

## **Influence of Wall Stiffness and Embedment Depth on Excavations Supported by Cantilever Walls**

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**Abstract :** Ground deformations in deep excavations are affected by wall stiffness and pile embedment ratio. This paper presents the findings of a parametric study of 64ft deep excavation in mixed stiff soil conditions supported by a cantilever pile wall. A series of finite element analyses have been carried out in Plaxis 2D by varying pile embedment ratio and wall stiffness. It has been observed that maximum wall deflections decrease by increasing the embedment ratio up to 1.50; however, any further increase in pile length does not improve the performance of wall. Similarly, increasing wall stiffness reduces the wall deformations and affects the deflection patterns of wall. The finite element analysis results are compared with field data of 25 case studies of cantilever walls. Analysis results fall within the range of normalized wall deflections of 25 case studies. It has been concluded that deep excavations can be supported by cantilever walls provided the system stiffness is increased significantly.

**Keywords :** excavations, support systems, wall stiffness, cantilever walls

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