

SECTION 21 90 12 - FIRE SPRINKLER SYSTEMS, CORROSION MITIGATION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Provide all required labor, materials, equipment and services necessary for a complete and operational Corrosion Mitigation Program for wet fire sprinkler systems as hereinafter described.
- B. Corrosion mitigation work may include the following listed products and services:
 - 1. Corrosion mitigation products shall be as specified herein:
 - a. Potter AquaN2 Wet Inserting System
 - 2. Piping, fittings, couplings, valves, etc. as required.
 - 3. Coordination of work and schedules with other trades.

1.2 REFERENCES

- A. All corrosion management work shall be designed, installed, inspected, tested and maintained in accordance with all applicable codes, referenced standards, documents listed herein, the manufacturer's instructions and the provisions of this specification:
 - 1. NFPA 13, Standard for installation of Sprinkler Systems
 - 2. NFPA 25, Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems
- B. All Corrosion Monitoring Devices shall be provided to achieve compliance with Section 23.1.5.2 (3) of NFPA 13, Standard for the installation of Sprinkler Systems.

1.3 QUALITY ASSURANCE

- A. Equipment and components not specifically specified shall be listed by Underwriters Laboratories, Inc. for Fire Protection System installation.
- B. All fire sprinkler system components shall be installed free of rust/corrosion or visible damage. All items not complying with this requirement shall be replaced without cost to the Owner.

1.4 REGULATORY REQUIREMENTS

- A. All work shall meet the requirements of Section 1.02, References.
- B. The fire sprinkler contractor shall not pursue any interpretations of the Corrosion Mitigation Program except through the Engineer.

PART 2 - PRODUCTS

2.1 PIPING

A. Wet Fire Sprinkler System:

1. Per local requirements and NFPA 13.
2. All piping shall have a Corrosion Resistance Ratio (CRR) greater than or equal to 1.00. Refer to the current UL Fire Protection Equipment Directory — Steel Sprinkler Pipe for acceptable manufacturers, sizes and joining methods.

2.2 JOINING OF PIPE AND FITTINGS

A. Wet Fire Sprinkler System:

1. Fittings shall be 175 psi screwed or mechanical fittings. Where mechanical fittings and couplings are used together, they shall be of the same manufacturer.
2. All gaskets shall be a flush style gasket.

2.3 CORROSION MITIGATION PROGRAM

A. Potter AquaN2 Wet Inerting System

B. Furnish and install a Potter AquaN2 Wet Inerting System at each wet fire sprinkler system stipulated in the drawings and installed per manufacturer's instructions.

1. The Potter AquaN2 Wet Inerting System shall remove up to 98% or greater of the oxygen in the wet fire sprinkler system.
2. The Potter AquaN2 System shall include: Nitrogen Injection Manifold (NIM), Quick X-Haust Manifold (QXM), Potter Automatic Air Release Valve (PAAR-B) and 98% or greater concentration nitrogen source.
3. The Nitrogen Injection Manifold shall be installed at the fire sprinkler riser. The Nitrogen Injection Manifold shall have a ball valve UL listed/FM approved for fire sprinkler systems, a ¼" quick-disconnect plug, and a pressure relief valve set at 50 PSI.
4. The Quick X-Haust Manifold shall be installed at the end point on the fire sprinkler system. The Quick X-Haust Manifold shall have a ball valve UL listed/FM approved for fire sprinkler systems and a ½" muffled orifice for purging.
5. The Potter Automatic Air Release Valve (PAAR-B) shall be installed on fire sprinkler system at the high point most remote from the riser determined by the sprinkler system designer or engineer to assure evacuation of nitrogen from the system during and after filling. The automatic air release valve shall be UL listed and FM approve for fire sprinkler systems. The automatic air release valve shall consist of a 40 mesh "Y" type strainer connected to an automatic air vent valve and all components shall be brass. The automatic air release valve shall be mounted in a vertical position and shall require a minimum of 8" of clearance above the fire sprinkler main or branch line piping.
6. The nitrogen source shall be either nitrogen cylinders with Industrial Grade Nitrogen or from a nitrogen generator capable of producing 98% or greater nitrogen.

C. Potter AutoTest Flowswitch with Electronic Retard (VSR-AT) -

1. Furnish and install an AutoTest Flowswitch with Electronic Retard (VSR-AT) at each fire sprinkler system connection to the wet pipe main where indicated on the drawings and plans and as required by applicable local and national codes and standards.

FIRE SPRINKLER SYSTEMS, CORROSION MITIGATION

2. The electronic retard shall contain a motor and software that allow the flow switch to be tested without discharging water out of the system. The test shall ensure that water is in the pipe as well as ensure the integrity of the paddle and trip stem assembly. The test is initiated by a separate test switch developed specifically for the flow switch. The flowswitch assembly shall be UL Listed and FM Approved.
- D. Potter Corrosion Monitoring Station (PCMS-RM) and Corrosion Monitoring Probe (PCMPK) –
1. Furnish and install a PCMS-RM Corrosion Monitoring Station with a Monitoring Probe Kit (PCMPK) for each fire sprinkler system. Install per manufacturer's instructions. The fire sprinkler contractor shall confirm the PCMK Corrosion Monitoring Probe that has been installed in the PCMS-RM Corrosion Monitoring Station and has been wired to the monitoring system specified.
 2. Corrosion monitoring station shall be suitable for use on systems up to 250 PSI and have a minimum of 3 welded outlets for the installation of corrosion coupons or corrosion monitoring probes.
- E. Potter Automatic Air Release Valve (Model PAAR-B)
1. Furnish and install a Potter PAAR-B, air release valve that is UL listed and FM approved for use on fire sprinkler branch lines. The automatic air release valve shall be brass consisting of a 40 mesh "Y" type strainer to which an air vent valve is connected.
 2. The automatic air release valve shall be located at the high point(s) on the fire sprinkler system piping.
 3. The fire sprinkler designer shall determine the location of the automatic air release valve during layout of the fire sprinkler piping to assure evacuation of trapped air in the fire sprinkler system.
 4. The automatic air release valve is to be mounted in a vertical position which requires a minimum 8" of clearance above the fire sprinkler main or branch line piping.
- F. Potter Air Vent (Model PAV)
1. Furnish and install a Potter PAV air vent that is UL listed and FM approved for use on fire sprinkler branch lines.
 2. The air vent shall have a ½" NPT male connection which allows a drain attachment for safely draining inadvertent discharge of water that is inherent in the operation of the automatic air vent. Install drain pipe to appropriate drain.
 3. The air vent is furnished connected to a "y" type strainer.
 4. All components and fittings shall be brass.
 5. The air vent valve shall be located in the high point(s) on the fire sprinkler system piping. The fire sprinkler designer should determine the location of the air vent during layout of the fire sprinkler piping to assure evacuation of trapped air in the fire sprinkler system. Air vents to be mounted in a vertical position which requires 8" of clearance above the fire sprinkler main or branch line piping.
 6. Furnish and install a ball valve to isolate the air vent from system pressure for replacement or strainer maintenance.

PART 3 - EXECUTION

3.1 COORDINATION WITH OTHER TRADES

- A. Coordinate closely with the General Contractor, other trades and the Owner to expedite construction, commissioning and avoid interference.

3.2 SUPERVISION AND TRAINING

- A. A Consulting Services Package for Commissioning the AquaN2 Wet Inserting System shall be provided by Potter Corrosion Solutions. Contact Potter Corrosion Solutions 314-595-6700 or e-mail: sales@pottersignal.com to schedule commissioning at least 3 weeks in advance. The fire sprinkler contractor shall have Potter Corrosion Solutions assist in final system commissioning. The fire sprinkler contractor shall confirm that all the Potter AquaN2 Wet Inserting System connections have been made as specified and as indicated in the manufacturer's installation instructions.

END OF SECTION 21 90 12