SECTION 15325

VIKING PREACTION SPRINKLER SYSTEM

PART 1 - GENERAL INFORMATION AND REQUIREMENTS

1.1 SCOPE OF WORK

A. Work included:

1. Provide all material, labor, equipment, design and services necessary to perform the installation of the fire sprinkler system described in the specification and as shown on the drawings.

B. Summary of Work:

1. Design, furnish, and install a Viking Double Interlock Preaction Sprinkler System.
2. The Sprinkler System shall be designed for an Ordinary Group I Hazard refer to NFPA-13 Automatic Sprinkler Systems, and Local Authority Having Jurisdiction for sprinkler density, and remote area of coverage.
3. The cross main will use only a single loop, no grid piping will be allowed.
4. Location of the Preaction Sprinkler Valve other than shown on the contract documents is subject to approval by the owner's representative.
5. Sprinkler Hydraulic Calculations shall have a 15%, but not less than 10 psi, safety factor above the required pressure to meet the required design density.

1.2 QUALITY ASSURANCE

A. Codes and standards: This installation shall conform to the latest edition at the time of bid of the following codes:

1. NFPA 13, all appendices, Installation of Sprinkler Systems
2. NFPA, Automatic Sprinkler System Handbook
3. Factory Mutual Approval Guide
4. Underwriters Laboratories Fire Protection Equipment Directory

B. Qualifications of Contractor:

1. All work shall be performed by a contractor with a valid Virginia Business License.
2. The system shall be designed by a NICET Level 3 certified sprinkler designer.

1.3 SUBMITTALS

A. Shop Drawings shall be computer generated utilizing a recognized Cadd program. A submittal book with manufacturers data sheets for all of the components shall also accompany the shop drawings. Submittals shall be approved by the AHJ, and owners Insurance Company prior to fabrication and installation of the system. Partial submittals will be rejected without review. Shop drawings will be on paper no smaller than 30"x42".

PART 2 TRIMPAC™ PREACTION SYSTEM DOUBLE INTERLOCKED - ELECTRIC/PNEUMATIC RELEASE

Viking TRIMPAC Double Interlock Electric/Pneumatic Release Preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be by an electric solenoid valve and a pneumatic actuator. Electric solenoid valve will open upon activation of the electrical supplemental detection system. Pneumatic actuator shall open upon activation of a sprinkler head on the sprinkler system. The opening of the deluge valve shall not be dependent on the order of activation of the release devices, only that both devices must activate before the deluge valve will open. The preaction system riser shall be of a listed and approved assembly. The system riser shall be equipped with a rubber seated check valve downstream of the deluge valve and prior to the supervisory air connection. The preaction system shall be provided with all necessary appurtenances to complete the system. The system shall be installed in conformance with the current Edition of N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The Preaction System shall be of a Double Interlock Release type.

SYSTEM DEVICES

2.0 VIKING TRIMPAC™ DOUBLE INTERLOCK PREACTION ELECTRIC/PNEUMATIC RELEASE

A. The deluge valve trim shall be a trim package for a deluge valve with a specific release device and release module for the desired application manufactured and tested in a metal enclosure. The metal enclosure shall be 16-gauge steel painted with a red epoxy powder coat. The standard trim normally required on a deluge valve will be enclosed in this single cabinet. The TRIMPAC shall provide access doors for the emergency release and alarm test valve for manual operation of these trim valves. The TRIMPAC shall be equipped with priming water pressure and water supply gauge view-ports for easy monitoring of water pressures. The enclosure shall be designed to protect the trim valves from inadvertent operation. The system shall be piped (or use the stainless steel hose package) from the valve body to the enclosure assembly. The TRIMPAC Model B-6 can be utilized for electric/pneumatic release double interlocked preaction systems with the Viking Model E-1 or F-1 Deluge Valves in all sizes. The unit shall be rated for 250 PSI. The Deluge Valve Trim shall be Viking TRIMPAC Double Interlocked Preaction Electric/Pneumatic Model B-5, part number 12235B-5.

2.1 WATER CONTROL VALVE

A. The deluge systems shall utilize a 90° pattern or straight-through pattern type of deluge valve. The deluge valve shall be externally resettable by hydraulic means. The deluge valve shall employ a positive vent on the priming line to ensure that the deluge valve will not prematurely reset. The inlet and outlet connections of deluge valve can be flanged by flanged, flanged by grooved or grooved by grooved, respectively. The deluge valve shall be capable of installation in the vertical or horizontal position. The deluge valve shall be UL Listed and Factory Mutual Approved. The deluge valve shall have a working pressure of 250 PSI. The valve trim shall be compatible and shall be installed following the manufacturer's specifications. The Deluge Valve manufacturer to be The Viking Corporation. Deluge Valve to be Viking Model E-1 or F-1.

2.2 DETECTION

A. The Preaction detection, and controls shall be covered under the Notified Fire Suppression Control Panel Specifications.

2.3 SOLEOID VALVE

A. The deluge valve priming water release device shall be an electrically operated solenoid valve. The solenoid valve shall be constructed of a ½" brass body with a stainless steel core tube, core, plug nut and springs. The solenoid valve shall have a maximum working pressure of 250 PSI. The solenoid valve shall be UL Listed for its intended use. The Solenoid Valve shall be listed for use with Viking Model E or F Deluge Valves and Viking Model H or J Flow Control Valves.

2.4 SYSTEM CONTROL VALVE

A. The preaction system control valve shall be a listed indicating type valve. The control valve shall be UL Listed and Factory Mutual Approved for fire protection installations. The system control valve shall be rated for normal system pressure but in no cases less than 175 PSI.

2.5 MICROMATIC STANDARD RESPONSE SPRINKLER

A. No mixing of sprinkler brands shall be permitted. Sprinklers shall be of all brass frame construction utilizing a metal Belleville spring seal, coated on both sides with Teflon film. Sprinklers utilizing non-metal parts in the sealing portion of the sprinkler are strictly prohibited. Sprinklers shall have a standard or large orifice, with a nominal K Factor of 5.6 or 8.0, respectively. Sprinklers shall have a frangible bulb type fusible Sprinklers to be installed through a ceiling shall be chrome finish pendent sprinklers with an adjustable semi-recessed escutcheon of same specified finish. Sprinklers shall be UL Listed and FM Approved.

2.6 COMPRESSED AIR SUPPLY

A. The preaction pipe shall be supervised by a riser mounted air compressor. A small detectable air pressure shall be kept at all times on the preaction pipe. This pressure supervises the sprinkler pipe integrity. The riser mounted air compressor will be controlled by a pressure operated switch. The riser air compressor will require a dedicated 120vac power circuit.

2.7 SYSTEM CHECK VALVE

A. Check valves shall be UL Listed and Factory Mutual Approved for use on fire protection systems. The sprinkler riser check valves shall be manufactured with supply side and system side gauge connections and a main drain outlet in conformance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The check valves shall be constructed of a ductile iron body with a brass seat and a rubber faced clapper assembly hinged to a removable access cover. The check valves shall be equipped with a removable access cover for periodic inspection as required in N.F.P.A. 25, Standard for Inspection, Testing and Maintenance of Water-Based Fire Protection Systems. The check valves shall have a working water pressure of 250 PSI. The Check Valve manufacturer to be The Viking Corporation. The Check Valve to be Viking Model F-1 Easy Riser Check Valve.

2.8 ALARM PRESSURE SWITCH

A. Water flow will activate an alarm by way of an alarm pressure switch. The alarm pressure switch shall be compatible with the system devices. The alarm pressure enclosure shall be UL Listed and Factory Mutual Approved. The alarm pressure switch shall have the ability to be wired for Class A or Class B service. The Alarm Pressure Switch shall be Viking, part number 09470 or 09471.

2.9 GENERAL MATERIALS AND EQUIPMENT

A. All materials and equipment in the system shall be new and current products of a manufacturer regularly engaged in the production of such materials and equipment. Where two or more pieces of equipment are required to perform interrelated functions, they shall be products of one manufacturer.

B. Approval guides: Unless otherwise indicated, all products shall be listed in the latest publication of Approval Guides for Underwriters Laboratory and Factory Mutual for the service intended.

C. Acceptable manufacturers: Manufacturer of sprinkler specialties shall be Viking.

2.10 PIPE

A. Schedule of pipe: All pipe shall be ferrous and meet the requirements of NFPA 13, Table 3-3.1. Pipe shall be Schedule 40 for pipe 2½ in. and smaller and Schedule 10 for pipe greater than 2½ in.Schedule 10 pipe shall only be used in a roll groove application; no exceptions.

B. Galvanized pipe: Dry pipe systems, non-pressurized above ground fire department pumper connection piping, and pipe located in corrosive environments shall meet the requirements of NFPA 13, Table 3-3.1, be schedule 40 pipe, ferrous, and galvanized; no exceptions.

2.11 FITTING AND COUPLINGS

A. Threaded fittings: Threaded fittings shall be cast iron class 125, rated for 175 psi. cold water working pressure and shall conform to ANSI B16.4, ASTM 126 and ANSI B2.1 NPT. Malleable threaded fittings will not be permitted.

B. Nipples: No close nipples will be permitted. For short pipe connections use standard short nipples.

C. Adjustable nipples: Adjustable drop nipples may not be used on this project.

D. Thread-O-Lets: Shop-welded Thread-O-Lets may be used where a certified welder is used, meeting the requirements of paragraph 1.04.B. and if the Thread-O-Lets are listed.

E. Grooved fittings: 90's, 45's, Tees, and reducers shall be malleable iron or ductile. The fittings shall be by Anvil, Victaulic, or approved equal.

F. Adapter flanges: Adapter flanges (fittings) shall be cast iron/class 125 conforming to ANSI B-16.1, with a rust inhibiting coating. The adapter flanges shall be by Anvil, Victaulic, or approved equal.

G. Grooved couplings: Grooved couplings and reducers shall be malleable or ductile iron conforming to ASTM A-47. Coupling gasket shall be molded Elastomer (EPDM) per ASTM D2000, Victaulic grade

H. Plain end couplings: No plain end couplings (Roust-A-Bouts, Plainloks or similar couplings) may be used.

I. Hole Cut Outlets: Hole cut bolted branch outlets couplings may be used. Hole cut outlets shall be a full-bodied outlet style 921 by Victaulic or approved equal. Coupons created by hole cut outlets shall be secured to the fittings via zip-tie or wire.

2.12 HANGERS AND SUPPORTS

A. Hangers: Provide hangers to support all piping in perfect alignment without sagging or interference, to permit free expansion and contraction, and meet the requirements of NFPA 13.

B. Pipe rings: Pipe rings shall be galvanized.

C. Hanger rods: Hanger rods shall be electro-galvanized.

D. Riser clamps: Riser clamps shall not protrude more than 2 inches beyond the edge of the hole. The riser clamps need be only UL listed.

E. Concrete anchors: Concrete expansion anchors shall be Hilti, Phillips, Impex, ITW, or approved equal.

F. Explosive anchors: Explosive type fasteners are not permitted.

2.13 VALVES

A. Outside screw and yoke (OSY) valves: OSY valves shall be cast iron, flanged and rated for 175 psi, non-shock cold water working pressure.

B. Valves not permitted: Wafer valves are not permitted.

C. Isolation/control valves: Sprinkler system, standpipe, and other above ground controlling valves shall be gear-operated slow-close butterfly valves with flag type indicator, cast iron lug body, bronze disc, EPDM crowned seat, stainless steel stem with bronze bushings, two internal single-pole, double-throw monitor switches.

D. Drain valves: Drain valves need only be UL Listed, screw-in bonnet bronze globe valves, rated to 175 psi non-shock cold water working pressure by Nibco, United or approved equal. Low point drain valves shall have, in addition, a ¾-inch brass nipple with ¾-inch male hose threads and cap.

E. Combination test and drain valve: AGF Model 1000 Test 'N Drain assembly; no exception. Pressure gauge for system pressure located on Test 'N Drain assembly is not acceptable for measuring system pressure.

F. Check valves: Check valves shall be grooved, iron body, bronze seat, stainless steel clapper with a replaceable rubber seal (a rubber seal integral with the seat is not acceptable), and 175 psi non-shock cold water working pressure. Use Viking Model D, or approved equal.

SECTION 3 – EXECUTION (NOT USED)

END OF SECTION