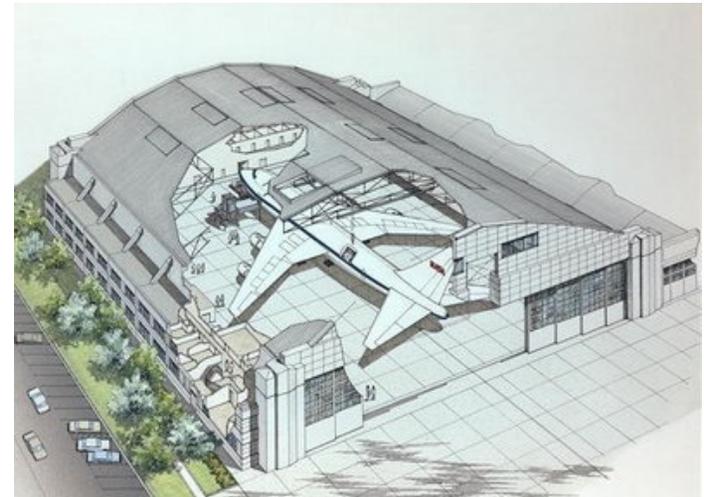
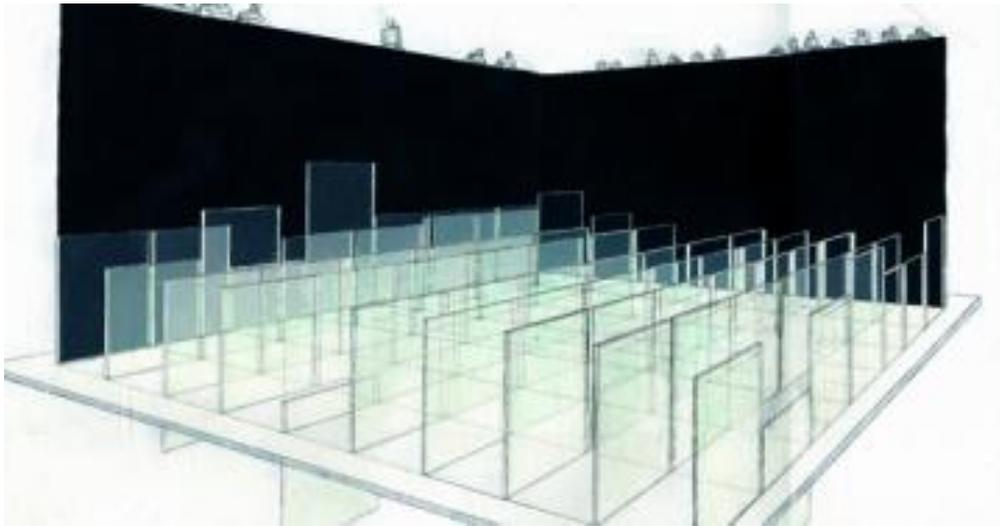


# IBC Chapter 4

- **Special Detailed Requirements Based on Use and Occupancy**



# **Section 401 Scope**

- **In addition to the occupancy and construction requirements in this code, the provisions of this chapter apply to the special uses and occupancies described herein.**

# Section 402 Covered Mall Buildings

- Not to exceed three floor levels and meet the provisions of section 402



# **Section 402.2 Definitions**

- **Anchor Building**
- **Covered Mall Building**
- **Gross Leasable Area**
- **Mall**

# Section 402.3 Lease Plan

- Owner shall provide both building and fire official lease plan showing the location of each occupancy and its exits after certificate of occupancy issue.



# **Section 402.4 Means of Egress**

- **Each tenant shall be provided egress in accordance with this code. Where conflict...this section shall apply.**

# **Section 402.4.1 Determination of Occupant Load**

- **402.4.1.1 Occupant Load Formula**
- **$OLF = (0.00007)(GLA) + 25$**
- **Occupant Load Factor = square feet per person**

# **Section 402.4.1 Determination of Occupant Load**

- **402.4.1.2 OLF Range**
- **Not required to be less than 30 and shall not exceed 50**
- **402.4.1.3 Anchor Buildings – Not included in mall occupant load.**
- **402.4.1.4 Food Courts – Occupant load based on s. 1004**

# Section 402.4.2 Number of Means of Egress



- **Travel distance >75 feet**
- **Occupant Load 50 or more**
- **Not less than two means of egress**

# Section 402.4.3 Arrangements of Means of Egress

- **402.4.3.1 Anchor building Means of Egress shall be independent.**
- **Malls terminating at an anchor building shall be considered dead-end.**



# Section 402.4.4 Distance to Exits



- **200'** from any point to an exit or entrance to mall.
- **200'** from any point within a mall to an exit.

# **Section 402.4.5 Access to Exits**

- **Travel in either direction from any point.**
- **Minimum 66 inch width.**
- **402.4.5.1 Exit passageways from tenant spaces protected including 1-hour doors.**

# Section 402.5 Mall Width



- **Not in accordance with 1005.1...**
- **402.5.1 Minimum Width of mall shall be 20 feet with minimum 10 foot clear exit width.**

# **Section 402.6 Types of Construction**

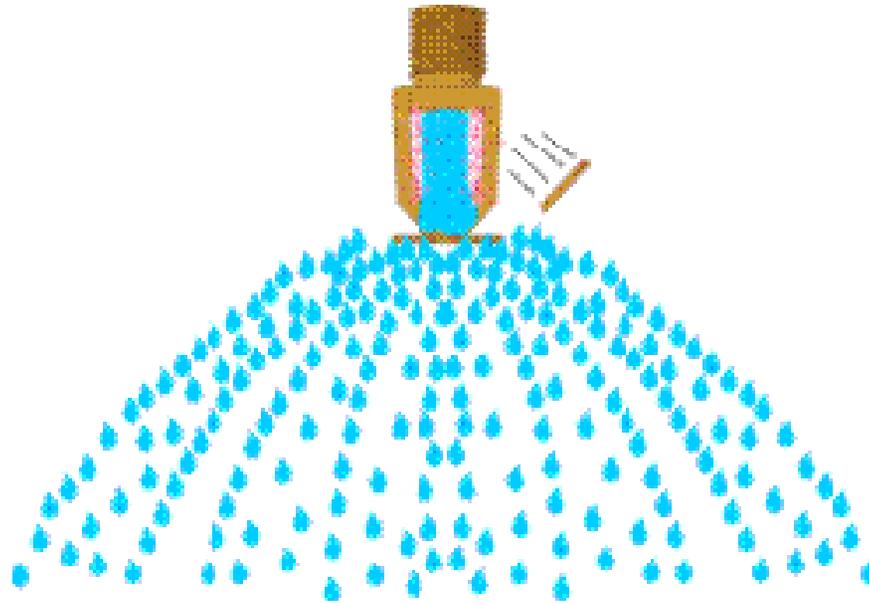
- **Construction types I, II, III and IV**
- **Unlimited –**
- **60 foot open space**
- **Anchor buildings and parking garages**
  - **3 story maximum**

# **Section 402.7 Fire resistance-rated separation**

- **Not required between tenant space and mall of food court.**
- **Garages – Separate buildings – 2 hour**
- **Tenants separated by fire partitions**
- **Anchor buildings separated from mall by fire walls, s. 705**

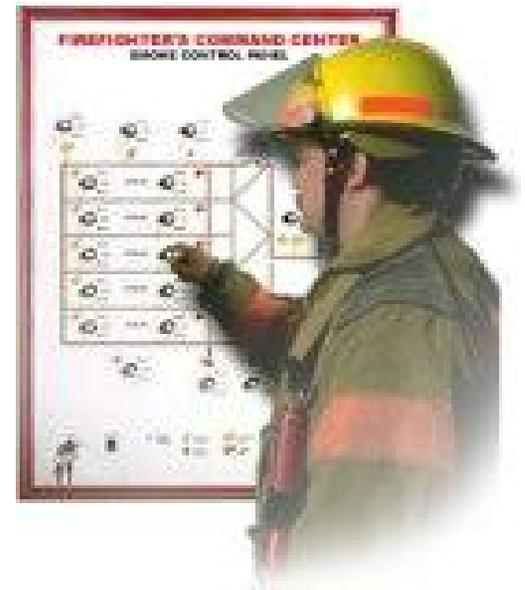
# Section 402.8 Automatic Sprinkler System

- Equipped throughout with an automatic system in accordance with s. 903.3.1.1



# Section 402.9 Smoke Control

- Smoke control shall be provided where required for atriums, s. 404



# **Section 402.10 Kiosks**

- **Non-combustible**
- **Fire suppression and detection**
- **Minimum separation of 20 feet**
- **Maximum area of 300 square feet**

# **Section 402.11 Children's Playground Structures**

- **Exceeding 10 feet in height  
and 150 square feet.**
- **Materials**
- **Fire Protection**
- **Separation**
- **Area Limits**

# **Section 402.12 Security Grilles and Doors**

- **Fully open when occupied**
- **Openable from within**
- **Not more than half of required exits**

# Section 402.13 Standby Power

- Malls exceeding 50,000 square feet.
- Voice/alarm communication system



# **Section 402.14 Emergency voice/alarm systems**

- **Malls exceeding 50,000 square feet.**
- **In accordance with 907.2.12.2**



# **Section 402.15 Plastic Signs**

- **Area – 20% of wall**
- **Height and width**
- **Location**
- **Materials**

# **Section 402.16 FD access to equipment**

- **Air-Conditioning Systems**
- **Automatic Fire Extinguishing**
- **Detection**
- **Suppression**

# **Section 403 High-Rise Buildings**

- **Occupied floor more than 75 feet above the lowest level of fire department vehicle access.**



# Section 403.2 Automatic Sprinkler System

- 903.3.1.1
- 903.3.5.2 Secondary Supply



# **Section 403.3 Reduction in fire-resistance rating**

- **Sprinkler control valves equipped with supervisory initiating devices and water-flow initiating devices for each floor.**

# **Section 403.3.1 Type of Construction**

- **IA to IB – 420 foot maximum height / columns can not be reduced**
- **IB to IIA – except for F1, M and S1**
- **Height and Area of the reduced shall be allowed the same as the original**

# **Section 403.3.2 Shaft Enclosure**

- **1- hour Fire-resistance rating...Other than exit enclosures and hoistways**
- **Sprinkler head at top of shaft and alternate floor levels**

# **Section 403.4 Emergency Escape and Rescue**

- **Not required as prescribed by s. 1026**

# Section 403.5 Automatic Fire Detection

- **Smoke detection as prescribed by 907.2.12.1**



# **Section 403.6 Emergency voice/alarm system**

- **Emergency Voice/Alarm as prescribed  
by 907.2.12.2**

# Section 403.7 Fire department communication system

- **Two-way FD Communication system in accordance with 907.2.12.3**

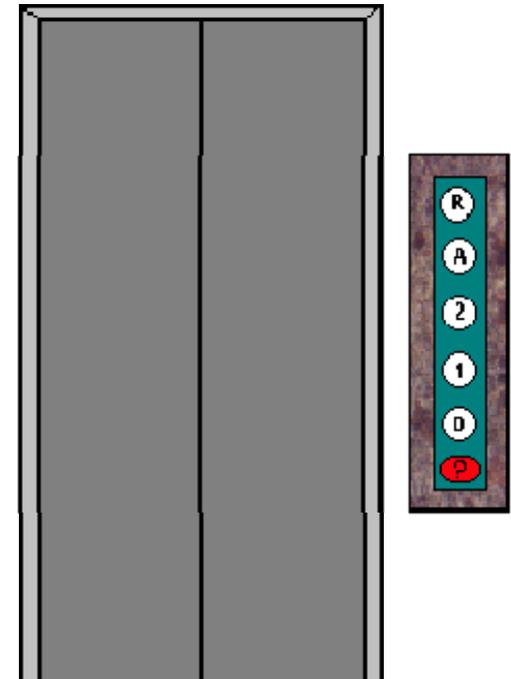


# **Section 403.8 Fire Command**

- **Section 911**

# Section 403.9 Elevators

- IBC Chapter 30



# **Section 403.10 Standby power**

- **Fire Command Center**
- **Fire Pumps**
- **Ventilation and detection – Smokeproof enclosures**
- **Elevators in accordance with s. 1007.4 and 3003**

# **Section 403.11 Emergency power systems**

- **Exit signs and Means of Egress Illumination**
- **Elevator car lighting**
- **Emergency voice/alarm communication**
- **Automatic Fire Detection**
- **Fire Alarms**

# **Section 403.12 Stairway door operation**

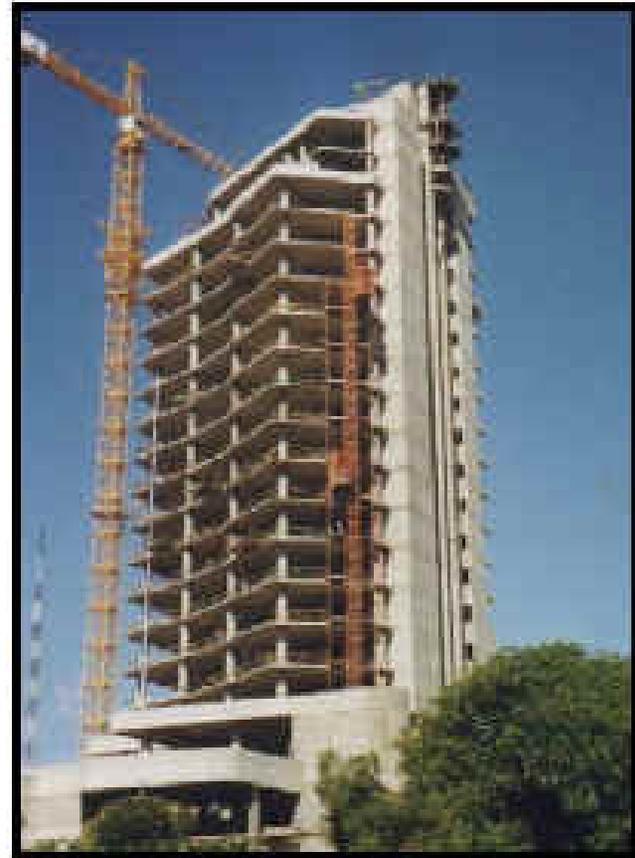
- **Other than exit discharge, permitted to be locked from the stairway side.**
- **Capable of being unlocked simultaneously from fire command center**
- **Two-way communication not less than every fifth floor where locked**

# **Section 403.13 Smokeproof exit enclosure**

- **Every required stairway serving floors more than 75 feet above lowest level of FD access...**
- **909.20**
- **1020.1.7**

# Section 403.14 Seismic Considerations

- Chapter 16



# Section 404 Atriums

- **Other than Group H or exception 5 s. 707.2**



# **Section 404.1.1 Definition**

- **An opening connecting two or more stories other than enclosed stairways, hoistways, escalators, plumbing, electrical, mechanical and not defined as a mall...stories does not include balconies or mezzanines.**

# Section 404.2 Use

- **No uses other than low fire hazard uses unless protected by an automatic sprinkler in accordance with 903.3.1.1.**



# **Section 404.3 Automatic Sprinkler Protection**

- **Entire Building**
- **Exceptions...**
- **2-hour separation**
- **Ceiling is more than 55 feet above the floor**

# **Section 404.4 Smoke Control**

- **Installed in accordance with s. 909**
- **Exception two story atriums**

# Section 404.5 Enclosure of Atriums



- **Separated from adjacent spaces by 1-hour Barriers s. 706 and Horizontal**

# **Section 404.6 Standby Power**

- **Smoke Control Equipment – 909.11**

# **Section 404.7 Interior Finish**

- **Not less than Class B...**

# **Section 404.8 Travel Distance**

- **Where part of the egress system the portion through the atrium shall not exceed 200'.**

# **Section 405 Underground Buildings**

- **Floor level used for human occupancy more than 30 feet below the lowest level of exit discharge.**



# **Section 405.3 Automatic Sprinkler System**

- **Highest level of exit discharge and all levels below...903.3.1.1.**

# **Section 405.4**

## **Compartmentation**

- **More than 60 feet below...minimum of two compartments extending through the highest level of exit discharge.**
- **Constructed as smoke barriers, section 709**
- **Where elevator is provided each compartment shall have direct access / elevator lobbies**

# **Section 405.5 Smoke Control System**

- **Section 909**
- **Activation 907.2.18**

# **Section 405.6 Fire Alarm System**

- **Section 907.2.19**

# Section 405.7 Public Address

- Section 907.2.19.1



# **Section 405.8 Means of Egress**

- **Minimum of two, one exit and one to adjoining compartment**

# **Section 405.9 Standby Power**

- **Smoke control system**
- **Ventilation and Automatic Fire Detection for smoke proof enclosures**
- **Fire Pumps**
- **Elevators in accordance with s. 3003**
- **60 second pick-up time...**

# **Section 405.10 Emergency Power**

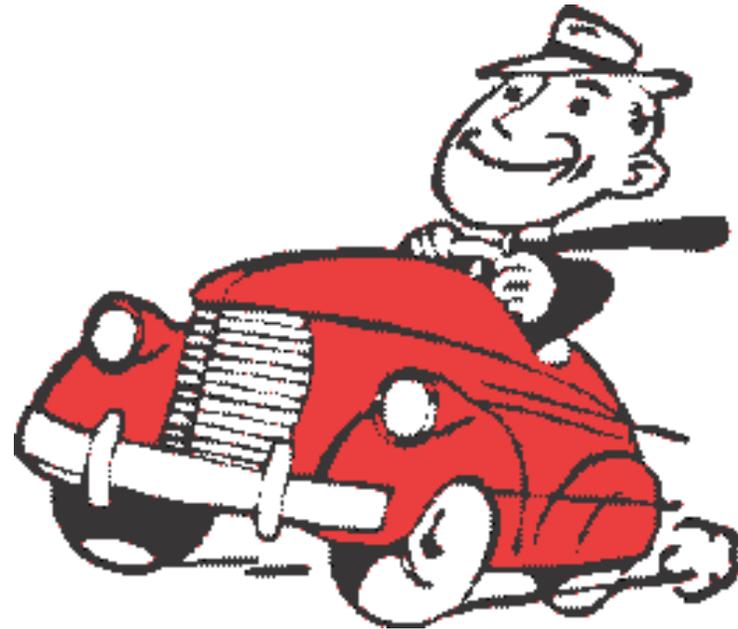
- **Emergency voice/alarm communications system**
- **Fire Alarm system**
- **Automatic Detection system**
- **Elevator car lighting**
- **Means of Egress and Exit sign illumination**

# Section 405.11 Standpipe System

- Section 905



# Section 406 Motor-vehicle Related Occupancies



# Section 406.1 Private Garages and Carports



# **Section 406.1.1 Classification**

- **Group U Classification**
- **Less than 1,000 Square Feet and one story**

# **Section 406.12 Area Increase**

- **Up to 3,000 square feet storage of private or pleasure motor vehicles**
- **Separated in mixed use**
- **Fire separation distance of 5 feet**
- **Fire walls where more than one 3,000 square foot area in the building**

# **Section 406.13 Garages and Carports**

- **Carport open on at least two sides**

# **Section 406.14 Separation**

- **Private garage to the dwelling unit...**
- **1/2 inch gypsum wall**
- **5/8 inch gypsum ceiling**
- **Solid wood or steel or honeycomb steel  
1 3/8 inch doors, self-closing and self  
latching**

# Section 406.2 Parking Garages

- Commercial



# **Section 406.2.1 Classification**

- **Open Parking Garage – 406.3**
- **Enclosed Parking Garage – 406.4**
- **Special Provisions - 509**

# **Section 406.2.2 Clear Height**

- **7 foot clear height in all vehicle and pedestrian areas.**
- **Accessible van stalls in accordance with section 1106.5 / ICC A117.1**

# **Section 406.2.3 Guards**

- **At exterior and interior openings in accordance with section 1012**

# **Section 406.2.4 Vehicle Barriers**

- **Ends of drive and parking lanes where difference is greater than 1 foot.**
- **Design in accordance with section 1607.7.**

# Section 406.2.5 Ramps

- **Vehicle ramps shall not be considered as required exits.**
- **Maximum slope 1 : 15**



# **Section 406.2.6 Floor Surface**

- **Concrete or similar noncombustible and nonabsorbent material.**

# **Section 406.2.7 Mixed Separation**

- **Separated in accordance with section 508.3**

# **Section 406.2.8 Special Hazards**

- **Provide separation from fuel fired appliances / vestibule**

# **Section 406.2.9 Attached to Rooms**

- **Openings from parking garage directly into a room used for sleeping is prohibited.**

# Section 406.3 Open Parking Garages



# **Section 406.32 Definitions**

- **Open Parking Garage...s. 406.3.3.1**  
**Uniformly distributed openings on two or more sides, 20% of the total perimeter wall.**

# **Section 406.3.3 Construction**

- **Type I, II or IV**

# **Section 406.34 Uses**

- **Mixed use permitted...separated, non-separated, covered mall, special occupancy.**

# **Section 406.3.5 Area and Height**

- **Chapter 5 as S2 or Table 406.3.5**

# **Section 406.3.6 Area and Height Increases**

- **Three-fourths perimeter open, 25% and one tier**
- **Entire perimeter open, 50% and one tier**

# **Section 406.3.7 Fire Separation Distance**

- **Table 601 and 602**
- **Openings per Table 602 and section 704**

# **Section 406.3.8 Means of Egress**

- **Chapter 10!**
- **No persons other than attendance 36 inch minimum.**

# **Section 406.39 Standpipes**

- **Chapter 9!**

# **Section 406.3.10 Sprinkler Systems**

- **Chapter 9!**

# **Section 406.3.11 Enclosure of Vertical Openings**

- **Section 406.3.8**

# **Section 406.3.12 Ventilation**

- **Section 406.3.3.1**

# **Section 406.3.13 Prohibitions**

- **Vehicle repair work**
- **Parking of buses, trucks or similar vehicles**
- **Partial or complete closing of required openings**
- **Dispensing of fuel**

# Section 406.4 Enclosed Parking Garages



# **Section 406.4.1 Height and Areas**

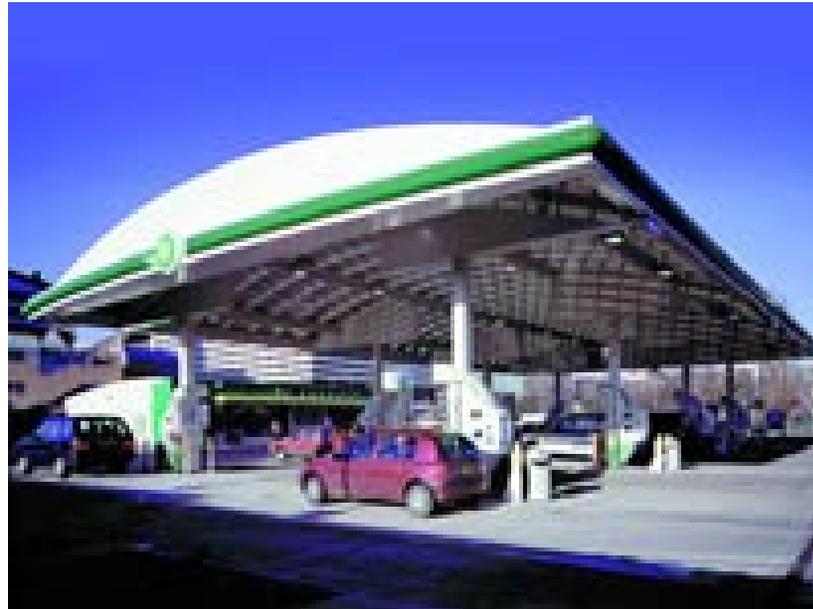
- **Table 503**
- **Modified by sections 504,506 and 507**

# **Section 406.4.2 Ventilation**

- **IMC (Int'l Mechanical Code)**

# Section 406.5 Motor fuel-dispensing facilities

- Canopies

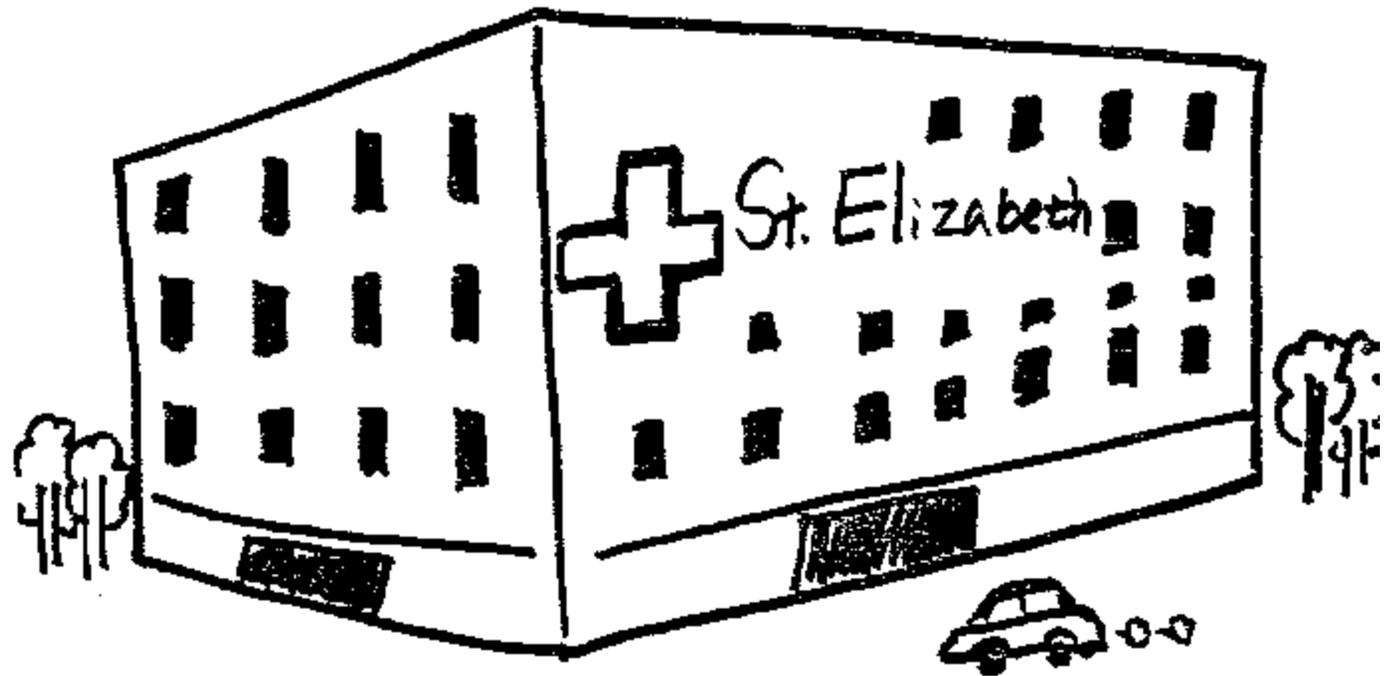


# **Section 406.6 Repair Garages**

- **Mixed uses section 508.3**
- **Ventilation IMC**
- **Floor Surface**
- **Heating Equipment IMC**
- **Gas Detection**

# Section 407 Group I2

- Hospitals and Nursing Homes



# Section 407.2 Corridors

- **Continuous to exits and separated from other areas.**



# **Section 407.2.1 Spaces of Unlimited Area**

- **Not occupied by patient rooms**
- **Fire detection**
- **Same smoke compartment, 907 and Quick Response per 903.3.2**
- **Not to obstruct access to exits**

# **Section 407.2.2 Nurses' Stations**

- **Permitted to be open to corridor**



# **Section 407.2.3 Mental Health Treatment Areas**

- **Not to exceed 1,500 square feet**
- **Supervision by faculty staff**
- **Not to obstruct access to exits**
- **Detection per 907.2**
- **One per smoke compartment**
- **Walls and ceiling constructed as corridor**

# **Section 407.2.4 Gift Shops**

- **Less than 500 square feet**
- **Fully sprinklered**
- **Storage areas protected per 508.2**

# **Section 407.3 Corridor Walls**

- **Partitions...section 710**

# **Section 407.4 Smoke Barriers**

- **Smoke Compartment area not more than 22,500 square feet**
- **Maximum 200 foot travel distance**
- **Build in accordance with 709**

# **Section 407.5 Automatic Sprinkler System**

- **Section 903.3.1.1**
- **Smoke Compartments include Quick Response 903.3.2**

# **Section 407.6 Automatic Fire Detection**

- **Corridors in nursing homes, detoxification facilities and spaces open to corridors by 407.2 – Automatic Fire Detection**
- **Hospitals shall be equipped with smoke detection**

# **Section 407.7 Secured Yard**

- **Grounds can be fenced in...**
- **30 net square feet for bed and litter.**
- **6 net square feet ambulatory**

# Section 408 Group I3

- Detention



# **Section 408.2 Mixed Occupancies**

- **Classified as different occupancy**
- **Security shall provide for release of occupants at all times**

# **Section 408.3 Means of Egress**

- **Chapter 10!**

# **Section 408.4 Locks**

- **Permitted to be locked in accordance with the applicable use condition.**

# **Section 408.5 Vertical Openings**

- **Section 707**

# **Section 408.6 Smoke Barrier**

- **More than 50 occupants – two smoke compartment minimum**
- **Maximum number of residents per compartment – 200**
- **6 square feet per occupant**

# **Section 408.7 Subdivision of Resident Housing**

- **Sleeping area and group activity space based on occupancy condition**

# **Section 408.8 Windowless Buildings**

- **Buildings with non-openable windows**
- **Smoke control system per 909**

# **Section 409 Motion Picture Projection Rooms**

- **Ribbon type cellulose acetate utilized in conjunction with electric arc, xenon...**

# **Section 409.2 Construction of Projection Rooms**

- **Construction consistent with the type of building.**

# Section 410 Stages and Platforms



# Section 410.2 Definitions

- **Fly Gallery**
- **Platform**
- **Proscenium Wall**
- **Stage**

# Section 410.3 Stages



# **Section 410.3.1 Stage Construction**

- **Floor construction consistent with the type of building.**

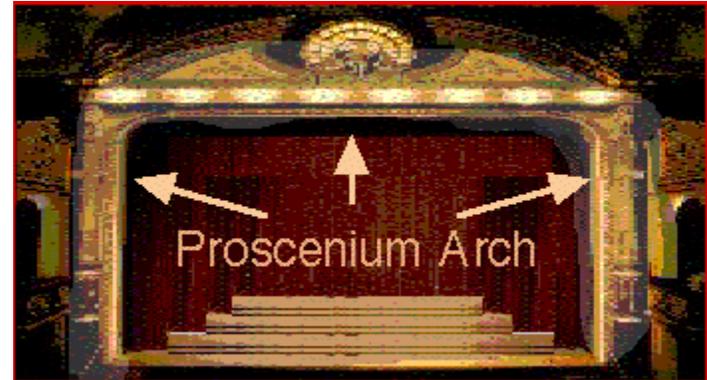
# **Section 410.3.2 Galleries, Gridirons, Catwalks**

- **Not considered to e floors, stories, mezzanines or levels.**

# **Section 410.3.3 Exterior Stage Doors**

- **Vestibule to prevent air drafts into the auditorium**

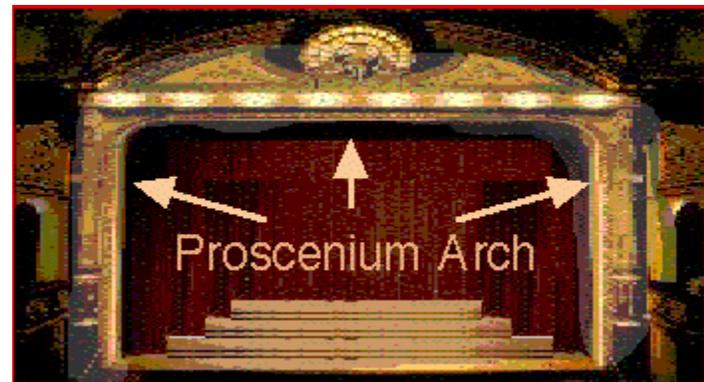
# Section 410.3.4 Proscenium Wall



- **Where the stage height is greater than 50 feet, 2-hour**

# Section 410.3.5 Proscenium Curtain

- Where proscenium wall is rated...
- Fire curtain or water curtain (903.3.1.1)



# **Section 410.36 Scenery**

- **NFPA 701**
- **Section 805**
- **IFC**
- **Section 2603**

# **Section 410.3.7 Stage Ventilation**

- **Stages larger than 1,000 square feet**
- **Stage height greater than 50 feet**

# **Section 410.4 Platform Construction**

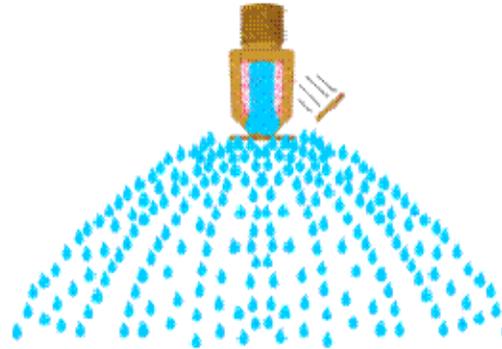
- **Construction type I, II or IV**
- **Not more than 30 inches above the main floor**
- **And not more than 1/3 of the room and not more than 3,000 square feet**

# **Section 410.5 Dressing and Appurtenant Rooms**

- **Separated from the stage where stage height greater than 50 feet**
- **2-hour fire barrier**
- **From each other by 1-hour fire barriers**

# Section 410.6 Automatic Sprinkler System

- Chapter 9!



# Section 410.7 Standpipes

- Section 905



# Section 411 Special Amusement Buildings

- Not a temporary use...



# Section 412 Aircraft-Related Occupancies



# **Section 412.1 Airport Traffic Control Towers**

- **Table 412.1.2 Height and Area based on construction type**

# Section 412.2 Aircraft Hangars



# **Section 412.2.1 Exterior Walls**

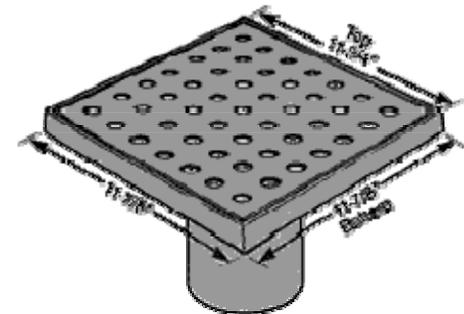
- **Located less than 30 feet from property lines and lot lines**

# **Section 412.2.2 Basements**

- **Floor must meet IA**
- **No openings or communication to hangar**
- **Access from outside only**

# Section 412.2.3 Floor Surface

- Graded and drained



# **Section 412.2.4 Heating Equipment**

- **Rooms separated by 2-hour construction**
- **Unit heaters 10 feet above upper surface of wings or engine enclosure**

# **Section 412.2.5 Finishing**

- **Doping or painting...separate building**

# Section 412.2.6 Fire Suppression

- Aircraft hangars shall be provided with fire suppression as required by NFPA 409.



# **Section 412.3 Residential Aircraft Hangars**

- **Accessory building less than 2,000 square feet and 20 feet in height, constructed on a one or two family residential property.**

# **Section 412.4 Aircraft Paint Hangars**

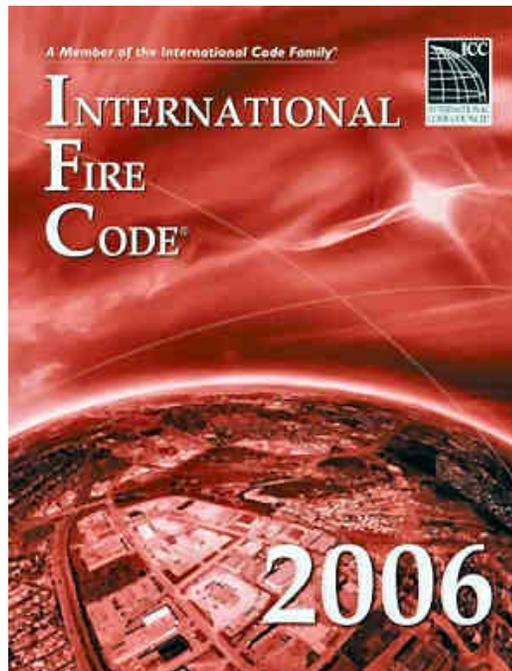
- **Probably an “H2”...**

# **Section 412.5 Heliports and Helistops**

- **On top of buildings in accordance with size, design and egress.**

# Section 413 Combustible Storage

- IFC

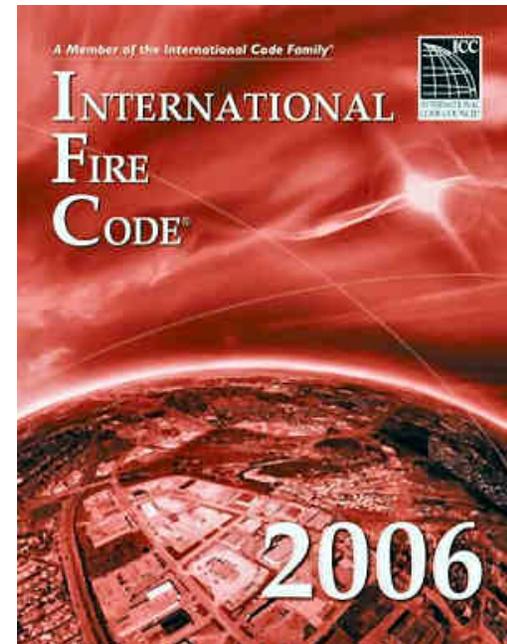


# **Section 414 Hazardous Materials**

- **Reference back to section 307...**

# Section 414.1.1 Other Provisions

- Reference 415 and IFC



# **Section 414.1.2 Materials**

- **Section 307, 415, IMC and IFC**

# **Section 414.13 Information Required**

- **Separate plan identifying location and anticipated contents and processes.**
- **Prepared by qualified person, firm or corporation**
- **Approved by the building official**
- **Without charge to the enforcing agency**

# **Section 414.2 Control Areas**

# **Section 414.2.1 Construction Requirements**

- **Fire Barriers per section 706, horizontal per section 711**

# **Section 414.2.2 Percentage of max. allowable quantities**

- **Table 414.2.2**

# Section 414.2.3 Number

- Table 414.2.2

**TABLE 414.2.2  
DESIGN AND NUMBER OF CONTROL AREAS**

FLOOR LEVEL		PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA <sup>a</sup>	NUMBER OF CONTROL AREAS PER FLOOR <sup>b</sup>	FIRE RESISTANCE RATING FOR FIRE BARRIERS IN HOURS <sup>c</sup>
Above grade	Higher than 9	5	1	2
	7-9	5	2	2
	6	12.5	2	2
	5	12.5	2	2
	4	12.5	2	2
	3	50	2	1
	2	75	3	1
	1	100	4	1
Below grade	1	75	3	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

# **Section 414.2.4 Fire- resistance-rating**

- **Table 414.2.2**

# Section 414.3 Ventilation

- **IFC and IMC**

# **Section 414.4 Hazardous Material Systems**

- **Systems involving hazardous materials shall be suitable for the intended application.**

# **Section 414.5 Inside Storage Dispensing and Use**

- **Explosion control**
- **Monitor control equipment**
- **Automatic fire detection**
- **Standby Emergency Power**
- **Spill control**

# **Section 414.6 Outdoor Storage Dispensing and Use**

- **Weather protection**
- **Walls**
- **Separation Distance**
- **Non-combustible construction**

# **Section 414.7 Emergency Alarms**

- **Emergency alarm systems shall be supervised by an approved central, proprietary or remote service...initiate audible and visual signal at a constantly attended on-site location.**



# **Section 415.2 Definitions**

- **Continuation from 307.2**

# **Section 415.3 Fire Separation Distance**

- **Table 415.3.1 addresses quantity**

# **Section 415.3.1 Group H Min. Fire Separation Distance**

- **1. H1 Not Less than 75 feet.**
- **2. H2 Not Less than 30 feet / area exceeds 1,000 square feet**
- **3. H2 and H3 Not Less than 50 feet where detached bldg required**
- **4. IFC Where not specified / ref Table 415.3.1**

# **Section 415.4 Special Provisions for H1**

- **No other use**
- **One story**
- **No basement**
- **Roofs are light weight**
- **Suitable thermal insulation to prevent sensitive material from decomposing**

# **Section 415.5 Special Provisions for H2 and H3**

- **No other use**
- **One story**
- **No basement**

# Section 415.6 Group H2



# **Section 415.6.1 Comb. Dusts, Grain Process & Storage**

- **NFPA**
- **Type I or II construction**
- **Grinding rooms / 2-hour up to 3,000 square feet, then 4-hour fire barriers**
- **Conveyors, chapter 30**
- **Explosion control IFC**

# **Section 415.62 Flammable and Combustible Liquids**

- **Mixed occupancies, Section 508.3.3**
- **Storage tanks not subject to height restriction of 503**
- **Tanks noncombustible and protected from physical damage**
- **IFC**
- **Suppression per 903**
- **Leak containment**

# **Section 415.6.3 LP Gas- Distribution Facilities**

- **Air Movement**
- **Construction**
- **Separate or Attached buildings**
- **Fire separation distance and fire barriers**

# **Section 415.6.4 Dry Cleaning Plants**

- **Classification in accordance with the  
IFC**

# **Section 415.7 Groups H3 and H4**

- **IFC**
- **Floors shall be liquid tight and noncombustible**
- **Highly toxic solids and liquids not stored – separated from other hazards by 1-hour fire barriers**

# **Section 415.8 Group H5**

- **Semiconductor fabrication facilities and similar research and development facilities**

# **Section 416 Application of Flammable Finishes**

- **Spraying of flammable paints,  
varnishes and lacquers or other  
flammable materials or mixtures ...IFC**

# **Section 417 Drying Rooms**

- **Drying rooms or Kilns installed within a building...**

# **Section 418 Organic Coatings**

- **No pits or basements**

# **Section 419 Group I1, R1, R2 and R3**

- **Walls separating dwelling units in the same building and walls separating sleeping units in the same building shall comply with section 708.**
- **Floor ceiling separation shall comply with section 711**

# Section 420 Hydrogen Cutoff Rooms

- Where required by the IFC

