

الآية

أعوذ بالله من الشيطان الرجيم

قال تعالى:

لَا يَجِدُكُمْ إِلَّا يَكْفُرًا ۖ وَلَوْلَا الَّذِي دُفِنَ فِيكُمْ لَوَدِدُوا كَانُوا دَافِعِينَ ۖ فَوَلَّى الْآلُفُنَا فَكَبَّرُوا ۖ وَكَلَبُوا جَنْجِلَهُمْ ۚ نَارُ الْجَهَنَّمَ خَالِدَةٌ فِي أَكْبُفٍ مُّكَرٍّ وَظُفَرٍ لِّلْأَيْدِي ۚ ذَٰلِكُمْ يَكْتُمُونَ {

{التوبة - 105}

صدق الله العظيم

Dedication

All praise to Allah, today we fold the days, tiredness and the errand summing up between the cover of this humble work.....

To the utmost knowledge, to our greatest and most honored prophet Mohammed-may peace and grace from Allah be upon him.....

To the spring that never stops giving to my mother who weaves my happiness with strings from her merciful heart.....To my Mother.

To whom he strives to bless comfort and welfare and never stints what he owns to push me in the success way who taught me to promote life stairs wisely and patiently.....To my Dearest Father.

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شكر وتقدير

يسرني وبثليج صدي أن أتقدم بالشكر والامتنان إلى أستاذي، ومشرفي الأستاذ الدكتور/حسين العربي/حسين-مدير معهد بحوث البناء والطرق - جامعة الخرطوم الذي مدني من منابع علمه بالكثير، والذي ما تواني يوماً عن مد يد المساعدة لي ، وحمداً لله بأني سره في دربي ويسر به أمري ويأري ليبقى نبزاً مثلاً في نور العلم والعلماء.

وأتقدم كذلك بجزيل الشكر إلى أساتذة جامعتي جامعة السودان للعلوم والتكنولوجيا كل من قدم لي فيهم مساعدة ومساندة مكنتني من المضي بخطى ثابتة في مسيرتي العلمية.

ولم ولن أنسى أن أتقدم بفائق الشكر والاحترام والتقدير إلى المهندس/دال محمد والمهندسة/سحر يوسف بمعهد بحوث البناء والطرق - جامعة الخرطوم- والذين ساندني ووقفوا بجانبني منذ بداية عملي في البحث، وجزاهم الله عني كل الخير.

كما أتقدم بجزيل الشكر إلى أساتذتي أعضاء لجنة النقاش الموقرين على ما تكبدوه من عناء في قراءة رسالتي المتواضعة وإغنائها بمقترحاتهم القيمة.

وفي النهاية يسرني أن أتقدم بجزيل الشكر إلى كل من مد لي يد العون في مسيرتي العلمية.

Abstract

This research deals with the concept of natural soil in terms of how the composition, properties, size, shape of grains, strength, and classified, and singled to discuss bearing capacity of the soil, where are the most important topics in soil engineering. Also the research deals with different types of bearing capacity and how can be determined from equations and plate load test, and to compare them. The research identifies structural fills which used in embankments, and their properties and laboratory tests to determine their quality and suitability for use.

Various types of structural fill materials were collected from different areas were used in the research. These soils were tested in the laboratory and classified, and one of them was chosen as a model for the plate load test. A Steel box with a specific dimension was used as a model for the plate load test. The selected structural fill was placed in the box in layers, and each layer compacted and tested to find value of bearing capacity. Also field density test has been carried out on each layer. The bearing capacity values were calculated using Terzaghi's bearing capacity equations. A comparison between the bearing capacity values for each layer had been done.

It was found that all structural fill samples used are classified as clay of medium plasticity. The bearing capacity value for a soil layer measured by plate load test was initially decreased and then increased with increasing the thickness of the layers and more compaction process. It is also concluded that the better compaction of a soil layer result in values of bearing capacity from equations and plate load test are very close.

المستخلص

تناول هذا البحث مفهوم التربة عامة من ناحية كيفية تشكيلها وخواصها ومقاسات وشكل حبيباتها وقوامها وتصنيفها. وإختصت بمناقشة السعة التحميلية للتربة حيث هى من أهم المواضيع في هندسة التربة. وتناول البحث أيضاً أنواع السعة التحميلية وكيفية إيجادها من المعادلات ومن إختبار التحميل والمقارنة بينهما. تم التعرف على المواد المستخدمة في الردميات وخواصها والإختبارات المعملية لها لتحديد نوعيتها وصلاحياتها للإستخدام.

إستخدمت عدة أنواع من مواد الردم جمعت من مناطق مختلفة ، وإختبرت فى المعمل وتم تصنيفها، وأختيرت إحداها كنموذج لإختبار التحميل. حيث أستخدم صندوق من الفولاذ بأبعاد معينة، ووضعت فيه عينة التربة المختارة على شكل طبقات، ودمكت كل طبقة وأجرى عليها إختبار التحميل ووجدت قيمة السعة التحميلية لكل منها. كما تم عمل إختبار الكثافة الحقلية ومنه حسبت قيمة السعة التحميلية لكل طبقة بواسطة معادلات (ترزاقى) لإيجاد السعة التحميلية وتمت المقارنة بين قيمتى السعة التحميلية لكل طبقة.

تم التوصل إلى أن كل عينات التربة المستخدمة كانت طينية متوسطة اللدونة من إختبار التصنيف، وقيمة السعة التحميلية لطبقات التربة من إختبار التحميل قلت فى البداية ثم زادت مع زيادة سمك الطبقات وزيادة عملية الدمك. كما أنه كلما كان دمك الطبقة جيداً كانت قيمتى السعة التحميلية المحسوبة والناجمة من إختبار التحميل متقاربتان جداً.

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