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**ARCHITECTURE, ENGINEERING AND CONSTRUCTION**

ARCHITECTURE & ENGINEERING

326 East Hoover, Mail Stop B

Ann Arbor, MI 48109-1002

Phone: 734-764-3414

Fax: 734-936-3334

DOCUMENTS

SPECIFICATION DIVISION 22

NUMBER SECTION DESCRIPTION

DIVISION 22 PLUMBING

SECTION 220553 - MECHANICAL IDENTIFICATION

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1. DIVISION 22 PLUMBING
	1. SECTION 220553 - MECHANICAL IDENTIFICATION

Revisions:
10-12-00: Substantially revised, approved as new master

***UPDATED BY PLMG/FP MTT October 2017***

* + 1. General
			1. RELATED DOCUMENTS

INCLUDE PARAGRAPH 1.1.A - IN EVERY SPECIFICATION SECTION.

* + - * 1. Drawings and general provisions of the Contract, Standard General and Supplementary General Conditions, Division 1 Specification Sections, and other applicable Specification Sections including the Related Sections listed below, apply to this Section.
			1. SCOPE OF WORK:
				1. Mechanical identification on piping, ductwork and equipment, identification of underground pipe, valve tags, and architectural access panels.
			2. QUALITY ASSURANCE
				1. Comply with ANSI A13.1 for lettering, size, colors, and viewing angles of mechanical identification.
			3. ACCEPTABLE MANUFACTURERS:
				1. Provide mechanical identification materials from one of the following:

Brady Co.

Brimer

Craftmark

Seton

Marking Services Incorporated

Kolbi Marker Co.

* + 1. PRODUCTS
			1. PIPE MARKERS:
				1. Manufacturer's standard, pre-printed, color-coded, plastic pipe markers, complying with ANSI A13.1, and requirements below. Self-adhesive markers are not acceptable.
				2. For pipe diameter (with insulation) less than 6": full-band, semi-rigid, snap-on pipe markers, extending 360 degrees around pipe.
				3. For pipe diameter (with insulation) of 6" and larger: full-band or strip-type pipe markers, but not narrower than 3 times letter height. Fasten with nylon or stainless steel bands for pipe 6" through 12". Fastened with stainless steel bands for piping over 12".
				4. Lettering: Standard nomenclature which best describes piping system, as selected by Engineer (in cases of variance from table below).
				5. Arrows: Pipe marker arrows indicating direction of flow, either integrally with piping system lettering, or as a separate marker.
				6. Identify contents of piping by both fluid contained and unique temperature and /or pressure (if necessary to distinguish between other systems with same fluid at different conditions); e.g. Potable Hot Water - 110F vs Potable Hot Water - 140F.
				7. Use the following color coding and nomenclature for pipe markers:

SPEC EDITOR: edit this list to ADD ANY specified systems, NOT INCLUDED IN THIS LIST. Coordinate nomenclatue with symbols sheet and plans.

Plumbing and Waste Drawing I.D. Letter and

Pipe System Labels (For Reference Only) Label Color

|

|  |  |  |
| --- | --- | --- |
| Acid Vent | AV | Black on Orange |
| Acid Waste | AW | Black on Orange |
| Brine | BR | Black on Orange |
| Cold Water, Potable | CW | White on Green |
| Compressed Air | A | White on Blue |
| Deionized Water | DI | White on Green |
| Deionized Water Return | DIR | White on Green |
| Fire Protection | FP | White on Red |
| Hazardous Waste | HAZ | Black on Yellow |
| Hot Water Supply, Potable | HW | Black on Yellow |
| Hot Water Return, Potable | HWR | Black on Yellow |
| Instrument Air | IA | White on Blue |
| Natural Gas | G | Black on Yellow |
| Non-Potable Water | NPW | Black on Yellow |
| Radiation Waste | RAD | Black on Yellow |
| Rainwater Conductor | RC | White on Green |
| Reverse Osmosis Water | RO | White on Green |
| Rev. Osmosis Return | ROR | White on Green |
| Sanitary Vent | V | White on Green |
| Sanitary Waste | SAN | White on Green |
| Silver Recovery | AG | Black on Yellow |
| Soft Cold Water | SCW | White on Green |
| Storm Sewer Water | ST | White on Green |
| Vacuum | VAC | White on Blue |
| | |  |  |

Heating and Cooling Drawing I.D. Letter and

Pipe System Labels (For Reference Only) Label Color

|

|  |  |  |
| --- | --- | --- |
| Chilled Beam Return | CBR | White on Green |
| Chilled Beam Supply | CBS | White on Green |
| Chilled Water Return | CHWR | White on Green |
| Chilled Water Supply | CHWS | White on Green |
| Condensate Vent | SCV | Black on Yellow |
| Condenser Water Return | CWR | White on Green |
| Condenser Water Supply | CWS | White on Green |
| Energy Recovery Wat. Ret. | ERWR | White on Green |
| Energy Recovery Wat. Supp. | ERWS | White on Green |
| Fuel Oil Return | FOR | Black on Yellow |
| Fuel Oil Supply | FOS | Black on Yellow |
| High Pressure Condensate | HPC | Black on Yellow |
| High Pressure Steam | HPS | Black on Yellow |
| Hot Water Heating Return | HWHR | Black on Yellow |
| Hot Water Heating Supply | HWHS | Black on Yellow |
| Low Pressure Condensate | LPC | Black on Yellow |
| Low Pressure Steam (15#) | LPS | Black on Yellow |
| Medium Pressure Condensate | MPC | Black on Yellow |
| Medium Pressure Steam (60#) | MPS | Black on Yellow |
| Process Water Return | PWR | White on Green |
| Process Chilled Water Supply | PCHWS | White on Green |
| Process Chilled Water Return | PCHWR | White on Green |
| Process Water Supply | PWS | White on Green |
| Pumped Steam Condensate | PC | Black on Yellow |
| | |  |  |

|

Lab / Medical Gas Pipe Drawing I.D. Letter and

System Labels (For Reference Only) Label Color

|

|  |  |  |
| --- | --- | --- |
| Carbon Dioxide | CO2 | White/Black on Gray |
| Helium | HE | White on Brown |
| Dental Air | DA | Black on Yellow |
| Dental Vacuum | DVAC | Silver on Yellow |
| Laboratory Compressed Air | LCA | Black on Yellow & White Checkerboard |
| Laboratory Vacuum | Lab Vac | Block boxed on white and black checkerboard |
| Medical Air | Med Air | Black on Yellow Block boxed on white and black checkerboard  |
| Medical Vacuum | Med Vac | Black on White |
| Nitrous Oxide | N2O | White on Blue |
| Nitrogen | N2 | White on Black |
| Oxygen | O2 | White on Green |
| Waste Anesthetic Gas Disposal | WAGD | White on Violet |

ALL labeling shall conform to NFPA 99.

* + - 1. DUCT MARKERS:
				1. Plastic, adhesive type color-coded duct markers, with arrow indicating direction of flow, and with fan system identified. Conform to the following color code and nomenclature:

Service/ Duct Label Drawing I.D. Letter and

 (For Reference Only) Label Color

|  |  |  |
| --- | --- | --- |
| | |  |  |
| Exhaust Air (Equip.#) | EA (Eq.#) | Black on Yellow |
| Fume Hood Exhaust (Equip.#) | FHEA (Eq.#) | Black on Yellow |
| Hazardous Exhaust (Equip.#) | HAZ EX (Eq.#) | Black on Yellow |
| Lab General Exhaust (Equip.#) | LGEX (Eq.#) | Black on Yellow |
| Outdoor Air (Equip.#) | OA (Eq.#) | White on Green |
| Return Air (Equip.#) | RA (Eq.#) | White on Green |
| Smoke Evac Exhaust (Equip.#) | SMOKE EX (Eq.#) | Black on Yellow |
| Smoke Evac Supply (Equip.#) | SMOKE SUP (Eq.#) | White on Green |
| Supply Air (Equip.#) | SA (Eq.#) | White on Green |

* + - * 1. Provide plastic adhesive duct access door markers indicating item and associated equipment accessed, and appropriate safety and procedural information. (eg. Fire Damper AHU-1)
			1. EQUIPMENT MARKERS:
				1. Engraved plastic equipment markers for all scheduled equipment, (eg., chillers, pumps, air handling units, heat exchangers, and fans). Indicate drawing I.D., and service, (eg., EF-1 serving FH No.3 in Rm. 2035, or P-7 Primary Chilled Water), nominal capacity (tons, cfm or gpm). Scale marker and lettering to equipment labeled. Typical nomenclature:

|  |  |
| --- | --- |
| Drawing I.D.& Equip. Label | Equipment |
| | |  |
| ACC | Air Cooled Condenser |
| AHU | Air Handling Unit |
| CH | Chiller |
| CHWP | Chilled Water Pump |
| CP | Condensate Pump |
| CT | Cooling Tower  |
| CUH | Cabinet Unit Heater |
| CWP | Condenser Water Pump |
| EWH | Electric Water Heater |
| FHEF | Fume Hood Exhaust Fan |
| FP | Fire Pump |
| GEF | General Exhaust Fan |
| GWH | Gas-fired Water Heater |
| HTX | Heat Exchanger |
| HWB | Hot Water Boiler |
| HWHP | Hot Water Heating Pump |
| LEF | Lab Exhaust Fan |
| P | Pump (other than those listed) |
| RF | Return Fan |
| SB | Steam Boiler |
| SF | Supply Fan |
| TEC | Terminal Equipment Controller |
| UH | Unit Heater |
| VAV | Variable Air Volume Box |
| VP | Vacuum Pump |

* + - 1. IDENTIFICATION ACCESSORIES:
				1. Underground Pipe Markers: Manufacturer's standard, permanent, bright-colored plastic tape, intended for direct-burial service, 6" wide x 4 mils thick, continuously printed to indicate service of buried pipe. For plastic pipe, provide label with detectable nonferrous locator.

SPEC EDITOR: Valve tags are typically not required for renovation projects. Consider valve tags only for new buildings, and gut renovation projects.

* + - * 1. Valve Tags: 1-1/2" diameter brass valve tags with 1/4" stamp-engraved designations with piping system abbreviation and sequenced valve numbers. Provide solid brass chain, or solid brass S-hooks of the size and type required for proper attachment of tags to valves.

SPEC EDITOR: Coordinate architectural access panel labeling with architect, especially in aesthetically sensitive areas..

* + - * 1. Architectural Access Panel Markers: 1/16" thick engraved plastic laminate, with nomenclature corresponding to items for which access door was installed (eg. VAV-7, TEC-7 and HWH control valve V-23).
		1. EXECUTION
			1. GENERAL INSTALLATION REQUIREMENTS:
				1. Coordination: Install identification after insulation is applied. Protect identification from paint, or apply after painting is complete. Install above ceiling identification prior to acoustical ceilings.
				2. Attachment: Securely attach all mechanical identification to associated pipe, duct, panels and equipment. Locate identification to be readily visible.
			2. PIPING SYSTEM IDENTIFICATION:
				1. Install pipe markers on all piping systems in all locations where piping, whether concealed or non-concealed, and where accessible at manholes and access panels. Installed at all access panels or doors, adjacent to valves and branch connections, both sides of floors, ceilings and walls, and all major changes in direction,
				2. Locate pipe markers near points where piping continues into shafts, underground, floor or wall; at 25' spacing along exposed runs (15' in congested areas), at valves, equipment and control devices, and where there could be question of flow pattern.
				3. Install marker over pipe insulation segment on hot non-insulated pipes.
			3. DUCTWORK IDENTIFICATION:
				1. Install duct markers on all supply, return, exhaust, intake and relief ductwork, whether concealed or non-concealed, , and where accessible at access panels. Install at all access panels or doors, both sides of floors, ceilings and walls, and all major changes in direction.
				2. Locate duct markers near points where ductwork originates or continues into shafts, floor or wall, and at 25' spacing along exposed runs (15' in congested areas), equipment and control devises, and where there could be a question of flow pattern.
				3. Install duct access door markers on all access doors.
			4. EQUIPMENT IDENTIFICATION:
				1. Provide equipment markers on scheduled equipment.
			5. UNDERGROUND PIPING IDENTIFICATION:
				1. During back-filling, install continuous underground pipe markers over all buried piping, 6" to 8" below finished grade, at 24" intervals across the field. Where multiple pipes are in a trench up to 16" wide, install single line marker. For tile fields and similar installations, mark only edge pipe lines of field.
			6. VALVE IDENTIFICATION:
				1. Install valve tags on all new valves and regulators for the following piping systems, except for valves within factory-fabricated equipment, at plumbing fixture faucets, hose bibs, and valves located directly at the equipment served. Number valves in a logical sequence relative to location installed.

SPEC EDITOR: specify systems to receive valve tags

* + - * 1. List each tagged valve in valve schedule for each piping system. Include a copy of the valve tag schedule in the Operation and Maintenance manuals, and mount a laminated copy on a wall as directed by the University.
				2. Where building has previously tagged valves, coordinate numbering with old schedule, and note changes made to previously tagged valves on new schedule.
			1. ARCHITECTURAL ACCESS PANEL IDENTIFICATION:
				1. Install access panel markers on inside and/or outside of access doors, as directed by the University.

END OF SECTION 220553