

**Influence of Nonlinearization of Ground and Structure on Combination of Inertia Force and
Ground Deformation Used in Seismic Deformation Method**

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In order to improve the accuracy of combining inertia force and ground deformation when using the seismic deformation method, we focused on the respective nonlinear behavior of the ground and the structure. Specifically, dynamic analyses were conducted for various types of grounds and structures under the condition that one of them became nonlinear, and the combination coefficients for the ratio of the period of grounds to the period of structures were calculated. As the result, we confirmed that the variation of the combination of actions was reduced by considering not only the relationship between the natural period of grounds and structures, but also the degree of nonlinearity of each. Based on these results, we proposed a new method which simply takes into account the degree of plasticization of the ground and structure. Using the proposed method, it is possible to determine more appropriate combination coefficients of ground deformation and inertial force than conventional methods.