



# Piping & Equipment Identification

## Part 1 – General

### 1.01 Description of Work

- A. Work in this section includes: Identification materials, including necessary accessories indicated on Contract Documents and specified in this section or as required for proper identification of equipment and piping.
  - 1. Pipe Markers
  - 2. Valve Tags
  - 3. Valve Tag Fasteners
  - 4. Equipment Nameplates
  - 5. Duct Markers
  - 6. Underground Pipe Warning

### 1.02 Quality Assurance:

#### Reference Standards

- A. The latest published edition of a reference shall be applicable, unless identified by a specific edition date.
- B. All materials, installation and workmanship shall comply with the applicable requirements and standards addressed within the following references:
  - 1. ANSI / ASME A13.1 2007: "Scheme for the Identification of Piping Systems"
  - 2. ANSI Z535.1 2007: "Safety Color Code"
  - 3. NFPA 99C: "Standard on Gas and Vacuum Systems"

### 1.03 Submittals

- A. Submit product data sheets on all products contained in this section for approval. Data sheets must substantiate conformance with applicable standards.
- B. Submit Valve Schedule that includes: Service Abbreviation, Number Sequence, Valve Location, Valve Function.

### 1.04 Coordination

- A. Coordinate installation of identifying devices with the completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with the location of access panels and doors.
- C. Install identifying devices before installing acoustical ceiling tiles or similar concealment.

## Part 2 - Products / Materials

### 2.01 Manufacturers

- A. Provide manufacturers standard products that conform to ANSI / ASME A13.1 2007 requirements for lettering size, background size, background color, and angle of installation.
- B. Provide Mechanical Identification materials manufactured by one of the following:
  - 1. Brimar Industries, Inc. Garfield, NJ (800-274-6271)
  - 2.
  - 3.

### 2.02 Pipe Markers

- A. General: Pipe Markers shall comply with ANSI / ASME A13.1 2007 "Scheme for the Identification of Piping Systems" and be installed as required and indicated below using legends spelled out fully with few abbreviations and directional arrows to indicate flow. Arrows must have the same background color as the pipe marker legend, or be incorporated into the pipe marker.
- B. Color: Pipe markers shall conform to ANSI Z535.1 "Safety Color Code"
- C. For pipes with an overall diameter of 6" or less (including insulation), provide semi rigid plastic wrap around pipe marker that extends 360° around the pipe at each marker location. The semi rigid marker should include the legend (pipe content) and a directional flow arrow. The marker shall be supplied as a pre-tensioned device and be equipped with a ½" strip of adhesive on the inside to further secure the marker in a permanent position on vertical locations.
- D. For pipes with an overall diameter greater than 6" (including insulation) provide a semi rigid plastic strap-on pipe marker with a height no less that 3 times the letter height. The marker shall include a legend (pipe content) and a directional flow arrow. The maker shall be supplied with no less than two nylon straps to secure the marker in place.

### 2.03 Pipe & Valve Markers For Medical Gas & Vacuum Systems

- A. Pipe Markers for Medical Gas and Vacuum Systems shall comply with NFPA 99C (5.1.11.1) Pipe Labeling. The Pipe Marker shall wrap completely around the pipe and contain both the legend and directional flow arrows. When positive pressure gas piping systems operate at other than standard gauge pressure the label shall include the operating pressure in addition to the name of the gas and directional flow arrow.
- B. For Pipes with an overall pipe diameter of 3/4" or less provide a self adhesive label which wraps completely around the pipe. For pipes with an overall pipe diameter of 1" or larger provide a semi rigid plastic pipe marker which wraps completely around the pipe.
- C. Valve Tags for Shutoff Valves in Medical Gas and Vacuum Systems shall comply with NFPA 99C (5.1.11.2) Shutoff Valves. The tag shall be an engraved 3 ply plastic and a minimum of 2" in diameter. The tag shall contain the name or chemical symbol of the specific system, the room served, and a caution to not close or open the valve except in emergency. The operating pressure of the gas system shall be included on the tag if the system operates at pressures

other than the standard gauge pressure of 345 kPa to 380 kPa (50psi to 55 psi) or a gauge pressure of 1100 kPa to 1275 kPa (160 psi to 185 psi) for Nitrogen or Instrument Air.

#### 2.04 Valve Tags

- A. General: Provide valve tags on all controlling valves installed and related to this project, except obvious drain and vent piping. Match service abbreviations with mechanical drawings.
- B. Valve Tags shall be approximately 19 gauge brass and no less than 1 ½" in diameter. Tag shall be stamped and black filled with a service abbreviation and a sequential number. The service abbreviation shall be on the top line and be no less than ¼" in height. The sequential number shall be on the bottom line and shall not be less than ½" in height. If necessary, to accommodate longer abbreviations or number sequences increase tag size to 2" in diameter.

#### 2.05 Valve Tag Fasteners

- A. General: Attach valve tag to the stem or body of the valve so that the tag is visible but doesn't interfere with the valve operation.
- B. Fastener: Attach each valve tag using the following products. #16 Solid Brass Jack Chain, 1-½" Solid Brass "S" Hooks, # 6 Solid Brass Beaded Chain.
- C. Valve Schedule Frame: Install an 8 ½" x 11" aluminum valve chart frame in a conspicuous location inside each room that contains control valves. The chart should contain the following information about each tag: Service Abbreviation, Valve Number, Valve Location and Valve Function. To protect the chart, the frame should be supplied with a 10 mil clear plastic cover.

#### 2.06 Equipment Nameplates

- A. General: Provided an engraved multi-layered plastic laminated nameplate for all mechanical equipment purchased for this project. Provide an additional engraved nameplate for each disconnect and controller connected to the mechanical equipment.
- B. Mechanical Equipment: Provide a 1/16" thick black nameplate with white letters for all mechanical equipment. The nameplate shall be a minimum of 3" high x 6" wide. The nameplate shall be engraved with the Equipment Tag as shown on the mechanical drawings and schedules. The minimum letter height shall be 3/4". If necessary enlarge the size of the plate to accommodate the ¾" characters. Do not reduce the letter height. The nameplate shall be installed with either double faced adhesive or with stainless steel screws.
- C. Disconnects and Controllers: Provide a 1/16" thick black nameplate with white letters for each disconnect or controller connected to the mechanical equipment. The nameplate shall be a minimum of 2" high x 4" wide. Coordinate the information to be engraved on each plate so that it exactly matches the nameplate on the equipment. The minimum letter height shall be ½". Install these nameplates with 2 mil. Permanent double faced acrylic adhesive covering the entire surface of the nameplate.
- D. Access Panels: Provide a 1/16" thick white nameplate with black letters to identify access to concealed valves or equipment such as those found above acoustical ceilings tiles. The nameplate shall be ¾" high x 2 ½" wide. Coordinate the information to be engraved on each plate so that it exactly matches the valve tag or equipment nameplate. The minimum letter height shall be ¼". Install these nameplates on the ceiling support to the right of the tile that

would provide access. Nameplates should be installed using double faced 2 mil. permanent acrylic adhesive.

### 2.07 Duct Markers

- A. General: Provide pressure sensitive vinyl labels on all ductwork installed on this project to identify the basic content and directional flow of the duct. Utilize manufacturer's standard legends such as: Exhaust, Exhaust Air, Intake, Intake Air, Outside Air, Relief, Relief Air, Return Air or Supply Air.
- B. Smaller Ducts: On ducts up to 24" in size provide a duct marker that is a minimum of 2 ¼" x 16" and has a letter size of 1 ½". Each marker must be supplied with a directional flow arrow.
- C. Larger Ducts: On ducts larger than 24" in size provide a duct marker that is a minimum of 4" x 24" and has a letter height of 2 ½". Each marker must be supplied with a directional flow arrow.

### 2.08 Underground Pipe Warning

- A. General: Provide underground pipe marking tape on all pipes buried beneath the ground. Provide a continuous length of tape 12" below the finished earth surface directly above the buried pipe. Provide a second continuous length of tape 12" above the top of the buried pipe if the top of the pipe is lower than 36" from the top of the finished earth surface.
- B. Underground Tape: Provide 6" wide detectable underground tape above all buried pipes on this project. Utilize manufactures standard legends to identify water lines, pipe lines, gas lines, fuel lines, steam lines, and sewer lines. Provide a continuous printed message similar to "Caution Water Line Buried Below". Detectable tape shall have a minimum thickness of 5 mils. and, a minimum tensile strength of 120 lbs. The tape shall be resistant to alkaline, acids, and other destructive agents usually found in soil.

## Part 3 - Execution

### 3.01 Preparation:

- A. All surfaces that are to receive adhesive applied mechanical identification such as Pipe, Duct, and Equipment nameplates should be clean and dry prior to application.

### 3.02 Installation

#### A. Pipe Markers:

Identify all piping on this project as described, except piping which is concealed and/or not accessible.

Identify piping concealed by ceiling tiles, floor tiles and, crawl spaces.

Piping outside, on roof, above grade, and within parking structures shall also be identified.

Only piping located within walls or inaccessible areas need not be identified.

Install pipe markers on long straight runs every 20 feet.

Install pipe markers above and below every floor penetration and on either side of every wall penetration and, insure there is at least one marker per pipe in every room.

Install pipe markers at every valve, branch and, any change in piping direction.  
Install pipe markers so they are visible for a normal standing position.

**B. Valve Tags:**

Identify all valves on this project as described except drain lines. Attached tags using solid brass chain and "S" hooks so they are easily visible but do not obstruct the operation of the valve. Provide a valve schedule to the engineer for approval. After schedule is approved install an aluminum frame in every room containing valves and installed the approved valve schedule detailing the valves within each room.

**C. Equipment Nameplates:**

Identify all equipment, the location of concealed equipment and the disconnects and controls of all equipment as described. Attach these nameplates with double faced 2 mil permanent acrylic adhesive.

**D. Duct Markers:**

Identify all ductwork on this project as described.  
Install duct markers every 20 feet on long straight runs.  
Install duct markers at all floor and wall penetrations and near all connected equipment.  
Install duct markers at all branches and changes in direction of the duct so it is easily traced.

**E. Underground Tape:**

Identify all underground piping on this project as described with a continuous length of detectable tape.  
If tape cannot be continuous then it must overlap by ten feet at any end.  
If piping is buried more than 36" below the finished earth surface then two continuous lengths of tape must be buried as described.