

SECTION 23 05 53

IDENTIFICATION FOR HVAC AND PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Painted Identification Materials
2. Plastic Pipe Markers
3. Plastic Tape
4. Underground Type Plastic Line Marker
5. Plastic Duct Markers
6. Valve Tags
7. Diagram and Schedule Frames
8. Engraved Plastic Laminate Signs
9. Plastic Equipment Markers
10. Plasticized Tags

B. Related Sections:

1. Division 09 - Painting and Coating: Execution requirements for painting specified by this section.

1.02 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME A13.1 - Scheme for the Identification of Piping Systems.

1.03 SUBMITTALS

A. Division 01 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit manufacturers catalog literature for each product required.

C. Shop Drawings: Submit list of wording, symbols, letter size, and color coding for mechanical identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

D. Samples: Submit two tags, labels, and pipe markers of size used on project.

E. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.04 CLOSEOUT SUBMITTALS

A. Division 01 - Execution and Closeout Requirements: Closeout procedures.

- B. Schedules and Diagrams:
 - 1. Submit valve schedule for each piping system, typewritten and reproduced on 8-1/2" x 11" bond paper. Tabulate valve number, piping system, system abbreviation (as shown on tag), location of valve (room or space), and variations for identification. Mark valves which are intended for emergency shut-off and similar special uses, by special "flags", in margin of schedule.
 - 2. Submit temperature control diagrams and Sequence of Operation on bond paper suitable for framing.
- C. Maintenance Data: Include product data and schedules in maintenance manuals; in accordance with requirements of Division 1.

1.05 QUALITY ASSURANCE

- A. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories, unless indicated otherwise in this specification.
- B. Maintain one copy of each document on site.

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.07 PRE-INSTALLATION MEETINGS

- A. Division 01 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.08 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.09 EXTRA MATERIALS

- A. Section 01 - Execution and Closeout Requirements: Spare parts and maintenance products.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide mechanical identification materials of one of the following:
 - 1. Craftmark Identification System.
 - 2. Brady (W.H.) Co.; Signmark Div.
 - 3. Industrial Safety Supply Co., Inc.
 - 4. Seton Name Plate Corp.

2.02 MECHANICAL IDENTIFICATION MATERIALS

- A. General: Provide manufacturer's standard products of categories and types required for each application as referenced in other Division 22 and 23 sections. Where more than single type is specified for application, selection is installer's option but provide single selection for each product category.

2.03 PLASTIC PIPE MARKERS

- A. Snap-On Type: Provide manufacturer's standard pre-printed, semi-rigid snap-on, color-coded pipe markers, complying with ANSI A13.1.
- B. Pressure Sensitive Type: Provide manufacturer's standard pre-printed, permanent adhesive, color coded, pressure sensitive vinyl pipe markers, complying with ANSI A13.1.
- C. Insulation: Furnish 1 inch thick molded fiberglass insulation with jacket for each plastic pipe marker to be installed on un-insulated pipes subject to fluid temperature of 125 degree F or greater. Cut length to extend 2 inches beyond each end of plastic pipe marker.
- D. Small Pipes: For external diameters less than 6 inch (including insulation if any), provide full band pipe markers, extending 360 degree around pipe at each location, fastened by one of the following methods:
1. Snap-on application of pre-tensioned semi-rigid plastic pipe marker.
 2. Adhesive lap joint in pipe marker overlap.
 3. Laminated or bonded application of pipe marker to pipe (or insulation).
 4. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than ¾ inch wide; full circle at both ends of pipe marker, tape lapped 1-1/2 inch.
- E. Large Pipes: For external diameters of 6 inch and larger (including insulation if any), provide either full band or letter height (and of required length), fastened by one of the following methods:
1. Laminated or bonded application of pipe marker to pipe (or insulation).
 2. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 1-1/2 inch wide; full circle at both ends of pipe marker, taped lapped 3 inch.
 3. Strapped to pipe (or insulation) application of semi-rigid type, with manufacturer's standard stainless steel bands.
- F. Lettering: Manufacturer's standard pre-printed nomenclature that best describes piping system in each instance, as selected by the County's Representative in cases of variance with names as shown or specified.
1. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as a separate unit of plastic.

2.04 PLASTIC DUCT MARKERS

- A. Non-Insulated Ductwork: Provide manufacturer's standard laminated plastic, color-coded duct markers. Conform to the following color code:
1. Green: Supply air
 2. Blue: Exhaust, outside, return, and mixed air
 3. For hazardous exhausts use colors and designs recommended by ANSI A13.1.
- B. Insulated Ductwork:
1. Stencil paint conforming with Division 09900, Semi Gloss, Black.

- C. Nomenclature: Include the following:
 - 1. Direction of airflow.
 - 2. Duct service (supply, return, exhaust, etc.)
 - 3. Equipment being served.
- D. Plastic duct markers and stencil paint shall be 2 1/2 inch high letters.

2.05 PLASTIC TAPE

- A. General: Provide manufacturer's standard color-coded pressure sensitive (self adhesive) vinyl tape, not less than 3 mils thick.
- B. Width: Provide 1-1/2 inch wide tape markers on pipes with outside diameters (including insulation, if any) of less than 6 inch, 2-1/2 inch wide tape for larger pipes.
- C. Color: Comply with ANSI A13.1, except where another color selection is indicated.

2.06 UNDERGROUND TYPE PLASTIC LINE MARKER

- A. General: Manufacturer's standard permanent, bright colored, continuous printed plastic tape, intended for direct burial service; not less than 6 inch wide x 4 mils thick. Provide tape with printing which most accurately indicates the type of service of buried pipe. Provide multi-ply tape consisting of solid aluminum foil core between 2 layers of plastic tape.

2.07 VALVE TAGS

- A. Brass Valve Tags: Provide 19 gage polished brass valve tags with stamped engraved piping system abbreviation in 1/4 inch high letters and sequenced valve numbers 1/2 inch high, and with 5/32 inch hole for fastener.
 - 1. Provide 1-1/2 inch diameter tags, except as otherwise indicated.
 - 2. Fill tag engraving with black enamel.
- B. Valve Tag Fasteners: Provide manufacturer's standard solid brass chain (wire link or beaded type), or solid brass S-hooks of the sizes required for proper attachment of tags to valves, and manufactured specifically for that purpose.
- C. Access Panel Markers: Provide manufacturer's standard solid brass chain (wire link or beaded type), or solid brass S-hooks of the sizes required for proper attachment of tags to valves, and manufactured specifically for that purpose.
- D. Access Panel Markers: Provide manufacturer's standard 1/16 inch thick engraved plastic laminate access panel markers, with abbreviations and numbers corresponding to concealed valve. Include 1/8 inch center hole to allow attachment.

2.08 DIAGRAM AND SCHEDULE FRAMES

- A. General: For each page of schedule and/or diagrams, provide glazed display frame, with screws for removable mounting on masonry walls. Provide frames of extruded aluminum, with SSB grade sheet glass.

2.09 ENGRAVED PLASTIC LAMINATE SIGNS

- A. General: Provide engraving stock melamine plastic laminate, complying with FS L-P-387, in the sizes and thickness indicated, engraved with engraver's standard letter style of the sizes and wording indicated, white with black core (letter color) except as otherwise indicated, punched for mechanical fastening except where adhesive mounting is necessary because of substrate.
- B. Thickness: 1/16 inch for units up to 20 square inches or 8 inch length, 1/8 inch for larger units.
- C. Fasteners: Self tapping stainless steel screws, except contact type permanent adhesive where screws cannot or should not penetrate the substrate.

2.10 LETTERING AND GRAPHICS

- A. General: Coordinate names, abbreviations and other designations used in mechanical identification work, with corresponding designations shown, specified or scheduled. Provide numbers, lettering and wording as indicated, as recommended by manufacturers or as required for proper identification and operation/maintenance of mechanical systems and equipment.
- B. Multiple Systems: Where multiple systems of same generic name are shown and specified, provide identification which indicates individual system number as well as service (as examples; Boiler No. 3, Air Supply No. 1H, Standpipe F12).

2.11 CEILING TACKS

- A. Steel with 3/4" diameter color-coded head.
- B. Color code as follows:
 - 1. Yellow: HVAC equipment
 - 2. Red: Fire dampers/smoke dampers
 - 3. Green: Plumbing valves
 - 4. Blue: Heating/cooling valves

PART 3 EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

- A. Coordination: Where identification is to be applied to surfaces which require insulation, painting or other covering or finish including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceiling and similar removable concealment.
- B. Provide access panels with laminate tape identifying equipment, valves, dampers, etc., being served.

3.02 DUCTWORK IDENTIFICATION

- A. General: Identify air supply, return, exhaust, intake and relief ductwork with duct markers; or paint (for insulated duct) showing ductwork service and direction of flow and equipment being served.
- B. Location: In each space where ductwork is exposed, or concealed only by removable ceiling system, locate signs near points where ductwork originates or continues into concealed enclosures (shaft, underground, or similar concealment) and at 50 foot spacing along exposed runs and above removable ceiling.

- C. Access Doors: Provide duct markers or stenciled signs on each access door in ductwork and housings, indicating purpose of access (to what equipment) and other maintenance and operating instructions, and appropriate safety and procedural information.

3.03 PIPING SYSTEM IDENTIFICATION

- A. General: Install pipe markers of one of the following types on each system indicated to receive identification, and include arrows to show normal direction of flow. Plastic pipe markers, with application system as indicated under "Materials" in this section. Install on pipe insulation segment where required for hot non-insulated pipes.
- B. Locate pipe markers as follows wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.
 - 1. Near each valve and control device.
 - 2. Near each branch, excluding short take offs for fixtures and terminal units; mark each pipe at branch, where there could be question of flow pattern.
 - 3. Near locations where pipes pass through walls or floor/s ceilings, or enter non-accessible to enclosures.
 - 4. At access doors, manholes similar access points which permit view or concealed piping.
 - 5. Near major equipment items and other pints of origination and termination.
 - 6. Spaced intermediately at maximum spacing of 50' along each piping run, except reduce spacing to 25' in congested areas of piping and equipment.
 - 7. On piping above removable acoustical ceilings, except omit intermediately spaced marks.

3.04 VALVE IDENTIFICATION

- A. General: Provide valve tag on every valve, cock and control device in each piping system; exclude check valves, valves within factory fabricated equipment units, plumbing fixture faucets, convenience and lawn watering hose bibs, and shut-off valves at plumbing fixtures, HVAC terminal devices and similar rough-in connections of end use fixtures and units. List each tagged valve in valve schedule for each piping system.
- B. Mount valve schedule frames and schedules in machine rooms where indicated or, if not otherwise indicated, where directed by the County's Representative.
- C. Provide ceiling tacks to locate valves or dampers above T-bar type panel ceilings. Locate in corner of ceiling panel closest to equipment.

3.05 MECHANICAL EQUIPMENT IDENTIFICATION

- A. General: Install engraved plastic laminate sign or plastic equipment marker on or near each major item of mechanical equipment and each operational device, as specified herein if not otherwise specified for each item or device. Provide signs for the following general categories of equipment and operational devices:
 - 1. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
 - 2. Meters, gages, thermometers and similar units.
 - 3. Pumps, compressors and similar motor driven units.
 - 4. Heat exchangers, coils, evaporators, heat recovering units and similar equipment.
 - 5. Fans, blowers, primary balancing dampers and mixing boxes.
 - 6. HVAC central station or zone type units.
 - 7. Tanks and pressure valves.
 - 8. Strainers, filters, humidifiers, water treatment systems and similar equipment.
- B. Lettering Size: Minimum 1/4 inch high lettering for name of unit where viewing distance is less than 2'-0", 1/2 inch high for distance up to 6'-0", and proportionately larger lettering for greater distances. Provide secondary lettering of 2/3 to 3/4 of size of the principal lettering.

- C. Test of Signs: In addition to name of identified unit, provide lettering to distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.

3.06 UNDERGROUND PIPING IDENTIFICATION

- A. General: During back-filling / top-soiling of each exterior underground piping systems, except sanitary sewer and storm drainage install continuous underground type plastic line marker, located directly over buried line at 6 inch to 8 inch below finished grade. Where multiple small lines are buried in common trench and do not exceed overall width of 16 inch, install single line marker.

3.07 ADJUSTING AND CLEANING

- A. Adjusting: Relocate any mechanical identification device which has become visually blocked by work of this division or other divisions.
- B. Cleaning: Clean face of identification devices, and glass frames of valve charts.

END OF SECTION