

Ground Response Analysis at the Rukni Irrigation Project Site Located in Assam, India

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Abstract : In the present paper, Ground Response Analysis at the Rukni irrigation project has been thoroughly investigated. Surface level seismic hazard is mainly used by the practical Engineers for designing the important structures. Surface level seismic hazard can be obtained accounting the soil factor. Structures on soft soil will show more ground shaking than the structure located on a hard soil. The Surface level ground motion depends on the type of soil. Density and shear wave velocity is different for different types of soil. The intensity of the soil amplification depends on the density and shear wave velocity of the soil. Rukni irrigation project is located in the North Eastern region of India, near the Dauki fault (550 Km length) which has already produced earthquakes of magnitude ($M_w = 8.5$) in the past. There is a probability of a similar type of earthquake occurring in the future. There are several faults also located around the project site. There are 765 recorded strong ground motion time histories available for the region. These data are used to determine the soil amplification factor by incorporation of the engineering properties of soil. With this in view, three of soil bore holes have been studied at the project site up to a depth of 30 m. It has been observed that in Soil bore hole 1, the shear wave velocity vary from 99.44 m/s to 239.28 m/s. For Soil Bore Hole No 2 and 3, shear wave velocity vary from 93.24 m/s to 241.39 m/s and 93.24m/s to 243.01 m/s. In the present work, surface level seismic hazard at the project site has been calculated based on the Probabilistic seismic hazard approach accounting the soil factor.

Keywords : Ground Response Analysis, shear wave velocity, soil amplification, surface level seismic hazard

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