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بسم اللّه الرحمن الرحيم

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قسم التوثيق الإلكتروني

Safaa Mahmoud

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

LATERAL TORSIONAL BUCKLING OF STEEL DELTA FLANGE GIRDERS

By

Randa Atef Hassan Ahmed Ismail

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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Thesis Title:

Lateral Torsional Buckling of Steel Delta Flange Girders

Key Words:

Lateral torsional buckling, delta stiffeners, finite element, non-linear, delta flange girders.

Summary:

This research is mainly concerned with the effect of delta stiffeners on the lateral torsional buckling (LTB) capacity of I-sections by performing non-linear buckling analysis using finite element modeling on ordinary I-beams and on delta flange girders; after verifying the modeling techniques with previous tests. The effect of different parameters such as: the width of the flange included between the delta stiffeners with respect to the total width of the flange, the height of the web included between the delta stiffeners and the plate flange as well as the thickness of the delta stiffeners is taken into consideration to determine the optimum configurations for increasing the LTB capacity of the sections. In addition to that, the provisions explained by different codes are compared to the results from the finite element modelling to determine the reliability of these codes in calculating the LTB capacity of delta flange girders.

Disclaimer

I hereby declare that this thesis in 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: Randa Atef Hassan Ahmed Ismail **Date:** / /2022

Signature:

Dedication

This thesis is dedicated to my beloved father's soul. He has always been there for me; encouraging, motivating and guiding me through every aspect of my life. He was and will always remain my role model, main supporter and best friend and without him I would have achieved nothing. All I ever worked for was to make him proud.

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