DESIGN GUIDELINE 220553
MECHANICAL IDENTIFICATION AND PAINTING

Scope

Requirements for identification and painting of mechanical piping, ductwork and equipment, underground pipe identification, valve tags, and labeling architectural access panels; including corresponding labeling requirements on design drawings.

Related Sections

U-M Design Guideline Sections:

U-M Master Specification Sections:

220553 Mechanical Identification

U-M Standard Details:

Reference Documents:

General

U-M Master Specification 220553 shall be used as the basis for the specification covering the identification requirements of piping, ductwork and equipment. The master specification reflects U-M's basic requirements for mechanical identification. It includes the required label size, nomenclature, color, mounting interval, etc. Revise the master specification only as required to make it project specific, e.g. to add a new pipe system type as opposed to revising the label nomenclature already indicated.

Pipe and duct on drawings should be labeled to match the respective drawing identification nomenclature indicated in the U-M master specification.

The U-M master spec. also includes U-M's requirements for underground pipe identification, valve tags, and labeling architectural access panels.

Editor's notes are included in the specification to assist the A/E. Be sure to turn on hidden text and read those notes.

Equipment Identification

During design phase, A/E shall assign equipment numbers to be used in the construction documents, in conjunction with the Design Manager (DM).

Numbers for major mechanical equipment such as air handlers, chillers and pumps should be unique within a building and continue the sequence established by existing equipment. As an example, if air handlers AC-1, AC-2 and AC-3 already exist, then a new air handler should be named AC-4 (not AC-1 or AHU-4 or ACU-4). Although many equipment designators are

presently used throughout the University, the A/E shall use the designators listed in the equipment marker section of the U-M master specification whenever possible. Where the first equipment item on a project is not named "..-1", the equipment schedule should note that all the equipment with names preceding it are existing.

All terminal air flow units (i.e. TU, LTAU, etc.) and unitary equipment (UH, CUH, FCU, etc.) shall be individually scheduled on the drawings and labeled in the field with a unique identifier per this guideline (i.e. LTAU-A for type "A" laboratory terminal air flow unit shall not be allowed).

All mechanical, plumbing, fire protection equipment marks indicated on contract document equipment schedules shall follow the naming convention designations indicated in U-M MS 220553. Any equipment utilized on a project not indicated in this spec section shall be brought to the attention of the U-M Design Manager to confirm the proper naming designation.

All mechanical, plumbing, fire protection equipment indicated on contract documents shall be field labeled by the Contractor. Labels shall follow equipment designations provided on the contract documents. Engineer of Record (EOR) shall not rely on the Contractor to determine equipment labeling marks/convention.

When identifying equipment in new facilities or major facility-wide renovations, use the following naming convention:

Major Equipment

Use the equipment designator (i.e. AHU, EF, etc.) and a four-digit number. Four-digit number shall start with the floor the equipment is located on, followed by a sequential equipment number. For example:

- AHU-0G01 (Air handling unit located on the ground floor, first AHU)
- AHU-0B01 (Air handling unit located in the basement, first AHU)
- AHU-0202 (Air handling unit located on the second floor, second AHU)
- AHU-0203 (Air handling unit located on the second floor, third AHU)
- EF-0604 (Exhaust fan located on the sixth floor, fourth EF)
- CHWP-0811 (Chilled water pump located on the eighth floor, eleventh CHWP)

Numbering of equipment shall progress sequentially from one side of the building to the other (i.e. west to east).

Terminal Air Flow Unit (TAU, LTAU) Identification

Utilize a labeling convention for terminal air flow units and laboratory terminal air flow units that incorporate the equipment mark (LTAU for laboratory spaces, TAU for all other spaces) followed by the room where the controlling thermostat is located, followed by the descriptors listed in the examples below:

- TAU-2100-S1 (supply terminal air flow unit, controlling thermostat located in room 2100)
- TAU-3100-R2 (return terminal air flow unit, controlling thermostat for the associated supply air terminal unit located in room 3100)

- LTAU-4100-E1 (laboratory terminal air flow unit, general exhaust, controlling thermostat for the associated supply laboratory terminal air flow unit located in room 4100)
- LTAU-5100-EH1 (laboratory terminal air flow unit, fume hood exhaust, controlling thermostat for the associated supply laboratory terminal air flow unit located in room 5100)
- LTAU-6100-ES1 (laboratory terminal air flow unit, snorkel exhaust, controlling thermostat for the associated supply laboratory terminal air flow unit located in room 6100)
- LTAU-7100-EC1 (laboratory terminal air flow unit, gas cabinet or canopy hood exhaust, controlling thermostat for the associated supply laboratory terminal air flow unit located in room 7100)
- LTAU-8100-S1 (laboratory terminal air flow unit, supply air, controlling thermostat located in room 8100)

Unitary Equipment

Unitary equipment (i.e. fan coil units, unit heaters, cabinet unit heaters, etc.) shall utilize the equipment designator followed by the room number served by that piece of equipment. For example:

- FCU-2112 (Fan coil unit serving room 2112)
- CUH-017X (Cabinet unit heater serving stairwell 017X)

Where unitary equipment serves multiple rooms, unit shall be labeled with the room number where the thermostat is located. Where multiple units serve a common room, utilize letter suffixes for each unit (i.e. UH-2115A, UH-2115B, etc.)

Field labeling may not be required for small equipment not listed in U-M Master Specification 220553. Consult with the U-M Design Manager.

Valve Identification

Generally, all valves and regulators on all systems, except those located directly at the equipment served, shall be provided with 1-1/2 inch diameter brass tags with stamped numbers and letters. Exact valve tag requirements are described in the U-M master specification *except the A/E must edit the specification to identify which systems are to be tagged*.

Special use valves shall be numbered on the design drawings, e.g. control valves.

The contractor shall develop a directory of valve tags, to be wall mounted and included in the O&M manual, as described in the U-M master specification.

Painting

Interior pipes and ducts are not typically painted, unless required in certain locations for aesthetic reasons, as confirmed by the U-M Design Manager. Exceptions include:

- Fire protection piping in exposed locations shall be painted red

- Pipes in the Central Power Plant. Consult with the U-M Design Manager for specifics.

Exterior uninsulated pipe and ductwork shall be painted the same color as the background building, or a complementary color as directed by the U-M Design Manager. Insulated pipe and ductwork normally does not require painting, provided the insulation material does not require paint for protection. However, review the visibility of insulated pipe and duct with the U-M Design Manager to determine if painting for aesthetic reasons is appropriate.