



## **SECTION 21 05 00 COMMON WORK RESULTS FOR FIRE SUPPRESSION**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This section supplements all sections in this division, including pipe, fittings, valves, and connections for sprinkler standpipe and fire hose combination sprinkler and standpipe systems.

#### **1.2 REFERENCES**

- A. General: Comply with appropriate standards.
  - 1. National Fire Protection Association: NFPA.
  - 2. Underwriter Laboratories, Inc.: U.L.
  - 3. Factory Mutual Standards: FM.

#### **1.3 SUBMITTALS**

- A. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections. Submit data and shop drawings to indicate pipe materials, fittings, accessories, equipment and methods of installation.
- B. Manufacturer's Installation Instructions: Submit installation instructions for all system components.
- C. Project Record Documents: Record actual locations of components and tag numbering.
- D. Operation and Maintenance Data: Submit spare parts lists, exploded assembly views and recommended maintenance intervals.

#### **1.4 WARRANTY**

- A. Furnish one-year minimum.

#### **1.5 CLOSEOUT**

- A. Submit spare parts and maintenance products.
- B. Furnish two sets of valves stem packing for each size and type of valve installed.
- C. Submit two sets of As-Built drawings and CDs drawn in latest version of AutoCAD and Elite Software or approved equal.



## **PART 2 – PRODUCTS**

### **2.1 VALVES**

#### **A. Gate Valves:**

1. Up to and including 2 inches: Bronze body and trim, rising stem, hand wheel, solid wedge or disc, threaded ends.
2. Over 2 inches and less than and equal to 4 inches: Iron body, bronze trim, rising stem pre-grooved for mounting tamper switch, hand wheel, OS&Y, solid bronze or cast iron wedge, flanged, grooved ends.
3. Over 4 inches: Iron body, bronze trim, non-rising stem with bolted bonnet, solid bronze wedge, flanged ends.

#### **B. Angle Valves:**

1. Up to and including 2 inches: Bronze body, bronze trim, rising stem and hand wheel, inside screw, renewable rubber disc, threaded ends, with back seating capacity.
2. Over 2 inches: Iron body, bronze trim, rising stem, hand wheel, OS&Y, plug-type disc, flanged ends, renewable seat and disc.

#### **C. Ball Valves:**

1. Up to and including 2 inches: Bronze two piece body, brass, chrome plated bronze, or stainless steel ball, teflon seats and stuffing box ring, lever handle, threaded ends.
2. Over 2 inches: Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle or gear drive hand wheel for sizes 10 inches and over, flanged.

#### **D. Butterfly Valves:**

1. Up to and Including 2 Inches Bronze Body: Stainless steel disc, resilient replaceable seat, threaded or grooved ends, extended neck, hand wheel and gear drive and integral indicating device, and built-in tamper proof switch rated 10 amp at 115 volt AC.
2. Over 2 Inches Cast or Ductile Iron Body: Cast or ductile iron, chrome or nickel plated ductile iron or aluminum bronze disc, resilient replaceable EPDM seat, wafer, lug, or grooved ends. With extended neck, hand wheel and gear drive and integral indicating device external tamper switch rated 10 amp at 115 volt AC.

#### **E. Check Valves:**

1. Up to and including 2 inches: Bronze body and swing disc, rubber seat, threaded ends.
2. Over 2 inches and less than and equal to 4 inches: Iron body, bronze trim, swing check with rubber disc, renewable disc and seat, flanged ends.
3. 4 inches and over: Iron body, bronze disc with stainless steel spring, resilient seal, threaded, wafer, or flanged ends.

#### **F. Drain Valves:**

1. Compression Stop: Bronze with hose thread nipple and cap.



2. Ball Valve: Brass with cap and chain, ¾ inch hose thread.

## **2.2 MATERIALS**

### **A. Electrical**

1. All electrical components furnished or installed under Fire Suppression shall be in complete compliance with the Electrical Specifications.
2. Wiring Diagrams. A wiring diagram of work not in Fire Suppression but necessary to operate equipment shown in this section shall be submitted for review as a shop drawing.

### **B. Equipment Identification.**

1. Provide as required per NFPA.

### **C. Access to Equipment.**

1. All valves, control devices, equipment, specialties, etc. shall be located for easy access for operation, repair and maintenance. If items are concealed, provide access doors of size required for easy access to the items. Provide access doors as required.

## **2.3 BURIED PIPING**

### **A. Ductile Iron Pipe, Class 350, AWWA C151, grooved ends.**

1. Steel Fittings: ASME B16.5, steel flanges and fittings.
2. Ductile Iron Joints: ANSI/AWWA C-606.
3. Ductile Iron Coupling Housings: ASTM A536, Grade 65-45-12.
4. Install piping with double-layer half over-lap 10 mil polyethylene tape.

## **2.4 ABOVE GROUND PIPING**

### **A. Steel Pipe: ASTM A53 / A53M, Standard Weight, Schedule 40 Black-Steel Pipe, Type E, Grade B, ERW pipe (unless otherwise noted on the drawings), or ASTM A106, Grade B, seamless steel pipe. Pipe ends maybe factory or field formed to match joining method.**

1. Threaded Fittings:
  - a. Malleable-Iron Fittings: ASTM B16.3, Class 300.
  - b. Flanges and Flanged Fittings: ASME B16.5, Class 300, unless Class 600 is indicated.
2. Grooved-End Fittings: ASTM A47 malleable Iron or ASTM A536 Ductile Iron, with dimensions matching steel pipe and ends factory grooved according to AWWA C606.

## **2.5 PIPE HANGERS AND SUPPORTS**

### **A. Provide as required per NFPA.**



## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify excavations are to required grade, dry, and not over-excavated.
- B. Verify adequacies of all site utilities and points-of-connection for existing buildings and/or structures.

### **3.2 PREPARATION**

- A. Remove scale and foreign material, from inside and outside, before assembly.
- B. Prepare piping connections to sprinkler heads and as required.
- C. Ream pipe and tube ends. Remove burrs.

### **3.3 INSTALLATION**

- A. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- B. Install piping to conserve building space, to not interfere with use of space and other work.
- C. Group piping whenever practical at common elevations.
- D. Install pipe sleeve at piping penetrations through footings partitions, walls, and floors. Seal pipe and sleeve penetrations to maintain fire resistance equivalent to fire separation.
- E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- F. Pipes, fittings, hangers and supports located interior of the building and exterior where exposed to corrosive ambient air conditions shall be prime coated with one coat (min. 1 mil thickness) of anticorrosive primer and two coats (min. 2 mils thickness) of Fire Red enamel finish.
- G. Pipe Hangers and Supports:
  - 1. Install in accordance with NFPA 13 and NFPA 14.
  - 2. Install hangers to with minimum 1/2 inch space between finished covering and adjacent work.
  - 3. Place hangers within 12 inches of each horizontal elbow.
  - 4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
  - 5. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.



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6. Where installing several pipes in parallel and at same elevation, provide multiple or trapeze hangers.
- H. Slope piping and arrange systems to drain at low points. Install eccentric reducers to maintain top of pipe level.
- I. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- J. Do not penetrate building structural members without approval of LAWA and Engineer of Record.
- K. Where more than one piping system material is specified, install compatible system components and joints. Install flanges, union, and couplings at locations requiring servicing.
- L. Die cut threaded joints with full cut standard taper pipe threads with red lead and linseed oil or other non-toxic joint compound applied to male threads only.
- M. Install valves with stems upright or horizontal, not inverted. Remove protective coatings after installation.
- N. Install gate or butterfly valves for shut-off or isolating service.
- O. Install drain valves at main shut-off valves, low points of piping and apparatus.
- P. Where inserts are omitted, Engineer of Record shall provide stamped and signed sketches and calculations to LADBS and LAWA.

### **3.4 INTERFACE WITH OTHER PRODUCTS**

- A. Inserts:
  1. Install inserts for placement in concrete forms.
  2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
  3. Install hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
  4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

### **3.5 PAINTING**

- A. Primer: Factory applied one coat (min. 1 mil) of anticorrosion primer paint.
- B. Finish: Factory applied two coats (min 2 mils) of Fire Red enamel finish.
- C. Paint fire suppression systems, equipment, and components prior to installation. It is not permissible to paint sprinkler heads.



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- D. Provide interior and exterior painting schedule indicating the type of prime coat, intermediate coat and top coat for all substrates applicable to your project.
- E. Damage and Touch-up: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

**3.6 CLEANING**

- A. Clean entire system after other construction is complete.

**3.7 TRAINING AND MAINTENANCE**

- A. Submit manufacturer's operation and maintenance data.
- B. Include written maintenance data on components of system, servicing requirements, and Record Drawings.
- C. Include maintenance, and inspection data, replacement and part numbers and availability, location and numbers of service depot.
- D. Provide demonstration, training for minimum of 12 hours (3 shifts total), and manuals for LAWA Maintenance personnel.

**3.8 EXECUTION**

- A. Install in accordance with NFPA 13.

END OF SECTION 21 05 00