شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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HANAA ALY

LABORATORY TESTING AND NUMERICAL MODELLING OF FRAME CORNER CONNECTIONS FABRICATED FROM STEEL COLD-FORMED SECTIONS

By

Ahmed Mohamed Massoud

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Structural Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

LABORATORY TESTING AND NUMERICAL MODELLING OF FRAME CORNER CONNECTIONS FABRICATED FROM STEEL COLD-FORMED SECTIONS

Key Words:
Cold-formed sections – Corner connection – Experimental testing – Finite element modelling – Self drilling screw connection.

Summary:

In this study, the behavior of beam to column cold formed section connection subjected to major axis bending moments has been investigated. For this purpose, experimental and analytical models have been developed. Two types of connections have been studied. For the first type, the beam is connected to the column via bracket plate attached to the web of the beam and column sections using self-drilling screw bolts of diameter 6mm, whereas. For the second type, ordinary bolts of grade 4.4 and diameter 12mm are used instead of the screws. Lipped channel sections of height, flange width, lip and thickness of 200,60, 20, and 2 mm respectively are studied. Seven specimens were fabricated to investigate the behavior of the connection. The main parameters were the thickness of the guest plate and the connecting element (self-drilling screws vs ordinary bolts). The same models were simulated numerically using a finite element program. The cold-formed sections were modeled using shell elements while the connecting fasteners were modeled using wire elements.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

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Signature:

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Ahmed Mohamed Massoud

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