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
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PARAMETRIC OPTIMIZATION OF DAYLIGHTING PERFORMANCE FOR SKYLIGHT DESIGN CONFIGURATIONS IN SHOPPING MALLS: A CASE STUDY

By

Eng. Wessam Mohamed Salah El-Din Talat El-Abd

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
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in
Architectural Engineering

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Title of Thesis:

Parametric Optimization of Daylighting performance for Skylight Design Configurations in Shopping Malls: A Case Study

Key Words:
natural lighting; Commercial buildings; Skylight; opening ratios; energy consumption

Summary:
In Egypt and the Middle East, there is an obvious tendency of establishing new shopping malls that provide collective facilities. This research aims to provide a methodology for multi-criteria multi-stage optimization for skylight designs. A case study for a shopping mall in Cairo is selected where different skylight design configurations are examined. Skylight parametric variations include different opening ratios, visual transmittance, shapes and heights values. Daylighting performance is tested in regards with daylit area coverage, potential for glare and accompanied energy consumption used for artificial lighting. A parametric simulation for over 370 different cases are conducted. Optimum solutions have been identified and compared to the current base case. These results shows that early considerations in skylight and interior design could achieve more than 50% improvements in daylighting. This research sets the outline for an effective methodology to optimize skylight design based on multi-objectives

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: Date: / /

Signature:

Dedication

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