

ATTACHMENT ONE

PERMITTING GUIDELINES FOR FOG EFFECTS SYSTEMS

PURPOSE: To provide uniform direction to the Authority Having Jurisdiction in the submission of construction documents for plan review, permitting and inspection relating to systems installed in buildings and structures that deliver cryogenic liquids or liquid CO₂ as agents for visual effects.

SPECIFICATIONS AND REQUIREMENTS:

GENERAL REQUIREMENTS

- a. Fog effects that utilize cryogenic liquids or liquid CO₂ shall be in accordance with this guideline and other applicable codes as referenced in the Florida Building Code and the Florida Fire Prevention Code.
- b. Provide a narrative describing procedures relating to normal function of the system.
- c. Provide a narrative explaining emergency safety processes.
- d. Provide operator training methodology.
- e. Provide Material Safety Data Sheet.
- f. Comply with all the requirements of building, electrical, mechanical, plumbing, life safety and fire trades as applicable to the project.

Note: This Guideline does not take the place of, nor take precedence over the Florida Building Code or Florida Fire Prevention Code. When a conflict exists between the requirements of this guideline and the Florida Building Code or Florida Fire Prevention Code the Authority Having Jurisdiction will prevail.

SITE SPECIFIC DESIGN

Shall be submitted, signed and sealed by a Florida Registered Professional Engineer to establish design criteria for fog effect included but not limited to the following check list:

1. General Description:

- a. Description of building uses.
- b. Description of space containing the fog effect.
- c. Net volume accounting for maximum occupant load.
- d. Amount of agent to be dispensed and time intervals.
- e. Volume analysis of space based on both controlled and uncontrolled release.

2. Project Description:

- a. Location of fog effect.
- b. Proposed source of fog effect.
- c. Controlling of fog effect.
- d. System interlock to prevent extended release.(as we previously agreed, 20 second release and interlocked to prevent a re-release)
- e. Ventilation systems:
 - I. Source, description and capacity of make-up air.
 - II. Location of exhaust ventilation and capacity.

III. Proximity of exhaust discharge to an air intake.

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- f. Properties of liquid source.
- g. Equipment reference.
- h. Manufacturer's specifications for all components.

3. Tank Requirements:

- a. Manufacturer's specifications for tank.
- b. Vehicular protection, if outdoors; show detail on bollards.
- c. Distance from storage to exposure.
- d. Storage conditions and location, temperature limitations based on specific installation.
- e. Signage.
- f. Spill control and secondary containment.
- g. Tank and system pressure control.
- h. Clearance from combustibles.

4. Delivery System:

- a. Size of pipe.
- b. Manufacturer's specifications indicating piping suitable for application.
- c. Drip pans under all nozzles or points of discharge.
- d. Wall penetration and fire protection details.
- e. Pipe and component Insulation.
- f. Valves.
- g. Fittings.
- h. Vent line.
- i. Nozzles/devices:
 - I. Location and direction of fog.
 - II. Distance from people (must ensure persons cannot be exposed to freezing liquid or fog).
 - III. Drip pans.
 - IV. Nozzle specifications and support details.

5. Alarm and Sensor Detection: (components have to be listed)

- a. Indicate type of alarm to be used.
- b. Show plan locations and indicate mounting heights.
- c. Connect to the fire command center with compatible listed equipment, if applicable.
- d. Cryogenic liquids – O₂ sensors only, with two critical values:
 - I. Set 19.8 percent O₂ will shutdown supply of gas, initiate local alarm and activate exhaust and 100 percent fresh air make-up automatically.
 - II. Set 19.5 percent O₂ will initiate fire alarm signal for evacuation and send signal for emergency response from the Fire Department.
- e. Liquid CO₂ requires both CO₂ and O₂ sensors, both with critical values:
 - I. Set 0.5 percent CO₂ will shutdown supply of gas, initiate local alarm and activate exhaust and 100 percent fresh air make-up automatically.

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- II. Set 1.5 percent CO₂ will initiate fire alarm signal for evacuation and send signal for emergency response from the Fire Department.
- f. Emergency alarm for indoor storage:
 - I. Indicate type of alarm to be used.
 - II. Show plan locations and indicate mounting heights.
 - III. Connect to the fire command center with compatible listed equipment.
 - IV. Cryogenic liquid requires O₂ sensors with two critical values:
 - i. Set 19.8 percent O₂ will shutdown supply, initiate local alarm and activate exhaust and make-up air automatically.
 - ii. Set 19.5 percent O₂ will initiate fire alarm signal for evacuation and send signal for emergency response to the Fire Department.
 - V. Liquid CO₂ requires both CO₂ and O₂ sensors, both with critical values:
 - i. Set 0.5 percent CO₂ will shutdown supply, initiate local alarm and activate exhaust and make-up air automatically.
- g. Set 1.5 percent CO₂ will initiate fire alarm signal for evacuation and send signal for emergency response to the Fire Department.
- h. Stand-by power.