1. GENERAL SPECIFICATION

1.1 A pre-engineered, fixed pipe, automatic wet agent fire suppression system shall be provided and installed for the kitchen exhaust hood(s) and plenum(s), ductwork, and cooking appliances requiring protection

1.2 The system shall be Kidde Wet Chemical, Model WHDR manufactured by Kidde Fire Systems, 400 Main Street, Ashland, Massachusetts. The manufacturer shall be ISO 9001:2000 certified.

2. CODES/STANDARDS COMPLIANCE

2.1 The system shall conform to the following:

A. UL 300, Underwriters Laboratories Standard for Fire Extinguishing Systems for Protection of Restaurant Cooking Area

B. NFPA 17A, Standard on Wet Chemical Extinguishing Systems

C. NFPA 96, Standard for Vapor Removal from Cooking Equipment

D. Kidde Model WHDR Instruction Manual, part number 87-122000-001 and all applicable addenda, as identified by Underwriters Laboratories File No. UL EX-3559

E. All applicable insurance company requirements

F. All applicable local and state codes and standards

G. NFPA 70 – National Electrical Code (NEC)

H. NFPA 72 – National Fire Alarm Code

I. Requirements of the Local Authorities Having Jurisdiction (AHJ)

2.2 The manufacturer shall meet ISO 9001:2000 requirements for the design, production and distribution of the Commercial Kitchen fire suppression systems.

3. SYSTEM DESCRIPTION

3.1 All Commercial Kitchen Wet Chemical, fire suppression equipment and accessories must be manufactured and/or supplied by:

Kidde Fire Systems
400 Main Street
Ashland, MA 01721
U.S.A.

Phone: (508) 881-2000
URL: http://www.kiddefiresystems.com

3.2 The manufacturer shall warrant all WHDR, fire suppression system products for six (6) years from the date of purchase.

3.3 The system shall be supplied and installed by a factory-authorized, Kidde Fire Systems distributor. The organization and Installer shall be trained by the manufacturer to calculate, design, install, test and maintain the WHDR Fire suppression system and shall be able to produce a certificate stating such on request.

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

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

3.6 Agent

A. The system shall use Kidde “APC” (Aqueous Potassium Carbonate) wet agent, which is a potassium salt solution fire suppression agent. The 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 Cylinder and Valve Assembly

A. The “APC” wet agent shall be contained in one or more stored pressure DOT 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. The Kidde Model WHDR cylinder(s) shall be sized according to the Kidde WHDR Instruction Manual and filled with the required amount of “APC” wet agent.

2. The cylinder(s) shall have a tin-nickel alloy plated brass valve, with pressure gauge. The pressure gauge shall have a stainless steel Bourdon tube. Cylinders without pressure gauges shall not be acceptable. The valve shall contain a check stem that is operated by the action of the actuator.

3. The cylinder and valve assemblies shall be pressurized to 175 PSIG (12 bar) with dry nitrogen. The cylinder and valve assemblies shall be capable of being stored and operated at temperatures between 0°F to 120°F (-17°C to 49°C)

4. The cylinder shall have a shield to protect the gauge. The shield shall be a separate assembly from that of the gauge, and shall be separately mounted.

B. Sufficient cylinder and valve assemblies shall be provided to protect the entire hazard area. Approved bracketing shall be provided to mount the cylinder 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 dry 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 equipment shall include a control head, and actuator(s) for each system cylinder valve. The control head can attach with two bolts to an actuator or can be wall mounted, whichever is applicable. All mechanical components of the control heads shall be enclosed. No exposed levers, except for the local manual actuation handle, will be permitted.

C. The control head can be actuated automatically, by electrical or mechanical means. The control head shall be equipped with microU.switch 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 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. Thermostats shall be located according to NFPA 72, standard for detection. 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 KG series link fire detectors. A mechanical thermo-bulb link system shall require no outside source of power for operation. Thermo-bulb links shall be located in accordance with Kidde's WHDR Instruction Manual part number 87-122000-001, and applicable NFPA and UL standards. Thermo-bulb links shall be chosen with a rating suitable to their expected normal exposure temperature.

4.3 Distribution Nozzles

1. Nozzles shall be located to protect the exhaust duct(s), plenum(s), and all cooking appliances requiring protection. Nozzles will not be permitted under the grates of char-rock broilers, or radiant (non-upright) char-broilers. Nozzle choice, coverage and location shall be according to the applicable Kidde UL listed instruction manual.
2. All nozzles shall be equipped with strainers to prevent foreign matter inside the distribution tubing from clogging the nozzle orifice. All nozzles shall be equipped with foil seals which prevent entry of grease and foreign matter into the nozzles and piping. The foil seals are to be ruptured by pressure at system discharge.
3. 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. The entire hood, ductwork, appliance and fire suppression system installation must conform to the requirements of NFPA 96.

4.4 Distribution System

A. The distribution system shall be designed and installed according to the Design, Installation, Operation and Maintenance Manual, Part Number 87-122000-001.

B. All fittings for tubing shall be stainless steel or carbon steel with a zinc phosphate coating. Compression fittings shall be of the “bite type” similar to:

1. Parker-Hannifin “Ferulok”
2. Weatherhead “Flareless 7000” series or equivalent.
3. Other tube fittings which may be described in the Kidde Wet Chemical Instruction Manual are also acceptable. Fittings may be chrome plated.

C. All fittings for Schedule 40 pipe shall be standard weight black malleable iron, ductile iron, steel or stainless steel. Fittings may be chrome plated. Cast iron or galvanized pipe and fittings shall not be used.

D. Stainless steel tubing may be bent rather than using 45 degree or 90 degree elbow fittings. Only commercially available bending jigs shall be used to bend tubing. All bending radii must be in accordance with the Kidde Wet Chemical Instruction Manual.

5. SYSTEM INSTALLATION AND COMMISSIONING

5.1 WHDR Fire Suppression System Equipment

The contractor shall install the system in accordance with the manufacturer's installation, operation and maintenance manual.

5.2 Training Requirements

The installer shall be certified and trained by the manufacturer on installation, design and maintenance of the Kidde WHDR fire suppression system.

5.3 Routine Maintenance

Routine maintenance shall be performed as recommended by the manufacturer's installation, operation and maintenance manual, NFPA 96 and NFPA 17A.