عنوان مقاله:

Performance evaluation of microbial carbonate precipitation method compared with resin and fiber stabilization on the strength of compacted sandy soils

محل انتشار:

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خلاصه مقاله:

One of the methods that have recently linked the fields of civil engineering, geochemistry and microbiology, have a good compatibility with the environment, and have a lower administrative cost than other methods of soil improvement is Microbial Induced Carbonate Precipitation (MICP). This new idea is inspired by nature, involves using certain species of soil bacteria to bind soil particles together and stabilize the soil structure. In this study, the performance of MICP method on the strength of sandy soil compared with another two methods of mixing treatment for soil improvement (resin stabilization and fiber/resin reinforcement). Unconfined compression strength test (UCS) were performed in 3 graded for one type of sandy soil to investigate the optimum results for each methods and comparison between them. the results indicate that the highest increased of strength in resin/fiber reinforcement occurs in T90 soil with 1831 Kpa and resin stabilization raised the strength to1611 Kpa in T60 soil . In addition, the MICP method has improved the strength from 51 Kpa to 1109 Kpa and the results in this process indicate the importance of soil granular and percent of bacteria. Therefore, comparison of these three methods shows the MICP method as a new and environmental method of soil improvement can be considered in future.

کلمات کلیدی:

MICP, Resin stabilization, Fiber reinforcement, Unconfined strength test, Sandy soil