SECTION 01 70 10: MEPFPS IDENTIFICATION & LABELING

1.   **GENERAL**

A.   The intent of this section is to define the labeling and identification requirements for building mechanical, electrical, plumbing, Fire Protection and specialty systems (MEPFPS) installed within buildings.

2.   **ACCESSIBLE CEILINGS & ACCESS HATCHES**

A.   MEPFPS equipment located above accessible or "hung" ceilings: provide labels on the ceiling T-bars to indicate the device location above the ceiling.

B.   MEPFSS equipment located behind wall or "hard" ceiling hatches: provide label on hatch to indicate the device behind. For finished areas where labeling is objectionable, install labels on the latch side or back of the access door.

C.   Labels to be machine-printed, adhesive label, minimum 1/2" high letters, black text on white background.

3.   **EQUIPMENT INVENTORY**

A.   In addition to the MEPFSS equipment labeling described herein, Brown also identifies each piece of equipment with an equipment inventory identification tag or barcode. The equipment inventory is created through submittal of the equipment information from the project to the FM Preventive Maintenance team or the selected inventory service provider during each project. For equipment located in public spaces, such as hallways and rooms, use white tags; for all other locations, use yellow tags.

Example Equipment Inventory Tag

B.   For small projects and equipment replacements, the inventory information and barcode tags are normally created and affixed by the FM Preventive Maintenance team.

C. For large projects, new buildings, complete gut and remodel of an existing building, the project construction contractor to work with the Brown inventory service provider to create the required equipment inventory information and barcoding, which will then be provided to the preventive maintenance team for loading into the Facilities Management maintenance management system

D. The inventory service provider is:

Building Maintenance Optimization Consultants (BMOC)
2321 4th St., Suite 203
Tucker, GA 30084

Contact: Jonathan C. Thomas, PE, CEM, LEED AP O+M | President
Phone: (770) 313.1858
Email: info@buildingmoc.com

4.   EQUIPMENT IDENTIFICATION

A. Label and tag all MEPFPS equipment, controllers, control cabinets, and Building Automation System (BAS) cabinets by the name and designation shown on the project schedules or record drawings.

B. Labels must be:
   ● Machine labeled or engraved nameplates, with permanent contact adhesive.
   ● Black text on white background. Label size as required, no smaller than 1 x 3 inches, minimum letter size of 3/4"

C. For equipment controllers and control cabinets, such as motor starters, VFDs, lighting contactors, heat trace control cabinets, etc.— label front of cabinet to denote the load or systems controlled.

5.   ELECTRICAL CIRCUITS IDENTIFICATION

A. Label all electrical and electrically-powered equipment, such as motor starters, VFDs, control cabinets, air handlers, pumps, chillers, BAS cabinets, transformers, disconnect switches, panelboards, etc. with an engraved nameplate denoting:
   ● Equipment Designation
   ● Operating voltage, phase
   ● Source panelboard or switchboard
   ● The specific circuit number (for disconnection and isolation)

B. For equipment connected to "normal" power supply, labels to be white background with black lettering.

C. For equipment connected to "Emergency", "Standby" or Legally-required power supplies, nameplates to be orange background with black lettering

D.　　Minimum text size: 1/2"

Example Electrical Equipment Tag

6.　ELECTRICAL JUNCTION BOXES, PULL BOXES & CONDUITS

A.　Label lighting fixture outlet boxes with their panelboard and circuit number.

B.　Label the covers of electrical junction boxes, pull boxes, terminal cabinets and wireways with the circuit types contained within (e.g. lighting, receptacles, power, telecommunications, emergency power, audio-visual, security).

C.　Junction boxes and outlet boxes for fire alarm use shall be painted red.

D.　Junction boxes for BAS shall be painted yellow.

E.　Conduits (2" and larger) and wireways containing electrical circuits over 600 volts, where run within buildings and accessible spaces, shall be painted orange.

7.　RECEPTACLES, SWITCHES & WIRING DEVICES

A　Label each wiring device faceplate with the source panelboard and circuit number.

B.　Labels to be machine-printed, non-smudge type, adhesive label, black text on white or clear background.

8.　PANELBOARD, SWITCHBOARD, CIRCUIT BREAKERS, & DISCONNECT SWITCHES

A.　Panel and switchboard circuit directories shall be type-written. Provide new directories when changes are made to add or remove circuits from panels.

B.　Circuit directories to be specific for the load served and include the equipment tag (e.g. HTHW pump P-3). Generic descriptions ie: "existing unknown circuit" are not acceptable.

C.　Branch circuit directories and labels to be specific to the type of load and the room or area served (e.g. receptacles - room 405).

D.　Provide labels on each adjustable-trip circuit breaker and fused disconnect noting the device's design setting for overcurrent protection (e.g.: a 400-amp frame circuit breaker calibrated for 250 amps to be labeled "250-amp trip").

9.　PIPING

A.   Piping label color coding and size per ANSI /ASME A13.1 and as follows:
1.   Potable Water – Green with white letters/numbers
2.   Unsafe (Non-Potable) Water – Gray with white letters
3.   Storm, Sanitary and Lab Waste Water - Gray with white letters
4.   Chilled Water Supply– Green with white letters
5.   Chilled Water Return– Green with white letters
6.   Condenser Water – Green with white letters
7.   Steam – Yellow with black letters
8.   Steam Condensate - Yellow with black letters
9.   High Temperature Hot Water (HTHW) Supply – Yellow with black letters
10.   High Temperature Hot Water (HTHW) Return – Yellow with black letters
11.   Medium Temperature Hot Water (MTHW) Supply – Yellow with black letters
12.   Medium Temperature Hot Water (MTHW) Return – Yellow with black letters
13.   Dual-Temperature systems (MTHW/Chilled Water) Supply - Yellow with black letters
14.   Dual-Temperature systems (MTHW/Chilled Water) Return - Yellow with black letters
15.   Fire Suppression Water – Red with white letters
16.   Fire Suppression Chemical and Gases - Red with white letters
17.   Toxic and Corrosive liquids – Orange with black letters
18.   Flammable fluids (e.g. diesel fuel) – Yellow with black letters
19.   Compressed Air / Oxygen – Blue with white letters
20.   Natural Gas / Combustible Gases – Yellow with black letters
21.   Compressed Air – Blue with white letters
22.   Refrigerant Lines (VRF systems) - Orange with black letters
23.   Nitrogen – Black with white lettering
24.   Systems not listed above - White with black letters

B.   Place labels over installed insulation on the pipe. Painted or stenciled labels on insulation jacket are not permitted.

C.   Install pipe markers as follows:
1.   Each side of every valve
2.   Each tee or wye
3.   Each point of exit and entry where piping passes through walls, floors, partitions, or ceilings
4.   At each piping change of direction
5.   Every 25 ft. on straight runs of pipe

D.   Provide arrow markers adjacent to each pipe label with the arrow showing direction of flow; use double-headed arrows or an arrow on either side of pipe label if flow can be in both directions.

E.   Building Exterior Walls & Foundations:
1.   Identify each piping penetration entering/leaving the building with a wall mounted identification sign.

2. Identification sign language to include:
    ● Piping system
    ● The destination of the other building or utility service that piping is connecting to.

Example Wall Piping Penetration Tag

10. VALVES

A. Tag valves in each piping system with a brass or aluminum tag, attached to the valve with brass or stainless steel chain.

B. Label and tag by the name and designation shown on the record drawings; minimum 1/2" high black letters; Utilize a 2-line tag nomenclature per below:

1. Line 1 - System Type: Common system type abbreviations include, but are not limited to:
    ● LPS - Low Pressure steam
    ● HPS - High Pressure steam
    ● MTHW - Medium Temperature Hot Water
    ● HTHW - High Temperature Hot Water
    ● DT - Dual Temperature (Heating & Cooling)
    ● DW - Domestic Water
    ● DHW - Domestic Hot Water
    ● NPW - Non-Potable Water
    ● NPHW - Non-Potable Hot Water
    ● CHW - Chilled Water
    ● CW - Condenser Water
    ● HR - Heat Recovery
    ● PCW - Process Cooling Water
    ● FP - Fire Protection

2. Line 2 – Valve Type & Number: Per the following, with "X" being a unique number and/or letter designation:

- CV - X: Control Valve
- BPV - X: Bypass valve, to bypass control valves and for allowing flow from the supply to the return side of a heating or cooling system
- WV - X: Heating System Warm-up valve, to bypass a control valve of a heating system
- VV-X: System vent valve
- DV- X: System drain valve
- ZV- X: Zone isolation valve, for system branch isolation
- IV - X: Isolation valve for building services, equipment such as heat exchangers, or control valves.

Example Valve Tag

C. Valve labeling and tagging for energy control (LOTO) shall be 2" x 2" yellow aluminum round tag and utilize the 2-line nomenclature noted above.

D. Individual isolation valves to isolate equipment that are not part of a LOTO program do not require identification, where they are located immediately adjacent to the equipment.

E. Subsequent projects that include additional valves are to be added to the existing record drawings and valve identification scheme.

11. FIRE SUPPRESSION SYSTEMS

A. Refer to Section 21 00 10 Fire Protection Systems for additional labeling and Identification requirements for Fire Suppression Systems and components.

12.   STEAM TRAPS

A.   Provide list of each trap location and trap type to FM-Operations: this information will be used by Brown's Service Provider to provide and install tags at each steam trap location, and to update the existing steam trap master database.

13. DUCTWORK

A.   Label ductwork with color-coded, preprinted labels to identify service and direction of airflow. Labels to include system designation and air type (e.g. AHU-1 Supply Air).

B.   Label size: 2-1/2" minimum height x length as required, with minimum 1-1/2" high lettering.

C.   Duct Label Color-Coding:
   ● Supply Air – Green with white letters/numbers
   ● Exhaust Air – Yellow with black letters
   ● Return Air, Supply Air or Relief Air - Blue with white letters

D.   Duct Label – Application:
   ● Within each room or space
   ● On each side of walls, floors, ceilings and other duct penetrations
   ● Near major equipment and points of origin or termination
   ● Every 50 ft. on straight runs of duct
   ● Label branches from main supply and exhaust ducts to identify rooms and areas served.

14.   VRF SYSTEM LABELING – APPLICATION:

A.   Individually label each VRF condenser unit with a unique tag number.

B.   Individually label each VRF unit Branch Selector with a unique tag number associated with the VRF Condenser tag.

C.   Individually label each Terminal unit with a unique tag number associated with the condenser unit or Branch Selector tag.

D.   Piping: Individually label all refrigerant gas and liquid piping to include: direction of flow, gas or liquid line, and a unique tag identifying the terminal unit or Branch selector served.

E.   Piping shall be labeled within each room or space, on each side of walls, floors, ceilings and other penetrations, near major equipment and points of origin or termination, and every 25 ft. on straight runs of piping.

Example Refrigerant Piping Tag

End of Section