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Soil stabilization Using cement & lime

By

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My dearest thanks ...

*To who stayed up nights for my palms my mother
To who fatigue in order to provide me with happiness
my father
to those who share my sadness and my joy my brothers,
my sister & my friends
to who gave me knowledge*

*Special thanks to the person who always make me want
to progress ,success,excellence and perseverance
To the person who I looked up to him*

*We must when we move our final steps in the academic
life of the pause go back to the years we spent in the
university campus without professors valued who have
given us so much sparing great efforts in building the
next generation of the nation...*

*Before we move forward we offer our deepest gratitude
and appreciation and love to those who carried the
holiest message in life Tous, who paved the way science
and knowledge...*

Abstract

This research presents the results of a series of laboratory tests carried out on clay stabilized with lime and cement in different percentages.

The objectives of this study is to investigate the improvement in mechanical and chemical properties of the soft saturated soil by adding different percentages of lime and cement and tested it after 1, 3, 7, 14, 28 days curing..

The soft soil was mixed with (3, 5, 7 and 10% cement only, lime only and lime-cement mixture) with respect to soft soil without any additive to compare with soil stabilize with additives. The investigations are carried out by testing the soil stabilized with additives the Attarbeg limit, Specific gravity, Standard Procter test, Unconfined compression test and Consolidation test.

In Attarbeg limits, there are an optimum liquid limit are 58 in cement content 3%, 59 in 3% lime content and 51 in 3% lime-cement content. In spite of the plastic limit was increasing with increasing the additive content and plasticity index is decreasing with increasing additive content.

In Specific gravity, the range of the Gs is increasing with increase additive content for cement only and lime-cement, and the Gs is decreasing with increase lime content.

In standard Procter test, the maximum dry density is decreasing with increase the additive content for lime only and lime-cement, and increasing with increase the cement content. The maximum dry density is observed 17.82 kN/m³ in 10% cement only.

In unconfined compression test, at cement only the unconfined compression results is increasing with increase cement content and with increasing curing

time the increasing in results with curing time are increasing from 75 kN/m^2 when tested after preparation to 305 kN/m^2 when tested after 28 days curing for 3% cement, $85 - 790 \text{ kN/m}^2$ for 5% and $150 - 915 \text{ kN/m}^2$ for 7% cement. At lime only the unconfined compression results is increasing with increase lime content and with increasing curing time the increasing in results with curing time are increasing from 80 kN/m^2 when tested after preparation to 300 kN/m^2 when tested after 28 days curing for 3% lime, $125 - 345 \text{ kN/m}^2$ for 5% and $150 - 440 \text{ kN/m}^2$ for 7% lime. at lime-cement the unconfined compression results is increasing with increase lime-cement content and with increasing curing time the increasing in results with curing time are increasing from 90 kN/m^2 when tested after preparation to 500 kN/m^2 when tested after 28 days curing for 3% lime-cement, $110 - 515 \text{ kN/m}^2$ for 5% and $125 - 590 \text{ kN/m}^2$ for 7% lime-cement.

In consolidation test, the dial gauge read is decreasing with increase additive content.