



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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MONA MAGHRABY



A STUDY OF THE MODELLING OF RIGID AND SEMI-RIGID END-PLATE STEEL CONNECTIONS

By

Elsayed Faisal Salman Elnaday

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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Under the Supervision of

Prof. Dr. Sherif Ahmed Mourad

Prof. Dr. Nabil Sayed Mahmoud

.....
Professor of Steel Structures
Structural Engineering
Faculty of Engineering, Cairo University

.....
Professor of Steel Structures
Structural Engineering
Faculty of Engineering, Mansoura
University

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Approved by the
Examining Committee

Prof. Dr. Sherif Ahmed Mourad

Thesis Main Advisor

Prof. Dr. Nabil Sayed Mahmoud

Advisor

Professor of Steel Structures
Faculty of Engineering, Mansoura University

Prof. Dr. Sherif Saleh Safer

Internal Examiner

Prof. Dr. Saad El Din Moustafa Abd Rabbo

External Examiner

Professor of Steel Structures
Faculty of Engineering, Mansoura University

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2020

Engineer's Name: Elsayed Faisal Salman Elnaday
Date of Birth: 28 / 09 / 1992
Nationality: Egyptian
E-mail: elsayedfaisal2@gmail.com
Phone: 01066528803
Address: 239, Second District, 6th of October
Registration Date: 01 / 10 / 2017
Awarding Date: / / 2020
Degree: Master of Science
Department: Structural Engineering



Supervisors:

Prof. Dr. Sherif Ahmed Mourad
Prof. Dr. Nabil Sayed Mahmoud
(Faculty of Engineering, Mansoura University)

Examiners:

Prof. Dr. Saad El Din Moustafa Abd Rabbo (External examiner)
(Faculty of Engineering, Mansoura University)
Prof. Dr. Sherif Saleh Safer (Internal examiner)
Prof. Dr. Sherif Ahmed Mourad (Thesis main advisor)
Prof. Dr. Nabil Sayed Mahmoud (advisor)
(Faculty of Engineering, Mansoura University)

Title of Thesis:

A Study of the Modelling of Rigid and Semi-Rigid End-Plate Steel Connections

Key Words:

Steel connections; Extended end-plate; flush end-plate; Rigid connections; Semi-rigid connections.

Summary:

A numerical simulations using ABAQUS software were performed on full scale steel beams connected to the columns (beam-to-column connection) with two different types of endplate connections (Extended and flush) to study the effect of a number of variables on connections behavior. Two finite element models were calibrated, first model using tested data, second model using analytical data from Eurocode 3 in order to verify the results. The models were simulated under static loads and the behavior of the connections was analyzed from moment-rotation ($M-\phi$) curve. Moment-rotation curve is a method for representing the stiffness, strength and ductility of a connection. The classification of the connections was determined by the European 3, American and Egyptian codes. The three codes were compared based on the classification of connections.

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.

Name: Elsayed Faisal Salman

Date: / / 2020

Signature:

Dedication

I dedicate this work to ALLAH almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this the thesis. I also dedicate this work to my parents, brothers, sisters, friends and professors who have encouraged me all the way and whose encouragement have made sure that I give it all it takes to finish that which I have started. Thank you. My love for you all can never be quantified. ALLAH bless you.

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