

## **Behavioral studies on inclined or rounded tip piles using 3D printed samples and FE analysis**

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### **ABSTRACT**

To test the effect of various pile tip shape loading tests were carried out on samples made using the 3D printer (*M-Flex Ex-One*), along with advanced large deformation finite element numerical analysis. The samples were made with tips with 30°, 45°, 60° incline, as well as a rounded tip. By installing these tips to an actual test pile, the objective of this study which is to investigate the maximum stress concentration forming around the pile tip and the settlement caused by loading will be accomplished. This will allow us to analyze the decrease of stress concentration around the pile tip which is the cause of the pile tip damage during pile installation. However, modifying the pile tip shape will eventually increase the settlement of the pile. By estimating the increase in pile settlement, the efficiency of the pile shape modification will be judged. Moreover, advanced large deformation finite element model, verified based on the loading test, will be used to study the effect of different pile tip shape and ground conditions.

### **REFERENCES**

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