Life Safety Code Compliance by *"The Numbers"*

Inspection, Testing and Maintenance

Stan Szpytek, President
Fire and Life Safety, Inc.

Stan Szpytek, President

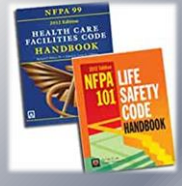
Fire and Life Safety, Inc. (FLS)

CAHF Consultant- 2010

- California Association of Health Facilities
  - Life Safety / Emergency Prep
- Arizona Health Care Association
  - Life Safety
  - Disaster Ready / EPIC
- Utah Health Care Association
  - Life Safety / Emergency Prep
- Fire and Life Safety, Inc. Clients
  - Arizona Association for Community Health Centers
  - Arizona Ambulatory Surgery Centers Association
  - Skilled Nursing Facilities
  - Assisted Living Facilities
  - In-Patient Hospice Facilities
  - Community Health Centers
  - Continuing Care Retirement Communities
  - Long-Term Care Associations- Nationwide
- Deputy Fire Chief / Fire Marshal
  - 26 years- Chicago-area Fire Department
  - Paramedic
  - Honorably Retired- 2003

Life Safety Code (LSC)
Health Care Facilities Code (HCFC)

- Applicable Editions – **2012**
- Effective – July 5, 2016
- Enforcement – November 1, 2016
- Handbooks- **RECOMMENDED**
  - Code
  - Explanatory Information
  - Illustrations / Charts
  - Examples



3

CMS / NFPA Requirements

Refer to Chapter 2 of NFPA #101 for Complete Listing

- NFPA 101-2012 (Life Safety Code)
- NFPA 99-2012 (Health Care Facilities Code)
- NFPA 13-2010 (Sprinkler Code)
- NFPA 25-2011 (Insp./Test/Maintenance)
- NFPA 72-2010 (Fire Alarms)
- NFPA 14-2010 (Standpipes & Hose)
- NFPA 96-2010 (Commercial Cooking)
- NFPA 10-2010 (Fire Extinguishers)
- NFPA 80-2010 (Fire Doors)
- NFPA 105-2010 (Smoke Doors)

4

LSC Documentation Checklist

5

Fire Drills- K712

NUMBERS: 1 per shift per quarter

- One drill, per shift, per quarter
- Unpredictable times/dates
- Perform at unique times
  - Examples: 7:14 am, 9:22 pm, 3:19 am
- NO monthly drill requirement
- Sufficient documentation
  - PASS & RACE included
  - Scenario included
  - All participants must sign-in

6

Fire Watch Policy
NUMBERS: 4 hours & 10 hours

Fire Watch P&P- K346/K354

- Fire Alarm OOS, 4 hours
- Fire Sprinkler OOS, 10 hours
- Contacts and phone numbers
  - Fire Department, non-emergency
  - State Department of Health Services, 24-hour number
  - Insurance / Risk Management

7

Risk Assessment Process- K901
NUMBERS: 1

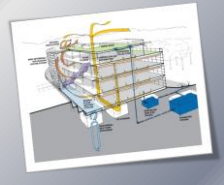
- **Remodeling, renovation, new construction or change-of-use**
- Establish an Assessment Team within the facility to review all aspects of facility operations
  - Comprehensive risk assessment process
  - Multiple perspectives on physical plant infrastructure, patient care, and occupant safety
- Familiarize all team members with NFPA 99, Health Care Facilities Code
  - Specifically sections 4.1 on Building Systems Categories and 4.2 on Risk Assessment
- Ensure team members understand the importance of system reliability and the consequences of system failure

8

Risk Assessment Categories
NUMBERS: 1 - 4

The assessment goal is to categorize the system or equipment into one of the following categories:

1. Failure may cause death or serious injury
2. Failure may cause minor injury
3. Failure may cause discomfort
4. Failure will cause no impact on patients or caregivers



9

Risk Assessment Tool

- Checkbox fields are provided to illustrate the findings of the risk assessment in accordance with Categories 1 through 4 identified in the code.
- The values associated with each category are listed at the top of these sections of the tool.

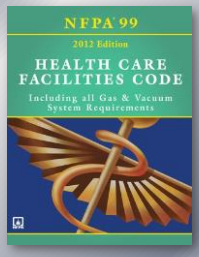
10

Once Risk Levels Are Identified

NUMBERS: 2012 edition

Code Sections

Administration
Referenced Publications
Definitions
Fundamentals
Gas and Vacuum Systems
Electrical Systems
Information Technology
Plumbing
Heating, Ventilation and A/C (HVAC)
Electrical Equipment
Gas Equipment
Emergency Management
Security Management
Hyperbaric Facilities
Features of Fire Protection



11

Fire Door Assembly Inspection- K761

NUMBERS: 1 Annually

NEW (2012) Fire Door Testing

- Inspection process
  - ✓ Visual – damage/missing parts
  - ✓ Operate door fully
  - ✓ Inspect hardware and replace defective parts
  - ✓ Inspect tin-clad doors for evidence of dry rot
  - ✓ No holes or breaks in door
  - ✓ Glazing and beds are intact
  - ✓ Door undercut is no more than ¾ inch
  - ✓ Positive latch secures door
  - ✓ No field modifications to door or frame
  - ✓ Labels visible and legible

12

Qualifications of Inspectors
NUMBERS: NFPA 80

- No specific qualifications for Fire Door Assembly Inspection individual other than being "knowledgeable."
- Specifically, NFPA 80 states the following:

"Functional testing of fire doors and window assemblies shall be performed by individuals with knowledge and understanding of the operating components of the type of door being subject to testing."

- CMS stated that SNF maintenance workers generally possess the skills and knowledge needed.

13

FDAI Checklist

- Clearly itemizes all of the different aspects of the inspection.
- A check mark indicates non-compliance.
- No check marks is considered a compliant Fire Door Assembly.

14

FDAI Master Inventory List

- Name inserted at the top.
- Includes a line for each Fire Door Assembly that is inspected with columns that itemize the following information:
  - Door ID Number
  - Location of Door
  - Date of FDAI
  - Pass
  - Fail
  - Work Order Number(s) Assigned
  - Name of Person Conducting FDAI

15

Fire Extinguishers- K355

NUMBERS: 1 monthly / 1- annually / 5- years

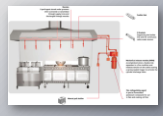
- Monthly Visual
  - Performed by facility staff
  - Typically initial inspection tag
    - Must use consistently if started
  - Can use checklist or spreadsheet
- Annual Service
  - Typically performed by vendor
  - All FEs done at same time
  - 5-year hydrostatic testing

16

Kitchen Hood Fire Suppression Hood / Exhaust Cleaning- K324

NUMBERS: 2 Semi-Annually / 1- Annually or…

- Suppression System
  - Semi-annual- every 6 months
  - Performed by vendor
  - Properly documented and tagged
- Hood / Exhaust Cleaning
  - Weekly cleaning by staff
    - Surfaces and filters - Documented
  - Annual requirement- professional service
    - Performed by vendor
  - **More frequently dependent upon use**
  - Properly documented / sticker on hood



17

Fire / Smoke Dampers- K521

NUMBERS: 1 & 4

- Tested one year after installation
- Tested every 4 years in SNFs
  - Hospitals every 6 years
- Qualified person- typically vendor
- Comprehensive testing process
  - Full unobstructed access verified
  - Fusible link tested to ensure full closure
  - Fusible line replaced if damaged or painted
  - Damper exercised and inspected for obstructions

18

Elevators- K531

- Elevators with Firefighter Emergency Ops
  - Emergency Recall (Phase 1), monthly test
  - Firefighter Controls (Phase 2), monthly test

• Exit Signs- K293

- All exit signs, monthly visual inspection
- Battery powered exit signs
  - 30-second monthly battery test
  - 90-minute annual battery test

• Emergency Lights- K281

- Battery-powered emergency lighting units
  - 30-second monthly battery test
  - 90-minute annual battery test

19

Electrical Receptacle Test- K914

- Annual Requirement: Tension & Polarity
- Pass/Fail Documented
  - The physical integrity of each receptacle shall be confirmed by visual inspection.
  - The continuity of each ground circuit in each electrical receptacle shall be confirmed.
  - Correct polarity of the hot and neutral connections in each electrical receptacle shall be confirmed.
  - The retention force of the grounding blade of each receptacle (except locking-type receptacles) shall be not less than 4-oz (115 g).
- All "Failed" devices must be repaired and re-tested.
- **Hospital-grade receptacles must be tested after initial installation, replacement, or servicing of the device.**

20

Patient Care-Related Electrical Equipment- K921 (PCREE)

NUMBERS: Variable

- Testing & Maintenance Requirements
  - Physical Integrity
  - Resistance
  - Leakage Current
  - Touch Current

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Patient Care-Related Electrical Equipment (PCREE)
NUMBERS: Variable

- Testing Intervals established by facility's P&P (in accordance with manufacturer's guidelines)
  - Before equipment put into service
  - After repair and/or modification
  - Properly documented
  - Instructions and maintenance manuals available

- Several electrical appliances working together = complete system
- Personnel responsible for the testing, maintenance and use of electrical appliances receive continuous training

22

Fire Alarm Systems (FAS)- K345

Quarterly FAS Inspections
- Low air pressure switches
- Low water level switches

Semi-Annual FAS Inspections
- FACP Trouble Signal
- Tamper Switches
- Remote Annunciators
- Duct, Heat and Smoke Detectors
- Manual Pull Stations
- Audible / Visual Notification Devices
- Supervising Station Alarm System Transmitters

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Fire Alarm Systems (FAS)

Annual FAS Tests / Inspections

- Control Equipment Test / Visual Inspection
- FACP Trouble Signal Test
- Remote Annunciator Test
- Initiating Devices Tests
  - Duct Detectors
  - Heat Detectors
  - Manual Pull Stations
  - Functional Test of Smoke Detectors and Smoke Alarms
- Audible / Visual Alarm Notification Devices Test
- Supervising Station Alarm System Transmitters Test
- Interface relays and modules
- Battery Charger Test / Battery Discharge Test

24

Fire Alarm Systems (FAS)

Smoke Detector Sensitivity Test- **1, 2 & 5**

- Smoke detector sensitivity must be checked within one year after installation, then checked every alternate year thereafter.
  - After the second test, if test results indicate that the device remains within its listed and marked sensitivity range, the length of time between tests is permitted to be extended to a maximum of 5 years
- Addressable FAS: Documentation required confirming that the system performs its own sensitivity testing per NFPA 72 requirements

FACP Batteries - Specific Testing Requirements Per Type

- Annual Charger & Annual 30 min. Discharge Test
- Lead Acid (replace as needed)
- Nickel Cadmium (replace as needed)
- Primary (dry cell)
- Sealed Lead Acid (replace within 5 years)

25

Automatic Sprinkler Systems- K353

Monthly Visual Inspections

- Gauges
- Control Valves/Tamper Switches
- OS&Y Valves-Open
- Exterior Alarm Valves

Quarterly Tests/Inspections

- Water Flow Alarm & Valve Supervisory Devices
- Hydraulic Nameplate (NFPA 25)
- Fire Department Connection
- Main Drain Test
- Mechanical Alarm Device

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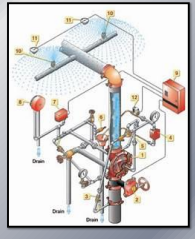
Automatic Sprinkler Systems

Semi-Annual Sprinkler Tests

- Water Flow Alarm Devices
  - Vane & Pressure Switch Type Devices
- Supervisory Sprinkler Devices

Annual Tests/Inspections

- Annual Visual Inspections
  - Hangers/Seismic Bracing
  - Pipes and Fittings
  - Sprinklers and spares
  - Signs
- Main Drain Test
- Control Valves (Positions and Operations)
  - Operating Stems of OS&Y Valves- Lubricated
- Backflow Prevention Assemblies



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Automatic Sprinkler Systems

5 Year Sprinkler Tests / Inspection
- Internal Inspection of Piping
  - Obstruction Investigation
- Gauges
  - Replaced (most common)
  - Tested with Calibrated Gauge
- Inspection of Interior Devices
  - Alarm Valves
  - Strainers
  - Filters
  - Restriction Orifices
  - Check Valves



28

Fire Pumps

Monthly Churn Test (No Flow)
- Run pump for a minimum of 10 minutes.
- Record the system suction and discharge pressure gauge reading.
- Check the pump packing glands for slight discharge.
- Adjust glands nuts if necessary.
- Check for unusual noise or vibration.
- Check packing boxes, bearings or pump casing for overheating.
- Record the pump starting pressure.

Annual Flow Tests
- NFPA 25-Typically conducted by vendor.
- The fire pump flow test is required by NFPA 25 to be conducted once a year in order to measure the pump's flow and pressure.


29

Emergency Power Supply System- K918

Generator
- Nameplate Rating
- Primary Fuel Source
- Alternate Fuel Source
- **Weekly** Visual Inspection
- **Monthly** 30 Minute Load Test
  - Record Transfer time- < 10 seconds
- **Monthly** Battery Test
  - Electrolyte Specific Gravity Testing (Hydrometer)
  - Conductance Test (Special Meter)
- **Annual** Fuel Quality Test
- **Annual** 90 Minute Load Bank Test
- **3-Year** 4-Hour Load Bank Test for Level I EPSS




30

1135 Waiver for ITM

CMS is temporarily modifying these requirements to the extent necessary to permit these facilities to adjust scheduled inspection, testing and maintenance (ITM) frequencies and activities for facility and medical equipment.

CMS is temporarily modifying these provisions to the extent necessary to permit these facilities to adjust scheduled ITM frequencies and activities required by the LSC and HCFC. The following LSC and HCFC ITM are considered critical **are not** included in this waiver:

- Sprinkler system monthly electric motor-driven and weekly diesel engine-driven fire pump testing.
- Portable fire extinguisher monthly inspection.
- Elevators with firefighters' emergency operations monthly testing.
- Emergency generator 30 continuous minute monthly testing and associated transfer switch monthly testing.
- Means of egress daily inspection in areas that have undergone construction, repair, alterations or additions to ensure its ability to be used instantly in case of emergency.

Alcohol Based Hand Rub (ABHR)- K325

- Corridor is at least 6 ft. wide (8 ft. in health care)
- Maximum individual dispenser capacity-0.32 gal. of fluid
  - 0.53 gal. in suites
- Maximum Level 1 aerosol dispensers-18 oz.
- Minimum of 4 ft. horizontal spacing.
- Maximum of 10 gal. aggregate limit in smoke compartment.
  - Excluding one (1) dispenser per room
- Storage of more than 5 gallons of ABHR solution in a smoke compartment requires flammable liquids locker (NFPA 30).
- Dispensers cannot be within 1 inch of an ignition source.
- Fire sprinklers required if dispenser installed over carpeting.
- ABHR solution does not exceed 95% concentration.
- Dispenser protected against inappropriate access.

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ABHR- 1135 Waiver

Alcohol-based Hand-Rub (ABHR) Dispensers: We are waiving the prescriptive requirements for the placement of alcohol based hand rub (ABHR) dispensers for use by staff and others due to the need for the increased use of ABHR in infection control. However, ABHRs contain ethyl alcohol, which is considered a flammable liquid, and there are restrictions on the storage and location of the containers. This includes restricting access by certain patient/resident population to prevent accidental ingestion. Due to the increased fire risk for bulk containers (over five gallons) those will still need to be stored in a protected hazardous materials area.

Refer to: 2012 LSC, sections 18/19.3.2.6. In addition, facilities should continue to protect ABHR dispensers against inappropriate use as required by 42 CFR §482.41(b)(7) for hospitals; §485.623(c)(5) for CAHs; §418.110(d)(4) for inpatient hospice; §483.470(j)(5)(ii) for ICF/IIDs and §483.90(a)(4) for SNF/NFs.

More Numbers…

- 1 inch- minimum an upright sprinkler head can be from ceiling or deck
- 1 ABHR in resident room that does not contribute to aggregated total per smoke compartment
- 1 inch- minimum distance ABHR can be installed from an ignition source
- 1 inch- distance between bottom of non-rated fire door and the floor
- 4 inches- minimum distance an upright or pendant sprinkler head can be from a side wall
- 5 feet- maximum distance a smoke detector can be from a door held open with magnetic hold-opens, unless entire corridor is protected with smoke detectors (typically every 30 feet on center)
- 6 inches- maximum corridor projection- BUT! ADA & HCAI requirements….
- 8 feet- minimum width of corridors in a health care facility
- 18 inches- minimum fire sprinkler clearance below bottom aspect of sprinkler head
- 36 inches- minimum distance smoke or heat detectors from as supply or return diffuser

34

If you haven't figured it out by now LSC Compliance = PAPERWORK

35

Mission:

Safe and Compliant Environment of Care

36

Code Interpretations

- Regulators
- Responders
- Architects
- Engineers
- Vendors
- Consultants
- Ownership/Management

FRUSTRATION!!

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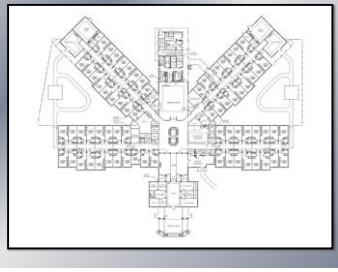
As long as we have you here….
Let's Take a Quick Facility Tour

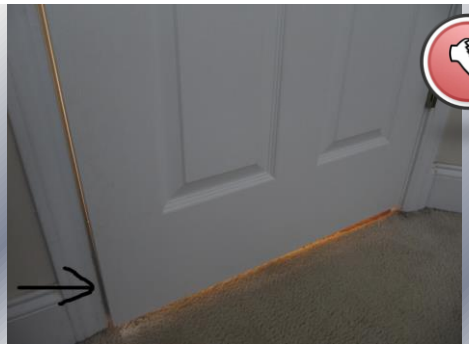


38

Means of Egress

Means of Egress

Protectives (aka doors)



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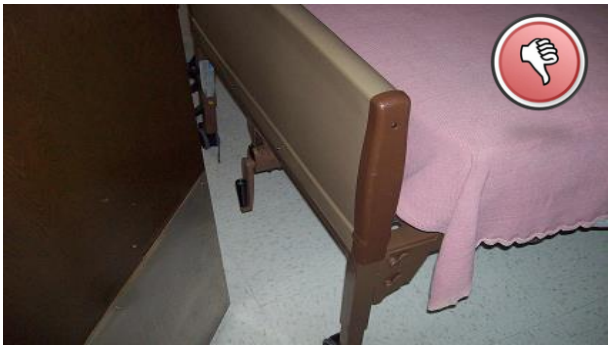
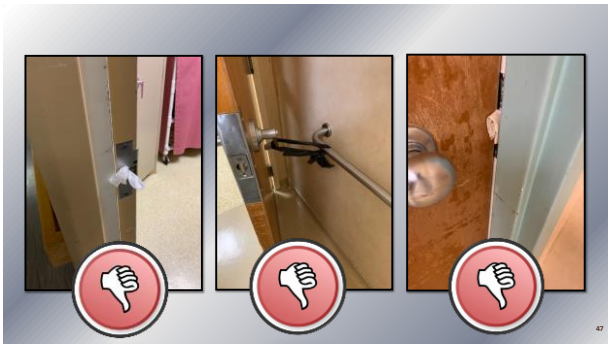
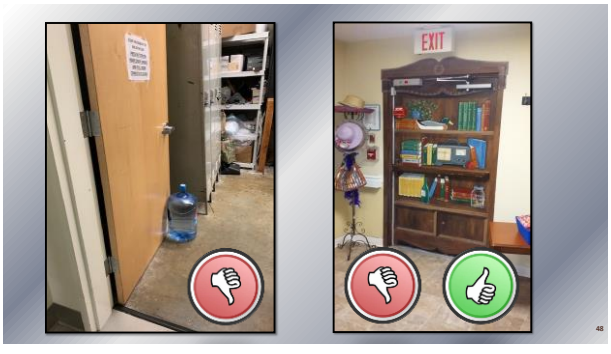


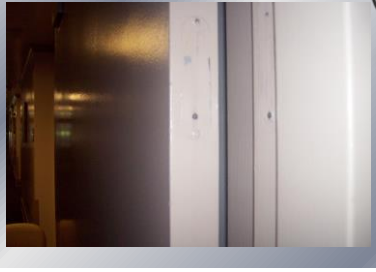



EXIT

Ingenuity or Insanity?

50

What's the Problem?



51

Compartmentalization- Penetrations

Compartmentalization- Proper Fire Stopping

General Storage Practices

56

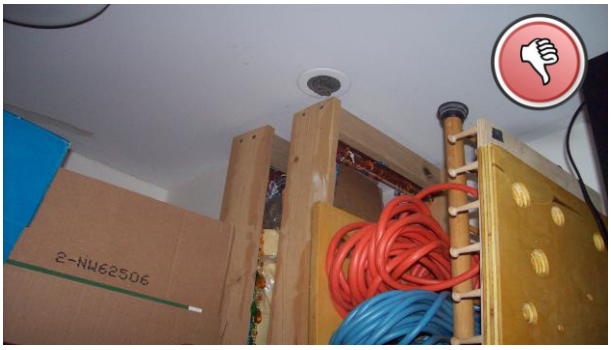
57

Alcohol Based Hand Rub (ABHR)


BROCKTON
LADDER
KEEP BACK 500 FEET


CLEARANCE !!


CAUTION
OXIDIZING GAS(ES)
STORED WITHIN
NO SMOKING
OXYGEN
STORAGE
No Smoking
No Open Flame
FULL
EMPTY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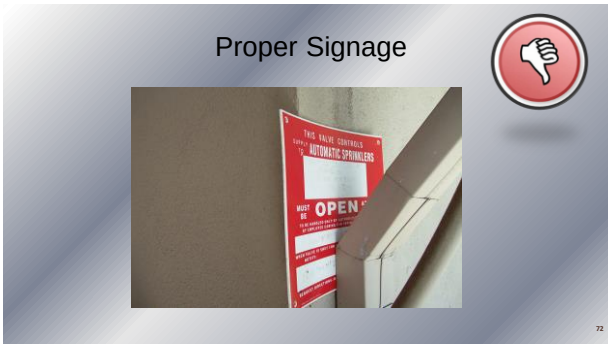
NEW

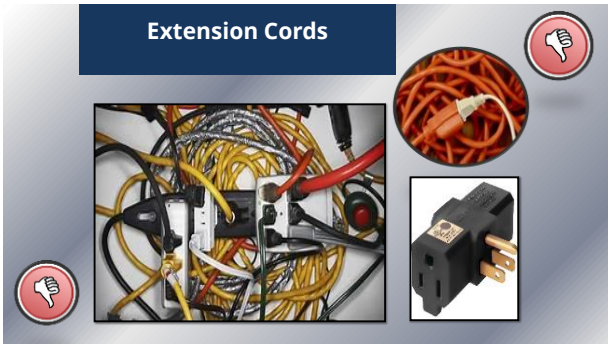

Proper Signage
THIS VALVE CONTROLS
AUTOMATIC SPRINKLERS
OPEN
72

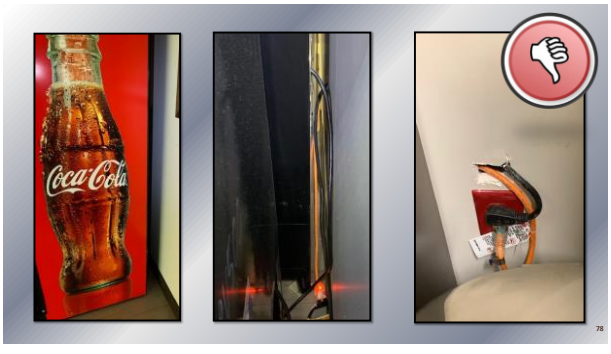
73

74

75

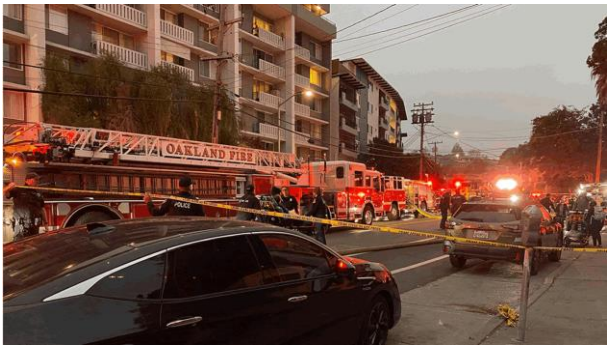
Extension Cords

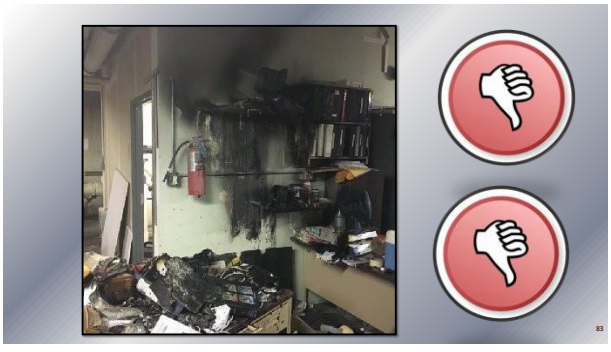




Approved Power Strips

UL 1363 or UL 1363A


OAKLAND FIRE



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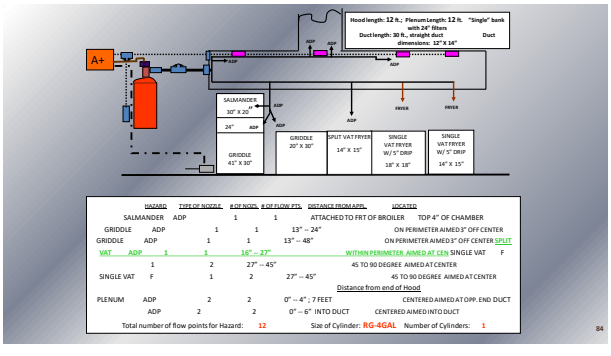
Hood length: 12 ft.; Plenum Length: 12 ft. "Single" bank with 24" filters
Duct length: 30 ft., straight duct Duct dimensions: 12" X 14"
A+
ADP
SALMANDER 30" X 20"
24"
GRIDDLE 41" X 30"
GRIDDLE 20" X 30"
SPLIT VAT FRYER 14" X 15"
SINGLE VAT FRYER W/ 5" DRIP 18" X 18"
SINGLE VAT FRYER W/ 5" DRIP 14" X 15"
FRYER
FRYER
HAZARD TYPE OF NOZZLE # OF NOZL # OF FLOW PTS DISTANCE FROM APPL LOCATED
SALMANDER ADP 1 1 ATTACHED TO FRT OF BROILER TOP 4" OF CHAMBER
GRIDDLE ADP 1 1 13" -- 24" ON PERIMETER AIMED 3" OFF CENTER
GRIDDLE ADP 1 1 13" -- 48" ON PERIMETER AIMED 3" OFF CENTER SPLIT
VAT ADP 1 1 16" -- 27" WITHIN PERIMETER AIMED AT CEN SINGLE VAT F
1 2 27" -- 45" 45 TO 90 DEGREE AIMED AT CENTER
SINGLE VAT F 1 2 27" -- 45" 45 TO 90 DEGREE AIMED AT CENTER
Distance from end of Hood
PLENUM ADP 2 2 0" -- 4" ; 7 FEET CENTERED AIMED AT OPP. END DUCT
ADP 2 2 0" -- 6" INTO DUCT CENTERED AIMED INTO DUCT
Total number of flow points for Hazard: 12 Size of Cylinder: RG-4GAL Number of Cylinders: 1

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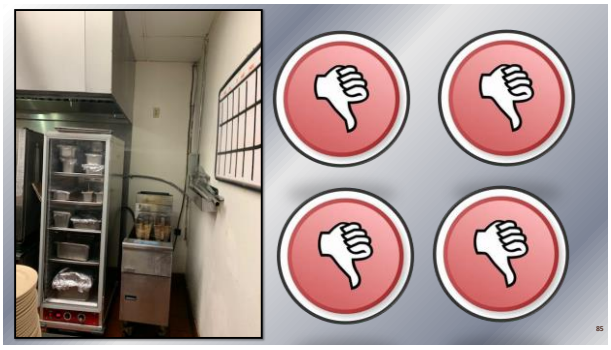
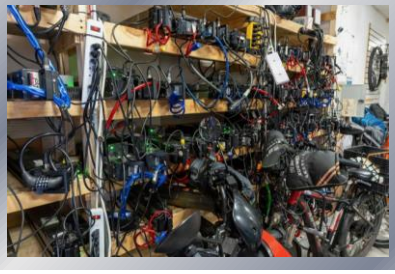
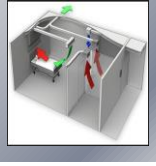


New Threat = Lithium Batteries



Isolation Measures



Alternate Life Safety Measures

Compliance

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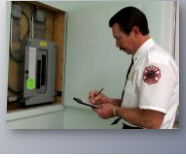

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SURVEY SUCCESS !

THANK YOU!

Stan Szpytek, President
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(708) 707-6363

FLS
Fire and Life Safety, Inc.

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