



Stabilizing the Excavation Materials to be used in Fill Layers

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Abstract

Daily increase in the amounts of soil and wastes produced by excavation and demolishing of the old buildings in the urban worn out textures has caused great problems in large cities. The environmental issues due to the irrelevant and non-technical disposal of waste materials have attracted attention of researchers with the aim of recycling and use of these materials in the civil and construction activities. Old buildings constitute a significant portion of Sharestan Razavi Blvd in Mashhad which after demolishing of these buildings the area in this section is covered by the backfill materials and those remained from the demolishing of the buildings. In this research, maximizing use of the available materials and minimizing the transportation work as an execution order have been under focus of attention. Also through performing various tests, the possibility of recycling, stabilizing and implementing these materials at underlying layers of Sharestan Razavi Blvd has been evaluated and the results are presented.

Keywords: Construction Wastes; Recycling; Stabilizing; Lime; Cement; CBR Test.

1. Introduction

Recycling of the soil and construction wastes not only helps in preserving the natural sources and the environment but by incorporating the scientific methods it could have economic justification. The very large amounts of the soil and construction wastes and their irrelevant disposal have created environmental and sanitary problems together with the need for locations for waste disposal and creation of the polluted areas with an inappropriate view. The economic aspects of soil and construction wastes recycling are as important as the associated technical issues. The most important factors for justifying recycling of the soil and construction wastes are; the cost of waste transportation from the production point to the disposal point, cost of maintaining the land and essential facilities to create areas for unloading the soil and construction wastes, cost associated with waste disposal and preventing the related pollutions, and cost of preparation and transport of the appropriate materials from the borrow areas. It is quite clear that recycling of the soil and construction wastes is also costly and might not be economically justified. But daily increase in the primary materials' prices and un-compensable damages to the environment in long term has raised the importance of recycling of the soil and construction wastes [1]. One of the problems associated with urban solid wastes management system especially in the metropolitan cities, is production of thousands of tons of the soil and wastes where disposal of them in addition to the economic problems causes environmental pollution [2]. Growth and extension of the cities in the areas of construction wastes disposal has created many problems, including settlement of the buildings, blasting of the water and wastewater networks and sanitary problems including spread of diseases like leishmaniasis [3]. Unfortunately there are not any formal information concerning the areas that are backfilled by the soil and construction wastes in most of Iran's cities. Improper disposal of the solid wastes produced due to the civil projects and accumulation of large amounts of construction wastes in various points of the cities have caused many environmental problems, where by accurate management and recycling of the wastes one could alleviate some of the associated detrimental impacts. One of the solutions is incorporation of these materials in the road pavement layers [4], where there are special standards for

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