Evaluation of Failure Mode of Cut and Cover Tunnels in Consideration of Non-linearity of Ground

Jun IZAWA Seiji NISHIYAMA
Tomohiro KAWANISHI Yoshitaka MURONO

Evaluation of failure mode of cut and cover tunnels in the current seismic design is conducted by a Push-Over analysis using a seismic deformation method. However in case linear elastic stiffness of ground is assumed in the analysis, force acting on the structure will be calculated as being very large, which leads to unreasonable design. This paper describes how to consider non-linearity of ground in evaluation of failure mode using a seismic deformation analysis. In the evaluation, non-linearity of ground is obtained by conducting several cases of seismic response analyses of ground and seismic deformation analyses for different magnitude of earthquakes. A trial analysis shows that the proposed method can adequately evaluate non-linearity of ground in the evaluation of failure mode of cut and cover tunnels.