UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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USACE / NAVFAC / AFCEC / NASA	**UFGS-21 23 00.00 20 (April 2006)**

Preparing Activity: NAVFAC	**Replacing without change UFGS-13971N (September 2000)**

UNIFIED FACILITIES GUIDE SPECIFICATIONS

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SECTION 21 23 00.00 20

WET CHEMICAL FIRE EXTINGUISHING FOR KITCHEN CABINET
04/06

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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.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

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

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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.

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PART 1 GENERAL

1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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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 APP GUIDE	(updated on-line) Approval Guide http://www.approvalguide.com/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 17A	(2021) Standard for Wet Chemical Extinguishing Systems
NFPA 70	(2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA

	20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code
NFPA 96	(2021) Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations

UNDERWRITERS LABORATORIES (UL)

UL Fire Prot Dir	(2012) 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 APP GUIDE 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 valvelocations in relation to cooking appliances and fusible link locations.

1.3 SUBMITTALS

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NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G". Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters 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, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force, and NASA projects, or choose the second bracketed item for Army projects.
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Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 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.]

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NOTE: For projects administered by NAVFAC PAC and NAVFAC WASH, use the optional "SUBMITTALS" article immediately below and delete the general "SUBMITTALS" article above for Navy projects.
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[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[, [_____]]

SD-03 Product Data

Storage cylinder; G[, [_____]]

Fusible links; G[, [_____]]

Release mechanisms; G[, [_____]]

Valve; G[, [_____]]

Discharge nozzle; G[, [_____]]

Pipe and fittings; G[, [_____]]

Piping and accessories; G[, [_____]]

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

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

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

SD-07 Certificates

Qualifications of installer; G[, [_____]]

SD-08 Manufacturer's Instructions

Fire extinguishing system; G[, [_____]]

Submit the extinguishing system manufacturer's installation manual.

SD-10 Operation and Maintenance Data

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

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

Submit in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

SD-11 Closeout Submittals

Sign legends; G[, [_____]]

1.4 ELECTRICAL WORK

Associated with this section shall be provided under Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM, except for control [and fire alarm] wiring.[Fire alarm system is specified in Section [28 31 60 INTERIOR FIRE ALARM SYSTEM, NON-ADDRESSABLE] [28 31 66 INTERIOR FIRE ALARM AND MASS NOTIFICATION SYSTEM, NON-ADDRESSABLE] [28 31 70 INTERIOR FIRE ALARM SYSTEM, ADDRESSABLE] [28 31 76 INTERIOR FIRE ALARM AND MASS NOTIFICATION SYSTEM, ADDRESSABLE].] 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

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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	

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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 APP GUIDE 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

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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 [28 31 60 INTERIOR FIRE ALARM SYSTEM, NON-ADDRESSABLE] [28 31 66 INTERIOR FIRE ALARM AND MASS NOTIFICATION SYSTEM, NON-ADDRESSABLE] [28 31 70 INTERIOR FIRE ALARM SYSTEM, ADDRESSABLE] [28 31 76 INTERIOR FIRE ALARM AND MASS NOTIFICATION SYSTEM, ADDRESSABLE].
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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 APP GUIDE 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

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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.
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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 cylinderof 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 --