

BUILDING SAFETY ARCHITECTURE

BUILDING SAFETY ARCHITECTURE

FRANK G. BERCHA



FRANK G. BERCHA

THE AUTHOR



Following undergraduate studies in physics, architecture, engineering, and art, and a bachelor degree, Frank worked in architectural and engineering design and field operations for several years. He moved on to

graduate studies in structural engineering, culminating in a PhD in solid mechanics. He then worked extensively in risk and safety engineering and design of structures to resist extreme environments such as Arctic offshore ice and weather. In 2012 he completed a DSc in architecture including a thesis on building safety architecture, which forms part of the basis for this book. His professional practice over the last 40 years includes specialization in the design and analysis of complex structures and their risk and reliability under a range of conditions including natural and manmade threats in urban, rural, Arctic, temperate, onshore or offshore environments. He has worked as a consultant, designer, university lecturer, and expert witness with the majority of his work directed at completing projects and solving associated complex risk and reliability problems. Applications include residential and commercial buildings, land use planning, onshore and offshore oil and gas operations, rail, road, air, and pipeline transportation, and associated safety and reliability. He serves on numerous national and international organizations such as the ISO, testified before numerous regulatory and legal tribunals, and authored hundreds of technical publications in probabilistic design, safety and reliability, and offshore and onshore emergency procedures.



THIS BOOK?

This book is intended to assist architects, engineers, and contractors to better understand, design, and construct buildings and other structures to protect occupants from natural and manmade threats. This is done, in the context of building safety, a review of both historical and current provisions, an examination of human behaviour in life threatening conditions, details of contemporary building emergency design provisions, documentation of current codes and design practices, and presentation of quantitative methods for evaluating the risk and reliability of different combinations of emergencies, building designs, and occupant characteristics. The subject matter is relatively unique because it is based on a meld of architectural and structural design and reliability engineering experience of the author acquired through over 50 years of practice.

CONTENTS

- Introduction
- Natural cause threats
- Manmade threats
- Human performance in life threatening emergencies
- Pre-modern building occupant protection and expression provisions
- Modern building emergency egress provisions
- Modern building emergency occupant protection provisions
- North American codes and practices for building fire protection
- Worldwide codes and practices for building occupant protection in a warming world
- Building design optimization for manmade and natural emergencies
- Existing emergencies
- Inbuilding retrofit optimization for manmade and natural cause door air quality safety issues
- Building safety quantitative risk assessment



ISBN 0-9767736-6-X



5 1050

SAMPLE

9 780976 773665