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Parameters Adjustment of the Modified UBCSand Constitutive Model for the Potentially Liquefiable Sands of Santiago de Cali-Colombia

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Abstract : Santiago de Cali is located in the southwestern Colombia in a high seismic hazard zone. About 50% of the city is on the banks of the Cauca River, which is the second most important hydric affluent in the country and whose alluvial deposits contain potentially liquefiable sands. Among the methods used to study a site's liquefaction potential is the finite elements method which use constitutive models to simulate the soil response for different load types. Among the different constitutive models, the Modified UBCSand stands out to study the seismic behavior of sands, and especially the liquefaction phenomenon. In this paper, the dynamic behavior of a potentially liquefiable sand of Santiago de Cali is studied by cyclic triaxial and CPTu tests. Subsequently, the behavior of the sand is simulated using the Modified UBCSand constitutive model, whose parameters are calibrated using the results of cyclic triaxial and CPTu tests. The above with the aim of analyze the constitutive model applicability for studying the geotechnical problems associated to liquefaction in the city.

Keywords : constitutive model, cyclic triaxial test, dynamic behavior, liquefiable sand, modified ubcsand
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