

## Life Safety Code Happens - Documenting for Success KHCA

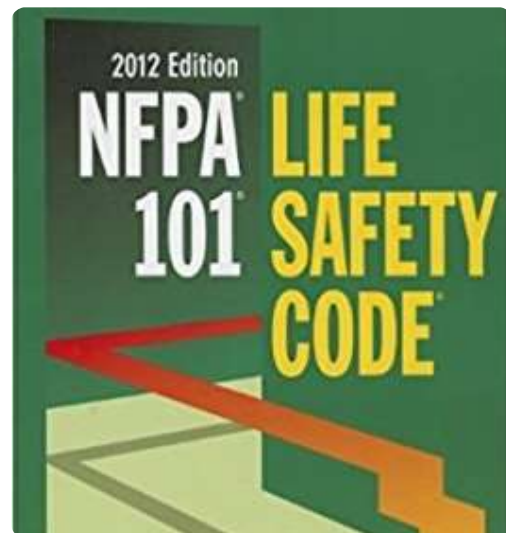
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## Life Safety Code©

- Life Safety Code 101 2012 Ed.
  - Promulgated by the National Fire Protection Association (NFPA) (not a government agency)
  - Life Safety Code is not the only code facilities must meet but one of many i.e., Health Care Facilities Code NFPA 99, "State" Fire Code, "State" Building Code, Facility Guidelines Institute, Local Codes and ordinances etc.
- It is NOT a building code. It focuses on safety of all persons in a building by protecting them from fire, smoke and toxic fumes and other emergencies

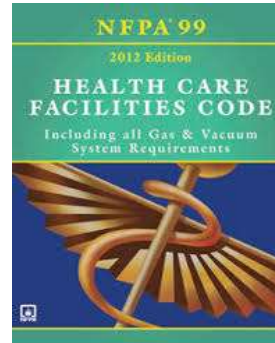
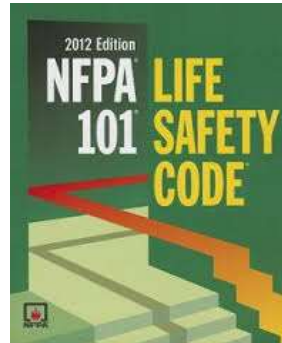


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# NFPA

Codes adopted effective July 5, 2016

**101 Chapter 19 – Existing**  
**101 Chapter 18 -New Facilities**



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## NFPA Referenced Codes

- **NFPA 10** Standard for Portable Fire Extinguishers 2010
- **NFPA 13** Standard for Installation of Sprinkler Systems 2010
- **NFPA 25** Standard for the Inspection, Testing & Maintenance of Water Based Extinguishing Systems 2011
- **NFPA 54**, *National Fuel Gas Code*, 2012 edition. [SEP]
- **NFPA 70** National Electrical Code 2011
- **NFPA 220** Standard on Types of Building Construction 2012
- **NFPA 72** National Fire Alarm Code 2010
- **NFPA 80** Standard for Fire Doors and Fire Windows 2010
- **NFPA 96** Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations 2011
- **NFPA 101A** Guide on Alternative Approaches on Life Safety 2013
- **NFPA 105**, *Standard for Smoke Door Assemblies and Other Opening Protectives*, 2010 edition.
- **NFPA 110** Standard on Emergency and Standby Power Systems 2010

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# LSC SURVEY



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## Leading Life Safety Code Deficiencies

K353	Sprinkler System - Maintenance and Testing
K345	Fire Alarm System - Testing and Maintenance
K918	Electrical Systems - Essential Electric System
K222	Egress Doors
K324	Cooking Facilities
K521	HVAC
K712	Fire Drills
K372	Subdivision of Building Spaces - Smoke Barrier
K511	Utilities - Gas and Electric
K920	Electrical Equipment - Power Cords and Extension
K363	Corridor - Doors
K761	Maintenance, Inspection and Testing - Doors

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## Deficiency De'jour

Egress doors – Delayed locking doo can be re-set (irreversible process) (K222)

Kitchen – height of Ansul pull station (K324)

Gas Kitchen equipment tethered to the wall (K324)

Kitchen equipment with rolling feet are chalked (K324)

Fire Alarm – Semi-Annual visual inspection (K345)

Fire Alarm – Sensitivity testing for battery operated- single station fire alarms (K345)

HVAC – Damper ITM (K521)

Essential Electrical System – generator remote stop button (K918)

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## Increasing Scrutiny

- **Doors are now one of the leading deficiencies- K 211, K 222, K 363 and K 761**
- Sprinkler K353
- Electrical issues such as
  - K 913 GFCI
  - K 914 Receptable testing
  - K 918 Generator ITM
  - K 511 Electrical
  - K 920 Power Strips
  - K 931 PCREE Testing



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## Survey Preparation

- LSC Binder– everything in one place
- Current survey cycle only
- Archive older records
- Review past surveys and ensure that prior deficiencies are corrected
- Evacuation plans – correct, posted and staff familiar
- Ladders available surveyor use?
- Flashlights ready surveyors use?




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## Life Safety Floor Plans

- Life Safety drawings are floor plans of the building that identify life safety features as required by NFPA 101 (2012 edition) *Life Safety Code*. They are used during the survey as a reference tool by the life safety code surveyor to determine whether the built conditions follow (and are maintained to) the way the building was designed. Fire safety features include the following:
  - Areas of the building that are fully sprinklered
  - Locations of all hazardous storage areas
  - Locations of all fire-rated barriers
  - Locations of all smoke-rated barriers
  - Sleeping and non-sleeping suite boundaries, including the size of the identified suites
  - Locations of designated smoke compartments
  - Locations of chutes and shafts
  - Any approved equivalencies or waivers

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## Survey Documentation




- **Facility Layout**
- **LSC Waivers/ FSES**
- **Building Occupancy Permit**
- **State/ Local Fire Inspection(s)**
- **Policies** - Fire Watch, smoking, space heater (K346, K354, K781, K741)
- **In-services (K923, K711)** - O<sup>2</sup> safety, fire/disaster, State Fire Marshal
- **Certificates for boilers and elevators**

- **Exit signs (K281)**
  - Monthly
- **Emergency Lighting w/ Battery Function (K291)**
  - Monthly 30 sec. test
  - Annual 90 min. test
- **Exit Lighting (K281)**
  - Monthly
- **Smoke/Fire Barriers (K271/K372)**
  - Quarterly audit

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## Survey Documentation




- **Magnetic Door Hold-Open Locking Devices (K222)**
  - Quarterly
- **Delayed Egress Doors (K222)**
  - Monthly
- **Locking Doors (K222)**
  - Monthly
- **Corridor - Smoke doors (K363)**
  - Annual
- **Fire Door testing (K761)**
  - Annual

- **Elevator ITM (K531)**
  - Monthly/Quarterly/Annual
- **HVAC ITM (K511, K521)**
  - Manufacturer recommendations
- **HVAC Filter Replacement**
  - Per manufacturer
- **Fire and Smoke Damper Inspections (K521/ K372)**
  - ITM every 4-years

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## Survey Documentation




- **Sprinkler System (K353)**
  - Quarterly/ Annual
- **Sprinkler System (Wet) Pressure Gauge Reading (K353)**
  - Monthly
- **Sprinkler System (Dry) Pressure Gauge Reading (K353)**
  - Weekly
- **Sprinkler System Inventory (K353)**
- **Spare Sprinkler Heads (K353)**
  - Quarterly
- **Sprinkler System Head Inspection**
  - Annual

- **Sprinkler System Internal Inspection (K353)**
  - Every 5-years
- **Sprinkler System Dry System Pressure Testing (K353)**
  - Every 3-years
- **Sprinkler System Backflow Testing (K353)**
  - Annual
- **Sprinkler System Anti-freeze Testing (K353)**
  - Annual
- **Standpipe System (K353)**
  - Every 5-years

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## Survey Documentation




- **Fire Pump (K345)**
  - Annual ITM
- **Fire Pump Inspection (K345)**
  - Weekly
- **Fire Pump- Electric - Testing (K345)**
  - Monthly
- **Fire Pump- Diesel - Testing (K345)**
  - Weekly
- **Kitchen Range hood system Suppression System (K324)**
  - Semi-annual ITM
  - Monthly
- **Kitchen Range Hood System Cleaning (K324)**
  - No less than semi-annual

- **Fire Alarm Inspection (K345)**
  - Semi-annual and annual inspection/testing
- **Smoke detector Sensitivity (K347)**
  - At 1 year and every 2 years thereafter
- **Portable fire extinguishers (K355)**
  - Monthly/ Annual
- **Fire Drills (K712)**
  - Monthly (one/month, per shift/per quarter)
- **Fire Hydrants (K300)**
  - Annual

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## Survey Documentation





- **NFPA 99 Risk Assessment (K901)**
- **Ground Fault Receptacles (K913)**
  - Quarterly
- **Non-hospital Grade Receptacles (K914)**
  - Annual
- **PCREE Electrical Equipment (K921)**
  - Annual
- **Circuit Breakers (K912)**
  - Annual Inspection

- **Generator Maintenance (K918)**
  - Annual
- **Generator (K918)**
  - Weekly
  - Monthly
  - Load Bank (if necessary)
- **Generator (K918)**
  - 36-month load exercise
- **Generator diesel fuel testing (K918)**
  - Annual
- **Fuel Reliability Letter (K918)**

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## LSC Bootcamp Outline – 100s



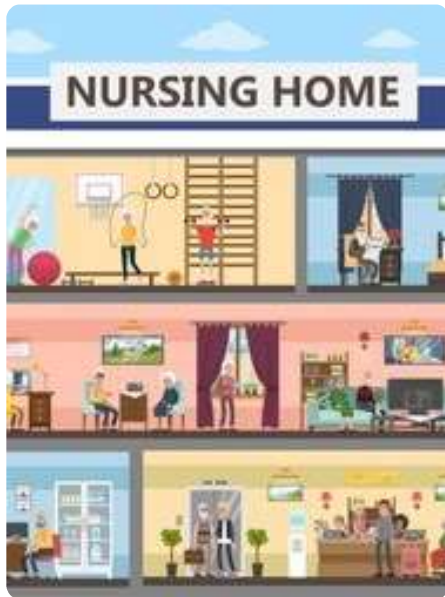


**General Requirements**

Focus here is construction, building and renovation

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## Building Construction

- If the building has a common wall with a nonconforming building, the common wall should be a fire barrier having at least a two-hour fire resistance rating constructed.
  - Does the separations extend from the floor slab below to the floor or roof slab above?
  - Does each section extend from exterior wall to exterior wall?
  - Are doors in 2-hr. fire wall
    - > 1 ½ Hr. fire door and
    - Positive latching, and
    - Self-closing or automatic closing, and
    - Door < 1/8 in. gaps between meeting edges of door pairs, and
    - provided with < 3/4 in. undercuts?

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## NFPA 101 43.7 Change of Use

Healthcare specific for existing, fully-sprinklered facilities:

A Change in Use of a space not exceeding 250 sq. ft. results in a hazardous room (> 50 sq. ft.) the requirements for new construction shall not apply. The room must have a door with a closer and may have a proper protective plate.



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## SECTION 2 – MEANS OF EGRESS K 200s



### Means of Egress

#### Components

Corridor walls (exit passage)

Corridor doors

Horizontal exits

Stairs (as appropriate)

Ramps

Corridor width

Number of exits

Arrangement of exits

Travel distance to exit

Exit discharge

Exit Illumination

Exit Identification

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## Means of Egress K211

General Aisles, passageways, corridors, exit discharges, exit locations, and accesses are in accordance with Chapter 7, and the means of egress is continuously maintained free of all obstructions to full instant use in case of emergency.



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## Corridor Doors K363

- Doors protecting corridor openings in other than required enclosures of vertical openings, exits, or hazardous areas shall be substantial doors, such as those constructed of 1¾ inch solid-bonded core wood, or capable of resisting fire for at least 20 minutes.
- Doors in fully sprinklered smoke compartments are only required to resist the passage of smoke.
- There is no impediment to the closing of the doors.
- Clearance between bottom of door and floor covering does not exceed 1"



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## Ensure ...Delayed Egress Locks K 222

- Permitted provided:
  - Releases with/in 15 seconds or 30 seconds per AHJ
  - ≤15 lb. for ≤ 3 seconds to initiate
  - Unlocks with the loss of power
  - Unlocks with the initiation of fire alarm and/or smoke detector
  - Emergency lighting at door
  - Instructional sign @ door



**PUSH UNTIL ALARM SOUNDS DOOR CAN BE  
OPENED IN 15 SECONDS**

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## Corridor Width Requirements

Certain wheeled equipment are permitted in the corridor provided the following:

- The clear width of the corridor is never reduced to less than 5 feet (60")
- There is a written fire safety plan and training program that address the relocation of the wheeled equipment during a fire



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## Wheeled Items in the Corridor

### Permitted

- Food service carts in use
- Housekeeping carts in use
- Medication carts in use
- Isolation carts in use
- Crash carts
- Portable lift equipment
- Transport equipment

### Not Permitted

- Beds
- Trash containers greater than 32 gals
- Desks
- Chairs
- Tables
- Computers on wheels
- Linen Carts
- Bird cages

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## SECTION 3 – PROTECTION K 300s




### Features of Fire Protection

This includes sprinkler system, fire alarm system, fire extinguishers, kitchen range hood suppression system

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## Sprinkler System

- Automatic Sprinkler System (K353)- quarterly and annual inspections
- Automatic Sprinkler System (K353) - Internal  Inspection conducted every 5 years.
- Automatic Sprinkler System (K353) – Pressure test on dry system every 3 years
- Automatic Sprinkler System (K353) – Back flow testing conducted annually.
- Automatic Sprinkler System (K353) – Where the system is utilizing anti-freeze the facility shall have system tested annually by qualified individual.



"You're not allowed to use the sprinkler system to keep your audience awake."

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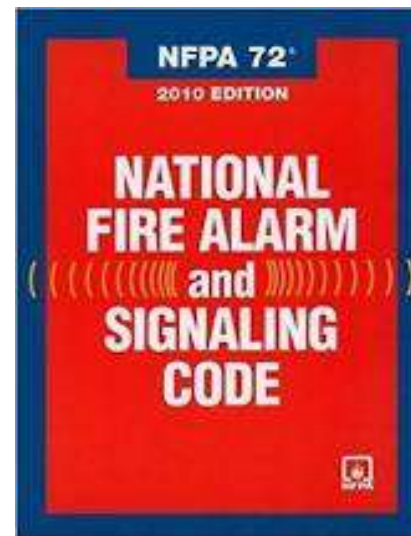
## Fire Watch K 346 or K 354

- Fire watch requirements for either sprinkler system or fire panel outage:
  - A fire watch should consist of trained personnel who continuously patrol the affected area;
  - Should have ready access to fire extinguishers;
  - Ability to promptly notify the fire department;
  - Look for fire and ensure other features of life safety are not impaired.
  - Fire watch personnel to perform no other duties;
  - If fire watch takes more than 15 minutes to complete, then multiple personnel must be used;
  - Notification to Fire Department, Department of Health and facility's Liability Insurer

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## National Fire Alarm and Signaling Code

- NFPA 72 Section 10.4.3 states that qualified ITM personnel shall include:
  - Personnel who are factory trained or certified for the specific type and brand of system being services
  - Personnel who are certified by a nationally recognized certification organization acceptable to the AHJ
  - Personnel who are registered, licensed or certified by a state or local authority to perform service on systems addressed within the scope of this Code
- NFPA 72 Section 14.2.2.: states that the property or building owner or the owner's designated representative shall be responsible for inspection, testing, and maintenance of the system and for alterations or additions to the system



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## Semi-Annually Visual Inspection K345

- Start at control panel
- Check for the obvious
- All equipment is in proper place, and properly mounted and oriented
- All notification appliances must be operated annually, and proper operation must be verified
- Periodically verify system is “normal” and not in ‘trouble’, ‘fault’, ‘supervisory’
- No obvious wire breaks, corrosion, or other damage to connections
- All documented (each device)



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## Annual Testing

- The entire system is required to be thoroughly inspected, tested and maintained each year by an approved
- Vendor will in accordance with Chapter 14 of NFPA 72 [see NFPA 72(10), Tables 14.3.1 and 14.4.5; see also: NFPA 90A(12), Sec. 6.4.1]. Before beginning testing, notify:
  - Building occupants—place signs on exit doors, send emails, signs in lobby, bulletin boards
  - Fire department
  - Monitoring company
- Testing must include control equipment, remote annunciators, initiating devices, HVAC shutdown devices and alarm notification appliances.

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### Common Issues

## Hazardous Space K321

- Existing facilities need to remember that any storage space should be smoke tight space, a door that closes and latches and has automatic closer.
- Deficient practices
  - Door does not have automatic closer
  - The door does not close to the latched position.
  - The door is held open with a wood wedge.
  - Holes in walls



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## Kitchen Hood Extinguishing - K 324

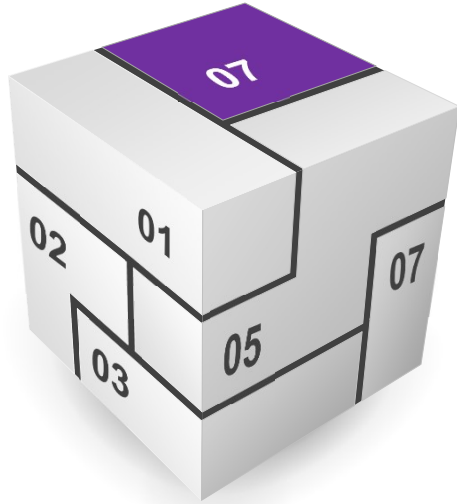
- ITM is expected every 6-months and includes examining the equipment, the detectors, and the gas container, distribution piping, etc.
- Fixed temperature fusible links must be replaced semi-annually
- The exhaust system must be cleaned no less than every 6-months



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## SECTION 7 – OPERATING FEATURES K 700s



### Operating Features

Fire Drills, Fire Door Inspection, Hazardous Materials, Smoking

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## Fire Safety Plan K 711

A written health care occupancy fire safety plan shall provide for all the following:

1. Use of alarms
2. Transmission of alarms to fire dept.
3. Emergency phone call to fire dept.
4. Response to alarms
5. Isolation of fire
6. Evacuation of immediate area
7. Evacuation of smoke compartment
8. Preparation of floors/building for evacuation
9. Extinguishment of fire

Fire Response Plan	
Date: March 2018 and October 2018, Jan 2019	E Tag – E-0013, E-0015, K-0022 and K-711
<b>OBJECTIVE</b>	
The primary objective of this plan is to prevent or minimize injury to any and all occupants of the building in the event that an emergency evacuation is needed. The plan also outlines the importance of continuing education for staff so that they are well acquainted with the fire equipment, fire doors, stairwells, and exits, all safety features of the building, as well as the procedures and action they should take in case of a fire, and disaster and/or fire alarms. The plan applies to all floors and addresses shift-staffing variances. All staff will be trained in the fire emergency plan and be trained in the RACE technique. Staff will know that their responsibilities are with the residents, how to communicate with other staff during an emergency, and how to respond to Fire Department personnel when they arrive. They will also know the building characteristics as well as features of fire protection.	
<b>General Information</b>	
<b>Avoid panic. Do not shout "fire". The greatest danger in most fires is panic.</b> The safety of the residents and employees is the top priority in a fire emergency. Review all the approved procedures and practices (see following) necessary to protect residents and employees during a fire emergency.	
When a burning odor or smell of smoke can be detected but visible smoke or flames are not observed, report this to your supervisor who will in turn contact the Maintenance and/or Environmental Services Department(s). A member of one of these departments will investigate the report.	
<b>Smoke vs. Fire</b> – Consistently, more injuries are caused by smoke inhalation than by fire. Smoke should be treated in exactly the same manner as fire. Smoke from certain sources (e.g., synthetic fabrics, insulation, plastic pipe, etc.) may be toxic and should be approached with extreme caution.	
<b>Alarm, detection and suppression systems</b>	
1. Smoke and heat detectors are placed throughout the building.	
2. Fire alarm pull stations are placed at each exit and when activated initiate facility fire alarm and strobes illuminate as well as sending fire alarm signal to monitoring company in addition, a telephone call is automatically placed to a 24-hour to 911	

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## Fire Drills K712

- Simulation of emergency fire conditions.
- Fire drills include a fire alarm signal and confirming of the signal to the monitoring company
- Conducted monthly per shift for 4 drills on each shift per year.
  - One drill per shift per quarter.
  - Different locations in the facility
  - Differing time of drills on each shift (varied by an HOUR)
  - Differing days of the week including weekends.
  - All departments are involved.
  - Documented observations of staff response.
  - Equipment functioning, doors released, alarms sounding, staff monitor exits, etc.
  - Residents are not evacuated during the drill.
- Where drills are conducted between 9:00 PM and 6:00 AM, a coded announcement may be used instead of audible alarms.
- Should use a coded announcement such as "CODE RED" then plain language "fire"



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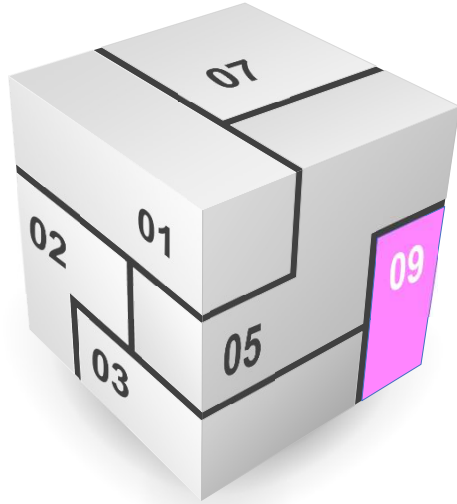
## Flammable Decorations

- No furnishings or decorations of highly flammable character
  - Corn stalks, hay bales, cotton cobwebs, real Christmas trees
  - Live potted plants with a root system are permissible



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## HEALTH CARE FACILITIES CODE REQUIREMENTS K 900s

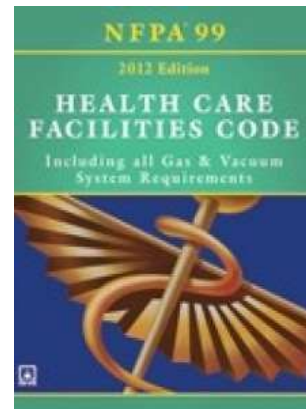


All the K tags  
900+ are from  
NFPA 99 Health  
Care Facilities  
Code (2012)

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## NFPA 99 Health Care Facilities Code

- Standard become a Code with 2012 edition
- The code is intended for professionals involved in the design, construction, maintenance, and inspection of health care facilities (NFPA 101 Chapter 18-19 facilities), in addition to the design, manufacture, and testing of appliances and equipment used in patient care rooms of the health care facilities
- Unique because the code is based on Risk and an assessment as determined by the facility leadership



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## Chapter 6 Electrical Systems

- Requirements for existing facilities specifically referenced in chapter
- Addresses hazards related to electrical power distribution systems
- Covers performance, maintenance and testing
- Receptacle testing
- Circuit Breaker testing
- Generator



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## Power Taps – Electrical K920

- **Resident Room**
  - **Vicinity of patient bed**
    - YES- Patient Care Equipment using Special-Purpose Relocatable Power Tap SPRPT (UL 1363A or UL 60601-1 Listed)
    - NO - Non- Patient Care Equipment – not permitted
  - **Not in vicinity of patient bed**
    - YES- Patient Care Equipment using SPRPT UL 1363A or UL 60601-1 Listed
    - Yes - Non- Patient Care Equipment using SPRPT - UL 1363
- **Offices/ other - UL Approved**



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## Electrical K 511

### Power strips

- No medical equipment, including the resident bed or any high current draw devices can be plugged into a power strip. No hair dryers or refrigerators may be plugged into power strips.
- Appliances that produce heat or are used for cooling cannot be plugged into a power strip
- Power strips may be used in non-wet, non direct patient areas and routine mopping does not constitute a wet area.
- Equipment such as televisions, DVD players, and clocks, may be plugged into a power strip with surge protection.
- Power strips cannot be covered with rugs or other material



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## Multi Plug Adapters

**NO!**

**These are NOT approved for any location in a healthcare facility**



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## Solution to Power Stripe Addiction

Replace dual for a quad



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## Generator – Annual Preventative Maintenance

- Routine maintenance and operational testing program based on the following:
    - Manufacturer's instruction manuals
    - Minimum requirements of this chapter
    - Authority having jurisdiction
1. Transfer switches operated monthly
  2. Routine maintenance and operational testing program shall be overseen by a properly instructed individual



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## Weekly Generator Inspection



- Checked with the unit stopped or running
  - Fuel levels, day tank float switch; piping, hoses
  - Connectors; operating fuel pressure; and for any obstructions to tank vents and overflow piping
  - Oil (check for proper oil level and oil operating pressure; lube oil heater)
  - Cooling system
  - Exhaust system
  - Electrical
  - Prime Mover/Generator

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## Generator Monthly Exercise K918

- Generator sets exercised under load 30 minutes 12 times a year
- The test must begin with manually tripping the transfer switch
  - Run at a minimum of 30% of name plate rating (diesel)
    - If run at less than 30% must have annual load bank test (diesel only)
    - No minimum load for Lp, propane or gasoline generators
  - Ensure that the startup and or cool down times are not included in the 30-minute load test.

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## Load Bank Testing

- Alternate compliance for DIESEL generators that do not operate at 30% of nameplate rating a facility may use a Load Bank test
- The generator is exercised annually for 90 minutes (30 min @ 50% and 60 minutes @ 75%)



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## 36 Month Generator Exercise

- System exercised/tested once every 36 months for no less than 4-hours
- Exercise does not include warm up and cool down times



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## Generator Remote Stop Switch

- 5.6.5.6 All installations shall have a remote manual stop station of a type to prevent inadvertent or unintentional operation located outside the room housing the prime mover, where so installed, or elsewhere on the premises where the prime mover is located outside the building.
- 5.6.5.6.1 The remote manual stop station shall be labeled.
- Remote location means that it shall be located remote from the generator, so it is protected from the impact of adverse generator conditions. The owner and designer determine the location.



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## Fuel Testing

NFPA 110 requires a fuel quality test to be performed annually using the approved ASTM standards.

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## Cylinder and Container Storage K923

A precautionary sign readable from 5 feet is of a cylinder storage room, wording as a minimum:

**CAUTION: OXIDIZING GAS(ES)  
STORED WITHIN NO SMOKING**

- Empty cylinders are segregated from full cylinders.
- Empty cylinders are marked to avoid confusion.
- Cylinders stored in the open are protected from weather.

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## O<sup>2</sup> Storage 300 - 3,000 cu ft

- Storage between must be in a room
  - Room maintained secured (locked)
  - Door with automatic-closer
  - Cylinders must be supported in non-combustible stand, rack or cart
  - No combustible storage within a distance of 5 ft.
  - Outdoor enclosure or indoor inside a room of noncombustible or limited combustible (dry wall)
  - No smoking, or open flames are electrical heating



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## Compliance Expectation

- Understand your systems and expected documents
- Test your stuff on-time
- Test your stuff properly
- Document the test properly
- Account for the repair of deficiencies
- HAVE IT ALL AVAILABLE



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### **Kenneth Daily, LNHA** Elder Care Systems Group

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- Consulting and education focusing on quality improvement, survey compliance, disaster preparation and facility management.
- Disaster preparedness planning
- Mock surveys and audits
- Fire Safety Evaluation System audits
- Policy and procedure development
- Professional development and training

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