

1. GENERAL

1.1 INTENT OF SPECIFICATIONS

This specification outlines the requirements for the Elkhart Brass water powered monitor oscillating system employing Elkhart Brass WPO-2000 water powered oscillator and Elkhart Brass Copperhead monitor. All requirements outlined in this specification must be completed in their entirety. These requirements, which are in accordance with the items listed in Section 1.3, combined with good engineering practices shall be followed in order to produce a safe and effective fire protection system.

1.2 GENERAL DESCRIPTION

- A. The water powered oscillating monitor system shall provide 0-30°/sec oscillating speed at 200psi
- B. The water powered oscillating monitor system shall provide 15-120° arc of oscillation for up to 1250 GPM (4732 LPM) flow rate.

1.3 CODES AND COMPLIANCE

- A. The design, installation, testing and maintenance of the water powered oscillation system, shall be in accordance with the following codes, standards and regulatory bodies:
 - 1. NFPA 11: Standard for Low, Medium and High-Expansion Foam
 - 2. NFPA 15: Standard for Water Spray Fixed Systems for Fire Protection
 - 3. NFPA 409: Standard on Aircraft Hangars
 - 4. NFPA 850: Standard for Power plants and power distribution stations
 - 5. NFPA 418: Standard for Heliports
 - 6. NFPA 25: Standard for testing maintenance of water-based fire protection system
 - 7. NFPA 170: Standard for Fire Safety Symbols
 - 8. UL 346: Waterflow Indicators for Fire Protective Signaling Systems
 - 9. ANSI B1.20.1: Standard for Pipe Threads, General Purpose
 - 10. FM 1421 Monitor Assembly
 - 11. Requirements of the Local Authority Having Jurisdiction
 - 12. Manufacturer's Design, Installation, Operation & Maintenance Manual
- B. The complete system shall have the applicable following listings and approvals:
 - 1. Factory Mutual Global (FM)
- C. The manufacturer shall meet ISO 9001 requirements for the design, production and distribution of the water powered oscillating monitor system.
- D. All components of the water powered oscillating monitor system shall be the products of the same manufacturer or listed by that manufacturer as compatible with those devices, components and equipment.

1.4 SYSTEM DESIGN CRITERIA

- A. All system components shall be manufactured and/or supplied by Elkhart Brass Manufacturing Co Inc, 1302 West Beardsley Avenue, Elkhart, IN 46514, USA, phone (574)295-8330. URL: <http://www.elkhartbrass.com>
- B. All materials and equipment shall be new and unused.

1.5 QUALIFICATIONS

- A. Manufacturer
 - 1. The manufacturer/supplier of the system hardware and components shall have a minimum of fifteen (15) years experience in the design and manufacture of systems of similar type
 - 2. The manufacturer/supplier of the systems shall be certified to ISO 9001 for a minimum period of five (5) years for the design, production and distribution of fire suppression systems.

3. The name of the manufacturer/supplier and manufacturer part numbers shall appear on all major components.
 4. All devices, components and equipment shall be the products of the same manufacturer/supplier.
 5. The system manufacturer/supplier shall have the ability to provide multiple monitor systems arrangements to accommodate the performance criteria required by the project.
 6. All devices, components and equipment shall be listed by the standardizing agencies (UL and/or FM).
- B. Contractor
1. The system shall be supplied by an authorized distributor. The Contractor shall have the appropriate training to design, install, test and maintain the monitor system and shall be able to produce a certificate stating such on request.
 2. The installing contractor shall employ a person who can show proficiency at least equal to a NICET level IV certification for Water-Based Systems design
 3. The Contractor shall confirm in writing that contractor stocks a full complement of spare parts and offers 24-hour emergency service for all equipment being furnished.
- 1.6 WARRANTY
- A. The manufacturer shall warrant the system from the date of shipment from the factory as follows: Elkhart Brass water powered oscillating monitor system for sixty (60) months; and other system components as specified by approved system component manufacturer.
- 1.7 SUBMITTALS
- A. The engineer will review all submittals for conformance to the drawings and specifications. The contractor shall be required to resubmit any materials, with appropriate modifications, that are found to be in non-conformance with the requirements of the drawings and these specifications after review by the architect. Approval of the submittals by the architect shall not relieve the Contractor of their responsibility to meet the requirements of the drawings and specifications.
- B. Engineered Design Drawings: The Contractor shall provide all required documents that shall include the following details:
1. The factory-authorized Elkhart Brass Distributor shall provide all required installation drawings
 2. Plan and riser drawings showing the location of the water powered oscillating monitor system and the locations and necessary installation and mounting details of all field devices such as, valves, pressure gauges and flow meters.
 3. A primary-power calculation that details the power requirements the reach of the water powered oscillating monitor system.
- C. Commissioning Equipment List: The Contractor shall provide a commissioning equipment list for each installed system. The equipment list shall identify all installed equipment and configurations. The Contractor shall submit the following:
1. Four (4) sets of installation drawings for each installed system and one (1) set of calculation reports, owner's manuals and product data sheets.
 2. A description of system functionality and a detailed matrix of all the initiating points, valves and gauges.
 3. The Contractor shall submit a test plan that describes how the system shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. Tests shall not be scheduled or conducted until the engineer of record approves the test plan. At a minimum, the tests to be conducted shall be per the relevant referenced codes and any additional supplemental tests required by the AHJ. Tests shall not be scheduled or conducted until the engineer of record approves the test plan.

4. Upon completion of installation and commissioning acceptance, two (2) sets of "As-Built" installation drawings and One (1) set of the calculation report for each installed system.
- D. Test Plan
1. The distributor shall submit a test plan that describes how the system shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. The tests to be conducted shall be per requirements of AHJ. Tests shall not be scheduled nor conducted until the engineer of record approves the test plan
- E. Installation Drawings
1. Four (4) sets of installation drawings for each installed water powered oscillating monitor system and one (1) set of the calculation report, owner's manual and product data sheets shall be submitted to the end-user/owner.
 2. Upon completion of installation and commissioning acceptance, two (2) sets of "As-Built" installation drawings and One (1) set of the calculation report for each installed water powered oscillating monitor system shall be given to the owner/end-user for use and reference.
- F. Documentation: The Contractor shall submit two (2) copies of the following after complete installation:
1. Elkhart Brass WPO-2000 Installation, Operation and Maintenance Manual.
 2. Elkhart Brass Copperhead Installation, Operation and Maintenance Manual.

2. SUPPRESSION SYSTEM REQUIREMENTS

2.1 GENERAL

- A. The water powered oscillating monitor system shall consist of WPO-2000 water powered oscillator, Elkhart Brass Copperhead monitor and Elkhart Brass Master Stream nozzle

2.2 SYSTEM PERFORMANCE

A. System Oscillation

1. The oscillator shall achieve speed of 0-30°/sec at 200psi
2. The oscillator shall achieve 15-120° arc of oscillation

B. Monitor

1. The monitor shall achieve up to 1250 GPM (4732 LPM) flow rate
2. The monitor shall achieve vertical travel range of -49° to +86° (135°)

C. Nozzles

1. The Nozzle shall achieve 250 feet or better effective reach
2. The nozzle shall be capable of flow pattern change between straight to gas mitigation wider (120°) fog pattern

A. Minimum System Design Limits

1. The system waterway material shall be corrosion resistance
2. There shall be no moving parts in the waterway

1.2 PIPE AND FITTINGS

- A. Piping and fittings, shall be installed in accordance with approved piping standards and the engineered fire suppression system manufacturer's requirements.

2. EXECUTION

2.1 SYSTEM INSTALLATION

- A. The contractor shall install the system in accordance with the appropriate Elkhart Brass installation, operation and maintenance instruction document.

- B. Locations of water powered oscillator, monitor and all system components are subject to the approval of the engineer.
- C. All final-acceptance tests shall be performed in the presence of the engineer and the authority having jurisdiction. The contractor shall record all equipment, tests and system configurations in a format approved by the manufacturer and/or the local Authority Having Jurisdiction. A copy of the commissioning tests and results shall be provided to the engineer, the authority having jurisdiction, and the end-user.

2.3 TRAINING REQUIREMENTS

The contractor shall have the appropriate certification and training by recognized body or institution that attest to acquired knowledge on installation, design and maintenance of the water powered oscillating monitor System and shall be able to produce a certificate stating such on request.

2.4 CODE COMPLIANCE TESTING

- A. Periodic code compliance test on equipment shall be performed as recommended by the relevant NFPA Codes and the requirements of the local Authority Having Jurisdiction (AHJ).