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The following Clean Agent Fire Extinguishing System Plans Submittal Checklist is required information for clean agent fire extinguishing system permit review. Use of the form does not guarantee that plans will be accepted on the first submittal, but will aid in reducing the number of re-submittals required due to the lack of information or conflicting information being provided. This checklist should not be considered to be all-inclusive. Additional information may be required. Use of this checklist will not eliminate the requirement for a good knowledge and understanding of NFPA 2001.

For issuance of the clean agent fire extinguishing system permit and prior to any installation and inspection request, the following information and/or forms shall be completed, submitted and approved.

- Completed & approved permit application.
- Include payment for permit fees.
- 1 Full set of Digital plans provided to bcfdplans@barrowga.org

Any material installed or work performed prior to the issuance of a permit will be subject to two times the permit fee and/or required to be removed. A hard copy of the permit and an approved set of plans are required to be maintained on the job site at all times and must be on site prior to any worked being performed unless a limited early start request has been granted. Limited early start requests are considered on a case by case basis, are required to be submitted in writing on letter head and are not automatically granted.

- 5.1.1 Specifications. Specifications for total flooding and local application clean agent fire extinguishing systems shall be prepared under the supervision of a person fully experienced and qualified in the design of such systems and with the advice of the authority having jurisdiction. The specifications shall include all pertinent items necessary for the proper design of the system, such as the designation of the authority having jurisdiction, variances from the standard to be permitted by the authority having jurisdiction, design criteria, system sequence of operations, the type and extent of the approval testing to be performed after installation of the system, and owner training requirements.
- 5.1.2.1 Working plans and calculations shall be submitted for approval to the authority having jurisdiction before system installation or remodeling begins. These documents shall be prepared only by persons fully experienced and qualified in the design of total flooding and local application clean agent fire extinguishing systems. Deviation from these documents shall require permission of the authority having jurisdiction.
- 5.1.2.2 Working plans shall be drawn to an indicated scale and shall show the following items that pertain to the design of the system:
 - (1) Name of owner and occupant.

- (2) Location, including street address.
- (3) Point of compass and symbol legend.
- (4) Location and construction of protected enclosure walls and partitions.
- (5) Location of fire walls.
- (6) Enclosure cross section, full height or schematic diagram, including location and construction of building floor/ceiling assemblies above and below, raised access floor and suspended ceiling.
- (7) Agent being used.
- (8) Design extinguishing or inerting concentration.
- (9) Description of occupancies and hazards being protected, designating whether or not the enclosure is normally occupied.
- (10) For an enclosure protected by a clean agent fire extinguishing system an estimate of the maximum positive and the maximum negative pressure, relative to ambient pressure, expected to be developed upon the discharge of agent.
- (11) Description of exposures surrounding the enclosure.
- (12) Description of the agent storage containers used including internal volume, storage pressure, and nominal capacity expressed in units of agent mass or volume at standard conditions of temperature and pressure.
- (13) Description of nozzle(s) used including size, orifice port configuration, and equivalent orifice area.
- (14) Description of pipe and fittings used including material specifications, grade, and pressure rating.
- (15) Description of wire or cable used including classification, gauge [American Wire Gauge (AWG)], shielding, number of strands in conductor, conductor material, and color coding schedule. Segregation requirements of various system conductors shall be clearly indicated. The required method of making wire terminations shall be detailed.
- (16) Description of the method of detector mounting.
- (17) Equipment schedule or bill of materials for each piece of equipment or device showing device name, manufacturer, model or part number, quantity, and description.
- (18) Plan view of protected area showing enclosure partitions (full and partial height); agent distribution system including agent storage containers, piping, and nozzles; type of pipe hangers and rigid pipe supports; detection, alarm, and control system including all devices and schematic of wiring interconnection between them; end-of-line device locations; location of controlled devices such as dampers and shutters; and location of instructional signage.
- (19) Isometric view of agent distribution system showing the length and diameter of each pipe segment; node reference numbers relating to the flow calculations; fittings including reducers and strainers; and orientation of tees, nozzles including size, orifice port configuration, flow rate, and equivalent orifice area.
- (20) Scale drawing showing the layout of the annunciator panel graphics if required by the authority having jurisdiction.
- (21) Details of each unique rigid pipe support configuration showing method of securement to the pipe and to the building structure.
- (22) Details of the method of container securement showing method of securement to the container and to the building structure.
- (23) Complete step-by-step description of the system sequence of operations, including functioning of abort and maintenance switches, delay timers, and emergency power shutdown.
- (24) Point-to-point wiring schematic diagrams showing all circuit connections to the system control panel and graphic annunciator panel.
- (25) Point-to-point wiring schematic diagrams showing all circuit connections to external or add-on relays.
- (26) Complete calculations to determine enclosure volume, quantity of clean agent, and size of backup batteries and method used to determine number and location of audible and visual indicating devices, and number and location of detectors.
- (27) Details of any special features.
- (28)* Pressure relief vent area, or equivalent leakage area, for the protected enclosure to prevent development, during system discharge, of a pressure difference across the enclosure boundaries that exceeds a specified enclosure pressure limit

5.1.2.3 The detail on the system shall include information and calculations on the amount of agent; container storage pressure; internal volume of the container; the location, type, and flow rate of

each nozzle including equivalent orifice area; the location, size, and equivalent lengths of pipe, fittings, and hose; and the location and size of the storage facility. Pipe size reduction and orientation of tees shall be clearly indicated. Information shall be submitted pertaining to the location and function of the detection devices, operating devices, auxiliary equipment, and electrical circuitry, if used. Apparatus and devices used shall be identified. Any special features shall be adequately explained.

5.1.2.3.1 Pre-engineered systems shall not be required to specify an internal volume of the container, nozzle flow rates, equivalent lengths of pipe and fitting and hose, or flow calculations, when used within their listed limitations. The information required by the listed system design manual, however, shall be made available to the authority having jurisdiction for verification that the system is within its listed limitations.

5.1.2.4 An "as built" instruction and maintenance manual that includes a full sequence of operations and a full set of drawings and calculations shall be maintained on site.

5.1.2.5 Flow Calculations.

5.1.2.5.1 Flow calculations along with the working plans shall be submitted to the authority having jurisdiction for approval. The version of the flow calculation program shall be identified on the computer calculation printout.

5.1.3.1 Plans and calculations shall be approved prior to installation.

5.2.1* System flow calculations shall be performed using a calculation method listed or approved by the authority having jurisdiction. The system design shall be within the manufacturer's listed limitations.

5.2.2 Valves and fittings shall be rated for equivalent length in terms of pipe or tubing sizes with which they will be used. The equivalent length of the container valve shall be listed and shall include siphon tube, valve, discharge head, and flexible connector.

5.2.3 Piping lengths and orientation of fittings and nozzles shall be in accordance with the manufacturer's listed limitations.

5.2.4 If the final installation varies from the prepared drawings and calculations, new drawings and calculations representing the "as built" installation shall be prepared.

5.3.1 In the design of a total flooding system, the characteristics of the protected enclosure shall be considered.

5.3.4 To prevent loss of agent through openings to adjacent hazards or work areas, openings shall be permanently sealed or equipped with automatic closures. Where reasonable confinement of agent is not practicable, protection shall be expanded to include the adjacent connected hazards or work areas or additional agent shall be introduced into the protected enclosure using an extended discharge configuration.

5.3.5* Other than the ventilation systems identified in 5.3.5.2, forced-air ventilating systems, including self-contained air recirculation systems, shall be shut down or closed automatically where their continued operation would adversely affect the performance of the fire extinguishing system or result in propagation of the fire.

5.3.6* The protected enclosure shall have the structural strength and integrity necessary to contain the agent discharge. If the developed pressures present a threat to the structural strength of the

enclosure, venting shall be provided to prevent excessive pressures. Designers shall consult system manufacturer's recommended procedures relative to enclosure venting. [For pressure relief vent area or equivalent leakage area, see 5.1.2.2(28).]

- 5.4.1 The flame extinguishing or inerting concentrations shall be used in determining the agent design concentration for a particular fuel. For combinations of fuels, the flame extinguishment or inerting value for the fuel requiring the greatest concentration shall be used unless tests are made on the actual mixture.
- 5.4.3.1 The inerting concentration shall be determined by test.
- 5.4.3.2* The inerting concentration shall be used in determining the agent design concentration where conditions for subsequent reflash or explosion exist.
- 5.4.3.3 The minimum design concentration used to inert the atmosphere of an enclosure where the hazard is a flammable liquid or gas shall be the inerting concentration times a safety factor of 1.1.