EL SEGUNDO FIRE DEPARTMENT
Fire Prevention Division

Regulation E-2-e
Standards for Clean Agent Fire Extinguishing Systems

I. INTRODUCTION

A. **Purpose:** The purpose of this regulation is to establish a consistent regulatory standard for the design, installation and maintenance of clean agent fire extinguishing systems.

B. **Scope:** This regulation shall apply to all clean agent fire extinguishing systems hereafter installed regardless of whether they were required by code.

C. **Authority:** California Fire Code, Chapter 1, Division II, Sections 102.9 and 101.4.

II. RESPONSIBILITY

A Individuals, Companies, Corporations and governmental entities that have a clean agent fire extinguishing system shall be responsible for compliance with this regulation.

B. The Fire Prevention Division of the El Segundo Fire Department shall approve the design and installation of clean agent fire extinguishing systems prior to operation/use.

II. POLICY

When a business has a room for information technology equipment, a computer/data room, they may have business interruption/loss prevention or insurance requirements to have the equipment protected by a clean agent fire extinguishing system. This requirement is also identified in National Fire Protection Association (NFPA) Standard 75, Standard for the Protection of Information Technology Equipment from an evaluation of risks within the room.

When a clean agent fire extinguishing system is installed, modified or added to, plans shall be submitted to the Fire Department and a permit issued. The new installation, modification or addition shall have an acceptance test performed in the Fire Department's presence. The fire alarm contractor shall be responsible

to comply with this Regulation and applicable NFPA Standards to obtain final approval.

III. REQUIREMENTS

I. Design and installation

Systems shall be designed and installed in accordance with California Fire Code Chapter 9, NFPA Standard 72, National Fire Alarm and Signaling Code and NFPA Standard 2001, Standard on Clean Agent Fire Extinguishing Systems. El Segundo Fire Department, Fire Prevention Division Regulation F-2-b, Fire Alarm Standards and the system manufacturer's specifications shall be followed.

III. Requirements

1. General
   a. Plans and specifications shall be submitted for approval through the Department of Planning and Building Safety. If an exhaust system is required under Section III.g.1 of this policy, separate electrical and mechanical permits are required for that system. Required permits shall be obtained and necessary inspections shall be arranged for approval. The submittal shall be coordinated and submitted as a package by a single, prime contractor who shall also coordinate all required inspections.
   b. Extinguishing gas release shall be through automatic detection activated by a 2 stage detector system (cross-zoning, verified detection, priority matrix or similar). Detectors shall be placed in accordance with the manufacturer's specifications and shall conform to NFPA Standard 72. Location of above-ceiling and underfloor detectors shall be marked on ceiling or floor tiles. Heat detectors are not permitted. The system discharge/actuation shall be by automatic means.
   c. The system control panel shall be located immediately outside of the protected area at the main exit/entrance.
   d. Manual pull/activation stations shall be provided at each exit and shall be readily accessible.
   e. All other controls with the exception of the abort stations and manual pull stations, shall be keyed, within a locked cabinet, or otherwise protected. All controls shall be labeled with permanent signs.
   f. A graphic annunciator is required where there when the detection system has more than 4 detectors and shall be

located at the system control panel. Using the device display on the system control panel is not permitted in lieu of the graphic annunciator.

g. Exhaust System. An exhaust system shall be provided as follows:

(1) Where required - Exhaust systems are required in occupied areas equipped with a clean agent total flooding system.

(2) If an unoccupied area above or below an occupied area is equipped with a total flooding system, but the occupied area is not so equipped, no exhaust system is required for either space.

NOTE: A total flooding system consists of a supply of a clean agent chemical arranged to discharge into, and fill to the proper concentration, an enclosed space or enclosure about the hazard. A local application system consists of a supply of a clean agent chemical arranged to discharge directly on the burning material.

(3) Separate Electrical and Mechanical permits from the Department of Planning and Building Safety are required.

(4) The system shall be designed to provide 1 cubic foot per minute of air movement per square foot of floor area.

(5) Ducts shall conform to the California Mechanical Code and shall be provided with a motor operated damper located at the duct inlet, which automatically opens upon activation of the exhaust system. The damper and the extinguishing system shall be inter-connected, so that the damper must be closed in order for the system to be reset. Ducts which pass through a fire barrier wall shall be in a shaft having the same hourly rating as the fire barrier wall, except when an approved, fire-rated, motorized damper is installed at such occupancy separation. This damper may be in addition to the one required at the duct inlet.

Ducts shall not pass through fire-rated floors. The duct shall terminate outside the building, not less than 10 feet from any fresh air intake. Appropriate building

permits shall be obtained for all alterations necessary to install the exhaust system.

(6) Exhaust equipment shall not be located within a plenum unless approved for such use.

(7) The control switch for the exhaust system shall be a key type or within a locked cabinet or otherwise protected. The control panel shall be labeled with a permanent sign: "CLEAN AGENT SYSTEM EXHAUST - FOR FIRE DEPARTMENT USE ONLY."

h. Extinguishing gas bottles shall be protected from damage and situated so that necessary maintenance and tests can be accomplished.

i. In occupied areas, a direct outside telephone or a private phone line shall be provided next to each abort station. The private line shall be to a monitored station which is staffed during all hours that

j.

k. the premises are occupied.

IV. Safety

1. All Protected Areas (including areas above underfloor systems).

a. Adequate aisleways of a minimum of 36 inches in width shall be provided to required exits from the area.

b. At least one exit from each protected area exceeding 500 square feet shall exit directly to the outside, or to a corridor or stairway and not through an intervening room or area. Doors shall be self-closing and self-latching, they shall open outwardly.

c. Adequate bells or horns, lights and warning signs shall be provided both inside and immediately outside the protected area. Warning bells/horns shall be audible to 15 db over ambient levels within the area. Warning lights shall be visible throughout the protected area. Warning bells/horns, lights and signs shall be installed both inside and outside each entrance to the room or area.

d. Personnel who may work in the protected area shall receive adequate training in the operation and hazards of the system and how to respond to an alarm.

V. Operation

In order to minimize false alarms, and to allow for evacuation by occupants and operation and/or shut down of equipment necessary to efficient system performance, sequence delays and a system abort

control are permissible when requested by the owner, occupant or other persons responsible for the area to be protected. These features are not required. All operations may occur upon receipt of the 1st alarm if desired by the owner.

1. Sequence of Operation
   a. Upon operation of the first detection alarm, the alarm bell/horn shall sound inside the protected area only.
   b. Upon activation of the second detector alarm, the following shall occur without delay:
      (1) All ventilating and cooling air movement in and out of protected area shall be shut down immediately.
      (2) Warning lights and horns located inside of the protected area shall operate.
   c. Upon time-out of the system, system discharge, the following shall occur:
      (1) Warning lights and horns located outside of the protected area shall operate. The discharge horn/light shall operate in the protected area. Power to computers or other protected equipment shall be shut down automatically.

      (2) Clean agent chemical discharge may be delayed for a maximum of 30 seconds after the operation of the second detector.

2. Abort Control

   1. When provided, the abort control station shall be located within the protected space at each exit.
   2. The abort control shall be arranged so that it must be continuously held to interrupt the discharge. If the abort switch is release, the time-out will continue to operate, unless the time-out has been completed; then the discharge will occur immediately unless the operation is averted by the control located within the system control panel.
   3. A direct outside telephone or a private phone, connected to a monitored station which is staffed during all hours that the premises is occupied shall be located within 18" from the abort button.
   4. Keys to the system panel shall only be in the possession of fire, security or other authorized company personnel who would respond and reset the system and in the building's Knox Box.

VI. Acceptance test
   1. Room integrity testing shall be performed in accordance with NFPA

2001.

2. The system piping network shall have a flow test with nitrogen or an inert gas to verify that the flow is continuous and that the piping and nozzles are unobstructed.
3. The system piping shall be pneumatically tested in a closed circuit for a period of 10 minutes at 40 PSI. At the end of the 10 minutes, the pressure drop shall not exceed 20 percent of the test pressure.
4. All fire alarm initiating devices, the notification appliances and the clean agent system control panel shall be tested in accordance with NFPA 72 and El Segundo Fire Department Fire Prevention Division Regulation F-2-b.
4. The room integrity test, piping system pneumatic test and system acceptance test shall be witnessed and approved by a member of the Fire Department.
5. Additional requirements may be imposed by the Fire Department to ensure adequate safety of personnel. Any request for variance, or deviation from this requirement shall be in writing and shall be first approved by the Fire Department. All other regulated codes, ordinances and requirements shall apply.

VII. Maintenance and service

1. Maintenance and servicing of the systems shall only be performed by a person having a license from the State Fire Marshal for engineered extinguishing systems.
2. Semi-annually, the weight and pressure of refillable containers and the weight of factory charged nonrefillable containers which do not have a pressure indicator shall be checked. If a container shows a loss in net weight of more than 5 percent or a loss in pressure (adjusted for temperature) of more than 10 percent, it shall be refilled or replaced.
3. Annually, all system components shall be thoroughly inspected and tested for proper operation by competent personnel.
4. The weight, pressure and condition of the system container shall be recorded on a tag attached to the container.

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Approved By: James Carver
Fire Marshal