1. GENERAL SPECIFICATION

1.1 The system shall be a pre-engineered, fixed pipe, automatic wet chemical agent fire suppression system for protection of all hazard areas associated with cooking operations, including exhaust hoods, plenums, ductwork and cooking appliances.

1.2 The system shall be a Kidde Fire Systems Model WHDR Wet Chemical Fire Suppression System.

2. CODES & STANDARDS COMPLIANCE

2.1 The design, installation, testing and maintenance of the system shall be in accordance with the following codes and standards as applicable:

- A. UL 300, *Standard for Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment*
- B. ULC/ORD-C1254.6, *Fire Testing of Restaurant Cooking Area Fire Extinguishing System Units*
- C. NFPA 17A: *Standard for Wet Chemical Extinguishing Systems*
- D. NFPA 70: *National Electrical Code® (NEC)*
- E. NFPA 72: *National Fire Alarm Code*
- F. NFPA 96: *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*
- G. Kidde Fire Systems *WHDR Wet Chemical Fire Suppression System Design, Installation, Operation and Maintenance (DIOM) Manual*, part number 87-122000-001 and all applicable addenda & technical bulletins, as identified by Underwriters Laboratories and Underwriters Laboratories Canada, File No. EX3559
- H. All applicable insurance company requirements
- I. All applicable local and state codes and standards
- J. Requirements of the Local Authorities Having Jurisdiction (AHJ)

2.2 The wet chemical system shall have the following listings and approvals as applicable:

- A. Underwriters Laboratories (UL), per Test Standard UL 300
- B. Underwriters Laboratories Canada (ULC), per Standard ULC/ORD-C1254.6
- C. New York City Buildings Department, Materials and Equipment Acceptance Division

2.3 The manufacturer shall meet ISO 9001 requirements for the design, production and distribution of the wet chemical fire suppressions systems for cooking operations.

3. SYSTEM DESCRIPTION

3.1 All wet chemical fire suppression equipment and accessories must be manufactured and/or supplied by Kidde Fire Systems, 400 Main Street, Ashland, MA 01721, USA, Telephone 508.881.2000, www.kiddefiresystems.com.

3.2 The manufacturer shall be ISO 9001 certified.

3.3 The manufacturer shall warranty all WHDR Wet Chemical Fire Suppression System products for six (6) years from the date of purchase.

3.4 The system shall be supplied and installed by an authorized Kidde Fire Systems distributor. The organization and installer shall be trained by the manufacturer to design, install, test and maintain the WHDR Wet Chemical Fire Suppression System and shall be able to produce a certificate stating such upon request.

3.5 The systems design shall be of a pre-engineered, modular type.

3.6 The system shall consist of Kidde WHDR Series APC Storage Cylinder(s), Kidde actuation hardware and Kidde distribution nozzles attached to a fixed pipe network.

3.7 The system shall use Kidde APC (Aqueous Potassium Carbonate) wet chemical agent, a potassium salt solution fire suppression agent. This agent works by producing a synthetic cellular mass (saponification) on the surface of hot or burning grease. This foam layer acts to smother a fire, and serves to prevent re-flash until the grease cools.

4. COMPONENTS

4.1 WHDR Series Cylinder and Valve Assembly

- A. The APC wet chemical agent shall be contained in one or more stored pressure DOT/TC rated steel cylinder and valve assemblies. Cylinders requiring an external source to pressurize the cylinder shall not be acceptable. The cylinder and valve assemblies shall have the following features:
  1. Sufficient cylinder quantities and sizes to protect the entire hazard area shall be provided in accordance with the Kidde WHDR DIOM Manual and filled with the required amount of APC wet chemical agent.
  2. The cylinders shall have a tin-nickel alloy plated brass valve with pressure gauge.
  3. The cylinder shall have a separately mounted shield to protect the pressure gauge.

4. The cylinder and valve assemblies shall be pressurized with dry nitrogen to 175 PSIG (1207 kPa) at 70°F (21°C). The cylinder and valve assemblies shall be capable of being stored and operated at temperatures from 0°F to 120°F (-18°C to 49°C).

B. Approved bracketing shall be provided to mount the cylinders securely to the intended mounting surface.

4.2 Control Equipment

A. The system control equipment shall be capable of all functions associated with automatically and manually discharging the wet chemical agent from all cylinder and valve assemblies, including automatic shutdown of the heat source or fuel and electrical power to all protected areas upon system discharge.

B. The system control head shall be either cylinder or wall mounted, whichever is applicable. Actuators shall be supplied for each system cylinder valve. All mechanical components of the control heads shall be enclosed. No exposed levers, except for a local manual actuation handle, shall be permitted.

C. The control head shall be capable of automatic actuation, either by electrical or mechanical means. The control head shall be equipped with microswitch contacts for audible alarm and/or equipment shutdown. For multiple cylinder systems, additional actuators shall be provided for each additional cylinder. All cylinders protecting one hazard area must be connected for simultaneous discharge by all methods of system actuation.

D. For electric automatic actuation, the electric solenoid shall be actuated by a tested and listed compatible control panel. The detectors shall be rate-compensated thermostat fire detectors. All detection and releasing circuits shall be supervised and the system shall provide for a secondary power supply calculated, at minimum, according to NFPA and UL standards. Rate-compensated detectors shall be located in accordance with NFPA 72. Thermostats shall be chosen with a rating suitable to their expected normal exposure temperature.

E. For automatic mechanical actuation, the system control head shall be activated by Kidde Fire Systems thermobulb link or fusible metal alloy link fire detectors per the Kidde WHDR DIOM Manual. The thermobulb or fusible link system shall require no outside source of power for operation. Detector links used for mechanical system actuation shall be located in accordance with the Kidde WHDR DIOM Manual and all applicable NFPA and UL standards. These links shall be chosen with a rating suitable for their expected normal exposure temperature.

4.3 Distribution Nozzles

A. Nozzles shall be located to protect the exhaust ducts, plenums, and all cooking appliances requiring protection. Nozzles shall not be permitted under the grates of char-rock broilers or radiant (non-upright) char-broilers. Nozzle type, coverage and location shall be according to the Kidde WHDR DIOM Manual.

B. All nozzles shall be equipped with strainers to prevent foreign matter in the agent distribution piping or tubing from clogging the nozzle orifice. All nozzles shall be equipped with foil seals to prevent entry of grease and foreign matter into the nozzles and piping. The foil seals are to be ruptured by pressure at system discharge.

C. All nozzles shall incorporate a ring identification system to easily identify nozzle types. Rings are to be machined into the nozzle body by the manufacturer.

4.4 Distribution System

A. The APC wet chemical agent distribution system shall be designed and installed in accordance with the Kidde WHDR DIOM Manual.

B. The distribution system shall consist of Schedule 40 black steel pipe or stainless steel tubing. Chrome plated piping is permissible. Galvanized piping shall not be used.

C. All fittings for Schedule 40 pipe shall be standard weight steel, malleable iron, ductile iron or cast iron. Galvanized fittings shall not be used.

D. Fittings for stainless steel tubing shall be compression or flare type. Bending of tubing is permissible. All bending radii shall be in accordance with the Kidde WHDR DIOM Manual using commercially available bending jigs.

5. SYSTEM INSTALLATION AND COMMISSIONING

5.1 Kidde WHDR Wet Chemical Fire Suppression System Equipment

A factory authorized distributor shall install and commission the system in accordance with the Kidde WHDR DIOM Manual.

5.2 Training Requirements

The installer shall be certified and trained by Kidde Fire Systems on design, installation, testing and maintenance of the Kidde WHDR Wet Chemical Fire Suppression System.

5.3 Routine Maintenance

Routine maintenance shall be performed in accordance with the Kidde WHDR DIOM Manual, NFPA 96, NFPA 17A, all applicable local codes and standards and local AHJ requirements.