

FOUNDATION STABILITY ON SAND SOIL USING GROUND ANCHOR FOR RIGID ROAD STRENGTHENING LABORATORY MODELING

by Endaryanta, Dian Eksana Wibowo, Yuli Fajarwati

ABSTRACT

High-rise slender structures such as power transmission towers, telecommunication towers, and street lights are always subjected to high lateral forces, especially from wind loads. This lateral load will cause somersault forces to rotate the foundation and affect the stability of the foundation of the structure. During the failure of high-rise slender structures, the rolling force is always higher than the weight of the structure objects. Therefore, lateral loading is a major factor to be considered at the time of design. In designs for high-rise lean structures, the traditional method is to use massive foundations to withstand rolling forces due to wind loads. However, it is very heavy, bulky, and expensive to build, which is not effective in terms of cost and time.

To solve the problem, civil experts recommend a new construction method using a ground anchor system to improve the stability of the structure. Over the years, many types of anchors have been developed and used in the construction of sleek high-rise structures. A helical anchor is one anchor that this type of construction has always used. The helical anchor is composed of several steel shafts with a series of welded helical steel plates. During installation, the helical anchor is screwed into the ground using a standard truck or auger equipment trailer attached.

This study used primary data. The primary data used in this study is by taking soil samples at the point to be analyzed to determine the soil properties index and then testing the pullout capacity of armature using soil material that has been tested before.

The results of the study are in the form of minimum and maximum capacity of the most effective anchor pullout capacity. The test results at the 8 cm anchor maximum pullout capacity value of 1.198 kN and the minimum occurred at the 10 cm anchor pullout capacity of 0.799 kN. The 10 cm anchor maximum pullout capacity value of 0.799 kN and the minimum occurred at the 13 cm anchor pullout capacity of 0.666 kN. The 14 cm anchor maximum pullout capacity value of 2.93 kN and the minimum occurred at the 12 cm anchor pullout capacity of 1.997 kN. The 11 cm maximum pullout capacity value of 1.731 kN and the minimum occurred at the 13 cm anchor pullout capacity of 0.666 kN. The 28 cm maximum pullout capacity value of 4.661 kN and the minimum occurred at the 16 cm anchor pullout capacity of 3.063 kN. The 22 cm maximum pullout capacity value of 2.264 kN and the minimum occurred at the 29 cm anchor pullout capacity of 0.932 kN.

Kata Kunci: *Anchor, pullout capacity, foundation*