World Academy of Science, Engineering and Technology
International Journal of Structural and Construction Engineering
Vol:10, No:07, 2016

Numerical Analysis of Jet Grouting Strengthened Pile under Lateral Loading

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Abstract : Jet grouting strengthened pile (JPP) is one of composite piles used in soft ground improvement. It may improve the vertical and lateral bearing capacity effectively and it has been practically used in a considerable scale. In order to make a further research on load transfer mechanism of single JPP with and without cap under lateral loads, JPP is analyzed by means of FEM analysis. It is resulted that the JPP pile could improve lateral bearing capacity by compared with bored concrete pile which is higher for shorter pile and the biggest bending moment of JPP pile is located in the depth of around 48% of embedded length of the pile. Meanwhile, increase of JPP pile length causes to increase of peak mobilized bending moment. Also, by cap addition, JPP piles will have a much higher lateral bearing capacity and increasing in cohesion of soil layer resulted to increase of lateral bearing capacity of JPP pile. In addition, the numerical results basically coincide with the experimental results presented by other researchers.

Keywords : bending moment, FEM analysis, JPP pile, lateral bearing capacity
Conference Title : ICSCE 2016 : International Conference on Structural and Construction Engineering
Conference Location : Istanbul, Türkiye
Conference Dates : July 21-22, 2016