

Emergency and Standby Power Systems and the IBC

NEC articles 700 and 701 and how they
relate to

Chapter 27 of the IBC



What is the difference between “Emergency” and “Legally Required” systems?

■ Emergency System

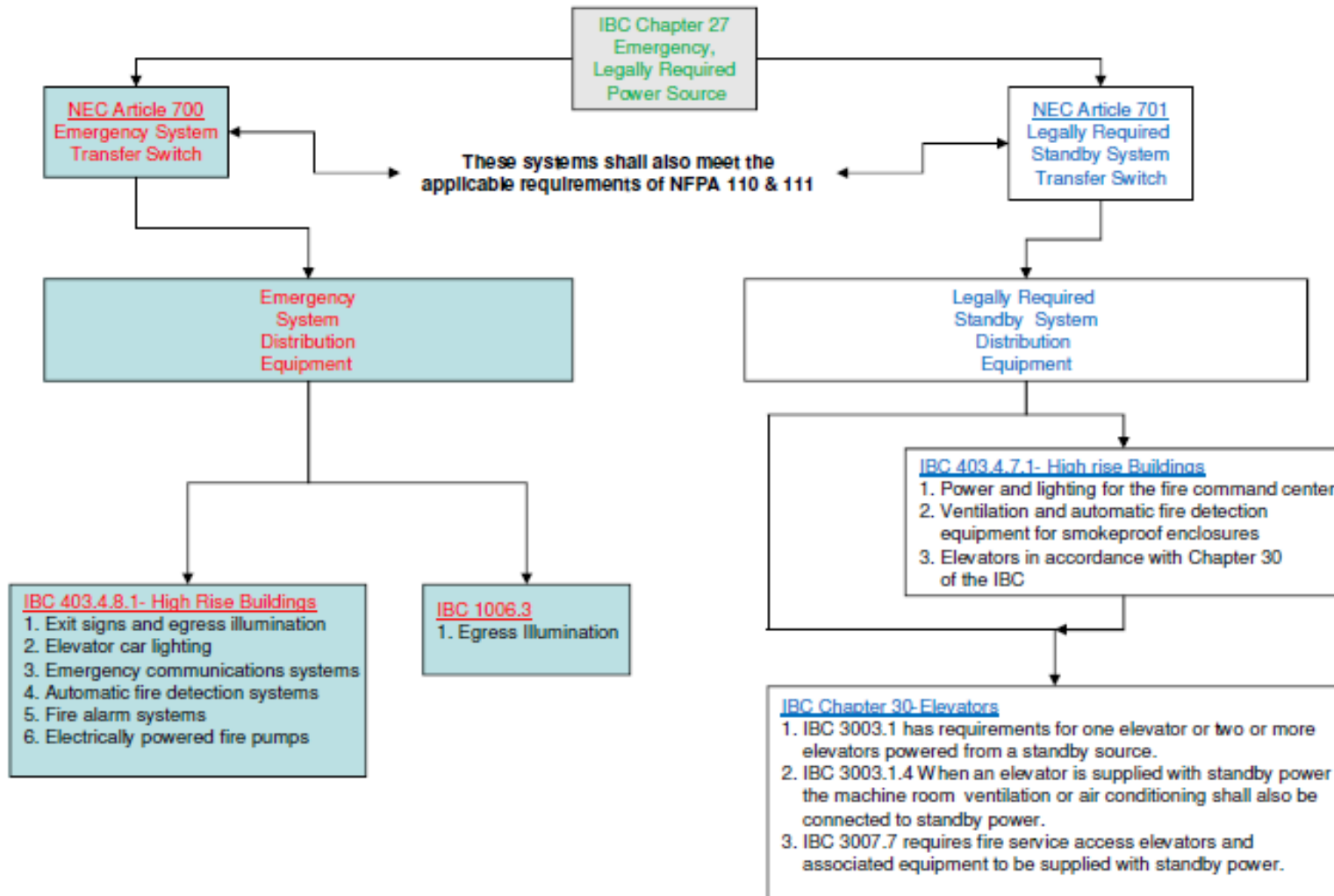
- An Emergency system provides illumination so occupants can safely exit the building in an emergency. Additional requirements can be found in IBC 403.4.8.1 for high rise buildings and NFPA 99 for Health Care Facilities.

Legally Required System



- A Legally required system is designed to keep equipment operating that aids in rescue operations. Additional requirements can be found in IBC 403.4.7.1 for high rise buildings and IBC Chapter 30-Elevators

Emergency and Standby Systems
NEC Articles 700 & 701, IBC Chapter 27



IBC Chapter 27

Electrical

- The requirements for where Emergency and Legally Required Standby systems are to be installed are found in IBC 2702.2.1 through 2702.2.20

IBC Chapter 27

- Some occupancies and equipment require both Emergency and Standby power systems, while some only require one or the other.
- Examples:
 - 2702.2.18-Air traffic control towers require standby power
 - 2702.2.15-High rise buildings require both Emergency and Standby power
 - 2702.2.3-Exit signs are required to be supplied by Emergency power



Type, Class, and Level of systems



- NFPA 110 has requirements for the Type, Class, and Level for Emergency and Legally Required Standby systems, and how they are to be designated.
- Example: Type 10, Class 2, Level 1 is a standard designation for a typical NEC 700 Emergency System.

The Type refers to the maximum time permitted before restoration of power.

Type	Power restoration time
U	Uninterruptible power supply
10	10 seconds
60	60 seconds
120	120 seconds
M	Manual, no time limit





The Class is the minimum time in hours the system is designed to run.

Class	Minimum operation time
.083	.083 hours (5 minutes)
.25	.25 hours (15 minutes)
2	2 hours
6	6 hours
48	48 hours
X	Other time, in hours, as required by code or user



The Level is the equipment installation, maintenance, and performance requirements.

Level	Installation
1	Failure of equipment to operate could result in serious injury or loss of life
2	Failure of equipment to operate is less likely to cause serious injury or loss of life



High Rise Building requirements for Standby Power IBC 403.4.7.2

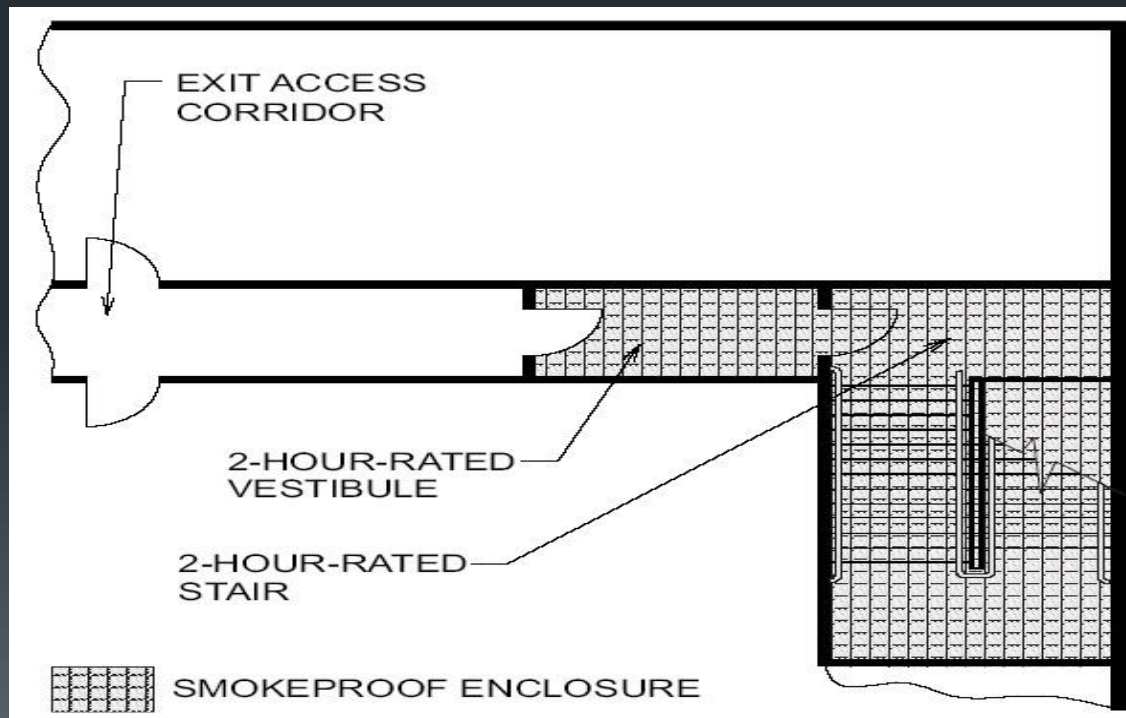
- Power and lighting for the fire command center



High Rise Building requirements for Standby Power

IBC 403.4.7.2

- Ventilation and automatic fire detection equipment for smokeproof enclosures



High Rise Building requirements for Standby Power

IBC 403.4.7.2

- Elevators in accordance with sections:
 - 1007.4
 - 3003
 - 3007
 - 3008

1007.4 – Elevators used as an accessible means of egress



3003 – Elevator power and machine room ventilation and A/C



3007.7 – Fire access elevator equipment, hoistway lighting, ventilation, and controller cooling



3008 – Occupant evacuation elevator equipment, ventilation, and controller cooling



High Rise Building requirements for Emergency Power

IBC 403.4.8.1

- Exit signs and Egress illumination



High Rise Building requirements for Emergency Power

IBC 403.4.8.1

- Elevator car lighting



High Rise Building requirements for Emergency Power

IBC 403.4.8.1

- Emergency voice/alarm communications systems



High Rise Building requirements for Emergency Power

IBC 403.4.8.1

- Automatic fire detection systems



High Rise Building requirements for Emergency Power

IBC 403.4.8.1

- Fire alarm systems



High Rise Building requirements for Emergency Power

IBC 403.4.8.1

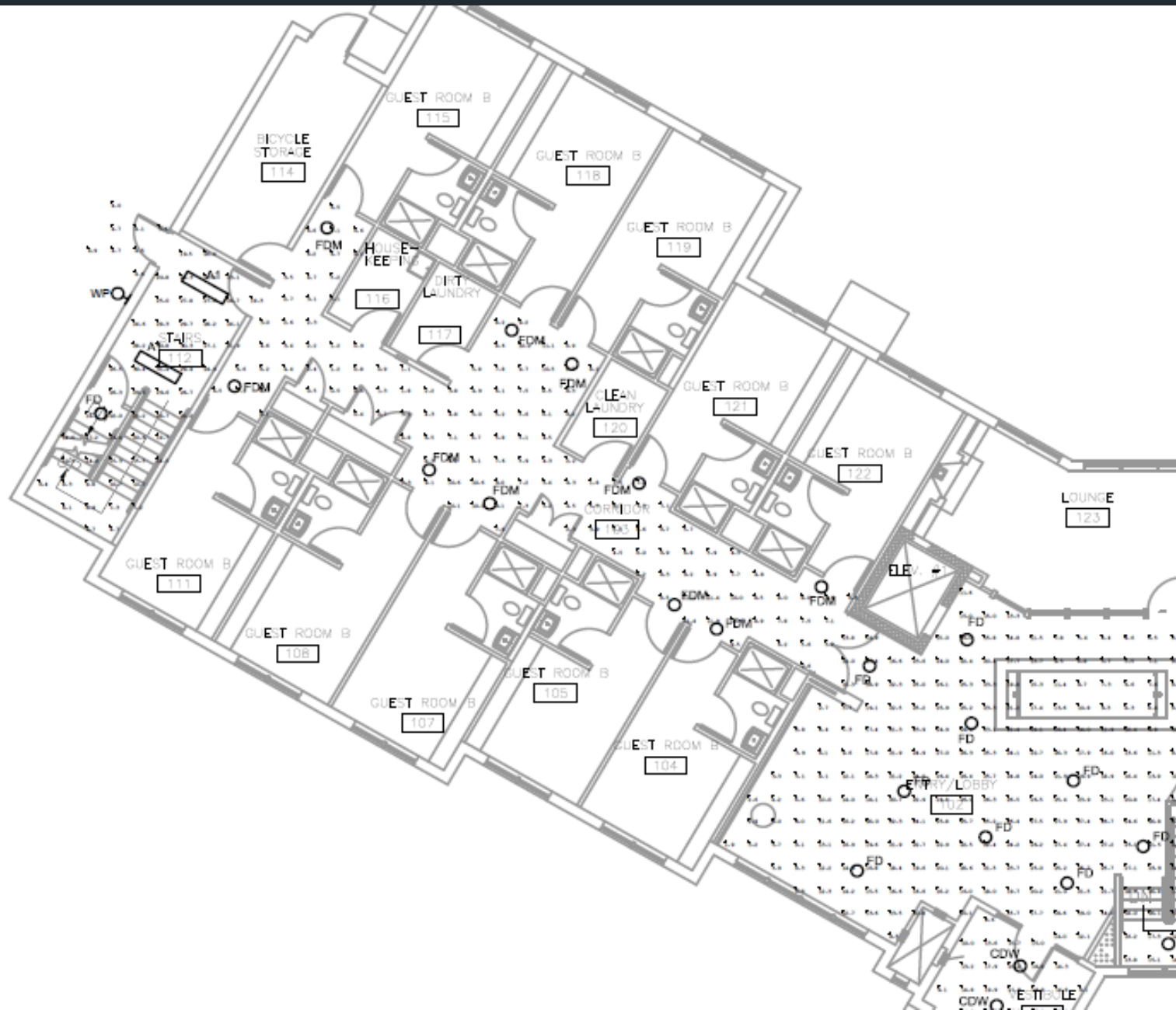
- Electrically powered fire pumps



Means of Egress Illumination

IBC Section 1006

- IBC 1006.1 requires illumination of the means of egress and exit discharge at all times the building is occupied.
- IBC 1006.2 has the illumination level requirements for the means of egress (1 foot-candle at the walking surface).



Means of Egress Illumination

IBC Section 1006

- IBC 1006.3 contains the conditions that the egress lighting be powered by the normal building supply except in the event of power failure.



Means of Egress Illumination

IBC Section 1006

- IBC 1006.3 states that the duration of the emergency power system shall provide power for at least 90 minutes





Means of Egress Illumination

IBC Section 1006

- IBC 1006.4 has the performance requirements for the emergency lighting system.
 - An average of 1 foot-candle and a minimum of .1 foot-candle at floor level.
 - A maximum to minimum illumination uniformity ratio of 40 to 1