

عنوان مقاله:

Effect of Eccentricity on Octagonal Foundations Bearing Capacity

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خلاصه مقاله:

Footing in industrial applications often have large horizontal forces and overturning moments in addition to vertical forces. These loadings are primarily from earthquake or wind. While the overturning direction is not usually fixed, round base is more regular. In practice, however, it is difficult to form a round footing member. Therefore, an octagon is widely used, because it closely fits a circle and can be formed easily. In this paper a finite element software, PLAXIS 3D, is used to calculate bearing capacity of a circular and octagonal foundation for a granular and cohesive soil. It is understood that for granular soils, octagonal and circular footings show slightly similar reaction. Nevertheless, for cohesive soils octagonal foundations depict about 4% higher bearing capacity than circular foundations. In addition to geometry of the footing, bearing capacity of octagonal and circular foundations, also is severely affected by load eccentricity. For cohesive soils, bearing capacity of octagonal and circular foundations reduces linearly, but for granular soil, the measure reduces exponentially. At last, the results were compared with traditional procedure and it is seen that the traditional method yields more over-design results

کلمات کلیدی: Circular footing; Octagonal footing; Eccentric load; PLAXIS 3D

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