THE NEW ERA OF DEVELOPING FIRE STRATEGIES IN THE UAE

SAFETY DESIGN IN BUILDINGS

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INTRODUCTION

• FOUNDATION OF CODES
  – FACTORY MUTUALS
  – UNDERWRITERS LABORATORIES
  – NATIONAL FIRE PROTECTION ASSOCIATION
APPLICABLE CODES

• 2000-2011:
  – NFPA 101, LIFE SAFETY CODE
  – ASSORTMENT OF STANDARDS

• CURRENT:
  – UAE FIRE AND LIFE SAFETY CODE OF PRACTICE (AUGUST 2011)
  – REFERENCED STANDARDS (LATEST EDITIONS)
ABU DHABI CIVIL DEFENCE APPROVAL

• STANDARD PROJECTS
  – LOW-RISE
  – COMMERCIAL/RESIDENTIAL
  – SUBMITTAL VIA MUNICIPALITY

• SPECIAL PROJECTS
  – HIGH-RISE
  – INDUSTRIAL
  – SUBMITTAL VIA MUNICIPALITY
  – HOUSE OF EXPERTISE
UAE CODE CONTENTS

• CH. IV: APPLICABLE CODES
• CH. XIII: OCCUPANCY CLASSIFICATION
• CH. 1: FIRE RATED CONSTRUCTION
• CH. 2: SITE FIRE PROTECTION
• CH. 3: MEANS OF EGRESS
• CH. 7 & 8: FIRE ALARM SYSTEMS
• CH. 9: FIRE SUPPRESSION SYSTEMS
• CH. 10: SMOKE CONTROL SYSTEMS
CH. 1: FIRE RATED CONSTRUCTION

• TYPES A, B, C, AND D
  - 1 TO 4 HOUR RATING
  - NONCOMBUSTIBLE

• COMPARTMENTATION
  - FLOORS
  - CORRIDORS
  - SHAFTS
  - LIFT LOBBIES
  - SPECIAL ROOMS
CH. 1: FIRE RATED CONSTRUCTION
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A. American Society For Testing and Materials (ASTM):

3. ASTM E 176: Terminology of Fire Standards
4. ASTM E 814: Test Method for Fire Tests of Through-Penetration Firestops
8. ASTM E 2174: Standard Practice for On-Site Inspection of Installed Fire Stops

B. UNDERWRITERS LABORATORIES (UL):

1. UL 263: Fire Tests of Building Construction and Materials
2. UL 723: Test for Surface Burning Characteristics of Building Materials
3. UL 1479: Fire Tests of Through-Penetration Fire Stops
CH. 2: SITE FIRE PROTECTION

- PRIVATE FIRE HYDRANT SYSTEM
  - DEDICATED
  - SPACING AT 120 m
  - 1,000 GPM AT 7 BAR FOR 120 MINUTES
CH. 2: SITE FIRE PROTECTION

• CIVIL DEFENCE VEHICLE ACCESS
  – PERIMETER BASED ON AREA
  – 2 TO 10 m FROM EXTERIOR WALL
  – 41 TON FIRE APPLIANCE

• BUILDING ACCESS
  – FIRE LIFT (1,950 mm)
  – LIFT LOBBY (5 TO 20 m²)
  – ACCESS TO EXIT STAIR
17. Further References

17.1. The following International Codes and Standards were referred, studied and consulted for this chapter. Further details where applicable can be referred to in these Codes and Standards. Also see XV. ACKNOWLEDGEMENT OF INTERNATIONAL CODES AND STANDARDS.

- NFPA 1: Uniform Fire Code
- NFPA 14: Standard for the installation of Standpipe and Hose Systems
- NFPA 24: Standard for the Installation of Private Fire Service Mains and Their Appurtenances
- NFPA 22: Standard for Water Tanks for Private Fire Protection
- NFPA 20: Standard for the Installation of Stationary Pumps for Fire Protection
CH. 3: MEANS OF EGRESS

• TWO EXITS FROM EVERY FLOOR
  – UNLOCKED
  – READILY VISIBLE
  – SWING IN DIRECTION OF EGRESS
  – STAIRS BASED ON ACCUMULATIVE OCCUPANT LOAD

• ASSEMBLY/HIGH-OCCUPANCY
  – FIRE EXIT HARDWARE
  – ADDITIONAL EXITS
CH. 3: MEANS OF EGRESS
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16. Further References

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- NFPA 5000: Building Construction and Safety Code
- IBC: International Building Code
CH. 7 & 8: FIRE ALARM SYSTEMS

- FIRE ALARM SYSTEMS
  - REQUIRED THROUGHOUT
  - DETECTION IN SUSPENDED CEILINGS
    - COMBUSTIBLE
    - GREATER THAN 800 m
  - DETECTION FOR FIRE SAFETY FUNCTION
    - ELEVATOR DOORS
    - HELD-OPEN DOORS
    - SMOKE DAMPERS
    - ETC.
CH. 7 & 8: FIRE ALARM SYSTEMS

• VOICE COMMUNICATIONS SYSTEM
  – GREATER THAN 2,800 m² (5,000 m²)
  – GREATER THAN 23 m
  – GREATER THAN 1,000 OCCUPANTS
  – ASSEMBLY, HOTEL, AND HEALTHCARE
41. **Further References**

41.1. The following International Codes and Standards were referred, studied and consulted for this chapter. Further details where applicable can be referred to in these Codes and Standards. Also see XV. ACKNOWLEDGEMENT OF INTERNATIONAL CODES AND STANDARDS.

- NFPA 70: National Electrical Code®
- NFPA 75: Standard for the protection of computer EDP/ Clean Agents.
- NFPA 76: Standard for the fire protection of telecommunication facility.
- FIA COP: Code of Practice for Design, Installation Commissioning & Maintenance of Aspirating Smoke Detector (ASD) Systems
CH. 9: FIRE SUPPRESSION SYSTEMS

• SYSTEM TYPES
  – SPRINKLER SYSTEM
  – STANDPIPE/HOSE REEL SYSTEM
  – SPECIAL SUPPRESSION SYSTEM

• SYSTEM APPLICATION
  – OCCUPANCY
  – HEIGHT
  – AREA
CH. 9: FIRE SUPPRESSION SYSTEMS

• SPRINKLER SYSTEM
  – CONCEALED SPACES
    • EXCEPTION FOR FIRE COMPARTMENTATION
    • MINIMUM 400 mm

• STANDPIPE/HOSE REELS
  – STAIRS
  – FIRE FIGHTING LOBBY
  – 30 m SPACING
CH. 9: FIRE SUPPRESSION SYSTEMS

• ABU DHABI EXCEPTIONS
  – FIRE PUMPS
    • GROUND FLOOR
    • FIRST BASEMENT WITH DIRECT ACCESS
49. **Further References**

49.1. The following International Codes and Standards were referred, studied and consulted for this chapter. Further details where applicable can be referred to in these Codes and Standards. Also see **XV. ACKNOWLEDGEMENT OF INTERNATIONAL CODES AND STANDARDS**.

- NFPA 11: Standard for Low-, Medium-, and High-Expansion Foam
- NFPA 12: Standard on Carbon Dioxide Extinguishing Systems
- NFPA 13: Standard for the Installation of Sprinkler Systems
- NFPA 13D: Standard for the Installation of Sprinkler Systems in One- and Two- Family Dwellings and Manufactured Homes
- NFPA 13R: Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height
- NFPA 14: Standard for the Installation of Standpipes and Hose Systems
- NFPA 17: Standard for Dry Chemical Extinguishing Systems
- NFPA 17A: Standard for Wet Chemical Extinguishing Systems
- NFPA 20: Standard for the Installation of Stationary Pumps for Fire Protection
- NFPA 22: Standard for Water Tanks for Private Fire Protection
- NFPA 2001: Standard on Clean Agent Fire Extinguishing Systems
CH. 10: SMOKE CONTROL SYSTEMS

- EXIT STAIR PRESSURIZATION
- CORRIDOR EXHAUST
- ATRIUM EXHAUST
- HAZARDOUS ROOM VENTILATION
- CRITICAL EQUIPMENT ROOM VENTILATION
- KITCHEN HOOD EXHAUST
CH. 10: SMOKE CONTROL SYSTEMS

• PRESSURIZATION SYSTEMS
  – SMOKE BARRIERS
  – OPENING PROTECTION

• VENTILATION SYSTEMS
  – DAMPER OPERATION
  – SMOKE DISCHARGE
CH. 10: SMOKE CONTROL SYSTEMS

• ABU DHABI EXCEPTIONS
  – JET FANS
    • NOT PERMITTED
CH. 10: SMOKE CONTROL SYSTEMS
45. Further References

45.1 The following International Codes and Standards were referred, studied and consulted for this chapter. Further details where applicable can be referred to in these Codes and Standards. Also see XV. ACKNOWLEDGEMENT OF INTERNATIONAL CODES AND STANDARDS.

- NFPA 90A: Standard for the Installation of Air-Conditioning and Ventilating Systems
- NFPA 90B: Standard for the Installation of Warm Air Heating and Air-Conditioning Systems
- NFPA 92: Standard for Smoke Management Systems
- NFPA 92A: Standard for Smoke-Control Systems Utilizing Barriers and Pressure Differences
- NFPA 92B: Standard for Smoke Management Systems in Malls, Atria, and Large Spaces
- EN 1366-2: Fire resistance tests for service installations - Part 2: Fire dampers
- EN 12101-3: Smoke and heat control systems – Part 3: specification for powered smoke and heat exhaust ventilators
- EN 12101-4: Smoke and heat control systems - Part 4: Installed SHEV systems for smoke and heat ventilation
- EN 12101-8: Smoke and Heat control systems- Part 8: Smoke control dampers
- EN 15650: Ventilation for buildings – Fire dampers
- EN 13501-3: Fire classification of construction products and building elements – Part 3: Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers
- EN 13501-4: Fire classification of construction products and buildings elements – Part 4: Classification using data from fire resistance tests on components of smoke control systems.
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