UNIVERSITY OF
MARYLAND
Department of Fire Protection Engineering

Code-**B**ased **A**pproach
to **F**ire **S**afety **D**esign

A. JAMES CLARK SCHOOL *of* ENGINEERING • UNIVERSITY *of* MARYLAND
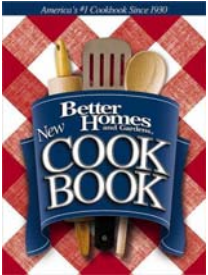

Code Approach

- Code overview
  - What are Codes?
  - How are Codes developed?
- Applications
- Examples

What are codes?

- Establishes criteria for construction
- Prescriptive historically
- Broad classification of buildings

- Performance-based recently

How are codes developed?

- Group of People
- Varied interests
  - Enforcers
  - Special experts
  - Manufacturer
  - User
- Anyone input
- Acceptance by vote
- Participation in vote may be limited

Types of Codes

- Life Safety
- Building Design
- System Design
  - Guidance
- Prescriptive
  - Specific applications

Code and Standard Guidance

- NFPA Codes:
  - NFPA 101 – *Life Safety Code*
  - NFPA 13 – *Standard for the Installation of Sprinkler Systems*
  - NFPA 72 – *National Fire Alarm and Signaling Code*
- ICC Codes:
  - International Building Code (IBC)

Code Guidance

- Goal: To provide an environment for occupants that is reasonably safe from fire.
  - Occupants not intimate
  - Survivability for intimate

Code Guidance

- Applicability
  - Base code for a jurisdiction
  - Jurisdictional amendments

Code Approach

- Determine use
- Determine number of people
- Determine hazard
- Apply criteria

Code Guidance

- Occupancy Classifications

Code Guidance

- General Building Construction Types
  - Heights and Areas
  - Occupancy group

Code Guidance

- Means of Egress
  - Number
  - Capacity
  - Arrangement
  - Discharge

Code Guidance

- Fire Protection Features

Code Guidance

- Building Service and Fire Protection Equipment
  - Utilities
  - HVAC
  - Smoke Control
  - Detection and Alarm
  - Sprinkler Systems

Code Guidance

- Fire Protection Systems
  - Gives requirements based on occupancy use and other special conditions

Code Guidance

- Special Structures and High-Rise Buildings

Code Guidance

- Special Requirements Based on Use and Occupancy

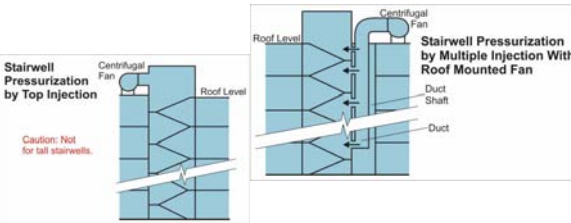## Code Guidance

- Interior Finishes

Example Code Requirements

- Automatic sprinkler system and secondary water supply
- Automatic smoke detection
- Emergency voice/alarm
- Standby and emergency power
- Smokeproof exit enclosures
- Fire command center

Example Code Requirements

- Smokeproof exit enclosures
  - Open exterior balcony or ventilated vestibule
  - Or, pressurize stairwells

Other Codes

- International
- DOD: *UFC 3-600-01 Design: Fire Protection Engineering for Facilities*
- GSA: *Facilities Standards for the Public Buildings Service, P100*
- VA: *Design Manual: Fire Protection*

Code Approach Summary

- Code provide guidance based on use of building
- Application to almost all buildings everywhere
- Codes and standards
  – Life safety and property protection
  – Exist to regulate and guide