

HSC024-06

Room:201A

Time:May 24 10:00-10:15

The subsequent development of 'Fill Vulnerability Scoring System'

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In the same session last year, the outline and effectiveness of "Fill Vulnerability Scoring System" were reported (Nakano and Koarai, 2010). Among them, it was left as a subject considering study of optimal parameter to rate non-deformation fills as the safety. In this presentation, we report on study result about the subject and the circumstances surrounding the system later.

In "Fill Vulnerability Scoring System", three methods, the scoring method written on the "A manual of guideline of investigation of movement calculation in large residential fill area" by MLIT published in 2008, statistical lateral resistance model and statistical three-dimensional stability analysis model were constructed in this study, can assess the vulnerability of fills. Among these, the optimum parameters used statistical lateral resistance model had been determined as the best examples can be explained statistically from fill form and earthquake damage data in Sendai, Hanshin, Nagaoka, Kashiwazaki region. But, these optimum parameters are different for the purpose and term of the user. Therefore, we prepared for the following three parameters; (1) The parameters can extract the most accurately the deformable fills by earthquake (percentage of correct answers about deformed fills in past cases is 100 %), (2) The parameters can tell deformable fills from non-deformable fills most efficiently, (3) The parameters can extract the deformable fills precisely (percentage of correct answers about deformed fills in past cases is more than 90 %) and can extract the non-deformable fills precisely as much as possible.

The manual of guideline is considered to be revised presently. It is expected that this scoring system appear as a simple fill vulnerability scoring method in the manual of guideline.

Keywords: fill vulnerability scoring system, large residential fill area, guideline scoring method, statistical lateral resistance model, statistical three-dimensional stability analysis model