

SECTION 220553 – IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

Latest Edition 08-10-2024 See Underlined Text for Edits.

(Engineer shall edit specifications and blue text in header to meet project requirements. This includes but is not limited to updating Equipment and/or Material Model Numbers indicated in the specification and adding any additional specifications that may be required by the project. Also turn off all “Underlines”.)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section and all other sections of Division 22.

1.2 SUMMARY

- A. This section includes the requirements for identification of piping and equipment in the building using the following:

<Delete items not applicable to project>

1. Equipment labels.
2. Warning signs and labels.
3. Pipe system labels.
4. Stencils.
5. Valve tags and schedules.
6. Ceiling tags
7. Laminate signs
8. Warning tags.

- B. All plumbing equipment, systems, piping, shall be identified

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 1. Samples: For color, letter style, and graphic representation required for each identification material and device.
 2. Data: Installation details, material descriptions, dimensions of individual components for each type tag and sign.
 3. Equipment Label Schedule: Submit a sample equipment label schedule for each plumbing system. Include the equipment tag designation, name and location in an “xl” file format.
 4. Valve Tag Schedule: Submit a sample valve tag schedule for each plumbing system. Include the valve tag designation, name and location in an “xl” file format.

1.4 CLOSEOUT SUBMITTALS

- A. Operation & Maintenance Manual: Include a copy of the approved submittal for each product and material along with any applicable maintenance data in the project operation and maintenance manual.
- B. Equipment Label Schedule: Include a complete equipment label schedule for each plumbing system. Include equipment tag designation, name and location, the operation and maintenance manual, in an “xl” electronic file format.
- C. Valve Tag Schedules: Include a complete valve tag numbering schedule for each plumbing system. Include the system identification, valve number and location, in the operation and maintenance manual, in an “xl” electronic file format.

1.5 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.

1.6 WARRANTY/GUARANTEE

- A. See Division 22, Specification Section “Basic Mechanical Requirements – Plumbing” for warranty and guarantee requirements.

PART 2 - PRODUCTS

2.1 GENERAL PRODUCT REQUIREMENTS

- A. Labels, Signs and Tags: All labels, signs and tags shall conform to ANSI/ASME A 13.1 and OSHA requirements for letter/color combinations.
- B. Basis of Design: The basis of design shall be mechanical identifications materials manufactured by the Seton Name Plate Corporation as follows: **<Edit for Project>**
 - 1. Equipment Labels – Style M4562 – M4565
 - 2. Warning Signs – Style M4562 – M4565
 - 3. Plumbing Pipe Labels – Size 8SM - 32
 - 4. Valve Tags – Style 374
- C. Other Acceptable Manufacturers: Subject to compliance with requirements, provide mechanical identifications materials from one (1) of the following:
 - 1. Craft Mark Pipe Markers

2. Pipe Markers – Division of Brimar Industries

2.2 EQUIPMENT LABELS

A. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, one eighth (1/8) inch thick, and having predrilled holes for attachment hardware.
2. Minimum Label Size: Length and width vary for required label content, but not less than two and one half (2-1/2) inches by three quarter (3/4) inches.
3. Minimum Letter Size: One quarter (1/4) inch for name of units if viewing distance is less than twenty four (24) inches, one half (1/2) inch for viewing distances up to seventy two (72) inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two thirds (2/3) to three fourths (3/4) the size of principal lettering.
4. Fasteners: Self tapping stainless steel screws, except contact type permanent adhesive where screws cannot or should not penetrate the substrate.
5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

- B. Label Content: Include equipment's label as indicated on the construction documents.

2.3 WARNING SIGNS AND LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving one eighth (1/8) inch thick and having predrilled holes for attachment hardware.
- B. Minimum Label Size: Length and width vary for required label content, but not less than two and one half (2-1/2) inch by three quarter (3/4) inch.
- C. Minimum Letter Size: One quarter (1/4) inch for name of units if viewing distance is less than twenty four (24) inches, one half (1/2) inch for viewing distances up to seventy two (72) inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two thirds (2/3) to three fourths (3/4) the size of principal lettering.
- D. Fasteners: Self tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.
- E. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- F. Label Content: Include caution and warning information, plus emergency notification instructions.

2.4 PLUMBING PIPE SYSTEM LABELS

- A. General Requirements: Do not use pipe labels or plastic tapes for bare pipes conveying fluids at temperatures of 125°F (52°C) or higher.
- B. Pipe Labels: Pretensioned, semirigid vinyl or plastic formed pipe labels to partially cover or cover full circumference of pipe and to attach to pipe without adhesive.
1. Label Material: Comply with the following:
 - a. Vinyl Formed Labels:
 - 1) External diameters up to two (2) inches – 20 mil vinyl.
 - 2) External diameters two and one half (2-1/2) inch and larger – 30 mil vinyl.
 - b. Plastic Formed Labels: per manufacturer's recommendations.
 2. Small Pipes: For external diameters less than six (6) inches (including insulation if any), provide full-band pipe markers, extending 360 degrees around pipe at each location, fastened by one of the following methods:
 - a. Snap-on application of pre-tensioned semi-rigid plastic pipe marker.
 - b. Adhesive lap joint in pipe marker overlap.
 - c. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than three quarter (3/4) inch wide; full circle at both ends of pipe marker, tape lapped one and one half (1-1/2) inches.
 3. Large Pipes: For external diameters of six (6) inches and larger (including insulation if any), provide either full-band or strip-type pipe markers, but not narrower than three (3) times letter height (and of required length), fastened by one of the following methods:
 - a. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than one and one half (1-1/2) inches wide; full circle at both ends of pipe marker, tape lapped three (3) inches.
 - b. Strapped-to-pipe (or insulation) application of semi-rigid type, with manufacturer's standard stainless steel bands.
 4. Pipe Label Contents: Comply with the following:
 - a. 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.
 - b. Lettering Size: At least one and one half (1-1/2) inches high.
 - c. Pipe Label Designation and Colors: See table below.

PLUMBING SERVICE DESIGNATION	LABEL DISIGNATION	FIELD/LETTER COLOR
Sanitary Waste	Same as Service Designation	Green / White
Sanitary Vent	Same as Service Designation	Green / White
Laboratory Waste	Same as Service Designation	Green / White
Laboratory Vent	Same as Service Designation	Green / White
Storm Water	Same as Service Designation	Brown / White
Storm Water Leader	Same as Service Designation	Brown / White
Domestic Cold Water	Same as Service Designation	Blue / White
Domestic Hot Water	Same as Service Designation	Blue / White
Domestic Hot Water	Same as Service Designation	Blue / White
Laboratory Cold Water	Same as Service Designation	Blue / White
Laboratory Hot Water	Same as Service Designation	Blue / White
Laboratory Hot Water Re-circ.	Same as Service Designation	Blue / White
RO / DI Water	Same as Service Designation	Green / White
HVAC Make Up Water	Same as Service Designation	Green / White
A/C Condensate Drain	Same as Service Designation	Green / White
Laboratory Compressed Air	Same as Service Designation	Green / White
Laboratory Vacuum	Same as Service Designation	Green / White
Laboratory Oxygen	Same as Service Designation	Green / White
Laboratory Nitrogen	Same as Service Designation	Green / White
Laboratory Nitrous Oxide	Same as Service Designation	Green / White
Laboratory Carbon Dioxide	Same as Service Designation	Green / White

2.5 STENCILS

- A. Stencils: Prepared with letter sizes according to ASME A13.1 for piping; and minimum letter height of three quarter (3/4) inch for access panel and door labels, equipment labels, and similar operational instructions.
1. Stencil Material Fiberboard or metal.
 2. Stencil Paint: Exterior, gloss, acrylic enamel black unless otherwise indicated. Paint may be in pressurized spray-can form.
 3. Identification Paint: Exterior, acrylic enamel in colors according to ASME A13.1 unless otherwise indicated.

2.6 VALVE TAGS AND SCHEDULE

- A. General: Valve tags are required to identify what systems the valves are installed in, where the valves are located and what duty the valves perform.
- B. Valve Tags:

1. Description: Stamped or engraved with one quarter (1/4) inch letters for piping system abbreviation and one half (1/2) inch numbers with:
 - a. Brass Tag Material: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
 - b. Fasteners: Brass wire-link chain
2. Plastic Laminate Valve Tags: Provide manufacturer's standard three thirty second (3/32) inch thick engraved plastic laminate valve tags, with piping system abbreviation in one quarter (1/4) inch high letters and sequenced valve numbers one half (1/2) inch high, and with five thirty second (5/32) inch hole for fastener.
 - a. Provide One and one half (1-1/2) inch sq. black tags with white lettering, except as otherwise indicated.
 - b. Provide size, shape and color combination as specified or scheduled for each piping system.
3. Plastic Valve Tags: Provide manufacturer's standard solid plastic valve tags with printed enamel lettering, with piping system abbreviation in approximately three sixteenth (3/16) inch high letters and sequenced valve numbers approximately three eights (3/8) inches high, and with five thirty second (5/32) inch hole for fastener.
 - a. Provide one and one eighth (1-1/8) inch sq. white tags with black lettering.
 - b. Provide size, shape and color combination as specified or scheduled for each piping system.
 - c. 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.
4. Valve Tag Data: See chart on the next page:

PLUMBING VALVE SERVICE	VALVE TAG DISIGNATION
Domestic Cold Water Service	DCWS – #
Domestic Cold Water Service – BFP	DCWBFP – #
Domestic Cold Water	DCW – #
Domestic Hot Water	DHW – #
Domestic Hot Water Recirculating	DHWR – #
Laboratory Cold Water	LCW – #
Laboratory Hot Water	LHW – #
Laboratory Hot Water Recirculating	LHWR – #
Laboratory RO / DI Water	LRODIW – #
HVAC Make Up Water – Cooling	MUWC – #
HVAC Make Up Water – Heating	MUWH – #
HVAC Make Up Water – Glycol	MUWG – #
HVAC Make Up Water – Chemical Feed	MUWCF – #
HVAC Make Up Water – Chemical Drain	MUWCD – #
Laboratory Compressed Air	LCA – #
Laboratory Natural Gas	LNG – #
Laboratory Vacuum	LVAC – #
Laboratory Oxygen	LOXY – #
Laboratory Nitrogen	LNIT – #
Laboratory Nitrous Oxide	LNO – #
Laboratory Carbon Dioxide	LCD – #

- C. Valve Schedules: Provide a valve schedule in an “xl” file format for each Plumbing piping system. File shall include the valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room, space, equipment, pipe riser), and valve duty. Also mark valves for emergency shutoff and similar special uses as required by the project.
1. Numbering System: Valves shall be in numerical order starting with one (1) for each plumbing system.

2.7 CEILING MARKERS

- A. Ceiling Grid and Access Panel Markers: Provide Kroy type clear adhesive printed labels with three sixteenth (3/16) inch high letters to identify the location and type of concealed components.
- B. Ceiling Marker Data: For Plumbing printed data shall be as follows:

ITEM	SERVICE	LABEL
LP Drain	Low Point Drain	PL Valve – LPD – *
PRD Valve – DCW	Pressure Reducing Valve	PL Valve – PRDV – DCW
PRD Valve – DHW	Pressure Reducing Valve	PL Valve – PRDV – DHW
PRD Valve – LCW	Pressure Reducing Valve	PL Valve – PRDV – LCW
PRD Valve – LHW	Pressure Reducing Valve	PL Valve – PRDV – LHW
San Cleanout	Sanitary Drain Cleanout	PL – Cleanout – SAN
SW Cleanout	Storm Water Drain Cleanout	PL – Cleanout – SW
AW Cleanout	Acid Waste Drain Cleanout	PL – Cleanout – AW

* System ID: Domestic Cold Water (DCW), Domestic Hot Water (DHW), Laboratory Cold Water (LCW), Laboratory Hot Water (LHW), Laboratory RO/DI Water (LRO/DI)

2.8 ENGRAVED PLASTIC LAMINATE SIGNS

- A. General: Provide engraving stock melamine plastic laminate, complying with FS L-P-387, in the sizes and thicknesses indicated, engraved with engraver's standard letter style of the sizes and wording indicated, black with white core (letter color) except as otherwise indicated, punched for mechanical fastening except where adhesive mounting is necessary because of substrate.
- B. Thickness: One eighth (1/8) inch, except as otherwise indicated.
- C. Fasteners: Self tapping stainless steel screws, except contact type permanent adhesive where screws cannot or should not penetrate the substrate.
- D. Nomenclature: Include the following, matching terminology on schedules as closely as possible.
- E. Size: Provide approximate two and one half (2-1/2) inch x four (4) inch markers for control devices, dampers, and valves; and four and one half (4-1/2) inch x six (6) inches for equipment.

2.9 WARNING TAGS

- A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.
 - 1. Size: Three (3) inches by five and one quarter (5-1/4) inches minimum.
 - 2. Fasteners: Self tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.

3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
4. Color: Yellow background with black lettering.

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. Retain first paragraph below to identify piping systems by color-coded painting. Labels will still be required to identify service, pipe size, and flow direction.
- B. Piping Color-Coding: Painting of piping is specified in Architectural Specification Section "Interior Painting."
- C. 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 on each piping system.
 1. Identification Paint: Use for contrasting background.
 2. Stencil Paint: Use for pipe marking.

<Revise paragraph below to suit Project.>

- D. 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 fifty (50) feet along each run. Reduce intervals to twenty five (25) feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

E. Pipe Label Color Schedule:

3.4 VALVE TAG INSTALLATION

- A. Provide valve tags for all valves installed in plumbing piping systems. Valve duty usually includes the following:
 1. Shut off duty for a room, equipment and/or a floor.
 2. Balancing duty.
 3. Riser isolation duty.
 4. Drain valves.
 5. Control valves.
 6. Shut off duty for back flow preventers.
 7. Shut off valves in branch piping serving hose bibbs.
 8. Exclude stop valves for faucets, etc., at plumbing fixtures and hose bibbs.

3.5 VALVE TAG SCHEDULE

- A. Include the valve schedule file in the electronic operation and maintenance manual.

3.6 WARNING TAG INSTALLATION

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

3.7 CEILING MARKERS

- A. Location: Install each ceiling marker label and a dot on the surface of the ceiling grid ‘T’ bar and/or on the frame of an access door.

3.8 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.

END OF SECTION 220553