

Dedication

To My Dear Mother Spirit...

To My Great Father...

To Dr. Yousif Ali Yousif...

To My Small Family

I dedicate this research

The researcher

بسم الله الرحمن الرحيم
Acknowledgment

Praise is to Allah, the Lord of the world, and peace is upon the Master of apostles, his family and companions. All thanks to Allah, at both beginning and end for enabling the researcher to complete his research to see the light.

In particular, I would like to thank Dr. Yousif Ali Yousif, the supervisor, from whom I have had generous scientific help and advice in preparing this research, special thanks to him as his office and home was being opened, saying, "Welcome" at any time. Thanks for his unlimited efforts, patience, good humor and expertise whilst the research in was being planned, written, discussed and edited.

I also want to express my deep gratitude to Dr. Moustafa Abd-Albagi, the head of the Master program in department of Architecture.

My sincere gratitude to Eng. Moutaz Abbas the head officer of safety and fire strategy department in the Sudan Civil Defense Authority. Also I send my thank, to Eng. Hosham Hassan who kindly made the facilities of NTC tour project available to complete this research.

I would like to thank the family of University of Khartoum and University Sudan libraries.

I send my thanks to the Sudan University of Science and technology for giving me this opportunity to undertake the master program in building services.

The researcher

Abstract

The general objective of this research is to study and evaluate the fire protection systems used in the National Telecom Corporation (N.T.C) Tower in Khartoum town.

The specific objectives include the study of different systems used in the N.T.C building for fire protection and the building design and to compare them with the National Standards. Also the research aims to recommend suitable solutions needed and prepare a modular document to be applied by designers for similar buildings in Sudan.

The methodology followed to achieve this research includes the information taken from the specific references, experts (National fire Protection Association NFPA and British standard BS), specialized companies in the field, site visits and the civil defense authority, also the careful study of the project and making comparison between the project safety requirement applied and the International Codes such as the National fire Protection Association NFPA (which is approved by civil defense in Sudan) and with the British standards .

The case study results include that the N.T.C. building is designed architecturally and structurally according to the NFPA code. Also the fire alarm and protection systems of the N.T.C. building, and the public addressable system, access control and evacuation plan are well designed and satisfied standards according to the NFPA code standards.

The study recommends that the building should be provided with clear signs to improve the access control in the last floor to

guide people for the escape landing area. Also a stair case in suitable place with short distance after last staircase flight . Also the stair-cases hand rails should be increased in height for more safety, or fixing horizontal net (in the U shape staircase) for safety because the crowdnness of people in case of incident will be dangerous. Also it is recommended that fire design must be considered as part of the overall building design of the structure and not an item to be considered at the end. And the insurance companies should provide their services for fire incidents after achieving the fire safety requirements by civil defense authority certification , in addition to training of personnel in this field ,.. etc.

ملخص الدراسة

الهدف العام لهذا البحث هو دراسة وتقويم أنظمة الحماية من الحريق ببرج الهيئة العامة للاتصالات بمدينة الخرطوم.

تشمل الأهداف المحددة دراسة النظم المستخدمة في مكافحة الحريق بالمبني وتصميمها ومقارنة ذلك مع النظم والمعايير العالمية . كذلك يهدف البحث إلى تقديم التوصيات المناسبة لحماية المباني من الحريق ، إضافة إلى تقديم مرجع نموذجي يستخدمه المصممون للأبنية المشابهة بالسودان.

طريقة إجراء البحث المتبعة تضمنت المعلومات المستخلصة من المراجع المتخصصة والخبرات والكودات العالمية والشركات المتخصصة والزيارات الميدانية إضافة للهيئة العامة للدفاع المدني ومن ثم دراسة مبني الهيئة العامة للاتصالات من خلال الإطلاع المباشر بالموقع ودراسة الخطر ثم تحليل ومقارنة الأنظمة المنفذة مع النظم والمعايير العالمية مثل معايير الجمعية العامة لمكافحة الحريق (وهي مجازة بواسطة سلطة الدفاع المدني بالسودان) ومع الكود البريطاني.

خرجت دراسة هذه الحالة بنتائج أهمها أن مبني الهيئة العامة للاتصالات مطابق للمواصفات والمعايير العالمية حسب معايير الجمعية العامة لمكافحة الحريق وذلك من حيث التصميم المعماري وإنشائي، وأنظمة الإنذار والمكافحة وأنظمة التنبيه المسموعة والمرئية للتحكم في إخلاء الموقع في حالة الحريق.

أوصت الدراسة بعمل علامات لتوجيه الأفراد للخروج عبر سطح المبني وعمل سلم حديدي مؤدي إلى أعلى سطح للهروب بواسطة الطائرة العمودية وضرورة زيادة حماية السلم إما بزيادة ارتفاع سياج السلم أو عمل شبكة حماية أفقية (لبئر السلم شكل U نسبة لخطورة الإزدحام وقت الحوادث.

كما تمت التوصيات بضرورة الاهتمام بتصميم المباني ضد الحريق منذ البداية كجزء من التصميم العام وعدم تركه ضمن آخر الأعمال التي يتم التفكير فيها. ، وكذلك ضرورة أن تقوم شركات التأمين على المباني خدماتها بعد استيفاء شروط السلامة من الحريق بواسطة الدفاع المدني إلى جانب ضرورة الاهتمام بتدريب الكوادر الهندسية والفنية المتعلقة بهذا الأمر ،... الخ.

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Abbreviations

B.R.E. : BUILDING RESEARCH ESTABLISHMENT

B.S. : BRITISH STANDARDS

N.F.P.A. : NATIONAL FIRE PROTECTION ASSOCIATION

N.T.C.T : NATIONAL TELECOM CORPORATION TOWER

S.C.D.A : SUDANESE CIVIL DIFENSE AUTHORITY

UK : UNITED KINGDOM