بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــســـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

NEW MASONRY UNIT AND INTERLOCKING MORTARLESS BUILDING SYSTEM FOR LOAD-BEARING WALLS

A Thesis Submitted
In partial Fulfillment of the Requirements
For The degree of Master of Science
In
Civil Engineering (Structural Engineering)

by

Eng. Tarek Mohamed Cherif Elkhoraibi

Cairo University
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Under the Supervision of

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ABSTRACT

In this study, a new mortarless masonry system is developed. The developed system is composed of masonry units, each with two cylindrical cells, and the interlocking between successive stretches is achieved by two pins per unit.

A detailed survey of the previous research work in this domain is carried out. The author attempts to benefit from the advantages of mortarless masonry construction to yield a new masonry system suitable for domestic use. The system is designed to serve for load-bearing walls, retaining walls, and fences. It is ungrouted and unreinforced. Openings are built without supporting frames or lintels. The units and pins do not contain any complicated configuratons, and are to be manufactured according to the standard tolerances used in conventional masonry units built with mortar.

One-third scale model units and pins are manufactured using plaster. An experimental testing program is conducted on the developed masonry system to evaluate its performance under expected applied loads. The testing program is carried out on one-third model masonry units and masonry assemblages built using the developed interlocking system. One-third scale models are constructed using a conventional system built with mortar and tested for comparative purposes. The results are analyzed and correlated. The performance of the new mortarless system is evaluated, and an understanding of its behavior under applied loads is reached.

The new system shows considerable resistance to axial compression, and lateral in-plane and out-of-plane loads. Moreover, possible modifications, meant to improve the capacity and performance of the system, are specified, and recommendations for future research work are suggested.