

# # 3971549621 : MAJOR CIVIL ENGINEERING  
KEY WORD: NORMALIZED STIFFNESS / STRESS RELAXATION

WANNIPA TIEW : PREDICTION OF SETTLEMENT OF BANGKOK SOFT CLAY DUE TO TUNNEL  
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The main objective of the present study is to focus on settlement in Bangkok ground during tunnel excavation for public transportation. Two steps were conducted in this study. The first step studies the behavior of Bangkok soft ground under unloaded. The second step formulates non-linear elastic model relates to prediction of settlement based on the above result by using finite element analysis method. The result were obtained from the isotropically consolidated undrained triaxial extension tests of Bangkok soil and led to the exponential equation of the normalized stiffness; i.e., ratio of the tangent Young's modulus to its initial value, to the stress ratio ( $q/p$ ) ; i.e., ratio of the deviator stress and the mean stress. The empirically one parameter required by the model was dependent on the initial confining stress. The model was implemented into the finite element analysis program 'CRISP' to estimate the ground movement. The proposed model using the stress relaxation of 9 % were well similar to the observed ones and to Peck's equation at the volume loss at 2%. Moreover, during the 6-meter diameter tunnel construction, it was found that the settlement was similar to the proposed model at the 9 % stress relaxation and to the Peck's equation at the 2% volume loss.

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