

Strength and stiffness parameter study of Kenny Hill Formation with consideration of constitutive soil model for a Finite Element Analysis

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Abstract: Constitutive soil model and its parameters are fundamental parameters in finite element analysis. Mohr-Coulomb, Hardening Soil and Hardening Soil Small Strain shall be adopted to model the geotechnical parameters of Kenny Hill Formation for the finite element analysis evaluated in this study. For practical purposes, a case study of the completed metro station in Klang Valley was selected to model in 3D with the consideration of three types of constitutive soil models. The instrumentation data during the construction was used to compare with the prediction from the finite element

analysis. Plaxis 3D software was adopted as prediction tool in this study. Lateral wall deformation and ground surface settlement prediction were used to compare with the prediction. The outcome were concluded that the hardening soil and hardening soil small strain will be more suitable constitutive soil model to be adopted for deep excavation works.

Keywords: Deep excavation, 3D finite element analysis, advanced constitutive model, small strain characteristic