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Compaction of Municipal Solid Waste

Authors : Jovana Jankovic Pantic, Dragoslav Rakic, Tina Djuric, Irena Basaric Ikodinovic, Snezana Bogdanovic

Abstract : Regardless of the numerous activities undertaken to reduce municipal solid waste, its annual volumes continue to grow. In Serbia, the most common and the only one form of waste disposal is at municipal landfills with daily compaction and soil covering. Municipal waste compacting is one of the basic components of the disposal process. Well compacted waste takes up less volume and allows much safer storage. In order to better predict the behavior of municipal waste at landfills, it is necessary to define compaction parameters: the maximum dry unit weight and optimal moisture content. In current geotechnical practice, the most common method of determination compaction parameters is by the standard method (Proctor compaction test) used in soil mechanics, with an eventual reduction of compaction energy. Although this methodology is accepted in newer geotechnical scientific discipline "waste mechanics", different treatments of municipal waste at the landfill itself (including pretreatment), indicate the need to change this classical approach. The main reason for that is the simulation of the operation of compactors (hedgehogs) at the landfill. Therefore, during the research, various innovative solutions are introduced, such as changing the classic flat Proctor hammer, by adding spikes, whose function is, in addition to compaction, destruction and shredding of municipal waste. The paper presents the behavior of municipal waste for four synthetic waste samples with different waste compositions (Plandište landfill). The samples were tested in standard Proctor apparatus at the same compaction energy, but with two different hammers: standard flat hammer and hammer with spikes.

Keywords : compaction, hammer with spikes, landfill, municipal solid waste, proctor compaction test
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