**CONSTRUCTION**

**MANAGEMENT**

**MASTER SPECIFICATIONS**

**DIVISION 1**

**(Identification Systems)**

|  |  |  |
| --- | --- | --- |
| Issue | Pages Affected | Comments |
| 000 | All | New Specification. |
| 001 | All | General change. |
| 002 | 3 | 2.2.A. |
| 003 | All | Change all BWXT Pantex to B&W Pantex. |
| 004 | All | Global changes to clarify Contractor requirements. |
| 005 | All  8 | Change format to comply with MNL-0007 guidelines  Remove reference to “Section 16400” |
| 006 | 3.11, 3.12 | Addition of Trace wire and Utility marker requirements |
| 007 | 11 | Updated document to change UCM to the BRAIN. |

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| **Level of Use: Reference** |

**Table of Contents**

[1. GENERAL 5](#_Toc7704793)

[2. SPECIFIC REQUIREMENTS 5](#_Toc7704794)

[3. EXECUTION REQUIREMENTS 7](#_Toc7704795)

[4. REFERENCES 10](#_Toc7704796)

**ACRONYMS**

OSHA Occupational Safety and Health Administration

PSIG Pounds per Square Inch Gauge

PSTR Project Subcontract Technical Representative

T&P Temperature and Pressure

**SECTION 01080 - IDENTIFICATION SYSTEMS**

1. GENERAL
   1. This section includes Contractor requirements for paint, marking, labeling, and identification standards for Plant systems.
   2. The Contractor shall comply with MNL-00014 unless otherwise specified.
   3. The Contractor shall submit appropriate documentation for the use of stenciling where the use of labels, tags, or specified markers are not feasible.
2. SPECIFIC REQUIREMENTS
   1. Directional flow arrows shall be black on color-coded snap-on semi-rigid plastic pipe markers similar to Seton’s Setmark pipe markers. All piping and ductwork shall be labeled with the direction of flow.
   2. All exhaust ductwork shall be labeled “Caution - Potentially Hazardous.” This labeling shall appear a minimum of every 20 feet on-center and on both sides of penetrations. Letters shall be a minimum of 3 inches high. Ductwork shall be labeled on the underside where it is over 10 feet from the floor and on all sides where it is less than 10 feet from the floor.
   3. All Labels shall have the following data fields.
      1. Line 1 - 12 character alphanumeric field, system abbreviation.
      2. Line 2 - 20 character alphanumeric field, building and room numbers.
      3. Line 3 - 16 character alphanumeric field, equipment/component name abbreviation and number.
      4. Line 4 - Optional, alphanumeric field, engineering grid coordinates.
   4. Plastic labels shall be laminated three-layer plastic with engraved white letters on black background.
   5. Metal labels shall be a minimum thickness of 0.0375 inch (1 mm) stainless steel, 0.032 inch (0.8 mm) polished brass or 0.032 inch (0.8 mm) aluminum with stamped letters or material compatible with the labeled item.
   6. Valve lists shall be a typewritten letter size list framed under Lucite in anodized aluminum frame. Provide separate list for each service. The valve list shall show valves in numerical order according to the numbers on the labels and indicate valve size, location, manufacturer, and type (such as gate, globe, or butterfly, etc.). It shall also include Temperature and Pressure (T&P) valves. An as-built one-line diagram of the system with all valves labeled shall be included with the list in the frame. Valve lists will be located in each penthouse, equipment room, or as directed by the Project Subcontract Technical Representative (PSTR).
   7. Pipe content label for stainless steel piping, attach identification tags of appropriate size. For hazardous material (explosive gas, acids, contaminated fluid, etc.) use industry standard hazard identification or symbol. Acceptable labels shall consist of the following:
      1. Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
      2. Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering, minimum information indicating flow direction arrow and identification of fluid being conveyed.
      3. Color-coded snap-on semi-rigid plastic pipe markers equal to Seton’s Setmark pipe markers.
      4. Color numbers on this page are defined in FED-STD No. 595 and conform to color chips listed therein.
      5. Letter colors conform to the following table:

|  |  |
| --- | --- |
| **Predominate Background Color** | **Letter Color** |
| Red | White |
| Yellow | Black |
| Green | Black |
| Bright Blue | White |

* + 1. All piping installed by the Contractor shall be labeled in accordance with ANSI/ASME A13.1 and this Section.
    2. Color conforms to ANSI/ASME A13.1 and to the following table:

| **Pantex Plant Piping Color Code** | | |
| --- | --- | --- |
| **Material** | **Color** | **Name** |
| Domestic Cold Water | Green, #14090 | Domestic CW |
| Domestic Hot Water | Yellow, #13655 | Domestic HW |
| Domestic Re-circulating Hot Water | Yellow, #13655 | Recirc. Dom. HW |
| Heating-Hot Water | Yellow, #13655 | Heating-Hot W. |
| Chilled Water | Green, #14090 | Chill W. |
| Fire Protection Water | Red, #11105 | None Reqd. |
| All Fire Prot’n. Chemical | Red, #11105 | Name of Chemical |
| Laboratory Air | Black | Util. Air |
| Control Air | Black | Control Air |
| Vacuum | White | HE Contaminated\*\* |
| All Combustible Gases | Yellow, #13655 | Name of Gas\* |
| All Toxic Gases | Yellow, #13655 | Name of Gas\* |
| Nitrogen Gas (Less than 150 psig) | Green, #14260 | Nitrogen |
| All Inert, Nontoxic (Safe) Gases | Green, #14260 | Name of Gas\* |
| All Gases at Press. (More than 150 psig) | Yellow, #13655 | Name of Gas H.P.\* |
| Cryogenic Liquid | Yellow, #13655 | Liquid (Name of Gas)\* |
| Deionized Water | Green, #14090 | DI Water |
| **NOTES:**  \*Standard pressures above 150 psig will be considered high pressure. All liquid or gas systems with pressures exceeding 150 psig will be color coded focal yellow and marked (H.P.). This will supersede any other criteria stated or implied in this standard.  \*\*Mark “HE CONTAMINATED” in red lettering.  Name shall include supply or return as appropriate.  Color numbers on this page are defined in FED-STD No. 595 and conform to color chips listed therein. | | |

1. EXECUTION REQUIREMENTS
   1. Mark above ground piping in accordance with Exhibit 1 MNL-00014 and these specifications, except marking of Fire Safety Systems shall conform to the Fire Safety Systems specification.
   2. Degrease and clean surfaces to receive adhesive for identification materials.
   3. Labels shall be located in the normal line of vision and placed on or as near as practicable to the equipment.
   4. Position labels horizontally, labels shall be readable without manipulation by personnel.
   5. Labels shall not obscure or interfere with operation of any components and shall not obscure manufacturer’s labels. Labels shall not bind tightly to valves.
   6. Identification numbers shall be assigned based on a logical sequence of flow or pattern. Numbering systems shall be approved by the PSTR prior to fabrication or installation.
   7. Install plastic labels with corrosive-resistant mechanical fasteners or chains, or with adhesive. Apply with sufficient adhesive to assure permanent adhesion and seal with clear lacquer.
   8. Provide metal type in areas where plastic labels will be damaged by heat.
   9. Position labels so they are readily visible and, where feasible, oriented in a horizontal position. Make labels readable without manipulation. Label large equipment, e.g., boilers, chillers, and tanks in multiple locations.
   10. Provide labels for the following items (including on skid-mounted equipment):
       1. Valves and dampers.
       2. Instruments and gauges.
       3. All equipment (scheduled or specified).
       4. Piping and ventilation ductwork.
       5. Electrical panels, breakers, switches, and instrument panel doors.
       6. Fuse blocks, relays, terminal boards, and other components inside electrical panels.
       7. Electronic/system devices.
       8. Valve and damper labeling: Attach valve and damper labels so they will not be easily lost and misplaced. Where possible, thread stainless steel wire through the valve yoke and label plate. Care shall be taken not to damage the valve stem. Do not thread label plates and connecting wire through valve hand wheels or damper linkages.
       9. Labeling:
          1. Provide labels that do not interfere with an operator’s ability to read the instrument or gauge.
          2. For instruments located in environmental boxes, provide labels on the outside that will identify those instruments located inside, and label instruments individually inside the box.
          3. Include unit of measurement (e.g., psig for pressure instruments) on the instrument or gauge label.
       10. Equipment labeling: Attach labels on equipment to a structural member of the equipment not normally removed during routine maintenance and in a consistent location for similar equipment. Label large equipment in multiple locations in areas where Plant personnel are expected to perform work.
       11. Piping and ventilation ductwork: Identify with flow directional arrows and identification tag. Ventilation Ductwork shall be labeled at 30-foot intervals and on each side of walls. Labeling shall be visible from the floor. Labeling shall indicate the flow of air via arrows. Labels shall indicate if air is supply or return air.
       12. Occupational Safety and Health Administration (OSHA) warning signs: The Contractor shall install required warning, danger, and caution signs, labels, tags, etc., as required by 29 CFR 1910.145.
       13. Valve List: Locate framed lists and one-lines where indicated by PSTR.
       14. As-Built Drawings: Indicate valve labeling on as-built drawings.
       15. Pipe Content Label:
           1. Place on each pipe at 30-foot intervals and on each side of walls, ceilings, or floors through which the pipe passes within 2 feet of either side of the penetration.
           2. Place adjacent to valves and branch fittings.
           3. Locate markers on exposed piping so as to be clearly visible to a person standing on the floor. Locate markers on concealed piping, such as that in shafts and over suspended ceilings so as to be clearly visible within the concealed area.
           4. Install plastic tape markers with adhesive and secure on each end with pressure-sensitive tape wrapped completely around the pipe and overlapping at least 1 inch.
           5. Install plastic tape pipe markers in accordance with manufacturer’s instructions.
   11. Utility line marker signs and posts shall be:
       1. Located at each end and at any change in direction of a utility line.
       2. At Intervals of 300 feet or less on straight runs (except when in roadways, parking lots, plowed fields, etc.).
       3. Placed two feet to the side of the utility with the sign reading from the utility side. The marker must be on the same side of the line for the full length of the utility run.
   12. Trace Wire shall be:
       1. Installed beside and at centerline of utility.
       2. Electronically continuous from termination to termination with a maximum distance of 300 feet between terminations.
       3. Installed with test points where the utility enters a building and at termination locations.
       4. Termination test points Trace wires shall be terminated in a weatherproof electrical junction box.

1. REFERENCES
   1. Governing Documents

<https://pxweb.uad.pxplant.com/RMS/ReqFlowdown.jsp?docno=DIV-01080>

* 1. **Authorizing Documents**
     + 1. DIR-0001, “Roles and Responsibilities for the Management and Operation of Pantex Plant”
  2. Related Documents

1. 29 CFR 1910.145, “Specifications for Accident Prevention Signs and Tags”
2. ANSI/ASME A13.1, “Scheme for the Identification of Piping Systems”
3. FED-STD, Federal Standard #595a, “Colors”
4. MNL-00014, “Labeling Manual”
   1. Forms
      1. Generated Forms

None

* + 1. Related Forms

None

* 1. Records

None

* 1. Exhibits
     + 1. MNL-00014, “Labeling Manual”

**END OF SECTION 01080**

**EXHIBIT 1**

**MNL-00014, “Labeling Manual”**

***(USE MOST CURRENT ISSUE IN THE BRAIN)***