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Estimation of Relative Amplification Effect by Shear Wave Velocity (Vs30): A Case Study from Eskisehir, Turkey

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Turkey, which is one of the world's most active earthquake zones located within the Alpine-Himalayan seismic belt. The major part of the territory of the country is at risk of earthquakes that causes damage and loss of life. The important indication of this danger is the past earthquakes resulted with losses. Turkey has experienced many destructive earthquakes in the last 15 years. In 1999 Gölcük Earthquake with the magnitude of 7.4, Düzce Earthquake with the magnitude of 7.2 and in 2011 Van Earthquake with the magnitude of 7.2-Van resulted with thousands of loss of life and damage to property as billions of thousand liras. It is quite important to doing microzonation works in these areas and estimation of behaviors during the earthquake in order to prevent occurring damages in settlements and areas will be settle. Soil amplification comes from the most basic parameter used in the microzonation works. This study was made in Eskisehir urban area which is one of the most urbanized and industrialized cities of Turkey in recent years. This study aim to amplification that may occur due to the earthquake to effects of Eskisehir region. It was used that seismic refraction data in 23 different location and 96 borehole data in settlement. Local soil properties variation upon amplification influence was investigated depending on SPT-N values and wave velocity data from seismic refraction. Average shear wave velocities for each type of surface to 30 m were found that each borehole point by equations İyisan (1996), and Jafari et al. (1997) using the resulting values. In addition, relative amplifications has been calculated by Midorikawa (1987) and Borcherdt et al's (1991) approaches. Then, these parameters have been mapped spatial changes using GIS (Geographical Information Systems) techniques. Porsuk river and its surroundings might have caused a high soil amplification result due to the low speed and soft soil when analyze the results of maps. In addition, it is thought that the results of this study will be clear up determination of risk areas where used city center urban regeneration studies in Eskisehir.