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PIPE MARKERS ▲ SINCE 1959

Product MasterSpec®230553

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SECTION 230553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.
4. Duct labels.
5. Stencils.
6. Valve tags.
7. Warning tags.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

E. Valve Schedules: For each piping system to include in maintenance manuals.

1.4 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Basis-of-Design Product: Craftmark Pipe Markers; [**Anodized Aluminum Nameplates**] [**Stainless Steel Engraved Nameplates**] [**Brass Engraved Nameplates**].

2. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

a. Brady, Inc.
b. Seton, Inc.
c. <**Insert manufacturer's name**>.

3. Material and Thickness: [**Brass, 0.036-inch (0.9-mm)**] [**Stainless steel, 0.025-inch (0.64-mm)**] [**Aluminum, 0.032-inch (0.8-mm)**] [**or**] [**anodized aluminum, 0.032-inch (0.8-mm)**] minimum thickness, and having predrilled or stamped holes for attachment hardware.
4. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch (64 by 19 mm).
5. Minimum Letter Size: 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
6. Fasteners: Stainless-steel [**rivets**] [**rivets or self-tapping screws**] [**self-tapping screws**].
7. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Plastic Labels for Equipment:

1. Basis-of-Design Product: Craftmark Pipe Markers; Craftflex Multilayer, Multicolor Plastic Nameplates.

2. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

a. Brady, Inc.
b. Seton, Inc.
c. <**Insert manufacturer's name**>.

3. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, [**1/16 inch (1.6 mm)**] [**1/8 inch (3.2 mm)**] <**Insert dimension**> thick, and having predrilled holes for attachment hardware.
4. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] [**Green**].
5. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] [**Green**].
6. Maximum Temperature: Able to withstand temperatures up to 180 deg F (82 deg C).
7. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch (64 by 19 mm).
8. Minimum Letter Size: 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
9. Fasteners: Stainless-steel [**rivets**] [**rivets or self-tapping screws**] [**self-tapping screws**].
10. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

C. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

D. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch (A4) bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Basis-of-Design Product: Craftmark Pipe Markers; Warning Signs and Labels.

B. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

1. Brady, Inc.
2. Seton, Inc.
3. <**Insert manufacturer's name**>.

C. Material and Thickness: [**Adhesive-backed vinyl 0.005inches (0.13 mm)**] [**Aluminum 0.04 inch (1.02 mm)**] [**Polystyrene 0.060 inch (1.524-mm)**] thick, and having predrilled holes for attachment hardware.

D. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] [**Green**] <**Insert color**>.

E. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] [**Green**] <**Insert color**>.

F. Fasteners: Stainless-steel [**rivets**] [**rivets or self-tapping screws**] [**self-tapping screws**].

G. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

H. Label Content: Include [**Caution**] [**Danger**] [**Notice**] [**Warning**] information, plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction. Manufacturers standard legends and colors should be used whenever possible. Pipe marker color field and legend height shall comply with ASME/ANSE A 13.1 specifications.

B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to [**partially cover**] [**cover full**] circumference of pipe and to attach to pipe without fasteners or adhesive.

1. Basis-of-Design Product: Craftmark Pipe Markers; Specmark Snap-on Markers.

2. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

a. Brady, Inc.
b. Seton, Inc.
c. <**Insert manufacturer's name**>.

3. For pipe sizes NP5 5 (DN125) and smaller including pipe insulation: semi-rigid plastic wrap-around pipe markers that extend 360 degrees around pipe at each marker location. Include legend (pipe content) and arrows to indicate direction of flow.
4. For pipe sizes NP5 5 (DN125) and larger including pipe installation: Semi-rigid plastic strap-on pipe markers. Include legend (pipe content), and arrows to indicate direction of flow. Include at least 2 nylon straps to secure marker to pipe.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

1. Basis-of-Design Product: Craftmark Pipe Markers; Duramark Self-Stick Markers.

2. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

a. Brady, Inc.
b. Seton, Inc.
c. <**Insert manufacturer's name**>.

D. Exterior Pretensioned Pipe Labels: Pre-coiled, semi-rigid plastic formed to [**partially cover**] [**cover full**] circumference of pipe and to attach to pipe without fasteners or adhesive.

1. Basis-of-Design Product: Craftmark Pipe Markers; Specmark HT Extreme Environmental Markers.

2. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

a. Brady, Inc.

b. Seton, Inc.
c. <**Insert manufacturer's name**>.

3. For pipe sizes NP5 6 (DN150) or smaller including pipe insulation: Semi-rigid plastic wrap-around pipe markers. Include legend (pipe content) and arrows to indicate direction of flow. Include at least 2 nylon straps to secure marker to pipe.
4. For pipe sizes NPS 6 (DN150) or larger: rigid 0.090 inches (2.3 mm) fiberglass carrier with high temp adhesive back pipe marker attached to surface. Include legend (pipe content) and arrow to indicate direction of flow. Include at least 2 nylon straps to secure marker to pipe.

E. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1-1/2 inches (38 mm)high.

2.4 DUCT LABELS

A. Basis-of-Design Product: Craftmark Pipe Markers; Engraved Craftflex Plastic Nameplate.

B. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

1. Brady, Inc.
2. Seton, Inc.
3. <**Insert manufacturer's name**>.

C. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, [**1/16 inch (1.6 mm)**] [**1/8 inch (3.2 mm)**] <**Insert dimension**> thick, and having predrilled holes for attachment hardware.

D. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] [**Green**].

E. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] [**Green**].

F. Maximum Temperature: Able to withstand temperatures up to 180 deg F (82 deg C).

G. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch (64 by 19 mm).

H. Minimum Letter Size: 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

I. Fasteners: Stainless-steel [**rivets**] [**rivets or self-tapping screws**] [**self-tapping screws**].

J. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

K. Duct Label Content: Include identification of duct service using same designations or abbreviations as used on Drawings, duct size, and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with duct system service lettering to accommodate both directions, or as separate unit on each duct label to indicate flow direction.
2. Lettering Size: At least 1-1/2 inches (38 mm) high.

2.5 STENCILS

A. Basis-of-Design Product: Craftmark Pipe Markers; Plastic Stencils.

B. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

1. Seton, Inc.
2. <**Insert manufacturer's name**>.

C. Stencils: Prepared with letter sizes according to ASME A13.1 for piping; minimum letter height of 1-1/4 inches (32 mm) for ducts; and minimum letter height of 3/4 inch (19 mm) for access panel and door labels, equipment labels, and similar operational instructions.

1. Stencil Material: [**Aluminum**] [**Brass**] [**Fiberboard**] [**Fiberboard or metal**] [**Polyester 0.02 inch (0.51 mm)**] <**Insert material**>.
2. Stencil Paint: Exterior, gloss, [**alkyd enamel**] [**acrylic enamel**] <**Insert paint type**> black unless otherwise indicated. Paint may be in pressurized spray-can form.
3. Identification Paint: Exterior, [**alkyd enamel**] [**acrylic enamel**] <**Insert paint type**> in colors according to ASME A13.1 unless otherwise indicated.

2.6 VALVE TAGS

A. Basis-of-Design Product: Craftmark Pipe Markers; Valve Tags.

B. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

1. Brady, Inc.
2. Seton, Inc.
3. <**Insert manufacturer's name**>.

C. Valve Tags: Stamped or engraved with 1/4-inch (6.4-mm) letters for piping system abbreviation and 1/2-inch (13-mm) numbers.

1. Tag Material: [**Brass, 0.036-inch (0.9-mm)**] [**Stainless steel, 0.025-inch (0.64-mm)**] [**Aluminum, 0.032-inch (0.8-mm)**] [**or**] [**anodized aluminum, 0.032-inch (0.8-mm)**] [**0.125-inch (3.175 mm)**] [**Plastic engraved 0.062 inch (1.57 mm)**] <**Insert thickness**> minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: [**Brass #16 jack chain, #6 beaded chain; or S-hook**] [**Stainless steel #16 jack chain, #6 beaded chain, or S-hook**].

D. Valve Schedules: For each piping system, on 8-1/2-by-11-inch (A4) bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

2.7 WARNING TAGS

A. Basis-of-Design Product: Craftmark Pipe Markers; Accident Prevention Tags.

B. Subject to compliance with requirements, provide the Basis-of-Design Product or comparable product by one of the following:

1. Brady, Inc.
2. Seton, Inc.
3. <**Insert manufacturer's name**>.

C. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of polystyrene material with matte finish suitable for writing, and with grommeted hole.

1. Warning Tag Material: 0.20 inch (0.51 mm) polystyrene.
2. Fasteners: [**6 inch (152 mm)** nylon tie] [**8 inch (203 mm)**].
3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," "WARNING", or "DO NOT OPERATE."
4. Color: [**Red/Black on white background**] [**Yellow/Black on white background**] [**Orange/Black on white background**] <**Insert color**>.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

A. Piping Color-Coding: Painting of piping is specified in [Section 099123 "Interior Painting"] [Section 099600 "High Performance Coatings"]

B. Stenciled Pipe Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels [**with painted, color-coded bands or rectangles**] [**, complying with ASME A13.1,**] on each piping system.

1. Identification Paint: Use for contrasting background.
2. Stencil Paint: Use for pipe marking.

C. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of [**50 feet (15 m)**] <**Insert dimension**> along each run. Reduce intervals to [**25 feet (7.6 m)**] <**Insert dimension**> in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

D. Pipe Label Color Schedule:

1. Chilled-Water Piping:

   a. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.
   b. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.

2. Condenser-Water Piping:

   a. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.
   b. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.

3. Heating Water Piping:

   a. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.
   b. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.

4. Refrigerant Piping:

   a. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.
   b. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.

5. Low-Pressure Steam Piping:

   a. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.
   b. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.

6. High-Pressure Steam Piping:

   a. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.

b. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.

7. Steam Condensate Piping:

a. Background Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.
b. Letter Color: [**Black**] [**Blue**] [**Red**] [**White**] [**Yellow**] <**Insert color**>.

3.4 DUCT LABEL INSTALLATION

A. Install [**plastic-laminated**] [**self-adhesive**] duct labels with permanent adhesive on air ducts in the following color codes:

1. [**Blue**] <**Insert color**>: For cold-air supply ducts.
2. [**Yellow**] <**Insert color**>: For hot-air supply ducts.
3. [**Green**] <**Insert color**>: For exhaust-, outside-, relief-, return-, and mixed-air ducts.
4. ASME A13.1 Colors and Designs: For hazardous material exhaust.

B. Stenciled Duct Label Option: Stenciled labels, showing service and flow direction, may be provided instead of plastic-laminated duct labels, at Installer's option, if lettering larger than 1 inch (25 mm) high is needed for proper identification because of distance from normal location of required identification.

C. Locate labels near points where ducts enter into concealed spaces and at maximum intervals of [**50 feet (15 m)**] <**Insert dimension**> in each space where ducts are exposed or concealed by removable ceiling system.

3.5 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:

a. Chilled Water: [**1-1/2 inches (38 mm)**] [**2 inches (50 mm)**], [**round**] [**square**] <**Insert shape**>.
b. Condenser Water: [**1-1/2 inches (38 mm)**] [**2 inches (50 mm)**], [**round**] [**square**] <**Insert shape**>.
c. Refrigerant: [**1-1/2 inches (38 mm)**] [**2 inches (50 mm)**], [**round**] [**square**] <**Insert shape**>.
d. Hot Water: [**1-1/2 inches (38 mm)**] [**2 inches (50 mm)**], [**round**] [**square**] <**Insert shape**>.
e. Gas: [**1-1/2 inches (38 mm)**] [**2 inches (50 mm)**], [**round**] [**square**] <**Insert shape**>.
f. Low-Pressure Steam: [**1-1/2 inches (38 mm)**] [**2 inches (50 mm)**], [**round**] [**square**] <**Insert shape**>.

g. High-Pressure Steam: [**1-1/2 inches (38 mm)**] [**2 inches (50 mm)**], [**round**] [**square**] <**Insert shape**>.
h. Steam Condensate: [**1-1/2 inches (38 mm)**] [**2 inches (50 mm)**], [**round**] [**square**] <**Insert shape**>.

2. Valve-Tag Color:

a. Chilled Water: [**Natural**] [**Green**] <**Insert color**>.
b. Condenser Water: [**Natural**] [**Green**] <**Insert color**>.
c. Refrigerant: [**Natural**] [**Green**] <**Insert color**>.
d. Hot Water: [**Natural**] [**Green**] <**Insert color**>.
e. Gas: [**Natural**] [**Yellow**] <**Insert color**>.
f. Low-Pressure Steam: [**Natural**] [**Yellow**] <**Insert color**>.
g. High-Pressure Steam: [**Natural**] [**Green**] <**Insert color**>.
h. Steam Condensate: [**Natural**] [**Green**] <**Insert color**>.

3. Letter Color:

a. Chilled Water: [**Black**] [**White**] <**Insert color**>.
b. Condenser Water: [**Black**] [**White**] <**Insert color**>.
c. Refrigerant: [**Black**] [**White**] <**Insert color**>.
d. Hot Water: [**Black**] [**White**] <**Insert color**>.
e. Gas: [**Black**] [**White**] <**Insert color**>.
f. Low-Pressure Steam: [**Black**] [**White**] <**Insert color**>.
g. High-Pressure Steam: [**Black**] [**White**] <**Insert color**>.
h. Steam Condensate: [**Black**] [**White**] <**Insert color**>.

3.6 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 230553

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