

UNIVERSITI TEKNOLOGI MARA

**EFFECTIVENESS OF DIFFERENT
PERCENTAGE OF BENTONITE IN SOIL LINER
ON INTERFACE SHEAR STRENGTH WITH
GEOSYNTHETIC**

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Thesis submitted in fulfilment of the requirements for the degree of
Master of Science in Civil Engineering (Geotechnique)

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Candidate's Declaration

I declare that the work in this thesis entitled “Effectiveness of Different Percentage of Bentonite in Soil Liner on Interface Shear Strength with Geotextile” is the result of my own work except as cited in the references. It was carried out in accordance with the regulations of Universiti Teknologi MARA and has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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ABSTRACT

Interface shear performance of various percentages of bentonite and fine soil were evaluated for landfill stability by conducting Direct Shear Test. The focus of this study is placed on interface shear strength of fine soil and soil with different percentage of bentonite. Bentonite is currently placed for use as buffer and backfill materials in landfill because these materials create an impermeable zone where it reduced the potential of soil contamination from leachate. In this study, direct shear box with dimension of 60 mm x 60 mm was used to determine the interface shear strength of soil with different percentage of bentonite at optimum moisture content. Normal stresses used were between 100 kPa to 300 kPa to represent the depth of 20 metres of solid waste. Results showed that the most suitable percentage of bentonite was 5% due to the highest interface shear strength of the mixture with non woven geosynthetic. Moreover, even the presence of bentonite in the sample is proved to give higher interface shear strength to the tested soil, additional bentonite tends to decreased its shear strength.

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