showing the resistivity variations with depth. The borehole data and geological inputs were used for lithological correlation and calibration of the resistivity values to the subsurface formation. Subsequently the electrical parameter (resistivity) for different subsurface lithological units has been inferred. Further, at selected points, the electrical resistivity sounding data, derived from the ERT, have been correlated with the Standard Penetration Test (SPT) data. This correlation results from the fact that in the subsurface soil both the electrical resistivity variations and the soil strength measured by SPT are controlled by the soil properties: grain size distribu-

*Corresponding author (M. Israil) Email-id: mohammad.israil@gmail.com