
USACE / NAVFAC / AFCEA UFGS-13971N (September 2000)

Preparing Activity: NAVFAC Replacing without revision
NFGS of same number and date

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 25 June 2004

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SECTION 13971N

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09/00

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SECTION 13971N

WET CHEMICAL FIRE EXTINGUISHING FOR KITCHEN CABINET 09/00

NOTE: This guide specification covers the requirements for preengineered wet chemical fire extinguishing systems for protection of cooking equipment including exhaust hoods, ducts, and related work.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

NOTE: System requirements shall conform to UFC 3-600-01 Design: Fire Protection Engineering For Facilities and NFPA 17A, "Wet Chemical Extinguishing Systems."

NOTE: The following information shall not indicate locations of piping, fusible links, or discharge nozzles; project drawings should indicate the following information:

1. Location and detail of each hood, plenum, and duct to be protected.
2. Location, type, height, and size of each cooking appliance to be protected.

3. Location of fire alarm panel.

4. Method of electrical or fuel shut-off, such as shunt trip breakers or extinguishing system operated solenoid valves. NFPA 96 requires that the electrical power and fuel to all protected appliances be shut off upon actuation of the extinguishing system. Additionally, any gas appliance under the same hood as protected appliances must be shut off. NFPA 96 requires the shut off equipment be of the type that requires manual resetting prior to the fuel or power being restored. This includes power outages.

5. Location of remote manual actuation stations.

PART 1 GENERAL

1.1 REFERENCES

NOTE: Issue (date) of references included in project specifications need not be more current than provided by the latest guide specification. Use of SpecsIntact automated reference checking is recommended for projects based on older guide specifications.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

FM GLOBAL (FM)

FM P7825 (2003) Approval Guide

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 17A (2002) Wet Chemical Extinguishing Systems

NFPA 70 (2002) National Electrical Code

NFPA 96 (2001) Ventilation Control and Fire Protection of Commercial Cooking Operations

UNDERWRITERS LABORATORIES (UL)

UL Fire Prot Dir (2004) Fire Protection Equipment Directory

1.2 SYSTEM REQUIREMENTS

[Provide new] [and] [modify existing] preengineered wet chemical fire extinguishing system for protection of [new] [and] [existing] cooking equipment including exhaust hoods, ducts, and related work. Equipment, materials, installation, workmanship, inspection, and testing shall be in strict accordance with the required and advisory provisions of the manufacturer's installation manual, NFPA 17A and NFPA 96, except as

modified herein. Each system shall include materials, accessories, and equipment necessary to provide each system complete and ready for use. Provide each system to give full consideration to blind spaces, piping, electrical equipment, ducts, and other construction and equipment in accordance with detailed working drawings to be submitted for approval. Devices and equipment for fire protection service shall be UL Fire Prot Dir listed or FM P7825 approved for use with wet chemical fire extinguishing systems. In the NFPA publications referred to herein, the advisory provisions shall be considered to be mandatory, as though the word "shall" had been substituted for "should" wherever it appears; reference to the "authority having jurisdiction" shall be interpreted to mean the [_____] Division, Naval Facilities Engineering Command, Fire Protection Engineer.

1.2.1 Detail Drawing

Submit electrical wiring diagrams and dimensioned or scaled piping layout showing components, pipe sizes, pipe lengths, nozzle and valve locations in relation to cooking appliances and fusible link locations.

1.3 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for information only. When used, a designation following the

"G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

[The [[_____] Division] [Engineering Field Activity [_____]], Naval Facilities Engineering Command, Fire Protection Engineer, will review and approve all submittals in this section requiring Government approval.]

NOTE: For projects administered by the Pacific Division and Engineering Field Activity Chesapeake, Naval Facilities Engineering Command, use the optional "SUBMITTALS" article immediately below and delete the general "SUBMITTALS" article above for Navy projects.

[The [[_____] Division] [Engineering Field Activity [_____]], Naval Facilities Engineering Command, Fire Protection Engineer delegates the authority to the Quality Control (QC) Representative's U.S. Registered Fire Protection Engineer for review and approval of submittals required by this section. Submit to the [_____] Division, Naval Facilities Engineering Command, Fire Protection Engineer one set of all approved submittals and drawings immediately after approval but no more later than 15 working days prior to final inspection.]

SD-02 Shop Drawings

Fire extinguishing system[; G][; G, [_____]]

SD-03 Product Data

Storage cylinder[; G][; G, [_____]]

Fusible links[; G][; G, [_____]]

Release mechanisms[; G][; G, [_____]]

Valve[; G][; G, [_____]]

Discharge nozzle[; G][; G, [_____]]

Pipe and fittings[; G][; G, [_____]]

Piping and accessories[; G][; G, [_____]]

Remote manual actuation stations[; G][; G, [_____]]

Pressure-operated switches[; G][; G, [_____]]

Manufacturer's installation and maintenance manuals[; G][; G, [_____]]

SD-07 Certificates

Qualifications of installer[; G][; G, [_____]]

SD-08 Manufacturer's Instructions

Fire extinguishing system[; G][; G, [____]]

Submit the extinguishing system manufacturer's installation manual.

SD-10 Operation and Maintenance Data

Fire extinguishing system, Data Package 3[; G][; G, [____]]

System as-built drawings, Data Package 3[; G][; G, [____]]

Submit in accordance with Section 01781 OPERATION AND MAINTENANCE DATA.

SD-11 Closeout Submittals

Sign legends[; G][; G, [____]]

1.4 ELECTRICAL WORK

Associated with this section shall be provided under Section 16402 INTERIOR DISTRIBUTION SYSTEM, except for control [and fire alarm] wiring. [Fire alarm system is specified in Section 13852N INTERIOR FIRE ALARM SYSTEM.] Provide control [and fire alarm] wiring [, including connections to fire alarm systems,] under this section in accordance with NFPA 70. Provide wiring in rigid metal conduit or intermediate metal conduit, except electrical metallic tubing conduit may be provided in dry locations not enclosed in concrete or where not subject to mechanical damage.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications of Installer

Prior to installation, submit data showing that the Contractor has successfully installed systems of the same type and design as specified herein, or that the Contractor has a firm contractual agreement with a subcontractor having such required experience. The data shall include the names and locations of at least two installations where the Contractor, or the subcontractor referred to above, has installed such systems. Indicate type and design of each system and certify that each system has performed satisfactorily in the manner intended for not less than 18 months.

Qualifications of System Technician: Installation drawings, shop drawing and as-built drawings shall be prepared, by or under the supervision of, an individual who is experienced with the types of works specified herein, and is currently certified by the National Institute for Certification in Engineering Technologies (NICET) as an engineering technician with minimum Level-III certification in Special Hazard System program. Contractor shall submit data for approval showing the name and certification of all involved individuals with such qualifications at or prior to submittal of drawings.

PART 2 PRODUCTS

2.1 PREENGINEERED WET CHEMICAL FIRE EXTINGUISHING SYSTEMS

NOTE: If the piping between hood and storage canisters is mounted

against....

specify

A porous surface
(gypsum wallboard, etc.)
that has a painted enamel
finish

black
steel

A stainless steel wall
plate or other nonporous,
prefinished surface

Chrome plated or
stainless steel

Galvanized pipe and fittings are not permitted for
use with wet chemical extinguishing systems.

Systems shall comply with NFPA 17A and NFPA 96, except as modified herein. Piping and accessories within the hood shall be [stainless steel] [or] [chrome plated]. All other piping shall be [chrome or nickel plated or stainless steel] [black steel painted to match the adjacent surface]. Exhaust hoods with grease extractors UL Fire Prot Dir listed or FM P7825 approved are not required to have protection downstream of the grease extractors. Wet chemical agent shall be listed for the particular system and recommended by the manufacturer of the system. Provide systems for protection of [new] [and] [existing] cooking equipment, including exhaust hoods and ducts for cooking equipment requiring protection by NFPA 96, including the following:

- a. [_____]
- b. [_____]
- c. [_____]
- d. [_____]

2.2 SYSTEM CONTROLS

NOTE: If there is no building fire alarm system,
provision for connection to the base fire alarm
system should be included in a separate
specification section. Refer to Section 13852,
"Interior Fire Alarm System."

Each system shall be mechanically actuated by fusible links and by remote manual actuation stations connected to the extinguishing system release mechanisms by stainless steel cables. Arrange each system to automatically shut off the flow of fuel and electrical power to cooking appliances as indicated [and to automatically actuate the building fire alarm fire alarm system as indicated] [and to automatically transmit an alarm over the base fire alarm system as indicated]. Electrical power to hood exhaust fans shall not be shut off unless specifically required by the UL Fire Prot Dir listing or FM P7825 approval. [Provide operating instructions at all system remote manual actuation stations.]

2.3 EXISTING BUILDING FIRE ALARM CONTROL PANEL

Panel was manufactured by [____], Model [____], and presently has [____] spare zone modules. The fire extinguishing system shall be connected to [the zone currently serving [____] [a spare zone module]]. [The fire alarm panel zone identification label shall be replaced with new label of similar construction which indicates the equipment connected to the zone module.] Discharge of the extinguishing system shall actuate the fire alarm control panel in the same manner as other actuating devices. [Extinguishing system wiring shall be supervised in the same manner as other devices connected to the fire alarm system.]

2.4 IDENTIFICATION SIGNS

NOTE: Locate remote manual actuation stations in the normal path of egress and at least 1.50 meters 5 feet from the protected cooking appliances. Avoid grouping stations for different systems together; however, when this is not possible, include identification signs.

Provide red rigid plastic signs with engraved 6 mm 0.25 inch high white lettering at each remote manual actuation station. Sign legends shall be "Fire Extinguishing System" followed by a brief description of the equipment protected.

PART 3 EXECUTION

3.1 INSTALLATION

Equipment, materials, installation, workmanship, inspection, and testing shall be in accordance with the manufacturer's installation and maintenance manuals and NFPA 17A, except as modified herein.

3.2 FIELD QUALITY CONTROL

Perform tests to determine compliance with the specified requirements in the presence of the Contracting Officer. Test, inspect, and approve piping before covering or concealing.

3.2.1 Preliminary Tests

Upon completion and before final acceptance of the work, test each pipe and fittings system by discharging a minimum of one storage cylinder of same size as system cylinder of compressed air or nitrogen (do not use wet chemical) to demonstrate the reliability and proper functioning of all pressure-operated switches, electrical and gas shutoff features, and the discharge of gas from each system discharge nozzle. Individually test remote control stations and other components and accessories to demonstrate proper functioning. Testing shall also include automatic and manual actuation, and fuel or electrical power shutoff [and automatic actuation of the building fire alarm system]. When tests have been completed and corrections made, submit a signed and dated certificate, with a request for formal inspection and tests.

3.2.2 Formal Tests and Inspection

The [[_____] Division] [Engineering Field Activity [_____]], Naval Facilities Engineering Command, Fire Protection Engineer, will witness formal tests and approve systems before acceptance. Submit a written request for formal inspection at least [_____] [15] working days prior to inspection date. An experienced technician regularly employed by the system installer shall be present during the inspection. At the inspection, repeat any or all of the required tests as directed. [Provide plastic containers, hose fittings, and hose at each nozzle to capture the wet chemical and discharge each system to demonstrate uniform distribution of the wet chemical among the nozzles.] Furnish compressed air, nitrogen, [wet chemical] equipment, and personnel for the tests. Refill and reset systems after tests have been completed.

-- End of Section --