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Identification of Deep Landslide on Erzurum-Turkey Highway by Geotechnical and Geophysical Methods and its Prevention

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Abstract : In this study, an active landslide zone affecting the road alignment on the Tortum-Uzundere (Erzurum/Turkey) highway was investigated. Due to the landslide movement, problems have occurred in the existing road pavement, which has caused both safety problems and reduced driving comfort in the operation of the road. In order to model the landslide, drilling, geophysical and inclinometer studies were carried out in the field within the scope of ground investigation. Laboratory tests were carried out on soil and rock samples obtained from the borings. When the drilling and geophysical studies were evaluated together, it was determined that the study area has a complex geological structure. In addition, according to the inclinometer results, the direction and speed of movement of the landslide mass were observed. In order to create an idealized geological profile, all field and laboratory studies were evaluated together and then the sliding surface of the landslide was determined by back analysis method. According to the findings obtained, it was determined that the landslide was massively large, and the movement occurred had a deep sliding surface. As a result of the numerical analyses, it was concluded that the Slope angle reduction is the most economical and environmentally friendly method for the control of the landslide mass.

Keywords : landslide, geotechnical methods, geophysics, monitoring, highway
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