

5. Development of a Hybrid Foundation Design Support System

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Buildings are now supported on different types of foundations, spread and pile foundations, in plane, or on hybrid foundations such as piled raft foundations even in complex and soft ground. For these foundations, considering ground deformation under building loads is essential. Predicting the settlement of buildings accurately enables effective foundation design in which the foundation is partly eliminated or shorter piles are used. A design support system was developed to quickly design hybrid foundations (HYFEST).

The settlement behavior of a seismically isolated high-rise building was observed during construction. The high-rise was supported by an alluvial sand intermediate layer with an N-value of approximately 30 at the tip of the pile. Data obtained by observing the settlement was compared with the predictions made using the system. Then, the validity and applicability to actual buildings of the system were verified.

Key words : hybrid foundations, different types of foundations, piled raft foundations, observation of settlement, interaction, design support