بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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Cairo University

DESIGN PROCEDURE OF STAY CABLES FOR DIFFERENT BRIDGE CONFIGURATIONS

By

Mostafa Elsayed Elrefaay Sorror

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 A. Mourad

Professor of Steel Structures and Bridges
Structural Engineering Department
Faculty of Engineering, Cairo University

Dr. Hazem H. Elanwar

Assistant Professor
Structural Engineering Department
Faculty of Engineering, Cairo University

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Approved by the Examining Committee

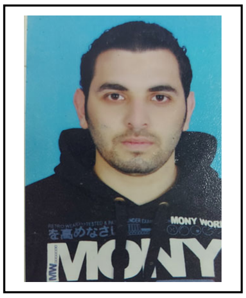
Prof. Dr. Sherif A. Mourad Thesis Main Advisor

Prof. Dr. Walid Abdel Latif Attia Internal Examiner

Prof. Dr. Mohamed Nour Eldin Fayed External Examiner
Professor of Structural Engineering, Faculty of Engineering, Ain Shams University

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2021

Engineer's Name: Mostafa Elsayed Elrefaay Sorror
Date of Birth: 27/07/1989
Nationality: Egyptian
E-mail: Mostafarefaay53@gmail.com
Phone: 01092551601
Address: 8 zen-elabden street, al-khalafawy, Cairo, Egypt



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Degree: Master of Science
Department: Structural Engineering

Supervisors:

Prof. Dr. Sherif A. Mourad
Dr. Hazem H. El-Anwar

Examiners:

Prof. Dr. Sherif A. Mourad (Thesis Main Advisor)
Prof. Dr. Walid Abdel Latif Attia (Internal Examiner)
Mohamed Nour Eldin Fayed (External Examiner)
Professor of Structural Engineering, Faculty of Engineering,
Ain Shams University

Title of Thesis:

Design procedure of stay cables for different bridge configurations.

Key Words:
Cable-Stayed Bridge, CSI Finite Element, Cables arrangements,
Post-Tensioning Cable Forces, Optimization.

Summary:

Cable stayed bridges are considered one of the preferred structural systems used for bridges that covers large spans due to their economical and aesthetic values. In this system, the bridge deck is supported by cables that are subjected to pre-tensioning force and hence, it reduces the free span of the bridge deck. The optimum post-tensioning cable forces design is governed by several factors including the bridge span, the bridge type, and the pylon height. In this study the design procedure of cable stayed bridges using the analysis program CSI Bridge is illustrated. The procedure also includes the staged construction analysis process, since large deflections occur in bridge deck at the cantilever segments during construction. The proposed analysis procedure is verified against the design values of the existing Kigamboni cable stayed bridge located in Tanzania. Accordingly, a parametric study that consists of 36 finite element models is carried out to investigate the optimum post-tensioning cable forces for different arrangements with variation in spans and height of pylon.

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: Mostafa Elsayed Elrefaay Sorror Date: / / 2021

Signature:

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Mostafa Elsayed Elrefaay Sorror

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