SECTION 21 0523
GENERAL-DUTY VALVES FOR WATER-BASED FIRE-SUPPRESSION PIPING

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Two-piece ball valves with indicators.
B. Bronze butterfly valves with indicators.
C. Iron butterfly valves with indicators.
D. Check valves.
E. Bronze OS&Y gate valves.
F. Iron OS&Y gate valves.
G. NRS gate valves.
H. Indicator posts.
I. Trim and drain valves.

1.02 RELATED REQUIREMENTS
A. Section 07 8400 - Firestopping.
B. Section 21 0553 - Identification for Fire Suppression Piping and Equipment.

1.03 ABBREVIATIONS AND ACRONYMS
A. EPDM: Ethylene-propylene diene monomer.
B. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
C. NRS: Non-rising stem.
D. OS&Y: Outside screw and yoke.
E. PTFE: Polytetrafluoroethylene.
F. SBR: Styrene-butadiene rubber.

1.04 REFERENCE STANDARDS
A. ASME B1.20.1 - Pipe Threads, General Purpose (Inch); 2013.
C. ASME B31.9 - Building Services Piping; 2014.
D. AWWA C606 - Grooved and Shouldered Joints; 2011.
I. UL 262 - Gate Valves for Fire-Protection Service; Current Edition, Including All Revisions.
J. UL 789 - Indicator Posts for Fire-Protection Service; Current Edition, Including All Revisions.

1.05 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
C. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts listings.
1.06 QUALITY ASSURANCE
   A. Manufacturer Qualifications:
      1. Obtain valves for each valve type from single manufacturer.
      2. Company must specialize in manufacturing products specified in this section, with not less
         than three years of documented experience.
   B. Where listed products are specified, provide products listed, classified, and labeled by FM (AG),
      UL (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for the purpose
      indicated.
   C. Installer and Maintenance Contractor Qualifications:
      1. Company specializing in performing the work of this section with minimum five years
         documented experience.
      2. Trained and approved by manufacturer to design, install, test and maintain the equipment
         specified herein.
      3. Complies with manufacturer’s certification requirements.

1.07 DELIVERY, STORAGE, AND HANDLING
   A. Prepare valves for shipping as follows:
      1. Protect internal parts against rust and corrosion.
      2. Set valves open to minimize exposure of functional surfaces.
   B. Use the following precautions during storage:
      1. Maintain valve end protection and protect flanges and specialties from dirt.
         a. Provide temporary inlet and outlet caps.
         b. Maintain caps in place until installation.
      2. Store valves in shipping containers and maintain in place until installation.
         a. Store valves indoors and maintain at higher than ambient dew point temperature.
         b. If outdoor storage is unavoidable, store valves off the ground in watertight enclosures.
   C. Use the following precautions for handling:
      1. Do not use operating handles or stems as lifting or rigging points.

PART 2 PRODUCTS
2.01 GENERAL REQUIREMENTS
   A. UL Listed: Provide valves listed in UL (DIR) under following headings and bearing UL mark:
      1. Main Level: HAMV - Fire Main Equipment.
         a. Level 1: HCBZ - Indicator Posts, Gate Valve.
         b. Level 1: HLOT - Valves.
         c. Level 3: HLUG - Ball Valves, System Control.
         e. Level 3: HMER - Check Valves.
         f. Level 3: HMRZ - Gate Valves.
         a. Level 1: VQGU - Valves, Trim, and Drain.
   B. FM Global Approved: Provide valves listed in FM (AG) Approval Guide under the following
      headings:
      1. Automated Sprinkler Systems:
         a. Indicator posts.
         b. Valves:
            1) Gate valves.
            2) Single check valves.
            3) Miscellaneous valves.
   C. ASME Compliance:
      1. ASME B16.1 for flanges on iron valves.
      2. ASME B1.20.1 for threads on threaded-end valves.
3. ASME B31.9 for building services piping valves.
D. Comply with AWWA C606 for grooved-end connections.
E. Comply with NFPA 13 and NFPA 13R for valves.
F. Valve Pressure Ratings: Not less than minimum pressure rating indicated or higher as required.
G. Valve Sizes: Same as upstream piping unless otherwise indicated.

2.02 TWO-PIECE BALL VALVES WITH INDICATORS
A. Manufacturers:
   1. Nibco
   2. Victaulic
   3. Viking
   4. Watts
B. Description:
   2. Body Design: Two piece.
   3. Body Material: Forged brass or bronze.
   4. Port Size: Full or standard.
   5. Seat: PTFE.
   6. Stem: Bronze or stainless steel.
   7. Ball: Chrome-plated brass.
   8. Actuator: Worm gear or traveling nut.

2.03 BRONZE BUTTERFLY VALVES WITH INDICATORS
A. UL 1091 and FM (AG) standard listing for indicating valves, (butterfly or ball type), Class Number 1112.
B. Minimum Pressure Rating: 175 psig.
C. Body Material: Bronze.
D. Seat: EPDM.
E. Stem: Bronze or stainless steel.
F. Disc: Bronze with EPDM coating.
G. Actuator: Worm gear or traveling nut.
H. Supervisory Switch: Internal or external.

2.04 IRON BUTTERFLY VALVES WITH INDICATORS
A. UL 1091 and FM (AG) standard listing for indicating valves (butterfly or ball type), Class Number 112.
B. Minimum Pressure Rating: 175 psig.
C. Body Material: Cast or ductile iron with nylon, EPDM, epoxy, or polyamide coating.
D. Seat: EPDM.
E. Stem: Stainless steel.
F. Disc: Ductile iron, nickel plated.
G. Actuator: Worm gear or traveling nut.
H. Supervisory Switch: Internal or external.
I. Body Design: Grooved-end connections.

2.05 CHECK VALVES
A. Minimum Pressure Rating: 175 psig.
B. Type: Center guided check valve.
C. Body Material: Cast iron, ductile iron.
D. Center guided check with elastomeric seal.
E. Hinge Spring: Stainless steel.
F. End Connections: Flanged, grooved, or threaded.

2.06 BRONZE OS&Y GATE VALVES
A. UL 262 and FM (AG) standard listing for fire-service water control valves (OS&Y and NRS-type gate valves).
B. Minimum Pressure Rating: 175 psig.
C. Body and Bonnet Material: Bronze or brass.
D. Wedge: One-piece bronze or brass.
E. Wedge Seat: Bronze.
F. Stem: Bronze or brass.
G. Packing: Non-asbestos PTFE.
H. Supervisory Switch: External.
I. End Connections: Threaded.

2.07 IRON OS&Y GATE VALVES
A. UL 262 and FM (AG) standard listing for fire-service water control valves (OS&Y and NRS-type gate valves).
B. Minimum Pressure Rating: 175 psig.
C. Body and Bonnet Material: Cast or ductile iron.
D. Wedge: Cast or ductile iron, or bronze with elastomeric coating.
E. Wedge Seat: Cast or ductile iron, or bronze with elastomeric coating.
F. Stem: Brass or bronze.
G. Packing: Non-asbestos PTFE.
H. Supervisory Switch: External.
I. End Connections: Flanged.

2.08 NRS GATE VALVES
A. UL 262 and FM (AG) standard listing for fire-service water control valves (OS&Y and NRS-type gate valves).
B. Minimum Pressure Rating: 175 psig.
C. Body and Bonnet Material: Cast or ductile iron.
D. Wedge: Cast or ductile iron with elastomeric coating.
E. Stem: Brass or bronze.
F. Packing: Non-asbestos PTFE.
G. Supervisory Switch: External.
H. End Connections: Flanged.

2.09 INDICATOR POSTS
A. UL 789 and FM (AG) standard listing for indicator posts.
B. Type: Underground.
C. Base Barrel Material: Cast or ductile iron.
D. Extension Barrel for Adjustable Length Indicator Posts: Cast or ductile iron.
E. Cap: Cast or ductile iron.
F. Operation: Wrench.

2.10 TRIM AND DRAIN VALVES

A. Ball Valves:
   1. Description:
      b. Body Design: Two piece.
      c. Body Material: Forged brass or bronze.
      d. Port Size: Full or standard.
      e. Seat: PTFE.
      f. Stem: Bronze or stainless steel.
      g. Ball: Chrome-plated brass.
      h. Actuator: Hand-lever.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm valve interior to be free of foreign matter and corrosion.
B. Remove packing materials.
C. Examine guides and seats by operating valves from the fully open position to the fully closed position.
D. Examine valve threads and mating pipe for form and cleanliness.
E. Examine mating flange faces for conditions that might cause leakage.
   1. Check bolting for proper size, length, and material.
   2. Verify gasket for size, defects, damage, and suitable material composition for service.
   3. Replace all defective valves with new valves.

3.02 INSTALLATION

A. Comply with specific valve installation requirements and application in the following Sections:
B. Install listed fire protection shutoff valves supervised-open, located to control sources of water supply except from fire department connections.
   1. Install permanent identification signs indicating portion of system controlled by each valve.
C. Install check valve in water supply connections and backflow preventer at potable water supply connections.
D. Valves with threaded connections to have unions at equipment arranged for easy access, service, maintenance, and equipment removal without system shutdown.
E. Valves in horizontal piping installed with stem at or above the pipe center.
F. Position valves to allow full stem movement.
G. Install valve tags. Comply with Section 21 0553 requirements for valve tags, schedules, and signs on surfaces concealing valves; and the appropriate NFPA standard applying to the piping system in which valves are installed.

END OF SECTION 21 0523