

TOTALPAC2[®] SYSTEM SPECIFICATIONS

WET SYSTEM

Supply and install a TotalPac2[®] integrated fire protection system, wet pipe type, as indicated, including the wet pipe cabinet and automatic sprinkler system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

Wet Pipe Cabinet

Supply and install a wet pipe cabinet containing all hydraulic and electrical components required for the control of a wet pipe system. The cabinet shall include the remote controlled unit without control panel with a sturdy 14 gauge steel cabinet, measuring: 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems and 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections with a neoprene gasket to avoid vibrations. The wet system components shall include the Viking Alarm Check Valve Model J, complete with Schedule 40 galvanized steel trim rated at 250 PSI, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for excess pressure pump (if provided), the pressure gauges to indicate water supply pressure and water pressure of the system, each actuation and supervisory device that is required, a schedule 40 steel pipe header with grooved ends to be connected to supply water, and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Retard chamber assembly.
- Excess pressure pump of the capacity required for the system, complete with all hardware, shut-off switch and control pressure switch.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2[®] System, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Detection & Signaling System

Supply and install the supervisory and alarm connections between the unit field wiring terminals and the building fire alarm panel, including the system tubing, wiring and signaling devices.

System Operation

The activation of at least one automatic sprinkler head is necessary to cause the water discharge. The activation of at least one automatic sprinkler head will open the alarm valve and cause water to spray through all open sprinklers. This will activate alarm and water flow switch contacts connected to the building fire alarm panel and sound an alarm.

Retard Chamber

When the optional retarding chamber is used, water entering the grooved seat alarm port of the valve shall be directed into the retarding chamber. Temporary pressure surges or fluctuations, large enough to move the valve clapper should be automatically drained through a restricted drain. Retard chamber shall be Viking Model C-1 and shall be factory mounted inside the cabinet complete with its associated hardware.

Excess pressure pump

When the optional excess pressure pump is used (mainly required by AHJ's in Canada), it builds up pressure on top of the alarm valve clapper to prevent false activation on temporary pressure surges. Excess pressure should be adjusted and maintained at 20 PSI above the normal water supply pressure. Pump shall be factory mounted inside the cabinet complete with ¼" pressure relief valve and other associated hardware. A high & low water pressure supervisory switch shall also be provided on the system riser inside the cabinet as part of the option.

Automatic Sprinklers

Supply and install all required automatic sprinklers. They will be glass bulb type, UL/ULC Listed and FM Approved.

- The pendent type automatic sprinklers shall be Viking Micromatic Sprinklers with an operating temperature of _____°F/_____°C _____ response and _____ in. orifice.
- The upright automatic sprinklers shall be Viking Micromatic Sprinklers with operating temperature of _____°F/_____°C _____ response and _____ in. orifice.
- The sidewall automatic sprinklers shall be Viking Sidewall Sprinklers with operating temperature of _____°F/_____°C _____ response and _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted providing the manufacturer's recommendations are carefully followed and complied with.

DRY SYSTEM

Supply and install a TotalPac2® integrated fire protection system, dry system type, as indicated, including the dry pipe cabinet and automatic sprinkler system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

Dry Pipe Cabinet

Supply and install a dry system cabinet containing all hydraulic and electrical components required for the control of a dry pipe system. The cabinet shall include the remote controlled unit without control panel with a sturdy 14 gauge steel cabinet, measuring: 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems and 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The dry system components shall include the Viking Dry Valve Model F, complete with Schedule 40 galvanized steel trim rated at 175 PSI. (Standard system).

OR

The Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ-trim rated at 250 PSI. (HP® system) All field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water, and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Listed and approved integrated supervised discharge by-Pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge *(available for HP® system only)*.
- Tee connection inside the cabinet with opening on the right side of cabinet enclosure for connection to the fire department connection.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Detection & Signaling System

Supply and install supervisory and alarm connections between the unit field wiring terminals and the building fire alarm panel, including the system tubing, wiring and signaling devices.

System Operation

The activation of at least one automatic sprinkler head is necessary to cause the water discharge. *Choose one:*

- Standard Trim (175 PSI): The activation of at least one automatic sprinkler head will open the dry valve and cause the system to fill the piping network with water and spray through all open sprinklers. This will activate alarm and water flow switch contacts connected to the building fire alarm panel and sound an alarm.
- HP® Trim (250 PSI): The activation of at least one automatic sprinkler head will activate the pneumatic actuator trim, open the deluge valve and cause the system to fill the piping network with water and spray through all open sprinklers. This will activate alarm and water flow switch contacts connected to the building fire alarm panel and sound an alarm.
- Pressure loss on the piping system will activate a low air supervisory switch indicating the low air condition.
- (HP® System only): Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, spray through all fused sprinklers, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the dry pipe cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes. *Choose what applies:*

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders, properly sized for the system, shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)
- Freezer type air trim (Air Option "D") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders, properly sized for the system, shall be made by the contractor. Air supply must meet NFPA and FM requirements for freezer applications.

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. The dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

Automatic Sprinklers

Supply and install all required automatic sprinklers. They will be glass bulb type, UL/ULC Listed and FM Approved.

- The pendent type automatic sprinklers shall be Viking Dry Sprinklers with an operating temperature of _____°F/_____°C _____ response and _____ in. orifice.
- The upright automatic sprinklers shall be Viking Dry Sprinklers, with operating temperature of _____°F/_____°C _____ response and _____ in. orifice.
- The sidewall automatic sprinklers shall be Viking Dry Sprinklers, with operating temperature of _____°F/_____°C _____ response and _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

(Available on HP® Systems only) The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

DELUGE SYSTEM

Hydraulic Release – Remote Controlled Unit (without Integrated Control Panel)

Supply and install a TotalPac2® integrated fire protection system, deluge type, as indicated, including the deluge cabinet, open discharge device type sprinkler system and fire detection system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

Deluge Cabinet

Supply and install a deluge cabinet containing all hydraulic and electrical components required for the control of a deluge system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring without control panel: 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems and 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The deluge system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI all field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and release air pressure (if applicable) of the system each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the pneumatic detection system in the prescribed time with air compressor isolation switch and control pressure switch. Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Detection & Signaling System

Supply and install a complete hydraulic detection system (pilot line) including the hydraulic release piping network (pilot line), thermostatic (rate-of-rise) releases, and/or fixed temperature releases (pilot heads) Supply and install supervisory and alarm connection between the unit field wiring terminals and the building fire alarm panel, including the system tubing, wiring and signaling devices.

System Operation

The activation of a thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) is necessary to cause the water discharge. The activation of at least one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) will activate the pneumatic actuator, and open the deluge valve. This will cause the system to fill the piping network with water, spray through all open type sprinklers or nozzles, sound an alarm, and activate alarm and water flow contacts connected to the building fire alarm panel. Pressure loss on the hydraulic release system (pilot line) will activate an auxiliary contact indicating same, connected to the building fire alarm panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Automatic Sprinklers

Supply and install all required open type sprinklers or nozzles. They will be UL/ULC Listed and FM Approved. The open type sprinklers or nozzles shall be Viking Micromatic Model M, chrome finish with _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

DELUGE SYSTEM

Pneumatic Release – Remote Controlled Unit (without Integrated Control Panel)

Supply and install a TotalPac2® integrated fire protection system, deluge type, as indicated, including the deluge cabinet, open type sprinkler or nozzle system and fire detection system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

Deluge Cabinet

Supply and install a deluge cabinet containing all hydraulic and electrical components required for the control of a deluge system. The cabinet shall include the sturdy 14 gauge steel cabinet, measuring without control panel (provided by others): 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems and 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The deluge system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, all field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and release air pressure (if applicable) of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the pneumatic detection system in the prescribed time with air compressor isolation switch and control pressure switch. Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Detection & Signaling System

Supply and install a complete pneumatic detection system including the pneumatic release piping network, external air supply, thermostatic (rate-of-rise) releases, and/or fixed temperature releases (pilot heads). Supply and install supervisory and alarm connections between the unit field wiring terminals and the building fire alarm panel, including the system tubing, wiring and signaling devices.

System Operation

The activation of one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) is necessary to cause the water discharge. The activation of at least one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) will activate the pneumatic actuator trim, open the deluge valve and cause the system to fill the piping network with water and spray through all open type sprinklers or nozzles. This will activate alarm and water flow switch contacts connected to the building fire alarm panel and sound an alarm. Pressure loss on the pneumatic release system will activate an auxiliary contact indicating same. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, spray through all open type sprinklers or nozzles, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply (for Pneumatic Release only)

On pneumatically operated systems, the pilot line is supervised by air from a compressed air source installed & provided by the contractor outside the deluge cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes. Pneumatic release air trim (Air Option

"C") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders, properly sized for the system, shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the pilot piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. The dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

Automatic Sprinklers

Supply and install all required open type sprinklers or nozzles. They will be UL & ULC Listed and FM Approved. The open type sprinklers or nozzles shall be Viking Micromatic Model M, chrome finish with _____ in. orifice.

Pneumatic Releases

Pneumatically operated systems shall be provided with a separate piping network, equipped with thermostatic (rate-of-rise) releases Viking Model C, and/or fixed temperature releases (pilot heads) Viking Microfast Model M. Temperature setting, quantity and location of pneumatic releases shall meet the manufacturer's recommendation.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL & C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

DELUGE SYSTEM

Electric Release – Remote Controlled Unit (without Integrated Control Panel)

Supply and install a TotalPac2® integrated fire protection system, deluge type, as indicated, including the deluge cabinet, open type sprinkler or nozzle system and fire detection system (control panel to be supplied by others). The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

Deluge Cabinet

Supply and install a deluge cabinet containing all hydraulic and electrical components required for the control of a deluge system. The cabinet shall include the sturdy 14 gauge steel cabinet, measuring without control panel (provided by others): 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems and 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The deluge system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and release air pressure (if applicable) of the system, each actuation and supervisory device required a schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the pneumatic detection system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and cannot work with every or all control panel(s). Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the CROSSED ZONES principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a SINGLE ZONE detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a partial electrical detection system including the system tubing, wiring, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors shall be provided and wired to the release control panel by others. The heat and/or smoke detectors and alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the release control panel. In addition, the release control panel shall be listed and/or approved for release service.

System Operation

Activation of the detection condition is necessary to cause the water discharge. The activation of the detection condition will activate the solenoid valve, open the deluge valve and cause the system to fill the piping network with water and spray through all open type sprinklers or nozzles. This will activate alarm and water flow switch contacts connected to the release control panel and sound an alarm. Operation of the emergency manual release will

depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, spray water through all open type sprinklers or nozzles and activate alarm and water flow contacts connected to the building fire alarm panel.

Automatic Sprinklers

Supply and install all required open type sprinklers or nozzles. They will be UL & ULC Listed and FM Approved. The open type sprinklers shall be Viking Micromatic Model M, chrome finish with _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL & C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

DELUGE SYSTEM

Electric Release – Self Contained Unit (with Integrated Control Panel)

Supply and install a TotalPac2® integrated fire protection system, deluge type, as indicated, including the deluge cabinet, open type sprinkler or nozzle system and fire detection system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

Deluge Cabinet

Supply and install a deluge cabinet containing all hydraulic and electrical components required for the control of a deluge system. The cabinet shall include the sturdy 14 gauge steel cabinet, measuring with release control panel: 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems and 71"x46"x24" (180x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The deluge system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the Viking PAR-3 Model B-2 Integrated Release Control Panel, with emergency battery backup, all field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided) the pressure gauges to indicate water supply pressure, priming water pressure and release air pressure (if applicable) of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the pneumatic detection system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

WARNING: Use only compatible detectors and verify for the maximum quantity of detectors allowed per zone.

Note: Smoke detectors **must be compatible and approved** to be used with the release control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the CROSSED ZONES principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a SINGLE ZONE detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, smoke detectors, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors can be wired on either of the two input zones. Each zone shall consist of a combination of photoelectric and ionization detectors on a 1:1 ratio. The heat and/or smoke detectors and the alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the Viking PAR-3 Model B-2 Release Control Panel. The ionization and photoelectric detectors shall be System Sensor, Model 1451 and 2451, with base no. B401B (**Maximum of 15 detectors per zone**). Where more than 15 detectors are required on a zone, use the 4-wire type detector base no. B402B. A bell or a horn should be installed near the TotalPac2® cabinet.

System Operation

The activation of at least one electrical detector on either or both detection zones is necessary to cause the water discharge.

Single zone operation: The activation of **EITHER** detection zones will cause the system to indicate an alarm and sound alarm devices, energize the solenoid valve and open the deluge valve. This will cause the system to fill the piping network with water, spray through all open type sprinklers or nozzles and activate alarm and water flow contacts for auxiliary functions.

ALTERNATE:

Cross zone operation: The activation of **EITHER** detection zones will cause the system to indicate an alarm and sound alarm devices. Activation of **BOTH** detection zones will energize the solenoid valve and open the deluge valve. This will cause the system to fill the piping network with water, spray through all open type sprinklers or nozzles, sound an alarm, and activate alarm and water flow contacts for auxiliary functions. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, spray through all open type sprinklers or nozzles and activate alarm and water flow contacts for auxiliary functions.

Automatic Sprinklers

Supply and install all required open type sprinklers or nozzles. They shall be UL/ULC Listed and FM Approved. The open type sprinklers or nozzles shall be Viking Micromatic Model M, chrome finish with _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL & C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

PREACTION SYSTEM

Preaction System (Non Interlocked) Pneumatic Release - Skid Mounted Unit

Supply and install a TotalPac2® skid mounted fire protection system. The skid unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

System Description

Supply and install a preaction skid including all hydraulic and electrical components required for the control of a preaction system. The skid shall include a sturdy 14 gauge steel base with a textured rust proof coating, fire red, oven baked polyester powder on phosphate base. The system shall utilize a Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI. The skid shall also incorporate electrical junction boxes on the butterfly valve and solenoid(s) for field wiring, pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the trim and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Listed and approved integrated discharge by-pass valve installed on the riser, including supervisory switches and junction box, with sight glass assembly on drain to visually confirm discharge.
- Tee connection for connection to the fire department connection.

Note: All wiring of the various electrical components of the skid unit as well as its connection to the fire alarm control panel are under the responsibility of the electrical contractor. The fire alarm control panel in the case of an electrically operated system SHALL be listed and approved for releasing service and its releasing circuits shall be compatible with the solenoid valves provided. Refer to the manufacturer literature for the solenoids electrical information.

Detection & Signaling System

Supply and install a complete pneumatic detection system including the pneumatic release piping network, external air supply, thermostatic (rate-of-rise) releases, and/or fixed temperature releases (pilot heads). The supplying and installation of supervisory and alarm connections between the unit devices and the building fire alarm panel are provided by others.

System Operation

The activation of EITHER one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) OR the opening of an automatic sprinkler is necessary to cause the water discharge. The activation of at least one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) will activate the pneumatic actuator trim, open the deluge valve and cause the system to fill the piping network with water. This will activate alarm and water flow switch contacts connected to the building fire alarm panel and sound an alarm. The opening of an automatic sprinkler will also activate the pneumatic actuator trim, open the deluge valve and cause the system to fill the piping network with water. This will activate alarm and water flow switch contacts connected to the building fire alarm panel and sound an alarm. Pressure loss on either the pneumatic release system or the sprinkler system will activate an auxiliary contact indicating same. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed & provided by the installing contractor. On pneumatically operated systems, the pilot line is supervised by air from a compressed air source also installed & provided by the contractor. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

Air Supply Options

(Choose applicable options)

- Air supply supervisory trim shall be factory installed on the skid and provide a connection to an external air compressor or nitrogen cylinders properly sized for the system. The connection to the external air supply source shall be made on-site by the contractor.
- Pneumatic release air trim (Air Option "C") shall be factory installed on the skid and adjusted for the selected configuration. The supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor.
- If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system.

Pneumatic releases

Pneumatically operated systems shall be provided with a separate piping network, equipped with thermostatic (rate-of-rise) releases Viking Model C, and/or fixed temperature releases (pilot heads) Viking Microfast Model M. Temperature setting, quantity and location of pneumatic releases shall meet the manufacturer's recommendation.

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 shall be The Viking Corporation. Deluge Valve to be Viking Model E-1 or F-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.)

System Check Valve

The check valves shall be UL Listed and Factory Mutual Approved for use on fire protection 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 shall be The Viking Corporation. Check Valve to be Viking Model G-1.

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 Viking, part number 09472 or 09473.

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 Viking, part number 09470 or 09471.

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 shall be The Viking Corporation. Water Motor Alarm to be Viking Model F-2/G-2.

System Drain

The single drain collector of the TotalPac2® skid shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Non Interlocked) Pneumatic Release – Remote Controlled Unit (without Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet measuring without control panel: 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems; 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction systems components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, all field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Detection & Signaling System

Supply and install a complete pneumatic detection system including the pneumatic release piping network, external air supply, thermostatic (rate-of-rise) releases, and/or fixed temperature releases (pilot heads). Supply and install supervisory and alarm connections between the unit field wiring terminals and the building fire alarm panel, including the system tubing, wiring and signaling devices.

System Operation

The activation of **EITHER** one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) **OR** the opening of an automatic sprinkler is necessary to cause the water discharge. The activation of at least one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) will activate the pneumatic actuator trim, open the deluge valve and cause the system to fill the piping network with water. This will activate alarm and water flow switch contacts connected to the building fire alarm panel and sound an alarm. The opening of an automatic sprinkler will also activate the pneumatic actuator trim, open the deluge valve and cause the system to fill the piping network with water. This will activate alarm and water flow switch contacts connected to the building fire alarm panel and sound an alarm. Pressure loss on either the pneumatic release system or the sprinkler system will activate an auxiliary contact indicating same. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. On pneumatically operated systems, the pilot line is supervised by air from a compressed air source installed & provided by the contractor outside the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose applicable options)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.

- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. The supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)
- Pneumatic release air trim (Air Option "C") shall be factory installed inside the cabinet and adjusted for the selected configuration. The supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

Pneumatic releases

Pneumatically operated systems shall be provided with a separate piping network, equipped with thermostatic (rate-of-rise) releases Viking Model C, and/or fixed temperature releases (pilot heads) Viking Microfast Model M. Temperature setting, quantity and location of pneumatic releases shall meet the manufacturer's recommendation.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Non Interlocked) Electric Release - Skid Mounted Unit

Supply and install a TotalPac2® skid mounted fire protection system. The skid unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

System Description

Supply and install a preaction skid including all hydraulic and electrical components required for the control of a preaction system. The skid shall include a sturdy 14 gauge steel base with a textured rust proof coating, fire red, oven baked polyester powder on phosphate base. The system shall utilize a Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI. The skid shall also incorporate electrical junction boxes on the butterfly valve and solenoid(s) for field wiring, pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the trim and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Listed and approved integrated discharge by-pass valve installed on the riser, including supervisory switches and junction box, with sight glass assembly on drain to visually confirm discharge.
- Tee connection for connection to the fire department connection.

Note: All wiring of the various electrical components of the skid unit as well as its connection to the fire alarm control panel are under the responsibility of the electrical contractor. The fire alarm control panel in the case of an electrically operated system SHALL be listed and approved for releasing service and its releasing circuits shall be compatible with the solenoid valves provided. Refer to the manufacturer literature for the solenoids electrical information.

Detection & Signaling System

Supply and installation of the electrical detection system including the system tubing, wiring, signaling devices and connections to auxiliary functions are provided by others. Supply and installation of supervisory and alarm connections between the unit devices and the building fire alarm panel are provided by others. The release control panel shall be listed and/or approved for release service.

System Operation

Activation of EITHER the detection condition **OR** the opening of an automatic sprinkler is necessary to cause the water discharge. The activation of the detection condition will activate the solenoid valve, open the deluge valve and cause the system to fill the piping network with water. This will activate alarm and water flow switch contacts connected to the remote control panel and sound an alarm. The opening of an automatic sprinkler **OR** damage to system piping without the detection condition will activate the pneumatic actuator, open the deluge valve and cause the system to fill the piping network with water. This will activate alarm and water flow switch contacts connected to the remote control panel and sound an alarm. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed & provided by the installing contractor. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

Air Supply Options

(Choose applicable options)

- Air supply supervisory trim shall be factory installed on the skid and provide a connection to an external air compressor or nitrogen cylinders properly sized for the system. Connection to the external air supply source shall be made on-site by the contractor.

- If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system.

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 shall be The Viking Corporation. Deluge Valve to be Viking Model E-1 or F-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.)

Supplemental Detection System

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

- Electric fixed temperature self-restoring releases. (Insert applicable product specification.)
- Electric smoke detection devices. Smoke detection devices to be compatible with the release control panel. (Insert applicable product specification.)

System Check Valve

The check valves shall be UL Listed and Factory Mutual Approved for use on fire protection 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 shall be The Viking Corporation. Check Valve to be Viking Model G-1.

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 Viking, part number 09472 or 09473.

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 Viking, part number 09470 or 09471.

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/G-2.

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 B-1 Par-3 Panel.

System Drain

The single drain collector of the TotalPac2® skid shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Non Interlocked) Electric Release – Remote Controlled Unit (without Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet measuring without control panel (57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems; 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, all field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected and should allow for a faster detection of the fire condition than the automatic sprinklers. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the CROSSED ZONES principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a SINGLE ZONE detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors shall be provided and wired to the remote release control panel by others. Heat and/or smoke detectors and alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the remote release control panel. In addition, the remote control panel shall be listed and/or approved for release service.

System Operation

Activation of **EITHER** the detection condition **OR** the opening of an automatic sprinkler is necessary to cause the water discharge. The activation of the detection condition will activate the solenoid valve, open the deluge valve and cause the system to fill the piping network with water. This will activate alarm and water flow switch contacts connected to the remote control panel and sound an alarm. The opening of an automatic sprinkler **OR** damage to system piping without the detection condition will activate the pneumatic actuator, open the deluge valve and cause the system to fill the piping network with water. This will activate alarm and water flow switch contacts connected to the remote control panel and sound an alarm. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. On pneumatically operated systems, the pilot line is supervised by air from a compressed air source installed & provided by the contractor outside the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose applicable options)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)
- Pneumatic release air trim (Air Option "C") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Non Interlocked) Electric Release – Self Contained Unit (with Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring with control panel: 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems; 71"x46"x24" (180x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the Viking PAR-3 Model B-2 integrated control panel, with emergency battery backup, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required a schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

WARNING: When a self-contained unit (with integrated control panel) is selected, use only compatible detectors and verify for the maximum quantity of detectors allowed per zone.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected and should allow for a faster detection of the fire condition than the automatic sprinklers. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the CROSSED ZONES principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a SINGLE ZONE detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a complete electrical detection system including the release control panel, system tubing, wiring, smoke detectors, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors can be wired on either of the two input zones. Each zone shall consist of a combination of photoelectric and ionization detectors on a 1:1 ratio. The heat and/or smoke detectors and the alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the integrated Viking PAR-3 Model B-2 release control panel. The ionization and photoelectric detectors shall be System Sensor, Model 1451 and 2451, with base no. B401B (**Maximum of 15 detectors per zone**). Where more than 15 detectors are required on a zone, use the 4-wire type detector base no. B402B. A bell or a horn should be installed near the TotalPac2® cabinet.

System Operation

The activation of at least one electrical detector on either or both detection zones **OR** the opening of an automatic sprinkler is necessary to cause the water discharge.

Single zone operation: The activation of **EITHER** detection zones will cause the system to indicate an alarm and sound alarm devices, energize the solenoid valve and open the deluge valve. This will cause the system to fill the piping network with water, and activate alarm and water flow contacts for auxiliary functions.

ALTERNATE:

Cross zone operation: The activation of **EITHER** detection zones will cause the system to indicate an alarm and sound alarm devices. Activation of **BOTH** detection zones will energize the solenoid valve and open the deluge valve. This will cause the system to fill the piping network with water, sound an alarm, and activate alarm and water flow contacts for auxiliary functions. The opening of an automatic sprinkler **OR** damage to system piping without electrical detection will activate the pneumatic actuator, and open de deluge valve. This will cause the system to fill the piping network with water, sound an alarm, and activate alarm and water flow contacts for auxiliary functions. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts for auxiliary functions.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose applicable options)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. The dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Single Interlocked) Pneumatic Release – Skid Mounted Unit

Supply and install a TotalPac2® skid mounted fire protection system. The skid unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

System Description

Supply and install a preaction skid including all hydraulic and electrical components required for the control of a preaction system. The skid shall include a sturdy 14 gauge steel base with a textured rust proof coating, fire red, oven baked polyester powder on phosphate base. The system shall utilize a Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI. The skid shall also incorporate electrical junction boxes on the butterfly valve and solenoid(s) for field wiring, pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the trim and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Listed and approved integrated discharge by-pass valve installed on the riser, including supervisory switches and junction box, with sight glass assembly on drain to visually confirm discharge.
- Tee connection for connection to the fire department connection.

Note: All wiring of the various electrical components of the skid unit as well as its connection to the fire alarm control panel are under the responsibility of the electrical contractor. The fire alarm control panel in the case of an electrically operated system SHALL be listed and approved for releasing service and its releasing circuits shall be compatible with the solenoid valves provided. Refer to the manufacturer literature for the solenoids electrical information.

Detection & Signaling System

Supply and install a complete pneumatic detection system including the pneumatic release piping network, external air supply, thermostatic (rate-of-rise) releases, and/or fixed temperature releases (pilot heads). Supply and installation of supervisory and alarm connections between the unit devices and the building fire alarm panel are provided by others.

System Operation

The activation of BOTH a thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) **AND** the opening of an automatic sprinkler is necessary to cause the water discharge. The activation of at least one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) will activate the pneumatic actuator, and open the deluge valve. This will cause the system to fill the piping network with water, sound an alarm, and activate alarm and water flow contacts connected to the building fire alarm panel. The opening of an automatic sprinkler **OR** damage to system piping without pneumatic detection will activate an auxiliary contact connected to the building fire alarm panel but **will not** cause the system to fill. The activation of **BOTH** a thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) **AND** the opening of an automatic sprinkler will activate the pneumatic actuator, and open the deluge valve. This will cause water to discharge and activate alarm and water flow contacts connected to the building fire alarm panel. Pressure loss on either the pneumatic release system or the sprinkler system will activate an auxiliary contact indicating same, connected to the building fire alarm panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed & provided by the installing contractor. On pneumatically operated systems, the pilot line is supervised by air from a compressed air source also installed & provided by the contractor. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

Air Supply Options

(Choose applicable options)

- Air supply supervisory trim shall be factory installed on the skid and provide a connection to an external air compressor or nitrogen cylinders properly sized for the system. The connection to the external air supply source shall be made on-site by the contractor.
- Pneumatic release air trim (Air Option "C") shall be factory installed on the skid and adjusted for the selected configuration. The supply and connection of an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor.
- If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system.

Pneumatic releases

Pneumatically operated systems shall be provided with a separate piping network, equipped with thermostatic (rate-of-rise) releases Viking Model C, and/or fixed temperature releases (pilot heads) Viking Microfast Model M. Temperature setting, quantity and location of pneumatic releases shall meet the manufacturer's recommendation.

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 shall 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 shall 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.)

System Check Valve

The check valves shall be UL Listed and Factory Mutual Approved for use on fire protection 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 shall be The Viking Corporation. Check Valve to be Viking Model G-1.

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 Viking, part number 09472 or 09473.

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 Viking, part number 09470 or 09471.

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 shall be The Viking Corporation. Water Motor Alarm to be Viking Model F-2/G-2.

System Drain

The single drain collector of the TotalPac2® skid shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Single Interlocked) Pneumatic Release – Remote Controlled Unit (without Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring without control panel 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems; 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided) the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Detection & Signaling System

Supply and install a complete pneumatic detection system including the pneumatic release piping network, external air supply, thermostatic (rate-of-rise) releases, and/or fixed temperature releases (pilot heads). Supply and install supervisory and alarm connection between the unit field wiring terminals and the building fire alarm panel, including the system tubing, wiring and signaling devices.

System Operation

The activation of **BOTH** a thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) **AND** the opening of an automatic sprinkler is necessary to cause the water discharge. The activation of at least one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) will activate the pneumatic actuator, and open the deluge valve. This will cause the system to fill the piping network with water, sound an alarm, and activate alarm and water flow contacts connected to the building fire alarm panel. The opening of an automatic sprinkler **OR** damage to system piping without pneumatic detection will activate an auxiliary contact connected to the building fire alarm panel but **will not** cause the system to fill. The activation of **BOTH** a thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) **AND** the opening of an automatic sprinkler will activate the pneumatic actuator, and open the deluge valve. This will cause water to discharge and activate alarm and water flow contacts connected to the building fire alarm panel. Pressure loss on either the pneumatic release system or the sprinkler system will activate an auxiliary contact indicating same, connected to the building fire alarm panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. On pneumatically operated systems, the pilot line is supervised by air from a compressed air source installed & provided by the contractor outside the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose applicable options)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)
- Pneumatic release air trim (Air Option "C") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

Pneumatic Releases

Pneumatically operated systems shall be provided with a separate piping network, equipped with thermostatic (rate-of-rise) releases Viking Model C, and/or fixed temperature releases (pilot heads) Viking Microfast Model M. Temperature setting, quantity and location of pneumatic releases shall meet the manufacturer's recommendation.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Single Interlocked) Electric Release – Skid Mounted Unit

Supply and install a TotalPac2® skid mounted fire protection system. The skid unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

System Description

Supply and install a preaction skid including all hydraulic and electrical components required for the control of a preaction system. The skid shall include a sturdy 14 gauge steel base with a textured rust proof coating, fire red, oven baked polyester powder on phosphate base. The system shall utilize a Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI. The skid shall also incorporate electrical junction boxes on the butterfly valve and solenoid(s) for field wiring, pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the trim and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Listed and approved integrated discharge by-pass valve installed on the riser, including supervisory switches and junction box, with sight glass assembly on drain to visually confirm discharge.
- Tee connection for connection to the fire department connection.

Note: All wiring of the various electrical components of the skid unit as well as its connection to the fire alarm control panel are under the responsibility of the electrical contractor. The fire alarm control panel in the case of an electrically operated system SHALL be listed and approved for releasing service and its releasing circuits shall be compatible with the solenoid valves provided. Refer to the manufacturer literature for the solenoids electrical information.

Detection & Signaling System

Supply and installation of the electrical detection system including the release control panel, system tubing, wiring, signaling devices and connections to auxiliary functions are provided by others. Supply and installation of supervisory and alarm connections between the unit devices and the building fire alarm panel are provided by others. The release control panel shall be listed and/or approved for release service.

System Operation

Both the activation of the detection condition **AND** the opening of an automatic sprinkler are necessary to cause the water discharge. The activation of the detection condition will activate the solenoid valve, open the deluge valve and cause the system to fill the piping network with water. This will sound an alarm and activate alarm and water flow contacts connected to the remote control panel. The opening of an automatic sprinkler or damage to system piping without the detection condition satisfied will activate an alarm contact connected to the remote control panel but **will not** cause the system to fill. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed & provided by the installing contractor. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

Air Supply Options

(Choose applicable options)

- Air supply supervisory trim shall be factory installed on the skid and provide a connection to an external air compressor or nitrogen cylinders properly sized for the system. The connection to the external air supply source shall be made on-site by the contractor.

- If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system.

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 shall be The Viking Corporation. Deluge Valve to be Viking Model E-1 or F-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.)

Supplemental Detection System

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

- Pneumatic rate-of-rise compensating vent type detector with a fixed temperature release. (Insert applicable product specification.)
- Pneumatic fixed temperature pilot operated release line. (Insert applicable product specification.)
- Hydraulic rate-of-rise compensating vent type detector with a fixed temperature release. (Insert applicable product specification.)
- Hydraulic fixed temperature pilot operated release line. (Insert applicable product specification.)
- Electric fixed temperature self-restoring releases. (Insert applicable product specification.)
- Electric smoke detection devices. Smoke detection devices to be compatible with system control panel. (Insert applicable product specification.)

System Check Valve

The check valves shall be UL Listed and Factory Mutual Approved for use on fire protection 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 shall be The Viking Corporation. Check Valve to be Viking Model G-1.

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 Viking, part number 09472 or 09473.

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 Viking, part number 09470 or 09471.

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 shall be The Viking Corporation. Water Motor Alarm to be Viking Model F-2/G-2.

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 B-1 Par-3 Panel.

System Drain

The single drain collector of the TotalPac2® skid shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Single Interlocked) Electric Release – Remote Controlled Unit (without Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring without control panel: 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems; 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected and should allow for a faster detection of the fire condition than the automatic sprinklers. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the CROSSED ZONES principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a SINGLE ZONE detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a partial electrical detection system including the system tubing, wiring, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors shall be provided and wired to the remote release control panel by others. Heat and/or smoke detectors and alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the remote release control panel. In addition, the remote control panel shall be listed and/or approved for release service.

System Operation

Both the activation of the detection condition **AND** the opening of an automatic sprinkler are necessary to cause the water discharge. The activation of the detection condition will activate the solenoid valve, open the deluge valve and cause the system to fill the piping network with water. This will sound an alarm and activate alarm and water flow contacts connected to the remote control panel. The opening of an automatic sprinkler or damage to system piping without the detection condition satisfied will activate an alarm contact connected to the remote control panel but **will not** cause the system to fill. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Single Interlocked) Electric Release – Self Contained Unit (with Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring with control panel: 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems; 71"x46"x24" (180x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the Viking PAR-3 Model B-2 integrated control panel, with emergency battery backup, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

WARNING: When a self-contained unit (with integrated control panel) is selected, use only compatible detectors and verify for the maximum quantity of detectors allowed per zone.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected and should allow for a faster detection of the fire condition than the automatic sprinklers. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the CROSSED ZONES principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a SINGLE ZONE detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, smoke detectors, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors can be wired on either one or two zones for operation in single or crossed zones mode. Each zone shall consist of a combination of photoelectric and ionization detectors on a 1:1 ratio. The heat and/or smoke detectors and the alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the integrated Viking PAR-3 Model B-2 Release Control Panel. Ionization and photoelectric detectors shall be System Sensor, Model 1451 and 2451, with base no. B401B (**Maximum of 15 detectors per zone**). Where more than 15 detectors are required on a zone, use the 4-wire type detector base no. B402B. A bell or a horn should be installed near the TotalPac2® cabinet.

System Operation

The activation of **BOTH** an electrical detector on either or both detection zones (depending on program) **AND** the opening of an automatic sprinkler is necessary to cause the water discharge.

Single zone operation: The activation of **EITHER** detection zones will energize the solenoid valve, open the deluge valve and cause the system to fill the piping network with water. This will sound an alarm, and activate alarm and water flow contacts for auxiliary functions.

ALTERNATE:

Cross zone operation: The activation of **EITHER** detection zones will cause the system to indicate an alarm and sound alarm devices. Activation of **BOTH** detection zones will energize the solenoid valve, open the deluge valve and cause the system to fill the piping network with water. This will sound an alarm, and activate alarm and water flow contacts for auxiliary functions. The opening of an automatic sprinkler **OR** damage to system piping without electrical detection will initiate the sounding of a warning device and the activation of an alarm contact but **will not** cause the system to fill. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts for auxiliary functions.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Double Interlocked) Pneumatic Release – Skid Mounted Unit

Supply and install a TotalPac2® skid mounted fire protection system. The skid unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

System Description

Supply and install a preaction skid including all hydraulic and electrical components required for the control of a preaction system. The skid shall include a sturdy 14 gauge steel base with a textured rust proof coating, fire red, oven baked polyester powder on phosphate base. The system shall utilize a Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI. The skid shall also incorporate electrical junction boxes on the butterfly valve and solenoid(s) for field wiring, pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the trim and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Listed and approved integrated discharge by-pass valve installed on the riser, including supervisory switches and junction box, with sight glass assembly on drain to visually confirm discharge.
- Tee connection for connection to the fire department connection.

Note: All wiring of the various electrical components of the skid unit as well as its connection to the fire alarm control panel are under the responsibility of the electrical contractor. The fire alarm control panel in the case of an electrically operated system SHALL be listed and approved for releasing service and its releasing circuits shall be compatible with the solenoid valves provided. Refer to the manufacturer literature for the solenoids electrical information.

Detection & Signaling System

Supply and install a complete pneumatic detection system including the pneumatic release piping network, external air supply, thermostatic (rate-of-rise) releases, and/or fixed temperature releases (pilot heads). Supply and installation of supervisory and alarm connections between the unit devices and the building fire alarm panel are provided by others.

System Operation

The activation of **BOTH** a thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) **AND** the opening of an automatic sprinkler are necessary to cause the water discharge. The activation of at least one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) alone will **NOT** cause the system to fill the piping network with water, but will activate an alarm contact connected to the building fire alarm panel. The opening of an automatic sprinkler **OR** damage to system piping without pneumatic detection will activate an auxiliary contact connected to the building fire alarm panel but **will not** cause the system to fill. The activation of **BOTH** a thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) **AND** the opening of an automatic sprinkler will activate the pneumatic actuators, open the deluge valve and cause water to discharge. This will sound an alarm and activate alarm and water flow contacts connected to the building fire alarm panel. Pressure loss on either the pneumatic release system or the sprinkler system will activate an auxiliary contact indicating same, connected to the building fire alarm panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed & provided by the installing contractor. On pneumatically operated systems, the pilot line is supervised by air from a compressed air source also installed & provided by the contractor. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

Air Supply Options

(Choose applicable options)

- Air supply supervisory trim shall be factory installed on the skid and provide a connection to an external air compressor or nitrogen cylinders properly sized for the system. The connection to the external air supply source shall be made on-site by the contractor.
- Pneumatic release air trim (Air Option "C") shall be factory installed on the skid and adjusted for the selected configuration. The supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor.
- Freezer type air trim (Air Option "D") shall be factory installed on the skid and adjusted for the selected configuration. The supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. Air supply must meet NFPA and FM requirements for freezer applications.
- If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system.

Pneumatic releases

Pneumatically operated systems shall be provided with a separate piping network, equipped with thermostatic (rate-of-rise) releases Viking Model C, and/or fixed temperature releases (pilot heads) Viking Microfast Model M. Temperature setting, quantity and location of pneumatic releases shall meet the manufacturer's recommendation.

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 shall 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 shall be The Viking Corporation. Pneumatic Actuator shall 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.)

System Check Valve

The check valves shall be UL Listed and Factory Mutual Approved for use on fire protection 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 shall be The Viking Corporation. Check Valve to be Viking Model G-1.

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 Viking, part number 09472 or 09473.

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 Viking, part number 09470 or 09471.

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 shall be The Viking Corporation. Water Motor Alarm to be Viking Model F-2/G-2.

System Drain

The single drain collector of the TotalPac2® skid shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Double Interlocked) Pneumatic Release – Remote Controlled Unit (without Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring without control panel: 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems; 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Detection & Signaling System

Supply and install a complete pneumatic detection system including the pneumatic release piping network, external air supply, thermostatic (rate-of-rise) releases, and/or fixed temperature releases (pilot heads). Supply and install supervisory and alarm connection between the unit field wiring terminals and the building fire alarm panel, including the system tubing, wiring and signaling devices.

System Operation

The activation of **BOTH** a thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) **AND** the opening of an automatic sprinkler are necessary to cause the water discharge. The activation of at least one thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) alone will **NOT** cause the system to fill the piping network with water, but will activate an alarm contact connected to the building fire alarm panel. The opening of an automatic sprinkler **OR** damage to system piping without pneumatic detection will activate an auxiliary contact connected to the building fire alarm panel but **will not** cause the system to fill. The activation of **BOTH** a thermostatic (rate-of-rise) release, and/or fixed temperature release (pilot head) **AND** the opening of an automatic sprinkler will activate the pneumatic actuators, open the deluge valve and cause water to discharge. This will sound an alarm and activate alarm and water flow contacts connected to the building fire alarm panel. Pressure loss on either the pneumatic release system or the sprinkler system will activate an auxiliary contact indicating same, connected to the building fire alarm panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. On pneumatically operated systems, the pilot line is supervised by air from a compressed air source installed & provided by the contractor outside the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)
- Pneumatic release air trim (Air Option "C") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. The dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

Pneumatic Releases

Pneumatically operated systems shall be provided with a separate piping network, equipped with thermostatic (rate-of-rise) releases Viking Model C, and/or fixed temperature releases (pilot heads) Viking Microfast Model M. Temperature setting, quantity and location of pneumatic releases shall meet the manufacturer's recommendation.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Double Interlocked) Electric/Pneumatic Release – Skid Mounted Unit

Supply and install a TotalPac2® skid mounted fire protection system. The skid unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

System Description

Supply and install a preaction skid including all hydraulic and electrical components required for the control of a preaction system. The skid shall include a sturdy 14 gauge steel base with a textured rust proof coating, fire red, oven baked polyester powder on phosphate base. The system shall utilize a Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI. The skid shall also incorporate electrical junction boxes on the butterfly valve and solenoid(s) for field wiring, pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the trim and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Listed and approved integrated discharge by-pass valve installed on the riser, including supervisory switches and junction box, with sight glass assembly on drain to visually confirm discharge.
- Tee connection for connection to the fire department connection.

Note: All wiring of the various electrical components of the skid unit as well as its connection to the fire alarm control panel are under the responsibility of the electrical contractor. The fire alarm control panel in the case of an electrically operated system SHALL be listed and approved for releasing service and its releasing circuits shall be compatible with the solenoid valves provided. Refer to the manufacturer literature for the solenoids electrical information.

Detection & Signaling System

Supply and installation of the electrical detection system including the release control panel, system tubing, wiring, signaling devices and connections to auxiliary functions are provided by others. Supply and installation of supervisory and alarm connections between the unit devices and the building fire alarm panel are provided by others. The release control panel shall be listed and/or approved for Release Service.

System Operation

The activation of **BOTH** the detection condition **AND** the opening of an automatic sprinkler is necessary to cause the water discharge. The activation of an electrical detector alone will activate the solenoid valve, sound an alarm and activate alarm contacts connected to the remote control panel but **will not** cause the system to fill with water. The opening of an automatic sprinkler **OR** damage to system piping without the detection condition satisfied will activate the pneumatic actuator, sound an alarm and activate alarm contacts for auxiliary functions but **will not** cause the system to fill with water. Activation of **BOTH** the detection condition **AND** the opening of an automatic sprinkler will activate both the solenoid valve and pneumatic actuator, open deluge valve and sound an alarm. This will activate alarm and water flow contacts connected to the remote control panel. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed & provided by the installing contractor. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

Air Supply Options

(Choose applicable options)

- Air supply supervisory trim shall be factory installed on the skid and provide a connection to an external air compressor or nitrogen cylinders properly sized for the system. The connection to the external air supply source shall be made on-site by the contractor.

- Freezer type air trim (Air Option "D") shall be factory installed on the skid and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. Air supply must meet NFPA and FM requirements for freezer applications.
- If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system.

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 shall 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 shall 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.)

Supplemental Detection System

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

- Electric fixed temperature self-restoring releases. (Insert applicable product specification.)
- Electric smoke detection devices. Smoke detection devices to be compatible with system control panel. (Insert applicable product specification.)

System Check Valve

The check valves shall be UL Listed and Factory Mutual Approved for use on fire protection 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 shall be The Viking Corporation. Check Valve to be Viking Model G-1.

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 Viking, part number 09472 or 09473.

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 Viking, part number 09470 or 09471.

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 shall be The Viking Corporation. Water Motor Alarm to be Viking Model F-2/G-2.

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 B-1 Par-3 Panel.

System Drain

The single drain collector of the TotalPac2® skid shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Double Interlocked) Electric/Pneumatic Release – Remote Controlled Unit (without Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet measuring without control panel: 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems; 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water, and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected and should allow for a faster detection of the fire condition than the automatic sprinklers. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the CROSSED ZONES principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a SINGLE ZONE detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a partial electrical detection system including the system tubing, wiring, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors shall be provided and wired to the remote release control panel by others. Heat and/or smoke detectors and alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the remote release control panel. In addition, the remote control panel shall be listed and/or approved for release service.

System Operation

The activation of **BOTH** the detection condition **AND** the opening of an automatic sprinkler is necessary to cause the water discharge. The activation of an electrical detector alone will activate the solenoid valve, sound an alarm and activate alarm contacts connected to the remote control panel but **will not** cause the system to fill with water. The opening of an automatic sprinkler **OR** damage to system piping without the detection condition satisfied will activate the pneumatic actuator, sound an alarm and activate alarm contacts for auxiliary functions but **will not** cause the system to fill with water. Activation of **BOTH** the detection condition **AND** the opening of an automatic sprinkler will activate both the solenoid valve and pneumatic actuator, open deluge valve and sound an alarm. This will activate alarm and water flow contacts connected to the remote control panel. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the

emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)
- Freezer type air trim (Air Option "D") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. Air supply must meet NFPA and FM requirements for freezer applications.

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated desiccant-type air dryer, the desiccant acting as a moisture indicator by changing color.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Double Interlocked) Electric/Pneumatic Release – Self Contained Unit (with Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet measuring with control panel: 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems; 71"x46"x24" (180x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the Viking PAR-3 Model B-2 integrated control panel, with emergency battery backup, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

WARNING: When a self-contained unit (with integrated control panel) is selected, use only compatible detectors and verify for the maximum quantity of detectors allowed per zone.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected and should allow for a faster detection of the fire condition than the automatic sprinklers. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the **CROSSED ZONES** principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a **SINGLE ZONE** detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, smoke detectors, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors can be wired on either zones. Each zone shall consist of a combination of photoelectric and ionization detectors on a 1:1 ratio. The heat and/or smoke detectors and the alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the integrated Viking PAR-3 Model B-2 release control panel. The ionization and photoelectric detectors shall be System Sensor, Model 1451 and 2451, with base no. B401B (**Maximum of 15 detectors**). Where more than 15 detectors are required on a zone, use the 4-wire type detector base no. B402B. A bell or a horn should be installed near the TotalPac2® system.

System Operation

The activation of **BOTH** the detection condition **AND** the opening of an automatic sprinkler is necessary to cause the water discharge.

Single zone operation: The activation of **EITHER** detection zones alone will activate the solenoid valve, sound an alarm and activate alarm contacts for auxiliary functions but **will not** cause the system to fill with water.

ALTERNATE:

Cross zone operation: The activation of **EITHER** detection zones will cause the system to indicate an alarm and sound alarm devices. Activation of **BOTH** detection zones alone will activate the solenoid valve, sound an alarm and activate alarm contacts for auxiliary functions but **will not** cause the system to fill with water. The opening of an automatic sprinkler **OR** damage to system piping without the detection condition satisfied will activate the pneumatic actuator, sound an alarm and activate alarm contacts for auxiliary functions but **will not** cause the system to fill with water. Activation of **BOTH** the detection condition **AND** the opening of an automatic sprinkler will activate both the solenoid valve and pneumatic actuator, open deluge valve and sound an alarm. This will activate alarm and water flow contacts connected to the remote control panel. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)
- Freezer type air trim (Air Option "D") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. Air supply must meet NFPA and FM requirements for freezer applications.

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Double Interlocked) Electric/Pneumatic Release – Skid Mounted Unit

Supply and install a TotalPac2® skid mounted fire protection system. The skid unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

System Description

Supply and install a preaction skid including all hydraulic and electrical components required for the control of a preaction system. The skid shall include a sturdy 14 gauge steel base with a textured rust proof coating, fire red, oven baked polyester powder on phosphate base. The system shall utilize a Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI. The skid shall also incorporate electrical junction boxes on the butterfly valve and solenoid(s) for field wiring, pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the trim and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Listed and approved integrated discharge by-pass valve installed on the riser, including supervisory switches and junction box, with sight glass assembly on drain to visually confirm discharge.
- Tee connection for connection to the fire department connection.

Note: All wiring of the various electrical components of the skid unit as well as its connection to the fire alarm control panel are under the responsibility of the electrical contractor. The fire alarm control panel in the case of an electrically operated system SHALL be listed and approved for releasing service and its releasing circuits shall be compatible with the solenoid valves provided. Refer to the manufacturer literature for the solenoids electrical information.

Detection & Signaling System

Supply and installation of the electrical detection system including the release control panel, system tubing, wiring, signaling devices and connections to auxiliary functions are provided by others. Supply and installation of supervisory and alarm connections between the unit devices and the building fire alarm panel are provided by others. The remote control panel shall be listed and/or approved for release service.

Note: The release control panel shall be programmed to activate the solenoid circuit only when **BOTH** the heat and/or smoke detection zone is in alarm **AND** the very low air condition contact is activated (cross-zoned).

System Operation

The activation of both the detection condition **AND** the opening of an automatic sprinkler are necessary to cause the water discharge. The activation of an electrical detector alone will sound an alarm and activate alarm contacts connected to the remote control panel but **will not** cause the system to fill with water. The opening of an automatic sprinkler **OR** damage to system piping without the detection condition satisfied will activate the very low air pressure switch zone, sound an alarm and activate alarm contacts connected to the remote control panel but **will not** cause the system to fill with water. Activation of **BOTH** the detection condition **AND** the opening of an automatic sprinkler will activate the solenoid valve, open the deluge valve, and cause water to discharge. This will sound an alarm and activate alarm and water flow contacts connected to the remote control panel. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed & provided by the installing contractor. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

Air Supply Options

(Choose applicable options)

- Air supply supervisory trim shall be factory installed on the skid and provide a connection to an external air compressor or nitrogen cylinders properly sized for the system. The connection to the external air supply source shall be made on-site by the contractor.
- Freezer type air trim (Air Option "D") shall be factory installed on the skid and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. Air supply must meet NFPA and FM requirements for freezer applications.
- If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system.

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 shall be The Viking Corporation. Deluge Valve to be Viking Model E-1 or F-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.)

Supplemental Detection System

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

- Electric fixed temperature self-restoring releases. (Insert applicable product specification.)
- Electric smoke detection devices. Smoke detection devices to be compatible with system control panel. (Insert applicable product specification.)

System Check Valve

The check valves shall be UL Listed and Factory Mutual Approved for use on fire protection 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 shall be The Viking Corporation. Check Valve to be Viking Model G-1.

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 Viking, part number 09472 or 09473.

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 Viking, part number 09470 or 09471.

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 shall be The Viking Corporation. Water Motor Alarm to be Viking Model F-2/G-2.

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 B-1 Par-3 Panel.

System Drain

The single drain collector of the TotalPac2® skid shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Double Interlocked) Electric/Pneumatic Release – Remote Controlled Unit (without Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring without control panel: 57"x36"x20" (145x91x51cm) for 1½", 2" & 3" systems; 57"x46"x24" (145x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required a schedule 40 steel pipe header with grooved ends to be connected to supply water and schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected and should allow for a faster detection of the fire condition than the automatic sprinklers. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the CROSSED ZONES principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a SINGLE ZONE detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a partial electrical detection system including the system tubing, wiring, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors shall be provided and wired to the remote release control panel by others. Heat and/or smoke detectors and alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the remote release control panel. In addition, the remote control panel shall be listed and/or approved for release service.

Note: The remote control panel shall be programmed to activate the solenoid circuit only when **BOTH** the heat and/or smoke detection zone is in alarm **AND** the very low air condition contact is activated (cross-zoned).

System Operation

The activation of both the detection condition **AND** the opening of an automatic sprinkler are necessary to cause the water discharge. The activation of an electrical detector alone will sound an alarm and activate alarm contacts connected to the remote control panel but **will not** cause the system to fill with water. The opening of an automatic sprinkler **OR** damage to system piping without the detection condition satisfied will activate the very low air pressure switch zone, sound an alarm and activate alarm contacts connected to the remote control panel but **will not** cause the system to fill with water. Activation of BOTH the detection condition **AND** the opening of an automatic sprinkler will activate the solenoid valve, open the deluge valve, and cause water to discharge. This will sound an alarm and activate alarm and water flow contacts connected to the remote control panel. Pressure loss

on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts connected to the building fire alarm panel.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

Preaction System (Double Interlocked) Electric/Pneumatic Release – Self Contained Unit (with Integrated Control Panel)

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring with control panel: 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems; 71"x46"x24" (180x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the Viking PAR-3 Model B-2 integrated control panel, with emergency battery backup, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

Note: The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

WARNING: When a self-contained unit (with integrated control panel) is selected, use only compatible detectors and verify for the maximum quantity of detectors allowed per zone.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected and should allow for a faster detection of the fire condition than the automatic sprinklers. Furthermore, it shall not cause false alarms due to the type of occupation. The use of the CROSSED ZONES principle referred to in this document is only a typical example of such a detection system. However, in some applications, it could be preferable to use a SINGLE ZONE detection pattern or to use different types of detectors to suit conditions.

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, smoke detectors, signaling devices and connections to auxiliary functions. Heat and/or smoke detectors shall be wired on a single zone. This zone shall consist of a combination of photoelectric and ionization detectors on a 1:1 ratio. The heat and/or smoke detectors and the alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the integrated Viking PAR-3 Model B-2 release control panel. Ionization and photoelectric detectors shall be System Sensor, Model 1451 and 2451, with base no. B401B (**Maximum of 15 detectors**). Where more than 15 detectors are required on a zone, use the 4-wire type detector base no. B402B. A bell or a horn should be installed near the TotalPac2® system.

System Operation

The activation of both the detection condition **AND** the opening of an automatic sprinkler are necessary to cause the water discharge. The activation of an electrical detector alone will sound an alarm and activate alarm contacts for auxiliary functions but **will not** cause the system to fill with water. The opening of an automatic sprinkler **OR** damage to system piping without the detection condition satisfied will activate the very low air pressure switch

zone, sound an alarm and activate alarm contacts for auxiliary functions but **will not** cause the system to fill with water. Activation of **BOTH** the detection condition **AND** the opening of an automatic sprinkler will activate the solenoid valve, open the deluge valve, and cause water to discharge. This will sound an alarm and activate alarm and water flow contacts for auxiliary functions. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same, connected to the remote control panel. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts for auxiliary functions.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

ELEVATOR CONFIGURATION

Supply and install a TotalPac2® for Elevators integrated fire protection system. The system shall be a preaction double interlocked type as indicated, including the Preaction cabinet the Automatic sprinkler system and fire detection system. All system components shall be "compatible" and UL, C-UL listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

Preaction Cabinet

Supply and install a preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system for elevators. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring with control panel: 1"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems and 1"x46"x24" (180x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the Viking PAR-3 Model B-2 integrated control panel, with emergency battery backup and field-adjustable fail-safe timer, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® System for Elevators, by FireFlex Systems Inc.

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, smoke detectors and signaling devices and connections to auxiliary functions and the Interlocks for elevator recall functions and power shut-down. The heat and/or smoke detectors shall be wired on the dedicated zone. This zone can consist of a combination of photoelectric and ionization detectors on a 1:1 ratio. The heat and/or smoke detectors and the alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the integrated Viking PAR-3 Model B-2 release control panel. The ionization and photoelectric detectors shall be System Sensor, Model 1451 and 2451, with base no. B401B (**Maximum of 15 detectors**). Where more than 15 detectors are required on a zone, use the 4-wire type detector base no. B402B. A bell or a horn should be installed near the TotalPac2® system.

System Configuration

The sprinkler head(s) in the elevator machine room(s) and at the top of hoistway(s) shall be connected to the TotalPac2® system. A sidewall spray sprinkler shall be installed at the bottom of each elevator hoistway, not more than 2 ft (0.61m) above the floor of the pit.

Note: This sidewall sprinkler should be connected to the existing Wet Pipe System, NOT to the TotalPac2® system, except if operation of this head should shutdown the elevator power. Automatic sprinkler(s) in elevator machine rooms or at the top of hoistway(s) shall be ordinary or intermediate temperature rating. Upright or pendent spray sprinkler(s) shall be installed at the top of elevator hoistway(s).

Heat and/or Smoke Detector(s) shall be installed at the top of elevator hoistway(s) and in the Machine Room(s) and shall be connected to the detection zone of the TotalPac2® system. An alarm contact from the TotalPac2® system shall be connected to the Building Fire Alarm Panel. An alarm contact from the TotalPac2® system shall be connected to the third elevator control circuit as per NFPA 72, 3.8.15.4 b) (see exception if the elevator machine room is located at the designated landing). A contact from the Elevator Control Panel to indicate that the recalled

elevator cars have reached their designated lobby shall be provided and connected to the second detection zone of the TotalPac2® system. A failsafe timer is included in the TotalPac2® system to bypass the above contact if it is not activated after a predetermined time period. The preset value of this failsafe timer should be based on the time required by elevator cars to reach the designated level (recall lobby) from the highest floor. The waterflow contact of the TotalPac2® shall be used to shut the elevator power down. The lobby detectors, including the detector at the recall lobby, shall be connected to the Building Fire Alarm Panel **but not to the TotalPac2® system.**

System Operation

When a fire is detected by any detector connected to the TotalPac2® system the following events will occur:

- The alarm on the first detection zone is activated. The failsafe timer is activated. The alarm contact connected to the Building Fire Alarm Panel is activated. The alarm contact connected to the third elevator circuit is activated (The Recall Service Procedure is initiated by the Elevator Control Panel at this moment). The audible circuit is activated.

When the contact from the Elevator Control Panel indicating that the recalled elevator car has reached it's designated lobby is activated, the following events occur:

- The alarm on the second detection zone of the TotalPac2® system is activated and the solenoid valve is energized. (No water will be discharged at this time).

Note: If this contact is not activated after a predetermined time period, the failsafe timer will bypass the contact and create an alarm on the second detection zone of the TotalPac2® system.

When any sprinkler head connected to the TotalPac2® system is operated, the following events will occur:

- The deluge valve opens and water is discharged through any open head. The waterflow contact is activated and operates the shutdown of the elevator power through a power contactor provided by the contractor. The second audible circuit is activated.

Note: If the detection zone is not in alarm condition, the opening of an automatic sprinkler or damage to system piping will initiate the sounding of a warning device and the activation of an alarm contact but will not cause the system to fill.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

Automatic Sprinklers

Supply and install all required automatic sprinklers. They will be glass bulb type, UL/ULC Listed and FM Approved. The pendent type automatic sprinklers shall be Viking Micromatic Model M, chrome finish with an operating temperature of _____°F/ _____°C and _____ in. orifice. The ceiling plate shall be a chrome semi recessed style, such as Viking Model E-1.

The upright automatic sprinklers shall be Viking Micromatic Model M, brass finish, with operating temperature of _____°F/ _____°C and _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with an integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

SUREFIRE™ (Single Interlocked) Electric Release – Self Contained Unit

Supply and install a TotalPac2® SUREFIRE™ integrated fire protection system, preaction fail-safe type, as indicated, including the preaction cabinet, automatic sprinkler system and fire detection system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

COMPONENTS

Preaction Cabinet

Supply and install a fail-safe preaction cabinet containing all hydraulic and electrical components required for the control of a preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring with control panel 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems and 71"x46"x24" (180x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The preaction system components shall include the Viking Deluge Valve Model E, complete with Schedule 40 galvanized steel EZ-Trim rated at 250 PSI, the Viking PAR-3 Model B-2 integrated control panel, with emergency battery backup, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® SUREFIRE™ system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

WARNING: Use only compatible detectors and verify for the maximum quantity of detectors allowed per zone.

Note: Smoke detectors **must be compatible and approved** to be used with the system control panel. Most heat detectors are of the dry contact type and can work with almost any kind of control panel whereas smoke or flame detectors are designed with standards that are specific to each manufacturer and then cannot work with every or all control panels. Additionally, each manufacturer is producing different categories or generations of detectors that are not necessarily compatible between each other, further compounding the potential problems. The detection system should be adapted to the normal operating conditions of the hazard protected and should allow for a faster detection of the fire condition than the automatic sprinklers. Furthermore, it shall not cause false alarms due to the type of occupation.

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, smoke detectors, signaling devices and connections to auxiliary functions. The heat and/or smoke detectors can be wired on one zone for operation in single zone mode. When used for smoke detectors, this zone shall consist of a combination of photoelectric and ionization detectors on a 1:1 ratio. The heat and/or smoke detectors and the alarm indicating devices (24 Vdc bell, horn or strobe) must be compatible with the integrated Viking PAR-3 Model B-2 release control panel. Ionization and photoelectric detectors shall be System Sensor, Model 1451 and 2451, with base no. B401B (**Maximum of 15 detectors per zone**). Where more than 15 detectors are required on a zone, use the 4-wire type detector base no. B402B. A bell or a horn should be installed near the TotalPac2® SUREFIRE™ cabinet.

System Operation

Activation of the detection zone will energize the solenoid valves, open the deluge valve and cause the system to fill the piping network with water. This will sound an alarm, and activate alarm and water flow contacts for auxiliary functions. The opening of an automatic sprinkler **OR** damage to system piping without electrical detection will initiate the sounding of a warning device and the activation of an alarm contact but **will not** cause the system to fill. Pressure loss on the sprinkler system will activate an auxiliary contact indicating same. Operation of the emergency manual release will depressurize the priming chamber of the deluge valve, causing the system to fill the piping network with water, and activate alarm and water flow contacts for auxiliary functions. If the AC power fails and the battery backup power expires before the system is operating, the preaction system should "fail-safe" and function as a dry pipe system. The opening of an automatic sprinkler **OR** damage to system piping will cause the system to fill.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

Automatic Sprinklers

Supply and install all required automatic sprinklers. They will be glass bulb type, UL/ULC Listed and FM Approved. The pendent type automatic sprinklers shall be Viking Micromatic Model M, chrome finish with an operating temperature of _____°F/_____°C and _____ in. orifice. The ceiling plate shall be a chromed semi recessed style, such as Viking Model E-1.

The upright automatic sprinklers shall be Viking Micromatic Model M, brass finish, with operating temperature of _____°F/_____°C and _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® SUREFIRE™ system shall be provided with a UL, C-UL Listed and FM Approved integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® SUREFIRE™ system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

TOTALPAC2® FIRECYCLE® III

Wet System

Supply and install a TotalPac2® integrated cycling wet fire protection system including the system cabinet, automatic sprinkler system and fire detection system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved. **Note:** The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

System Design

The maximum area coverage per Firecycle heat detector shall be according to the following table:

Table for Ordinary Hazards Detectors (Firecycle® III-OH, Model C):

Temperature	Color Coding	UL	FM	SA
140°F/60°C	Black	50' x 50' (15.2m x 15.2m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)
160°F/71°C	Black	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)
190°F/88°C	White	50' x 50' (15.2m x 15.2m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)
225°F/107°C	White	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)

Table for Extra Hazards Detectors (Firecycle® III, Model B):

Temperature	Maximum Spacing	
140°F/60°C	40' x 40'	12m x 12m
160°F/71°C	25' x 25'	7.6m x 7.6m
190°F/88°C	25' x 25'	7.6m x 7.6m
225°F/107°C	25' x 25'	7.6m x 7.6m

Note: The above spacing is shown under optimum conditions (smooth ceilings). Refer to Viking Firecycle® Detector Design Data for more information.

COMPONENTS

Cycling Wet Cabinet

Supply and install a cycling wet system cabinet containing all hydraulic and electrical components required for the control of a cycling wet system. The cabinet shall include a Sturdy 14 gauge steel cabinet, measuring with control panel: 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems and 71"x46"x24" (180x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The cycling wet system components shall include the Viking Flow Control Valve Model H, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the Viking Firecycle® III Model E-2 integrated control panel, with emergency battery backup, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel, the pressure gauges to indicate water supply pressure and priming water pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.
- The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® Firecycle® III, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Note: These systems are provided with only one thermal detection zone (non-locking) using normally closed heat detectors. Zone 2 is available in every configuration above for an optional Manual Release Pull Station and shall not be used for any other purpose.

WARNING: Use only Viking Firecycle® III-OH Model C Detectors (ordinary hazards) or Firecycle® Model B Detectors (extra hazards) on this zone. Firecycle® III-OH Detectors (ordinary hazards) shall be connected with FPL plenum type wiring. Firecycle® Detectors (extra hazards) shall use Viking Firecycle® Detector Cable (fire resistant cable) in series from and to the cycling preaction cabinet. Other types of detectors are NOT compatible with cycling systems.

CYCLING WET PIPE ACTIVATION BY ZONE 1 OR 2

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, thermal detectors and signaling devices.

Zone 1 of the system allows automatic discharge control.

Ordinary Hazard: Only Model C Viking Firecycle® III-OH Detectors shall be used on this zone. The detectors shall be connected with FPL plenum type cable in series from and to the cycling wet pipe cabinet.

OR

Extra Hazard: Only Model B Viking Firecycle® Detectors shall be used on this zone. The detectors shall be connected with fire resistant detector cable (Viking Firecycle® Detector Cable) in series from and to the cycling wet pipe cabinet.

Zone 2 will only be used for the optional Manual Release Pull Stations. The thermal detectors and the audible devices (bell & horn 24 VDC) must be compatible with the release control panel. Thermal detectors will be Viking Model Firecycle®. The bell and horn should be installed near the TotalPac cabinet.

System Operation

The activation of an electrical detector will initiate the sounding of a warning device and the activation of alarm contact for remote transmission. Once a sprinkler head has fused, discharge shall continue for as long as the detection zone remains in alarm. When ambient temperature is lowered below the Firecycle detectors trip point, the detectors reset themselves automatically. At this moment, a soaking timer adjusted at ___ minutes, seconds is activated, allowing water to flow for an additional period of time. At the end of the soak timer delay, the water shut-down is made. If an alarm reappears, water discharge is started back immediately, and the same soaking timer delay will be applied once detectors are reset. Stopping the flow of water should be maintained only when Zone 1 is not activated and when the timer cycle is ended. Damage to system piping will initiate the sounding of a warning device or the activation of an alarm contact and water will flow for a short period of time only before valve resets itself due to the absence of alarm from a detector. The activation of at least one sprinkler head will cause water to discharge. The alarm signal will sound and an auxiliary contact for a water flow signal will be activated. Operation of the Optional Manual release pull station shall activate the same functions as a thermal detector except that the cycling function will be by-passed and system will discharge until main control valve is manually shut-off.

Failsafe Mode

The normally closed Firecycle® Detectors should form a single-line closed loop. When the heat detectors are exposed to the heat of the fire, their contacts should open. When the detectors cool off below their set point, the contacts should close. If exposed to excessive temperatures for extended periods, the detectors shall normally fail with an open contact. If the detectors wiring is broken due to physical damage, the system's control panel should detect an open in the loop, as if a detector had operated. The activation of an electrical detector will initiate the sounding of a warning device and the activation of alarm contact for remote transmission and **will** cause the system to flow water.

Automatic Sprinklers

Supply and install all required automatic sprinklers. For the wet configurations they will be glass bulb type, UL/ULC Listed and FM Approved. Deluge type systems will use open type sprinkler heads.

Pendent type automatic sprinklers shall be Viking Micromatic Model M, chrome finish with an operating temperature of _____°F/_____°C and _____ in. orifice. The ceiling plate shall be a chromed semi recessed style, such as Viking Model E-1.

Upright automatic sprinklers shall be Viking Micromatic Model M, brass finish, with operating temperature of _____°F/_____°C and _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

System Drain

The drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and of the same diameter as the drain collector. A single drain pipe shall be necessary per cabinet. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

TOTALPAC2® FIRECYCLE® III

Deluge System

Supply and install a TotalPac2® integrated fire protection system, cycling deluge type including the cycling deluge cabinet, the open type sprinkler/nozzle system and fire detection system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible", UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

System Design

The maximum area coverage per heat detector shall be according to the following table:

Table for Ordinary Hazards Detectors (Firecycle® III-OH, Model C):

Temperature	Color Coding	UL	FM	SA
140°F/60°C	Black	50' x 50' (15.2m x 15.2m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)
160°F/71°C	Black	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)
190°F/88°C	White	50' x 50' (15.2m x 15.2m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)
225°F/107°C	White	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)

Table for Extra Hazards Detectors (Firecycle®, Model B):

Temperature	Maximum Spacing	
140°F/60°C	40' x 40'	12m x 12m
160°F/71°C	25' x 25'	7.6m x 7.6m
190°F/88°C	25' x 25'	7.6m x 7.6m
225°F/107°C	25' x 25'	7.6m x 7.6m

Note: The above spacing is shown under optimum conditions (smooth ceilings). Refer to Viking Firecycle® Detector Design Data for more information.

COMPONENTS

Cycling Deluge Cabinet

Supply and install a cycling deluge cabinet containing all hydraulic and electrical components required for the control of a cycling deluge system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring with control panel: 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems and 71"x46"x24" (180x117x61cm) for 4" & 6" systems. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The cycling deluge system components shall include the Viking Flow Control Valve Model H, complete with Schedule 40 galvanized steel EZ Trim rated at 250 PSI, the Viking Firecycle® III Model E-2 integrated control panel, with emergency battery backup, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel, the pressure gauges to indicate water supply pressure and priming water pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® Firecycle® III system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Note: These systems are provided with only one thermal detection zone (non-locking) using normally closed heat detectors. Zone 2 is available in every configuration above for an optional manual release pull station and shall not be used for any other purpose.

Available Options

(Choose applicable options)

- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

WARNING: Use only Viking Firecycle® III-OH Model C Detectors (ordinary hazards) or Firecycle® Model B Detectors (extra hazards) on this zone. Firecycle® III-OH Detectors (ordinary hazards) shall be connected with FPL plenum type wiring. Firecycle® Detectors (extra hazards) shall use Viking Firecycle® Detector Cable (fire resistant cable) in series from and to the cycling preaction cabinet. Other types of detectors are NOT compatible with cycling systems.

CYCLING DELUGE ACTIVATION BY ZONE 1 OR 2

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, thermal detectors and signaling devices.

Zone 1 of the system allows automatic discharge control.

Ordinary Hazard: Only Model C Viking Firecycle® III-OH Detectors shall be used on this zone. The detectors shall be connected with FPL plenum type cable in series from and to the cycling preaction cabinet.

OR

Extra Hazard: Only Model B Viking Firecycle® Detectors shall be used on this zone. The detectors shall be connected with fire resistant detector cable (Viking Firecycle® Detector Cable) in series from and to the cycling preaction cabinet.

Zone 2 will only be used for the optional manual release pull stations. The thermal detectors and the audible devices (bell & horn 24 VDC) must be compatible with the release control panel. The bell and horn should be installed near the TotalPac2® cabinet.

System Operation

The activation of at least one electrical detector on the detection zone is necessary to cause the water discharge. The activation of the detection zone will cause the system to fill the piping network with water, spray through all the open type sprinklers/nozzles, sound an alarm, and will activate alarm and water flow contacts for auxiliary functions. Discharge shall continue for as long as the detection zone remains in alarm. When ambient temperature is lowered below the Firecycle® Detectors trip point, the detectors reset themselves automatically. At this moment, a soaking timer adjusted at ___ minutes, ___ seconds is activated, allowing water to flow for an additional period of time. At the end of the soak timer delay, the flow of water is stopped. If an alarm reappears, water discharge is started back immediately, and the same soaking timer delay will be applied once detectors are reset. Stopping the flow of water should be maintained only when the detection zone is not activated and when the timer cycle is ended. Operation of the optional manual release pull station shall activate the same functions as a thermal detector except that because of its locking internal contact, the cycling function will be by-passed and system will discharge until main control valve is manually turned off.

Failsafe Mode

The normally closed Firecycle® Detectors should form a single-line closed loop. When the heat detectors are exposed to the heat of the fire, their contacts should open. When the detectors cool off below their set point, the contacts should close. If exposed to excessive temperatures for extended periods, the detectors shall normally fail with an open contact. If the detectors wiring is broken due to physical damage, the system's control panel should detect an open in the loop, as if a detector had operated. When the detectors or their wiring is damaged, the control panel should energize both solenoids. The flow control valve should then open, allowing the flow of water into the sprinkler piping, and spray through all the open type sprinklers/nozzles. If the damage occurs during a fire condition, the system must continue to discharge water and also must be manually turned off. This failsafe condition should continue to provide sprinkler protection, even when the heat detectors or wiring has been damaged. System shall also be failsafe during total power failure. When both the AC and standby battery power

fail prior to the system operating, the system shall continue to provide sprinkler protection and operate manually only. If all power fails while the system is flowing water, the system shall continue to flow water, until manually turned off.

Automatic Sprinklers

Supply and install all required open type sprinklers. They will be UL/ULC Listed and FM Approved. The open type sprinklers shall be Viking Micromatic Model M, chrome finish with _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with an integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

TOTALPAC2® FIRECYCLE® III

Preaction System (Single Interlocked)

Supply and install a TotalPac2® integrated fire protection system, cycling single interlock preaction type including the cycling preaction cabinet, automatic sprinkler system and fire detection system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible" and UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

System Design

The maximum area coverage per heat detector shall be according to the following table:

Table for Ordinary Hazards Detectors (Firecycle® III-OH, Model C):

Temperature	Color Coding	UL	FM	SA
140°F/60°C	Black	50' x 50' (15.2m x 15.2m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)
160°F/71°C	Black	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)
190°F/88°C	White	50' x 50' (15.2m x 15.2m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)
225°F/107°C	White	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)

Table for Extra Hazards Detectors (Firecycle®, Model B) used with Standard Response sprinklers:

Temperature	Maximum spacing for sprinklers ratings			
	155°F/68°C	175°F/79°C	200°F/93°C	286°F/141°C
140°F/60°C	40' x 40' (12m x 12m)	40' x 40' (12m x 12m)	40' x 40' (12m x 12m)	40' x 40' (12m x 12m)
160°F/71°C	Not-Used	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)
190°F/88°C	Not-Used	Not-Used	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)
225°F/107°C	Not-Used	Not-Used	Not-Used	25' x 25' (7.6m x 7.6m)

Note: The above spacing is shown under optimum conditions (smooth ceilings). Refer to Viking Firecycle® Detector Design Data for more information and NFPA-72 for other types of sprinkler heads.

COMPONENTS

Cycling Preaction Cabinet

Supply and install a cycling single interlock preaction cabinet containing all hydraulic and electrical components required for the control of a cycling preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring: 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems and 71"x44"x20" (180x110x50cm) for 4" & 6" system. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The cycling single interlock preaction system components shall include the Viking Flow Control Valve Model H-1, complete with Schedule 40 galvanized

steel pipe EZ-Trim rated at 250 PSI, the Viking Firecycle® III Model E-2 integrated release control panel, with emergency battery backup, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® Firecycle® III system, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Note: These systems are provided with only one thermal detection zone (non-locking) using normally closed heat detectors. Zone 2 is available in every configuration above for an optional Manual Release Pull Station and shall not be used for any other purpose.

WARNING: Use only Viking Firecycle® III-OH Model C Detectors (ordinary hazards) or Firecycle® Model B Detectors (extra hazards) on this zone. Firecycle® III-OH Detectors (ordinary hazards) shall be connected with FPL plenum type wiring. Firecycle® Detectors (extra hazards) shall use Viking Firecycle® Detector Cable (fire resistant cable) in series from and to the cycling preaction cabinet. Other types of detectors are NOT compatible with cycling systems.

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, thermal detectors and signaling devices.

Zone 1 of the system allows automatic discharge control.

Ordinary Hazard: Only Model C Viking Firecycle® III-OH Detectors shall be used on this zone. The detectors shall be connected with FPL plenum type cable in series from and to the cycling preaction cabinet.

OR

Extra Hazard: Only Model B Viking Firecycle® Detectors shall be used on this zone. The detectors shall be connected with fire resistant detector cable (Viking Firecycle® Detector Cable) in series from and to the cycling preaction cabinet.

Zone 2 will only be used for the optional manual release pull stations.

The thermal detectors and the audible devices (bell & horn 24 VDC) must be compatible with the release control panel. The bell and horn should be installed near the TotalPac2® cabinet.

System Operation

The activation of at least one electrical detector on the detection zone **AND** the opening of an automatic sprinkler are **BOTH** necessary to cause the water discharge. The activation of the detection zone will cause the system to fill the piping network with water, sound an alarm, and will activate alarm and water flow contacts for auxiliary functions. The opening of an automatic sprinkler **OR** damage to system piping without electrical detection will initiate the sounding of a warning device but **will not** cause the system to fill. The activation of at least one electrical detector on the detection zone **AND** the opening of an automatic sprinkler will cause the sounding of a warning device, water to discharge and operation of an auxiliary contact indicating same. Discharge shall continue for as long as the detection zone remains in alarm. When ambient temperature is lowered below the Firecycle® Detectors trip point, the detectors reset themselves automatically. At this moment, a soaking timer adjusted at ___ minutes, ___ seconds is activated, allowing water to flow for an additional period of time. At the end of the soak timer delay, the flow of water is stopped. If an alarm reappears, water discharge is started back immediately, and the same soaking timer delay will be applied once detectors are reset. Stopping the flow of water should be maintained only when the detection zone is not activated and when the timer cycle is ended. Operation of the Optional Manual release Pull Station shall activate the same functions as a thermal detector except that because of its locking internal contact, the cycling function will be by-passed and system will discharge until main control valve is manually turned off.

Failsafe Mode

The normally closed Firecycle® Detectors should form a single-line closed loop. When the heat detectors are exposed to the heat of the fire, their contacts should open. When the detectors cool off below their set point, the contacts should close. If exposed to excessive temperatures for extended periods, the detectors shall normally fail with an open contact. If the detectors wiring is broken due to physical damage, the system's control panel should detect an open in the loop, as if a detector had operated. When the detectors or their wiring is damaged, the control panel should energize both solenoids. The flow control valve should then open, allowing the flow of water into the sprinkler piping. No water should discharge unless a sprinkler has operated at the same time. If a sprinkler operates during this condition, water should be discharged and must be manually turned off. If the damage occurs during a fire condition, the system must continue to discharge water and also must be manually turned off. This failsafe condition should continue to provide sprinkler protection, even when the heat detectors or wiring has been damaged. System shall also be failsafe during total power failure. When both the AC and standby battery power fail prior to the system operating, the system shall continue to provide sprinkler protection and operate as a dry system. If all power fails while the system is flowing water, the system shall continue to flow water, until manually turned off.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

Automatic Sprinklers

Supply and install all required automatic sprinklers. They will be glass bulb type, UL/ULC Listed and FM Approved. The pendent type automatic sprinklers shall be Viking Micromatic Model M, chrome finish with an operating temperature of _____°F/_____°C and _____ in. orifice. The ceiling plate shall be a chromed semi recessed style, such as Viking Model E-1.

The upright automatic sprinklers shall be Viking Micromatic Model M, brass finish, with operating temperature of _____°F/_____°C and _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with an integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.

TOTALPAC2® FIRECYCLE III®

Preaction System (Double Interlocked)

Supply and install a TotalPac2® integrated fire protection system, cycling double interlock preaction type including the cycling preaction cabinet the automatic sprinkler system and fire detection system. The integrated unit shall be UL & C-UL Listed and FM Approved as an assembled unit. All system components shall be "compatible" and UL, C-UL Listed or FM Approved.

Note: The word *compatible* used in this specification means that the items concerned have been tested and listed and/or approved for their use together.

System Design

The maximum area coverage per heat detector shall be according to the following table:

Table for Ordinary Hazards Detectors (Firecycle® III-OH, Model C):

Temperature	Color Coding	UL	FM	SA
140°F/60°C	Black	50' x 50' (15.2m x 15.2m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)
160°F/71°C	Black	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)
190°F/88°C	White	50' x 50' (15.2m x 15.2m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)
225°F/107°C	White	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	50' x 50' (15.2m x 15.2m)

Table for Extra Hazards Detectors (Firecycle®, Model B) used with Standard Response sprinklers:

Temperature	Maximum spacing for sprinklers ratings			
	155°F/68°C	175°F/79°C	200°F/93°C	286°F/141°C
140°F/60°C	40' x 40' (12m x 12m)	40' x 40' (12m x 12m)	40' x 40' (12m x 12m)	40' x 40' (12m x 12m)
160°F/71°C	Not-Used	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)
190°F/88°C	Not-Used	Not-Used	25' x 25' (7.6m x 7.6m)	25' x 25' (7.6m x 7.6m)
225°F/107°C	Not-Used	Not-Used	Not-Used	25' x 25' (7.6m x 7.6m)

Note: The above spacing is shown under optimum conditions (smooth ceilings). Refer to Viking Firecycle® Detector Design Data for more information and NFPA-72 for other types of sprinkler heads.

COMPONENTS

Cycling Preaction Cabinet

Supply and install a cycling preaction cabinet containing all hydraulic and electrical components required for the control of a cycling preaction system. The cabinet shall include a sturdy 14 gauge steel cabinet, measuring: 71"x36"x20" (180x91x51cm) for 1½", 2" & 3" systems and 71"x44"x20" (180x110x50cm) for 4" & 6" system. The cabinet shall have a textured rust proof coating, inside and outside, fire red, oven baked polyester powder on phosphate base. The cabinet shall have individual access doors for the hydraulic and electrical sections and the emergency release with a neoprene gasket to avoid vibrations. The cycling double interlock preaction system components shall include the Viking Flow Control Valve Model H-1, complete with Schedule 40 galvanized steel

pipe EZ-Trim rated at 250 PSI, the Viking Firecycle® III Model E-2 integrated release control panel, with emergency battery backup, the field wiring terminal strips integrated with the cabinet for connection of field wiring for detection system, audible devices, auxiliary contacts and power supply for control panel and air compressor (if provided), the pressure gauges to indicate water supply pressure, priming water pressure and air pressure of the system, each actuation and supervisory device required, a schedule 40 steel pipe header with grooved ends to be connected to supply water and a Schedule 40 steel pipe drain manifold of 2" diameter for drain connections. Open drain cups in the cabinet and multiple drain manifolds will not be accepted.

Available Options

(Choose applicable options)

- Automatic & supervised air supply of sufficient capacity to fill the system in the prescribed time with air compressor isolation switch and control pressure switch.
- Listed and approved integrated supervised discharge by-pass valve installed in the cabinet, with sight glass assembly on drain to visually confirm discharge.
- Tee connection inside the cabinet with opening on the side of cabinet enclosure (specify side) for connection to the fire department connection.

The cabinet assembly must be pre-assembled, pre-wired and factory tested under ISO-9001 conditions, as a TotalPac2® Firecycle® III System, by FireFlex Systems Inc. It shall also be UL & C-UL Listed and FM Approved as an assembled unit.

Note: These systems are provided with only one thermal detection zone (non-locking) using normally closed heat detectors. Zone 2 is available in every configuration above for an optional Manual Release Pull Station and shall not be used for any other purpose.

WARNING: Use only Viking Firecycle® III-OH Model C Detectors (ordinary hazards) or Firecycle® Model B Detectors (extra hazards) on this zone. Firecycle® III-OH Detectors (ordinary hazards) shall be connected with FPL plenum type wiring. Firecycle® Detectors (extra hazards) shall use Viking Firecycle® Detector Cable (fire resistant cable) in series from and to the cycling preaction cabinet. Other types of detectors are NOT compatible with cycling systems.

Detection & Signaling System

Supply and install a complete electrical detection system including the system tubing, wiring, thermal detectors and signaling devices. Thermal detectors shall be wired on zone 1.

Ordinary Hazard: Only Model C Viking Firecycle® III-OH Detectors shall be used on this zone. The detectors shall be connected with FPL plenum type cable in series from and to the cycling preaction cabinet.

OR

Extra Hazard: Only Model B Viking Firecycle® Detectors shall be used on this zone. The detectors shall be connected with fire resistant detector cable (Viking Firecycle® Detector Cable) in series from and to the cycling preaction cabinet.

Zone 2 will only be used for the optional manual release pull stations.

The thermal detectors and the audible devices (bell & horn 24 VDC) must be compatible with the release control panel. Thermal Detectors will be Viking Model Firecycle. The bell and horn should be installed near the TotalPac2® cabinet.

System Operation

The activation of at least one electrical detector **AND** the opening of an automatic sprinkler are necessary to cause the water discharge. The activation alone of an electrical detector will initiate the sounding of a warning device and the activation of alarm contact for remote transmission but **will not** cause the system to fill. The opening of an automatic sprinkler **OR** damage to system piping without electrical detection will initiate the sounding of a warning device and the activation of an alarm contact but **will not** cause the system to fill. The activation of at least one electrical detector **AND** the opening of an automatic sprinkler will cause water to discharge. The alarm signal will sound and an auxiliary contact for a water flow signal will be activated. Discharge shall continue for as long as the detection zone remains in alarm. When ambient temperature is lowered below the Firecycle® Detectors trip point, the detectors reset themselves automatically. At this moment, a soaking timer adjusted at ___ minutes, seconds is activated, allowing water to flow for an additional period of time. At the end of the soak timer delay, the water shut-down is made. If an alarm reappears, water discharge is started back immediately, and the same soaking timer delay will be applied once detectors are reset. Stopping the flow of water should be maintained only when Zone 1 is not activated and when the timer cycle is ended. Operation of the optional manual release pull station shall activate the same functions as a thermal detector except that the cycling function will be by-passed and system will discharge until main control valve is manually shut-off.

Failsafe Mode

The normally closed Firecycle® Detectors should form a single line closed loop. When the heat detectors are exposed to the heat of the fire, their contacts should open. When the detectors cool off below their set point, the contacts should close. If exposed to excessive temperatures for extended periods, the detectors shall normally fail with an open contact. If the detectors wiring is broken due to physical damage, the system's control panel should detect an open in the loop, as if a detector had operated. When the detectors or their wiring is damaged, the control panel should activate an alarm but no water should enter the piping. If a sprinkler operates during this condition, water should be discharged and must be manually turned off. If the damage occurs during a fire condition, the system must continue to discharge water and also must be manually turned off. This failsafe condition should continue to provide sprinkler protection, even when the heat detectors or wiring has been damaged. System shall also be failsafe during total power failure. When both the AC and standby battery power fail prior to the system operating, the system shall continue to provide sprinkler protection and operate as a dry system. If all power fails while the system is flowing water, the system shall continue to flow water, until manually turned off.

Air Supply

The automatic sprinkler piping is supervised by air from a compressed air source installed inside (or outside) the preaction cabinet. The air supply must be regulated and of the proper size in order to be able to restore normal system air pressure within 30 minutes.

(Choose what applies)

- Air compressor and supervisory trim (Air Option "A") shall be factory installed inside the cabinet and adjusted for the selected configuration.
- Air supply and supervisory trim (Air Option "B") shall be factory installed inside the cabinet and adjusted for the selected configuration. Supply and connection to an external air compressor or nitrogen cylinders properly sized for the system shall be made by the contractor. (Alternate: Connection to the external air supply source shall be made on-site by the contractor.)

Air Supply Options

If required by the size of the piping network, an accelerator device, Viking Model E-1, shall be factory installed in the air trim with its own pressure gauge and bypass valve, designed to increase the operating speed of the system. For high humidity environments, a dehydrator assembly must be factory installed in the air trim, with bowl guard, supply control and drain valves. Dehydrator shall be Viking manually generated dessicant-type air dryer, the dessicant acting as a moisture indicator by changing color.

Automatic Sprinklers

Supply and install all required automatic sprinklers. They will be glass bulb type, UL/ULC Listed and FM Approved. The pendent type automatic sprinklers shall be Viking Micromatic Model M, chrome finish with an operating temperature of _____°F/_____°C and _____ in. orifice. The ceiling plate shall be a chromed semi recessed style, such as Viking Model E-1.

The upright automatic sprinklers shall be Viking Micromatic Model M, brass finish, with operating temperature of _____°F/_____°C and _____ in. orifice.

Piping

System piping and fittings shall be as recommended by NFPA 13.

By-Pass Valve and Sight-Glass Assembly

The TotalPac2® system shall be provided with an integrated by-pass butterfly valve installed on the system riser inside the cabinet for full flow test purposes. The valve shall also be supervised. An integrated sight glass shall be part of this arrangement for visually confirm water flow upon system actuation. Detailed instructions placard must be provided inside the cabinet.

System Drain

The single drain collector of the TotalPac2® system shall be connected to an open drain. The drain piping shall not be restricted or reduced and shall be of the same diameter as the drain collector. Multiple drain collectors and open drain cups inside the cabinet will not be accepted. Manifolding of multiple units is permitted provided the manufacturer's recommendations are carefully followed and complied with.