بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

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

MONA MAGHRABY

COST BENEFITS ANALYSIS FOR ROCK-SIDE SLOPE FAILURE PREVENTION CONSIDERING RELIABILITY BASED DESIGN

By

Haitham Mohamed Adel Abul-Hakam Sorour

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for Degree of
DOCTOR OF PHILOSOPHY
in
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FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:
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Key Words:
Rock, Reliability, Slope, Cost, Optimization

Summary:
This thesis examines the economic benefits of rockslide prevention measures at Gebel Mokattam. A frequency ratio index (FRI) was achieved, by a simple probabilistic model, based on the rockslide-related geological and climate factors (e.g. slope, aspect, curvature and precipitation), results showed that the slope was the most hazardous rockslide factor controlling the rock failure. As a result the supporting of the rock side slope was done by using rock bolts. After obtaining the hazard places subjected to the rockslide, the optimal total cost that meets the optimal reliability index must be calculated. So it is necessary to determine the most critical parameters to reach optimal cost; the most critical parameters were shortlisted into two main parameters; uniaxial compressive strength (UCS) and geological strength index (GSI). Considering such critical parameters, in addition to analyzing their different nine scenarios; leading to reach the optimal total cost that meets the optimal reliability index.

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: Haitham Mohamed Adel Abul-Hakam Sorour Date: --/-- /2021

Signature:

Dedication

To whom I owe my life

To my Religion

To my Country

To my great Family

To my great Father God bless his soul

To my great Mother

To my great wife Ellen

To Alie-Eldien & Youssef

Without you all my life is meaningless

Acknowledgment

"In The Name of Allah the Most Gracious, the Most Merciful"

All praises and thanks to almighty, Allah, lord of the world, sustainer of the universe, and ruler of the day of resurrection, who provided me with all means of support, guidance, patience and ability to complete this thesis.

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