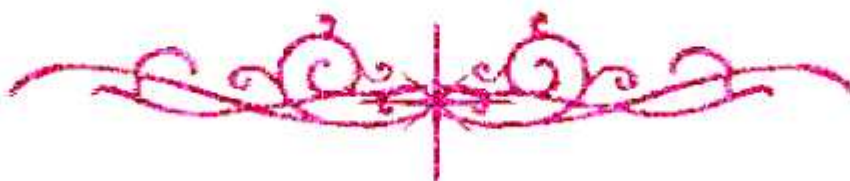


بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



جامعة عين شمس

التوثيق الإلكتروني والميكرو فيلم

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Cairo University

DESIGN PROCEDURE OF STAY CABLES FOR DIFFERENT BRIDGE CONFIGURATIONS

By

Mostafa Elsayed Elrefaay Sorrow

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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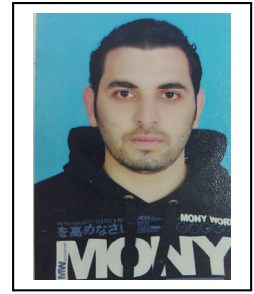
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Title of Thesis:

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 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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Date: / / 2021

Signature:

Acknowledgments

First of all, the great gratitude should be given to **ALLAH** who has guided me to complete this work .

I would like to express my most sincere gratitude and appreciation to my advisor, **Prof. Dr. Sherif A. Mourad** and **Dr. Hazem H. ElAnwar**, for their guidance, encouragement, and patience throughout the completion my thesis work.

Also, I would like to thank the Arab Consulting Engineers Moharram-Bakhoum "ACE" for giving me the required data, stay cable forces to accomplish this study, I would like to thank **Dr. Abd EL-Meguied Khafagi** and **Eng. Mostafa Mohy**, the heads of bridges department at "ACE" for their guidance and help

Mostafa Elsayed Elrefaay Sorrow

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