

# VIKING SYSTEM SPECIFICATIONS

## *PREACTION SYSTEMS*

### ***Preaction System (Non Interlocked) Varied Detection Method***

A preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be released by either an activation of the supplemental detection system or the activation of a sprinkler head on the system. The preaction system riser shall be of a listed and approved assembly. 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.

## **SYSTEM DEVICES**

### **Water Control Valve**

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, grooved by grooved or thread by thread, 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.

### **Pneumatic Actuator**

The preaction or deluge systems utilizing pneumatic release detectors shall employ a pneumatic actuator between the detection and the operating systems. The device shall actuate a release in the deluge valve priming water supply. The actuator of the pneumatic release system shall be UL Listed and Factory Mutual Approved for use with the deluge valve installed. The Pneumatic Actuator manufacturer to be The Viking Corporation. Pneumatic Actuator to be Viking Model H-1.

### **System Control Valve**

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 case less than 175 PSI.

### **Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where sprinklers are placed in the pendent position. (Insert applicable product specification.)

### **Brass Upright Sprinklers**

(Insert applicable product specification.)

### **Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the air supply inlet on the system riser.

### **Supplemental Detection System**

A supplemental detection system shall be provided for all preaction systems. Acceptable supplemental detection devices are:

- A. Pneumatic rate-of-rise compensating vent type detector with a fixed temperature release. (Insert applicable product specification.)
- A. Pneumatic fixed temperature pilot operated release line. (Insert applicable product specification.)
- C. Hydraulic rate-of-rise compensating vent type detector with a fixed temperature release. (Insert

- applicable product specification.)
- D. Hydraulic fixed temperature pilot operated release line. (Insert applicable product specification.)
  - E. Electric fixed temperature self-restoring releases. (Insert applicable product specification.)
  - F. Electric smoke detection devices. Smoke detection devices to be compatible with system control panel. (Insert applicable product specification.)

### **System Check Valve**

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 or Model L-1 or K-1 In-line Check Valve.

### **Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

### **Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The low air pressure supervisory switch shall be Potter, model number PS401A or PS402A.

### **Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

### **Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials and accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

### **Deluge Valve Release Control Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12 volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking Model VFR400 Multi-Hazard Release Control Panel.

## ***Preaction System (Single Interlocked) Varied Detection Methods***

A preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be by activation of the supplemental detection system only. 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 most current Edition of N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The Preaction System shall be of the Single Interlock Release type.

## **SYSTEM DEVICES**

### **Water Control Valve**

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, grooved by grooved or thread by thread, 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.

### **Pneumatic Actuator**

Preaction or deluge systems utilizing pneumatic release detectors shall employ a pneumatic actuator between the detection and the operating systems. The device shall actuate a release in the deluge valve priming water supply. The actuator of the pneumatic release system shall be UL Listed and Factory Mutual Approved for use with the deluge valve installed. The Pneumatic Actuator manufacturer to be The Viking Corporation. Pneumatic Actuator to be Viking Model H-1.

### **Solenoid Valve**

The deluge valve priming water release device shall be an electrically operated solenoid valve when electric releases are used as the supplemental detection system. The solenoid valve shall be constructed of a ½" brass body with a stainless steel core tube, core, plugnut 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.

### **System Control Valve**

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 case less than 175 PSI.

### **Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

### **Brass Upright Sprinklers**

(Insert applicable product specification.)

### **Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the air supply inlet on the system riser.

### **Supplemental Detection System**

A supplemental detection system shall be provided for all preaction systems. Acceptable supplemental detection devices are:

- A. Pneumatic rate-of-rise compensating vent type detector with a fixed temperature release. (Insert applicable product specification.)
- B. Pneumatic fixed temperature pilot operated release line. (Insert applicable product specification.)
- C. Hydraulic rate-of-rise compensating vent type detector with a fixed temperature release. (Insert applicable product specification.)
- D. Hydraulic fixed temperature pilot operated release line. (Insert applicable product specification.)
- E. Electric fixed temperature self-restoring releases. (Insert applicable product specification.)
- F. Electric smoke detection devices. Smoke detection devices to be compatible with system control panel. (Insert applicable product specification.)
- G. Other compatible listed electrical detectors.

### **System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve..

### **Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

### **Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

### **Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

### **Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials and accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

### **Deluge Valve Release Control Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with

ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12-volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking Model VFR400 Multi-Hazard Release Control Panel.

**Air Maintenance Device**

Air supplies provided for sprinkler systems shall be equipped with an automatic air pressure maintenance device. The air maintenance device shall be equipped with a ¼" air supply bypass with a field adjustable air pressure regulator with a built in ball check valve to eliminate air loss when system is in service. The air maintenance device shall have a factory setting of 40 PSI. The Air Maintenance Device manufacturer to be The Viking Corporation. Air Maintenance Device to be Viking Model D-2.

## ***Trimpac® Preaction System (Single Interlocked) Pneumatic Release***

A Viking TRIMPAC Single Interlock Pneumatic Release Preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be released by an activation of the pneumatic release system only. 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 most current Edition of N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The Preaction System shall be of the Single Interlock Release type.

### **SYSTEM DEVICES**

#### **Viking TRIMPAC® Single Interlock Pneumatic Release**

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-4 can be utilized for pneumatic release single 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 (1724 kPa). The Deluge Valve Trim shall be Viking TRIMPAC Single Interlock Pneumatic Release Model B-4, part number 13793B-4.

#### **Water Control Valve**

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, grooved by grooved or thread by thread, 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.

#### **Pneumatic Actuator**

Preaction or deluge systems utilizing pneumatic release detectors shall employ a pneumatic actuator between the detection and the operating systems. The device shall actuate a release in the deluge valve priming water supply. The actuator of the pneumatic release system shall be UL Listed and Factory Mutual Approved for use with the deluge valve installed. The Pneumatic Actuator manufacturer to be The Viking Corporation. Pneumatic Actuator to be Viking Model H-1.

#### **System Control Valve**

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 case less than 175 PSI.

#### **Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

#### **Brass Upright Sprinklers**

(Insert applicable product specification.)

#### **Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.

- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the air supply inlet on the system riser.

### **Supplemental Detection System**

A supplemental detection system shall be provided for the preaction systems. Acceptable supplemental detection devices are:

- A. Pneumatic rate-of-rise compensating vent type detector with a fixed temperature release. (Insert applicable product specification.)
- B. Pneumatic fixed temperature pilot operated release line. (Insert applicable product specification.)

### **System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

### **Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

### **Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

### **Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

### **Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials or accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

### **Air Maintenance Device**

Air supplies provided for sprinkler systems shall be equipped with an automatic air pressure maintenance device. The air maintenance device shall be equipped with a ¼" air supply bypass with a field adjustable air pressure regulator with a built in ball check valve to eliminate air loss when system is in service. The air maintenance device shall have a factory setting of 40 PSI. The Air Maintenance Device manufacturer to be The Viking Corporation. Air Maintenance Device to be Viking Model D-2.

## **TRIMPAC® Preaction System (Single Interlocked) Electric Release**

A Viking TRIMPAC Single Interlock Electric Release Preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be released by an electric solenoid valve. The electric solenoid valve will release the prime water only upon activation of the supplemental detection system. 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 Single Interlock Release type.

### **SYSTEM DEVICES**

#### **Viking TRIMPAC® Single Interlock Electric Release**

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-3 can be utilized for electric release single 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 (1724 kPa). The Deluge Valve Trim shall be Viking TRIMPAC Single Interlock Electric Release Model B-3, part number 13792B-3.

#### **Water Control Valve**

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, grooved by grooved or thread by thread, 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.

#### **Detection**

The release system shall incorporate as part of the operation of the system, electrical detection system. (Insert applicable product specification.) The detection devices installed shall be compatible with the deluge valve release control panel.

#### **Release Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12-volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking Model VFR400 Multi-Hazard Release Control Panel.

#### **Solenoid Valve**

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, plugnut 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.

**System Control Valve**

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 case less than 175 PSI.

**Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

**Brass Upright Sprinklers**

(Insert applicable product specification.)

**Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the system riser.
- D. A riser mounted air compressor listed as an air maintenance compressor.

**Air Compressor**

(Insert applicable product specification.)

**System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

**Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

**Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

**Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

**Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The

water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials or accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

### ***Preaction System (Single Interlocked) Electric Release Cross-Zone***

A preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be released by an electric solenoid valve. The electric solenoid valve will release the prime water only upon activation of both zones of the supplemental detection system. 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 Single Interlock Release type.

### **SYSTEM DEVICES**

#### **Water Control Valve**

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.

#### **Detection**

The release system shall incorporate as part of the operation of the system, a cross-zone detection system. (Insert applicable product specification.) The detection devices installed shall be compatible with the deluge valve release control panel.

#### **Release Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12-volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking VFR400 Multi-Hazard Release Control Panel.

#### **Solenoid Valve**

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, plugnut 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.

#### **System Control Valve**

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 case less than 175 PSI.

#### **Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

#### **Brass Upright Sprinklers**

(Insert applicable product specification.)

### **Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the system riser.
- D. A riser mounted air compressor listed as an air maintenance compressor.

### **Air Compressor**

(Insert applicable product specification.)

### **System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

### **Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

### **Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

### **Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

### **Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials or accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

### ***Preaction System (Double Interlocked) Pneumatic/Pneumatic Release***

A preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be by a pneumatic supplemental detection device and valve system piping charged with compressed air. Pneumatic actuators in series in the release line assigned to the pneumatic release system and the system supervisory air pressure will open upon activation of the supplemental detection system and the activation of a sprinkler head on the system piping. 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**

### **Water Control Valve**

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, grooved by grooved or thread by thread, 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.

### **Supplemental Detection System:**

A supplemental detection system shall be provided for all preaction systems. Acceptable supplemental detection devices are:

- A. Pneumatic rate-of-rise compensating vent type detector with a fixed temperature release. Preaction systems utilizing pneumatic release of the deluge valve prime water pressure shall employ a rate-of-rise release detector. The rate-of-rise release shall activate release when a rise of temperature of 15°F over the period of one minute is experienced. The rate-of-rise release shall have a means of installing a 155°F fixed temperature release on the device. The rate-of-rise release shall be automatically resetting. Device shall be UL Listed and Factory Mutual Approved. Systems utilizing nitrogen as an air supply shall be factory tested for such application. The Rate-of-Rise Release manufacturer to be The Viking Corporation. Rate-of-Rise Release to be Viking Model C-1.
- B. Pneumatic fixed temperature pilot operated release line. Preaction systems utilizing pneumatic release of the deluge valve prime water pressure shall employ a fixed temperature release device. The fixed temperature release may be a listed fixed temperature release or listed upright sprinkler head. The device shall be UL Listed and Factory Mutual Approved. The Fixed Temperature Release manufacturer to be The Viking Corporation. Fixed Temperature Release to be Viking Model M, or Model M Upright Sprinklers.

### **System Control Valve**

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 case less than 175 PSI.

### **Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

### **Brass Upright Sprinklers**

(Insert applicable product specification.)

### **Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet and

- a separate air maintenance device for the supplemental detection system.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser and a separate air maintenance device for the supplemental detection device.
  - C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the air supply inlet on the system riser.
  - D. A riser mounted air compressor listed as an air maintenance compressor.

### **Air Compressor**

(Insert applicable product specification.)

### **System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

### **Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

### **Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

### **Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

### **Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials or accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

## **TRIMPAC® Preaction System (Double Interlocked) Electric/Pneumatic Release**

A 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**

#### **Viking TRIMPAC® Double Interlock Preaction Electric/Pneumatic Release**

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-5 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 (1724 kPa). The Deluge Valve Trim shall be Viking TRIMPAC Double Interlocked Preaction Electric/Pneumatic Model B-5, part number 13794B-5.

#### **Water Control Valve**

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, grooved by grooved or thread by thread, 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.

#### **Detection**

The release system shall incorporate as part of the operation of the system, a compatible electric detection system. (Insert applicable detection system.) The detection devices installed shall be compatible with the Deluge Valve Release Control Panel.

#### **Release Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12-volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking VFR400 Multi-Hazard Release Control Panel.

#### **Solenoid Valve**

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, plugnut 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.

**System Control Valve**

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.

**Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

**Brass Upright Sprinklers**

(Insert applicable product specification.)

**Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the system riser.
- D. A riser mounted compressor listed as an air maintenance compressor.

**Air Compressor**

(Insert applicable product specification.)

**System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

**Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

**Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

**Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

**Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The

water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials or accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

## ***Preaction System (Double Interlocked) Electric/Pneumatic Release***

A 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**

#### **Water Control Valve**

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, grooved by grooved or thread by thread, 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.

#### **Detection**

The release system shall incorporate as part of the operation of the system, a compatible electric detection system. (Insert applicable detection system.) The detection devices installed shall be compatible with the Deluge Valve Release Control Panel.

#### **Release Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12-volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking VFR400 Multi-Hazard Release Control Panel.

#### **Solenoid Valve**

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, plugnut 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.

#### **System Control Valve**

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.

#### **Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

#### **Brass Upright Sprinklers**

(Insert applicable product specification.)

### **Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the system riser.
- D. A riser mounted compressor listed as an air maintenance compressor.

### **Air Compressor**

(Insert applicable product specification.)

### **System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

### **Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

### **Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

### **Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

### **Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials or accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

## **TRIMPAC® Preaction System (Double Interlocked) Electric/Pneumatic Release**

A Viking TRIMPAC Double Interlock Electric/Pneumatic preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be by an electric solenoid valve. Electric solenoid valve will open upon activation of the electrical supplemental detection system and a low air pressure alarm caused by an opening of a sprinkler head. 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**

#### **Viking TRIMPAC® Double Interlock Preaction Electric/Pneumatic Release**

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 (1724 kPa). The Deluge Valve Trim shall be Viking TRIMPAC Double Interlocked Preaction Electric/Pneumatic Model B-6, part number 13796B-6.

#### **Water Control Valve**

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, grooved by grooved or thread by thread, 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.

#### **Detection**

The detection shall be of the cross-zoned type. The electric detection system and the low air pressure alarm will be required prior to the opening of the normally closed solenoid valve, thereby, releasing the deluge valve prime pressure. Activation of one zone of detectors (electric detector or low air supervisory switch) will cause an alarm in the zone but release will not occur until the second zone is activated.

#### **Release Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12-volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking VFR400 Multi-Hazard Release Control Panel.

#### **Solenoid Valve**

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, plugnut 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.

### **System Control Valve**

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.

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

### **Brass Upright Sprinklers**

(Insert applicable product specification.)

### **Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the system riser.
- D. A riser mounted compressor listed as an air maintenance compressor.

### **Air Compressor**

(Insert applicable product specification.)

### **System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

### **Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

### **Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

### **Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

**Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials or accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

## ***Praction System (Double Interlocked) Electric/Pneumatic Release***

A praction system shall be provided. The method of release of the deluge valve priming water pressure shall be by an electric solenoid valve. Electric solenoid valve will open upon activation of the electrical supplemental detection system and a low air pressure alarm caused by an opening of a sprinkler head. 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 praction 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 praction 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 Praction System shall be of a Double Interlock Release type.

### **SYSTEM DEVICES**

#### **Water Control Valve**

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, grooved by grooved or thread by thread, 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.

#### **Detection**

The detection shall be of the cross-zoned type. The electric detection system and the low air pressure alarm will be required prior to the opening of the normally closed solenoid valve, thereby, releasing the deluge valve prime pressure. Activation of one zone of detectors (electric detector or low air supervisory switch) will cause an alarm in the zone but release will not occur until the second zone is activated.

#### **Release Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12-volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking VFR400 Multi-Hazard Release Control Panel.

#### **Solenoid Valve**

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, plugnut 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.

#### **System Control Valve**

The praction 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.

#### **Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

#### **Brass Upright Sprinklers**

(Insert applicable product specification.)

### **Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the system riser.
- D. A riser mounted compressor listed as an air maintenance compressor.

### **Air Compressor**

(Insert applicable product specification.)

### **System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

### **Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

### **Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, part number PS401A or PS402A.

### **Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

### **Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials or accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

## **TrimPac® SUREFIRE® Preaction System (Single Interlocked)**

A failsafe preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be by an activation of the electrical detection system only. The preaction system shall be of a listed and approved assembly and the manufacturer's components shall not be modified. 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 failsafe preaction system shall be provided with all necessary appurtenances to complete the system. The system shall be installed in conformance with the most current Edition of N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The failsafe preaction system shall be of the Single Interlock Release type.

**Note:** If the electrical release system design requires the use of a "cross-zone" configuration additional consideration must be given to the Viking VFR400 Multi-Hazard Release Control Panel and its capabilities. To accomplish a "cross-zone" configuration the system design must designate this function to be provided from the Building Fire Alarm Control Panel (FACP). The initiating devices for area protected by the SUREFIRE preaction system shall be attached to the building (FACP) in a cross zoned configuration. Upon activation of the "cross-zoned" detection the (FACP) will send the initiating signal to input number 1 on the SUREFIRE Release Panel and activate the system.

### **SYSTEM DEVICES**

#### **Viking TRIMPAC® Single Interlock Preaction**

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 D-1 can be utilized for single 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 (1724 kPa). The Deluge Valve Trim shall be Viking TRIMPAC Double Interlocked Preaction Pneumatic Model D-1, part number 13798D-1.

#### **Water Control Valve**

The deluge or preaction systems shall utilize a 90° pattern or straight-through pattern type of deluge valve. The inlet and outlet connections of deluge valve can be flanged by flanged, flanged by grooved, grooved by grooved or thread by thread, respectively. The Deluge valve shall be capable for 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.

#### **Pneumatic Actuator**

Preaction or deluge systems utilizing pneumatic release detectors shall employ a pneumatic actuator between the detection and the operating systems. The device shall actuate a release in the deluge valve priming water supply. The actuator of the pneumatic release system shall be UL Listed and Factory Mutual Approved for use with the deluge valve installed. The Pneumatic Actuator manufacturer to be The Viking Corporation. Pneumatic Actuator to be Viking Model H-1.

#### **Solenoid Valve**

The deluge valve priming water release device shall be an electrically operated solenoid valve when electric releases are used as the supplemental detection system. The solenoid valve shall be constructed of a ½" brass body with a stainless steel core tube, core, plugnut 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.

#### **System Control Valve**

The failsafe 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 case less than 175 PSI.

**Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

**Brass Upright Sprinklers**

(Insert applicable product specification.)

**Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the air supply inlet on the system riser.

**Supplemental Detection System**

A supplemental detection system shall be provided for all preaction systems. Acceptable supplemental detection devices are:

- A. Electric fixed temperature self-restoring releases. (Insert applicable product specification.)
- B. Electric smoke detection devices. Smoke detection devices to be compatible with system control panel. (Insert applicable product specification.)
- C. Other compatible listed electrical detectors.

**System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

**Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

**Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

**Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

**Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials

and accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

#### **Deluge Valve Release Control Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12-volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking VFR400 Multi-Hazard Release Control Panel.

#### **Air Maintenance Device**

Air supplies provided for sprinkler systems shall be equipped with an automatic air pressure maintenance device. The air maintenance device shall be equipped with a ¼" air supply bypass with a field adjustable air pressure regulator with a built in ball check valve to eliminate air loss when system is in service. The air maintenance device shall have a factory setting of 40 PSI. The Air Maintenance Device manufacturer to be The Viking Corporation. Air Maintenance Device to be Viking Model D-2.

## **TrimPac® SUREFIRE® Preaction System (Double Interlocked)**

A failsafe preaction system shall be provided. The method of release of the deluge valve priming water pressure shall be by an activation of the electrical detection system only. The failsafe preaction system shall be of a listed and approved assembly and the manufacturer's components shall not be modified. 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 most current Edition of N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The failsafe preaction system shall be of the Double Interlock Release type.

**Note:** If the electrical release system design requires the use of a "cross-zone" configuration additional consideration must be given to the Viking VFR400 Multi-Hazard Release Control Panel and its capabilities. To accomplish a "cross-zone" configuration the system design must designate this function to be provided from the Building Fire Alarm Control panel (FACP). The initiating devices for area protected by the SUREFIRE preaction system shall be attached to the building (FACP) in a cross zoned configuration. Upon activation of the "cross-zoned" detection the (FACP) will send the initiating signal to input number 1 on the SUREFIRE Release Panel and activate the system.

### **SYSTEM DEVICES**

#### **Viking TRIMPAC® Double Interlock Preaction**

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 D-2 can be utilized for 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 (1724 kPa). The Deluge Valve Trim shall be Viking TRIMPAC Double Interlocked Preaction Pneumatic Model D-2, part number 13799D-2.

#### **Water Control Valve**

The deluge or preaction systems shall utilize a 90° pattern or straight-through pattern type of deluge valve. The inlet and outlet connections of deluge valve can be flanged by flanged, flanged by grooved, grooved by grooved or thread by thread, 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.

#### **Pneumatic Actuator**

Preaction or deluge systems utilizing pneumatic release detectors shall employ a pneumatic actuator between the detection and the operating systems. The device shall actuate a release in the deluge valve priming water supply. The actuator of the pneumatic release system shall be UL Listed and Factory Mutual Approved for use with the deluge valve installed. The Pneumatic Actuator manufacturer to be The Viking Corporation. Pneumatic Actuator to be Viking Model H-1.

#### **Solenoid Valve**

The deluge valve priming water release device shall be an electrically operated solenoid valve when electric releases are used as the supplemental detection system. The solenoid valve shall be constructed of a ½" brass body with a stainless steel core tube, core, plugnut 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.

#### **System Control Valve**

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 case less than 175 PSI.

**Dry Pendent Sprinklers**

Dry pendent sprinklers shall be utilized where the sprinklers are in the pendent position. (Insert applicable product specification.)

**Brass Upright Sprinklers**

(Insert applicable product specification.)

**Compressed Air Supply**

An air supply capable of restoring system pressure within 30 minutes shall be provided. Acceptable air supply arrangements are:

- A. Owner supplied air system with an air maintenance device on the supply side of the air supply inlet.
- B. A tank mounted air compressor with an air maintenance device between the air compressor and the air supply inlet on the system riser.
- C. A riser mounted air compressor feeding an air reservoir. An air maintenance device shall be placed between the air reservoir and the air supply inlet on the system riser.

**Supplemental Detection System**

A supplemental detection system shall be provided for all failsafe preaction systems. Acceptable supplemental detection devices are:

- A. Electric fixed temperature self-restoring releases. (Insert applicable product specification.)
- B. Electric smoke detection devices. Smoke detection devices to be compatible with system control panel. (Insert applicable product specification.)
- C. Other compatible listed electrical detectors.

**System Check Valve**

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 or Model L-1 or K-1 In-Line Check Valve.

**Fire Department Connection**

A system fire department connection shall be provided on the system riser in accordance with N.F.P.A. 13, Standard for Installation of Sprinkler Systems. The fire department connection shall be of a brass body with an integral clapper assembly to separate flow between inlets. The fire department connection shall be installed in an area accessible for the first response unit. The fire department connection shall be UL Listed and Factory Mutual Approved for fire protection use.

**Pressure Supervisory Switch**

A supervisory air pressure shall be maintained on all preaction systems with 20 sprinklers or more on the system piping. A low air pressure alarm will activate by way of a pressure supervisory alarm pressure switch. The low air pressure alarm switch shall be compatible with system devices. The low air pressure alarm switch enclosure shall be UL Listed and Factory Mutual Approved for the application in which it is used. The low air pressure alarm switch shall have the ability to be wired for Class A or Class B service. The Low Air Pressure Supervisory Switch shall be Potter, model number PS401A or PS402A.

**Alarm Pressure Switch**

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 Potter, model number PS101A or PS102A.

**Water Motor Alarm**

Water flow will activate a hydraulic powered water motor alarm by way of integral valve alarm line trim piping. The water motor alarm shall be connected to a water pressure retarding chamber to limit the propensity of unnecessary alarms. The water motor alarm shall be equipped with a rear closure plate to limit the access of foreign materials or accumulation of debris. The water motor alarm shall be UL Listed and Factory Mutual Approved for the application in which it is used. The Water Motor Alarm manufacturer to be The Viking Corporation. Water Motor Alarm to be Viking Model F-2 or G-2. (G-2 not UL Listed or FM Approved)

**Deluge Valve Release Control Panel**

The system release panel shall be capable of a dual hazard split release, dual hazard combined release, single hazard cross-zone release, single hazard two-zone release. The release panel shall be equipped with a local tone alarm to annunciate loss of A/C power, system trouble, circuit trouble and low auxiliary D/C power supply. The release panel shall be capable of supervising trouble and alarm audible alarms. The trouble and alarm audible alarms shall be able to be silenced at release panel. The release panel shall be housed in a vented enclosure with ambient temperature compatibility of 32°F to 120°F. The panel enclosure shall be of adequate size to house auxiliary D/C power supply. The auxiliary D/C power supply shall consist of (2) 12-volt lead acid batteries of the same ampere-hour rating. Actual ampere-hour rating to be established by auxiliary D/C power requirement. The Release Panel shall be a Viking VFR400 Multi-Hazard Release Control Panel.

**Air Maintenance Device**

Air supplies provided for sprinkler systems shall be equipped with an automatic air pressure maintenance device. The air maintenance device shall be equipped with a ¼" air supply bypass with a field adjustable air pressure regulator with a built in ball check valve to eliminate air loss when system is in service. The air maintenance device shall have a factory setting of 40 PSI. The Air Maintenance Device manufacturer to be The Viking Corporation. Air Maintenance Device to be Viking Model D-2.