O 78. EXPERIMENTAL DETERMINATION OF THE EFFECT OF WASTE CARPET ON THE STRENGTH AND DEFORMATION AT FAILURE OF CLAYEY SOILS WITH FLY ASH AND CEMENT

Murat Olgun[1], Ekrem Burak Toka[2]

[1]*Associate Professor, Depratment of Civil Engineering, Selcuk University, molgun@selcuk.edu.tr*
[2]*Research Assistant, Depratment of Civil Engineering, Selcuk University, ebtoka@selcuk.edu.tr*

E-mail: molgun@selcuk.edu.tr

ABSTRACT: In this study, the effects of waste carpet on the strength and deformation at failure of clayey soil with cement and fly ash were investigated in laboratory. Experimental designs were established using response surface method (RSM) to create experimental program. Considering the previous studies; cement ratio (CR), fly ash ratio (FR), waste carpet ratio (WCR) and waste carpet aspect ratio (WCAR) have been selected as the parameters of these designs. The levels of these parameters were selected in the following ranges: 0% to 10% for CR, 0% to 30% for FR, 0% to 2% for WCR by total mixture weights and 15-75 for WCAR. In the laboratory, unconsolidated-undrained triaxial shear strength tests (UU) and splitting tensile strength tests (STS) were conducted on the specimens of 50 mm diameter. UU tests were conducted to determine shear strength and STS tests were conducted to determine tensile strength of the specimens. According to the results of the tests and the analysis of these results by RSM, the increase of cement and fly ash contents in the soil matrix caused both the increase of the shear strength obtained from the UU tests and the splitting tensile strength values obtained from the STS tests. In both STS and UU tests, WCR had the greatest influence on the change in deformation at failure.

Keywords: Waste Carpet, Shear Strength, Splitting Tensile Strength, Deformation at Failure.