PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Equipment labels.
   2. Warning signs and labels.
   3. Pipe labels.
   4. Duct labels.
   5. Valve tags.
   6. Refrigeration Machinery Room identification.

1.2 SUBMITTAL

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

B. Valve Schedule: Electronic version of valve schedule for approval.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:
   1. Material and Thickness: Black anodized aluminum for mechanical engraving, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
   2. Minimum Label Size: Length and width vary, but not less than 2-1/2 by 3/4 inch.
   5. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Plastic Labels for Equipment:
   1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
   4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
   5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
   7. Fasteners: Stainless-steel rivets or self-tapping screws.
   8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

C. Label Content: Include equipment’s Drawing designation or unique equipment number as directed by Owner.
2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.


C. Background Color: Red.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1 inch main lettering, 3/4 inch secondary lettering.

G. Fasteners: Stainless-steel rivets or self-tapping screws.

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

I. Label Content: Include caution and warning information, plus emergency notification instructions as indicated on drawings and specifications.

2.3 PIPE COLORS

A. Paint HVAC water pipe with Pittsburgh Paint as required below.
   1. Chilled Water Supply: Safety Blue 90-311
   2. Chilled Water Return: Light Blue 2708 (White) + Pastel base
   3. Condenser Water Inside Plant: Green 90-311
   4. Condenser Water Outside Plant: Beige/Sand No color # available

2.4 PIPE LABELS


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

C. Rigid Carrier Pipe Labels: Use only MS-995 Maxilar™ Rigid Carrier Pipe Markers strapped to pipe with Type 316 stainless banding.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, 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 (minimum):
      3. Pipe: <2.5" Letters: 3/4" high  Pipe: 2.5 D 6" Letters: 1.5" high
      4. Pipe: 8-10" Letters: 2.5" high  Pipe: >10" Letters: 3.5" high

2.5 VALVE TAGS
A. Valve Tags: Stamped or engraved, minimum 2-inch size with 1/4-inch letters for piping system abbreviation and function, i.e., balance, drain, shutoff, stop. Include 1/2-inch identifying number. Provide 5/32-inch hole for fastener.
   1. Material: 0.032-inch-thick brass.
   2. Valve-Tag Fasteners: Brass wire-link or beaded chain; or S-hook.

2.6 AS-BUILT MECHANICAL "FLOOR PLAN" DRAWING
A. Provide an as-built drawing that shows the major equipment and all valves with Valve ID

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 HVAC equipment.
B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION
A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.
   2. Pipe OD, incl. Insulation, 6 Inches and Larger: MS-995 Maxilar™ Rigid Carrier Pipe Markers
B. 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 20 feet along each run. Reduce intervals to 10 feet in areas of congested piping and equipment.

3.4 VALVE-TAG INSTALLATION
A. Install tags on valves and control devices in piping systems including piping within
refrigeration machinery rooms, boiler rooms, mechanical equipment room, mechanical equipment yards, piping mains, and piping branches serving more than one piece of equipment. Tags are not required on check valves; valves within factory-fabricated equipment units; and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units.

B. Identify tagged valves as follows
1. System: e.g., SEC, COND, CHW, CTW-1, CHL-B2
2. Subsystem: e.g. PMP-B2, COND,
3. Component: e.g. VLV, FC
4. Number: e.g. 1, 2, 3

3.5 VALVE SCHEDULE

A. Created a Valve Schedule in spreadsheet or table form. Valve schedule shall indicate the following:
1. System: e.g., SEC, COND, CHW, CTW-1, CHL-B2
2. Subsystem: e.g. PMP-B2, COND,
3. Component: e.g. VLV, FC
4. Number: e.g. 1, 2, 3
5. Mode of Operation: e.g. Auto, Man, A/M
6. Description (Function): e.g., Cooling Tower B2 By-Pass Valve
7. Location: e.g., "Above ceiling in Corridor C-01 near Room 117."

B. Mount valve schedule under plastic in main mechanical room, or elsewhere as directed by Owner. Include copy in O&M Manual.

C. Acronyms
AUTO Automatic Control MAN Manual Control
CHL Chiller PLNT Central Plant
CHM Chemical Treatment System PMPX Pump (X=number)
COND Condenser Water Loop PRI Primary Chilled Water Loop
CTW Cooling Tower SEC Secondary Chilled Water Loop
EQ Equalizing Line SEP Centrifugal Separator
FC Fan Coil VLV Valve
HX Heat Exchanger (X)-PLNT (Number)-Plant

3.6 AS-BUILT MECHANICAL "FLOOR PLAN" DRAWING UNDER PLASTIC

A. Place this under plastic next to the Valve Schedule.

3.7 REFRIGERATION MACHINERY ROOM IDENTIFICATION

A. Mount general information placard on wall in refrigeration machinery room adjacent to main entry.

B. Securely mount control device labels adjacent to each control device.
3.8 ADJUSTING AND CLEANING

A. Relocate mechanical identification materials and devices that have become visually blocked by other work.

B. Clean faces or mechanical identification devices and glass frames of valve schedules.

END OF SECTION