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

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HANAA ALY

Ain Shams University
Faculty of Engineering
Department of Structural Engineering

Stability of Shell Roof Structures under Different Load Types

A THESIS
Submitted in Partial Fulfillment for the Requirements of the Degree of

MASTER OF SCIENCE IN CIVIL ENGINEERING (STRUCTURAL)

Submitted by

Mahmoud Abo Ouf Alashary Abd Elrahman

Bachelor of Science in Civil Engineering
(Structural Engineering)
Faculty of Engineering, Future University in Egypt, 2014

Supervised by

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Cairo, 2021

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STATEMENT

This dissertation is submitted to Ain Shams University for the degree of Doctor of Philosophy in Civil Engineering (Structural Engineering).

The work included in this thesis was carried out by the author in the Department of Structural Engineering, Faculty of Engineering, Ain Shams University, Cairo, Egypt.

No part of this thesis has been submitted for a degree or qualification at any other university or institution.

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Date: **27 / 2 / 2021**

DEDICATION

Especially dedicated

To

Our Holy God

Who guide and never leave me in making this research

My Parents (Father and Mother)

Who will remain a great source of inspiration, support and always encourage me to believe in myself. Without them, i will not be able to succeed in my work

My Dear Brothers and Sisters

For giving me strength to overcome pressure while doing this thesis

To all of you who believed that I can finish the study despite of all the struggles, depression, and stress I experienced in the making of this thesis, I dedicate this work

Mahmoud Aboouf

Feb 2021

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ABSTRACT

Shells are important components of many industrial complexes. Performance of shells due to the extreme loading conditions shows that buckling is the major failure mode in such components. Shells have several applications in engineering structures and most particularly in civil engineering, and mechanical engineering, architecture, aerospace and marine industries.

Although Shells are important components of many industrial complexes, and they are becoming more prominent these days, many researches are required to buckling in shells. The best way to cover this point is the parametric study on stability of shell roof structures under different load types. There are different methods used in these decades the proposed method is not covered yet. During the past decades, several researches have been conducted on the stability of shell roof structures under different load types.

The main purpose of this study is to propose a methodology that the stability of shell roof Structures under different load types. The data used in this research was collected according to theoretical values, model geometry, different loads, and buckling of shell. The models use the finite element method to give recommendations or guidelines to study the stability of shell roof structures under different load types.

A compare between results of analytical model by ANSYS and collector models are used to validate the proposed models. The contribution of this study is to present a reveal that the different load types on shell roof structures can play a noticeable role in creating stress concentration and effect destructively the stability of structures.

Keywords: *Analytical Model; Finite Element Model; Thin-walled shells; Buckling; Parametric study; Different loads*

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