

## عنوان مقاله:

Quantification of Geometrical and Morphological Characteristics of Desiccation Crack and Shrinkage Behavior of Composite Clay Liner

## محل انتشار:

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## خلاصه مقاله:

Clay soil and their related irregular behavior such as shrinkage, swelling, desiccation cracks etc. are the main concern for the construction of composite clay liner (CCL) in waste landfill site. In this study, an investigation was conducted on a scaled model of prototype landfill liner to quantify both the geometrical and morphological characteristics of desiccation crack of CCL. For evaluating its cracking behavior cement, brick khoa and fiber were used as additives for two phases of investigation. In this study, for the quantification of geometrical and morphological characteristics of desiccation crack of CCL, both the image-based algorithms on MATLAB and ImageJ software was performed. To evaluate additives significance on soil, surface crack ratio, average length and width of cracks, number of crack segments, crack density and others related parameters were determined. Results showed significant impact on clayed soil due to presence of various types and percentages of additives. Experiential results depicted that surface crack ratio increases with reducing water content on prototype sample and finally stabilized its propagation. The optimum content of additives were found 5, 5 and 1.5% for brick khoa, cement and polymer fiber, respectively for preparing CCL with clay from selected landfill site of Khulna.

## کلمات کلیدی:

Landfill Liner, desiccation cracks, composite clay, Image based algorithm

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