LOW ACTIVITY WASTE PRETREATMENT SYSTEM

Project No. 31269 (T5L01)

Document No. 15-2-104
CSI Section 01 60 00

Safety Related ☐   Non-Safety Related ☒

LABELING SPECIFICATION

Prepared for
Washington River Protection Solutions, LLC

Revision: B       Status: Preliminary
REVISION PAGE

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<td>Project Number:</td>
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### REVISION SIGNATURES

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<td>P. Bell</td>
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| Quality Level: | Full QA □ | Enhanced QA □ | Commercial QA ✗ |
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Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>ASME</td>
<td>American Society of Mechanical Engineers</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials</td>
</tr>
<tr>
<td>CAM</td>
<td>Continuous Air Monitor</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>DST</td>
<td>Double Shell Tank</td>
</tr>
<tr>
<td>EIN</td>
<td>Equipment Identification Number</td>
</tr>
<tr>
<td>GFCI</td>
<td>Ground-Fault Circuit Interrupter</td>
</tr>
<tr>
<td>IEEE</td>
<td>Institute of Electrical and Electronics Engineers</td>
</tr>
<tr>
<td>LAH</td>
<td>Level Alarm High</td>
</tr>
<tr>
<td>LAWPS</td>
<td>Low Activity Waste Pretreatment System</td>
</tr>
<tr>
<td>MCC</td>
<td>Motor Control Centers</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>QA</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>RFI</td>
<td>Request for Information</td>
</tr>
<tr>
<td>RPP</td>
<td>River Protection Project</td>
</tr>
<tr>
<td>SHMS</td>
<td>Standard Hydrogen Monitoring System</td>
</tr>
<tr>
<td>SI</td>
<td>Speed Indicator</td>
</tr>
<tr>
<td>SISHH</td>
<td>Speed Indicator Switch High</td>
</tr>
<tr>
<td>SISHHH</td>
<td>Speed Indicator Switch High High</td>
</tr>
<tr>
<td>SSC</td>
<td>System, Structure, and Component</td>
</tr>
<tr>
<td>TOC</td>
<td>Tank Operations Contract</td>
</tr>
<tr>
<td>UV</td>
<td>Ultraviolet</td>
</tr>
<tr>
<td>UVA</td>
<td>Ultraviolet A</td>
</tr>
<tr>
<td>WAC</td>
<td>Washington Administrative Code</td>
</tr>
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Units

NOT USED
Definitions

**AVS PROCUREMENT QUALITY CLAUSES (QA Clauses)** – Procurement quality clauses are to be used for the acquisition of items and services. The clauses establish contractual obligations for quality program systems, identification, traceability, documents submittals, testing, reporting, qualification, special process controls, inspections, etc.

**BUYER** – The company for whom the VENDOR is performing work or services

**MORE CONSERVATIVE** – “More conservative” shall be interpreted as “more protective of the health, safety and well-being of Site workers and facilities, the public, and environment, as applicable”.

**SHALL / MUST** – Denotes project requirements, compliance is required

**SHOULD** – Denotes recommendation or expectation, compliance is expected.

**SPECIFICATION** – Refers to any design, fabrication or supply specification.

**SYSTEM BOUNDARY** – A boundary defines where two systems interface. The boundary exists at an isolation valve, an electrical breaker, a piping connection point, or some other physical location that can be identified in the field and/or on a drawing.

**VENDOR** – The company responsible for the supply of equipment or services
1.0 PART 1 – GENERAL

1.1 Section Scope

1.1.1 This specification provides the generic requirements related to labeling for all equipment associated with the Low Activity Waste Pretreatment System (LAWPS).

1.1.2 Refer to the appropriate equipment-specific sub-sections for equipment-specific labeling and nameplate information to be provided at equipment supply level.

1.1.3 The following components shall be labeled:

1. Above ground piping
2. Valves and dampers
3. Major equipment (e.g., pumps, motors and compressors)
4. Switches
5. Circuit breakers (4.16KV, 480V, 120VAC/DC, etc.)
6. Fuse blocks or fuse locations
7. Instruments and gauges
8. Busses and motor control centers
9. Cabinets (including internal components such as relays, terminals, etc.)
10. Room doors
11. Emergency equipment (such as fire alarm stations, sound powered phone headsets, etc.)
12. Fire protection systems
13. Vessels/Tanks
14. Any named safety structures, systems, and components (SSC) item or operator control.
15. Conduit, Cable Tray, Cables and Wires

1.1.4 Vessels and tanks holding dangerous waste shall be labeled in accordance with Washington Administrative Code (WAC) 173-303-640(5)(d). The label shall be legible at a distance of fifty feet and shall identify the waste in a manner which adequately warns employees and emergency response personnel of the associated risk(s).

1.1.5 Equipment Identification Numbers, or EIN’s, and the associated Equipment Descriptions will be provided by the BUYER in the design documentation.

1.1.6 VENDOR is still responsible for verifying the EINs are in compliance with this specification.

1.1.7 If BUYER design documentation does not contain the necessary EIN’s, the VENDOR shall request the missing EINs through the Request For Information (RFI) process. Refer to related section 01 25 00 “Substitutions” for detailed substitution requirements and RFI forms/guidelines.
1.2 Related Sections

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>01 25 00</td>
<td>Substitutions and Design Changes</td>
</tr>
<tr>
<td>01 66 00</td>
<td>Delivery Storage and Handling</td>
</tr>
</tbody>
</table>

1.3 Codes and Standards

Work shall be performed in accordance with the referenced codes, standards, and documents for this specification.

The following documents, of the exact issue shown, form a part of the Buyer basis of design to the extent specified in the applicable sections of this document and establish the Codes of Record. In the event of a conflict between documents referenced herein and the requirements of this specification, the requirements of this specification shall take precedence only when this specification’s requirements are more stringent or conservative. If the Code date is not defined, apply the latest Code as of April 16th 2015.

This document list is applicable to this specification only; please refer to the equipment specifications for codes and standards that apply to the equipment being supplied.

1.3.1 Government Documents

Code of Federal Regulations (CFR)

- 29 CFR 1910, Occupational Safety and Health Administration (OSHA)

Washington Administrative Code

- WAC 173-303-640, 2015, Tank Systems

1.3.2 Non-Government Documents

American Society of Mechanical Engineers (ASME)

- ASME NQA-1-2008/2009A, Quality Assurance (QA) Requirements for Nuclear Facility Applications
- ASME Y14.38 (2007), Abbreviations and Acronyms for Use on Drawings and Related Documents

American Society for Testing and Materials (ASTM)

- ASTM D4329 (2013), Standard Practice for Fluorescent Ultraviolet (UV) Lamp Apparatus Exposure of Plastics

American National Standards Institute (ANSI)

- ANSI/ASME A13.1 (2007), Scheme for Identification of Piping Systems
Institute of Electrical and Electronics Engineers (IEEE)


National Fire Protection Association (NFPA)


1.3.3 Non-Code of Record Documents/Related Documents/Drawings

LAWPS Documents

- Drawing H-16-000004, “LAWPS P&ID Symbol Legend”
- List 31269-15-LST-0001 LAWPS Jumper List;
- List 31269-15-LST-0001 LAWPS Mechanical Equipment List;
- List 31269-16-LST-0001 LAWPS Piping Line List;
- List 31269-16-LST-0002 LAWPS Piping Valve List;
- List 31269-16-LST-0003 LAWPS Specialty Item List;
- List 31269-19-LST-0001 LAWPS Instrument List;

1.4 System Descriptions

Refer to the appropriate equipment-specific sub-sections for equipment-specific descriptions and requirements.

1.5 Submittals

Not Used.

1.6 Delivery, Storage & Handling

Refer to related section 01 66 00 “Delivery Storage and Handling” for requirements that address marking items for shipment.

1.7 Quality Assurance

Refer to equipment specific design documents for all requirements related to quality.

1.8 Site Conditions

Refer to the appropriate equipment-specific sub-sections for equipment-specific site condition requirements.
2.0 PART 2 – PRODUCTS

2.1 Manufacturers

NOT USED

2.2 Materials

2.2.1 Label Materials

2.2.1.1 Unless otherwise specified elsewhere, all labels shall use a Metalphoto® (anodized photosensitized aluminum) base. (Reference www.mpofcinci.com)

2.2.1.2 Where caustic fluids are expected to come into contact with labels, stainless steel laser-engraved labels shall be used.

2.2.1.3 Labels shall provide abrasive wear, tamper resistance, and ultraviolet (UV) radiation protection.

2.2.1.4 Weathering: The label shall remain adhered and readable after 7,000 hours of exposure in a weathering deck in accordance with ASTM D4329 using Ultraviolet A (UVA) 340 lamps.

2.2.1.5 Chemical resistance: The material shall have excellent resistance to exposure from mild acids, mild alkalines and salt, water, and solvents.

2.2.1.6 Wire and Cable Markers

2.2.1.6.1 All wire and cable markers shall be permanent machine printed; conductors shall be identified with self-adhering, oil and moisture resistant vinyl labels, cover with clear heat shrink tubing or white heat shrink tubing with black typed on letters/numbers. Hand lettered labels shall not be used.

2.2.1.6.2 All conduit and cable tray markers shall be decals with white background and black letters. Letters height shall be as indicated on the drawings.

2.2.1.7 The label shall be 0.158 inches thick at the edges.

2.2.1.8 EIN labels shall have the following size and corner rounds (dimensions in inches):

<table>
<thead>
<tr>
<th>Code</th>
<th>Outside Dimensions</th>
<th>Inside Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Height</td>
<td>Width</td>
</tr>
<tr>
<td>NH</td>
<td>1.750</td>
<td>3.125</td>
</tr>
<tr>
<td>NF</td>
<td>3.250</td>
<td>4.750</td>
</tr>
</tbody>
</table>

2.2.1.8.1 NF size labels have eight, 0.125-inch diameter perimeter holes; three across the top, three across the bottom, and one each centered on the left and right sides, for field installation. (See Figure 2-2)
2.2.1.8.2 NH size labels have five, 0.125-inch diameter perimeter holes; three across the top and one each on the left and right bottom corners, for field installation. (See Figure 2-4)

2.2.1.8.3 NL size labels will have a single 0.125-inch diameter mounting hole in the upper left hand corner. (See Figure 2-6 – mounting hole not shown)

2.2.2 Attaching Labels

2.2.2.1 Labels may be attached to the equipment using VENDOR supplied adhesive, or hung with stainless steel aircraft cable, as best suited to the application. Stainless cable shall be 0.063 inches in diameter in a 7 x 7 strand matrix and fastened with wire crimps of zinc/copper material sized for the cable.

2.2.2.2 Acrylic adhesives (including die-cut 30 mil foam with acrylic adhesive on both sides) shall be used.

2.2.2.3 The label adhesive shall have a minimum thickness of 0.0015 inches of a solvent-based, acrylic adhesive.

2.2.2.4 All adhesive or other label-related materials contacting austenitic stainless steel and nickel alloy surfaces shall not be compounded from, or treated with chemical compounds containing elements in such quantities that harmful concentrations are leachable, or that they could be released by breakdown under expected environmental conditions and could contribute to intergranular cracking or stress corrosion cracking, such as those containing fluorides, chlorides, sulfur, lead, zinc, copper, and mercury.

2.2.2.5 Label adhesive performance: The adhesive shall be a 0.001-inch thick acrylic adhesive having the following minimum values:

<table>
<thead>
<tr>
<th>Peel Strength at 70°F with a 72 hour dwell</th>
<th>80 ounces/inch of width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>Shear Strength at 70°F</td>
<td>15 hours</td>
</tr>
</tbody>
</table>

2.3 Equipment

NOT USED
2.4 Components

2.4.1 Labeling Requirements

2.4.1.1 Equipment Identification Number Labels

2.4.1.1.1 The required Equipment Identification Number (EIN) labels are as shown in Figure 2-4 through Figure 2-10. Application of labels that are inconsistent with this standard, unless addressed by approved deviations, are prohibited.

2.4.1.1.2 Guidance for selection of EIN label type for LAWPS equipment

A. **STANDARD EIN LABEL**: Unless otherwise specified elsewhere, the standard label that shall be specified for all labeled equipment throughout LAWPS, including instruments and valves, is the **NH label** (Figure 2-4). If space does not permit adhering the label, these are available as two-sided labels that may be hung.

B. **MAJOR COMPONENT EIN LABELS**: Major components such as typical to small sized pumps, motors, tanks, skids, and breakers shall use the **NF label** (Figure 2-2) unless other label types are more suitable.

C. **HIGH VISIBILITY EIN LABELS**: For large-sized equipment or applications that involve the need for identifying and working with equipment from a considerable distance, including all jumpers, label types with the largest font sizes shall be used such as **NK and NE labels** (Figure 2-7 through Figure 2-9). In such situations, labels shall be placed in an ideal location and orientation that will be clearly visible from the operator’s point of view. See Section 2.4.3 for additional label placement guidance.

D. **SHMS/CAM PANEL EIN LABELS**: Standard Hydrogen Monitoring System (SHMS) and Continuous Air Monitor (CAM) panel labels shall use the **NE label** (Figure 2-9).

E. **CONTROL PANEL EIN LABELS**: Control panels and Ground Fault Circuit Interrupter (GFCI) labels shall use the **NM label** (Figure 2-10).

2.4.1.2 Piping Labels

2.4.1.2.1 All above grade piping shall be labeled and have an arrow indicating nominal flow direction. Label shall be in the following format

“Cautionary Prefix” – “Line ID Number” – “Content Description” “Flow Direction Arrow”

Where:

- The Cautionary Prefix, (e.g. **CAUTION RADIOACTIVE, CAUTION TOXIC, CAUTION EXPLOSIVE**), if applicable is defined on LAWPS line list (Document # 31269-16-LST-0001).
- The Line ID Number is defined on LAWPS line list (Document # 31269-16-LST-0001) and applicable piping design and fabrication documentation.
- The Content Description is defined in the Service Code Table of Document H-16-000004.
Flow direction is defined on the applicable P&IDs. Flow may be bi-directional in which case the flow arrow shall be double headed (↔).

Examples

For Line Number – CFF-SL-152, the service code is SL, so the label would be:

CAUTION RADIOACTIVE CFF-SL-152 – SLURRY ➔

For Line Number UT-POT-495, the service code is POT, so the label would be:

UT-POT-152-POTABLE WATER ➔

2.4.1.2.2 Stencils can be used to label piping including flow arrows. The paint used needs to meet the environmental conditions. The paint being used shall be compatible with the surface to which it is being applied.

2.4.1.2.3 Chloride free self-adhesive labels and flow arrows that meet the environmental conditions can be used. Label adhesives shall be compatible with the materials to which it is being applied.

2.4.1.2.4 Piping labels shall be color coded in accordance with ANSI A13.1. Additionally pipes containing radioactive, toxic, or explosive chemicals or gases shall be uniquely marked. Use the following ANSI/ASME A13.1 colors for pipeline content:
A. See Figure 2-1 below for the ANSI/ASME A13.1 “Pipe Marking Guide”.

![Figure 2-1: ANSI/ASME A13.1 Pipe Marking Guide](image)

**PLACE MARKERS:**
- To indicate direction of flow by labeling with arrows at one or both ends of the label.
- To be visible from the point of normal approach.
- Near valves, flanges and changes in pipe direction.
- Both sides of piping, walls or floor penetrations.
- At any line entry or re-entry point.
- On straight pipe runs.
- Every 50 feet.

**PIPE MARKER SIZE CHART:** Letter and Label Dimensions in accordance with pipe diameter

### Fluid Service | Background Color | Letter Color | Minimum Length of Label Field Color (mm) | Minimum Height of Letters (mm)
--- | --- | --- | --- | ---
Fire quenching fluids | Safety red | White | 8” | 5”
Toxic and corrosive fluids | Safety orange | Black | 10” | 6”
Flammable and oxidizing fluids | Safety yellow | Black | 10” | 6”
Combustible fluids | Safety brown | White | 8” | 5”
Potable, cooling, boiler feed, and other water | Safety green | White | 8” | 5”
Compressed air | Safety blue | White | 8” | 5”
To be defined by the user | Safety purple | White | 8” | 5”
To be defined by the user | Safety white | Black | 10” | 6”
To be defined by the user | Safety gray | White | 8” | 5”
To be defined by the user | Safety black | White | 8” | 5”

B. USER-DEFINED: Radioactive Process Fluid or Slurry – **White lettering on Purple background** (e.g. “DST RETURN LINE”)

C. USER-DEFINED: Non-Radioactive Process Fluid or Slurry – **White lettering on Black background** (e.g. “FRESH RESIN”)

2.4.1.3 Line numbers shall be as defined on LAWPS line list (Document # 31269-16-LST-0001).

2.4.1.4 Unless otherwise specified elsewhere, Metalphoto labels shall use a black background (foreground color will be bare aluminum).

2.4.1.5 Unless otherwise specified elsewhere, stainless steel labels shall use black text on a stainless steel (plain/natural) background.

2.4.1.6 **Font - USE ALL CAPITAL SIMPLE BLOCK TYPE FONT.** All labels in a given area shall be of the same font.

2.4.1.7 Spacing between words shall be at least one full character width.

2.4.1.8 Spacing between lines on the label shall typically be at least one times the character height of the line being printed.
2.4.1.9 Power and multi-conductor control cables shall have cable numbers marked at the origination and termination and at junction points in between. (i.e. pull boxes and manholes).

2.4.1.10 Cables shall be identified in accordance with the cable schedule. Internal jumper shall be identified with the wire number of the associated external cable.

2.4.1.11 The alphanumeric conductor identifications used shall be the wire numbers shown on the wiring diagrams. Wire numbers shall also be marked on terminal block identification strips in black indelible ink.

2.4.1.12 Permanently label conduits and cable tray with numbers shown on the drawings, at both ends. For 10 foot maximum length place on label at the center.

![Image of a label]

The NF label is available in one or two-sided format and can be hung or adhered with approved adhesives. It is designed for use in harsh environments. The large size is suitable for major components such as tanks, vessels, ventilation skids, breakers, pumps, and motors.

**Figure 2-2: NF-EIN Label Coding**
Figure 2-3: LAWPS Examples of NF-EIN Label Content
The NH label is available in one or two-sided format and can be hung or adhered with approved adhesives. It is designed for use in harsh environments. This is the primary label for use in the tank farms and LAWPS site. This label should be specified in all cases except for individual control panel instruments and controls, hand switches, etc., or where size prohibits.

Figure 2-4: NH-EIN Label Coding (Standard LAWPS EIN Label).
202LP-CFA-CFF-VLR-118
CFF VENT VALVE

FED FRM: K1-1-1
S003070WT

202LP-SRA-RH-CKV-419
SR VERIFICATION TANK
OVERFLOW CHECK VALVE

FED FRM: K1-1-1
S003070WT

Figure 2-5: LAWPS Examples of NH-EIN Label Content.
The NL label is designed for multiple purposes. It is available in one or two-sided format and can be hung or adhered with approved adhesives.

- Description fields limited to 25 characters each
- No provision for old EIN
- No provision for FED FROM data.

Figure 2-6: NL-EIN Label Coding.
The NK label is the largest label currently in use. It is available in one-sided format only and can be adhered with approved adhesives. This label is normally used for large sized equipment, or equipment that must be viewed from a considerable distance, space permitting.

**Figure 2-7: NK-EIN Label Coding (Highest Visibility Format).**
Figure 2-8: LAWPS Examples of NK-EIN Label Content.
The NE is a smaller version of the NK label, also available in one-sided format only and can be adhered with approved adhesives. This label is normally used for panel identification, such as SHMS and CAM panels.

**Figure 2-9: NE-EIN Label Coding.**
The NM label is designed primarily for control panel and GFCI use. It is available in one-sided format only and can be adhered with approved adhesives.

No provision for FED FROM data.

**Figure 2-10: NM-EIN Label Coding.**

<table>
<thead>
<tr>
<th>LINE</th>
<th>BAR CODE REF</th>
<th>DEN</th>
<th>MAX CHAR</th>
<th>ROW HGT</th>
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2.4.2 Label Information

2.4.2.1 Equipment Identification Number (EIN) labels shall contain:

A. Equipment Identification Numbers or EIN (provided by BUYER)
B. Equipment Description (provided by BUYER)
C. Bar Code
D. Fed From [insert power supply breaker information] (if applicable)
E. Additional labeling requirements for Electrical Equipment and Motor Control Centers

2.4.2.2 General Equipment Identification Number Convention

2.4.2.2.1 Equipment identification numbers shall be assigned in accordance with H-16-000004. EIN numbers shall be provided by the BUYER in the following applicable lists:

- LAWPS Instrument List; 31269-19-LST-0001
- LAWPS Jumper List; 31269-15-LST-0001
- LAWPS Mechanical Equipment List; 31269-15-LST-0001
- LAWPS Piping Line List; 31269-16-LST-0001
- LAWPS Piping Valve List; 31269-16-LST-0002
- LAWPS Specialty Item List; 31269-16-LST-0003

2.4.2.2.2 The following rules apply to all EIN SEQUENCE numbers assigned by the BUYER. The following information is being provided for reference to VENDOR to verify BUYER provided information at the VENDOR’s discretion:

A. With the exception of “redundant trains,” and "instrument loop components,” the sequence number provides uniqueness between two otherwise identical component EINs.
B. Risers are considered a tank-related structure and may be labeled beginning with number 001. Sequence numbers repeat from system to system, tank to tank.
C. Redundant equipment trains shall have sequence numbering that clearly indicates the different trains (e.g., Train A: -110 and Train B: -210.).
   NOTE: Associated equipment (instrument loops and associated control valves) may receive the same sequence number. This sequence number cannot be used again for any other device in the same system.
D. Like components with the same sequence number (see note above) use alpha suffixes (for example, in instrument loops: TI-110A, TI-110B, TI-110C, etc.).
   Alpha suffixes are used to differentiate between like components within a single loop, but are NOT used to group like components from different loops.
E. EXAMPLE: A level detector that has an alarm at the detector, in the control room and at the evaporator could have level detection alarm EINs with the following Component and Sequence descriptors:
   - LAH-101A at the detector (LAH – Level Alarm High)
F. The electrical distribution system boundary is located at the final electrical component (e.g., motor control center, disconnect switch, distribution panel, etc.) feeding another system’s auxiliary equipment (e.g., exhaust fan motor, pump motor, motor-operated valves, etc.). Refer to the system design descriptions for a description of the system interface boundary.

G. Local disconnects shall have the same system designation and sequence number as the equipment or component they power.

H. Auxiliary equipment (e.g., current transformers, meters, indicators, etc.) associated with a breaker either within, or associated with the cubicle, do not have an EIN because they are a subcomponent of the equipment.

I. Motors, which are by application considered separate from the driven equipment, are individually numbered using the same sequence number as the driven equipment. NOTE: Small motor pump combinations (e.g., vacuum pumps) are identified by the pump EIN only.

2.4.2.3 GFCIs are assigned unique EIN codes as follows:

a. GFCl-12345 is entered in the first line
b. FED FROM is entered in the second line
c. Power Source is entered in the third line
d. Remaining EIN fields are completed like all other equipment.

2.4.2.4 Instruments that perform multiple functions (e.g., Speed Indicator (SI), Speed Indicator Switch High (SISH), and Speed Indicator Switch High High (SISHH)) all in one device shall have all of the functions identified in the component field with a backslash separating them (e.g., Speed Indicator - POR346-WT-SI/SISH/SISHH-102).

2.4.2.3 Equipment Description

2.4.2.3.1 The Equipment Description will be provided by the BUYER. The following information is being provided for reference to VENDOR to verify BUYER provided information at the VENDOR’s discretion.

2.4.2.3.2 The 64-character description on River Protection Project (RPP) labels is comprised of two 32 character, alphanumeric fields (field length restricted to 25 characters on NL format labels). Since the field is broken into two 32-character fields, no word wrap is available. When completing this information, ensure the description makes sense, since it will appear as two stacked and centered lines.

2.4.2.3.3 If space permits, the entire description is spelled out. If space is insufficient for complete spelling, abbreviations are selected in the following order: H-16-000004; ASME Y14.38; and IEEE 100.

2.4.2.4 Bar Code

2.4.2.4.1 The bar code and associated number will be provided by the BUYER.

- LAH-101B in the control room
- LAH-101C in the evaporator building.
2.4.2.5 Power Supply Breaker Data (Fed From)

2.4.2.5.1 The “Fed From” data will be provided by the BUYER. The following information is being provided for reference to VENDOR to verify BUYER provided information at the VENDOR's discretion.

2.4.2.5.2 The purpose of the “fed from” field is to provide power source information for electrically powered equipment. The “Fed from” field shall refer to the nearest upstream disconnect device.

2.4.2.5.3 When possible, descriptive locating information is listed rather than power source EIN (e.g., “MCC-001, Cubicle A-2” vs. EIN assigned to that cubicle). (MCC-Motor Control Centers)

2.4.2.6 Electrical Equipment

2.4.2.6.1 The following information shall be provided on a label that meets the requirements of Section 2.2 (does not need to be included on an EIN label).

2.4.2.6.2 The Following Specific Label Information Is Required By Code: Rated Voltage, Number Of Phases, Supply Power Source, Type (Normal, Standby, Or Emergency), And Location.

2.4.2.6.3 Control Threshold Switches Are Labeled For Their Function.

2.4.2.6.4 Switches Are Labeled With Position (On-Off, Hand-Off-Auto, Etc.) Indication And Direction Of Operation, As Necessary.

2.4.2.7 Motor Control Centers

2.4.2.7.1 The following information shall be provided on a label that meets the requirements of Section 2.2 (does not need to be included on an EIN label).

2.4.2.7.2 The following specific label information is required by code: rated voltage, number of phases, supply power source, type (normal, standby, or emergency), and location. MCC breakers not providing a power source shall be labeled “SPARE.”

2.4.2.7.3 Distribution panel breaker loads are identified inside the panel. Where space prohibits listing breaker loads, place breaker information on a panel schedule inside the panel door. Lighting loads list building area and elevation served.

2.4.2.7.4 Control panels (graphic and non-graphic) are labeled with single or multiple entry points at each section of the panel with individual identifiers on the front and back of each panel.

2.4.3 Label Placement

2.4.3.1 Labels shall be placed:
   - To be readily visible and readable
   - Horizontal (except hanging labels)
   - To eliminate identity confusion
- So they will not be easily damaged or cause hazard to the operator
- To avoid obscuring indications or interfering with equipment operation.

2.4.3.2 Labels are placed on flat surfaces to the extent possible:
- On pipes, place the label along the horizontal run vs. around the pipe.
- On motors, tanks, and other curved surfaces, locate the flattest portion, which also meets criteria for ready visibility and readability.

2.4.3.3 Large equipment (generators, vessels, etc.) shall be labeled in multiple locations.

2.4.3.4 Valve and damper labels shall not interfere with linkage and valve operators. Where possible, attach the label to the valve yoke using care to avoid damaging the valve stem. Do not thread label plates and connecting wire through valve hand wheel, operating chains, damper linkages, or removable T-handles.

2.4.3.5 Both ends of the extension (reach rod) of remote, mechanically operated valves shall be labeled.

2.4.3.6 Chain operated valves are labeled at the valve and on a metal ring through which the chain easily passes, so the label is always at the bottom of the chain loop.

2.4.3.7 If the valve cannot be clearly seen, OPEN or CLOSE directional arrows shall be included at the chain.

2.4.3.8 Wire shall not be used to hang tags inside electrical equipment.

2.4.4 Marking for Shipment

2.4.4.1 Refer to related section 01 66 00 “Delivery Storage and Handling” for delivery storage and handling related requirements (including marking items for shipment).

2.5 Fabrication

NOT USED

2.6 Shop Quality Control

Refer to equipment specific design documents for all requirements related to quality.
3.0 PART 3 – EXECUTION

NOT USED

3.1 Preparation (Not Used)

3.2 Erection, Installation & Application (Not Used)

3.3 Field Quality Control (Not Used)

3.4 Adjusting And Cleaning (Not Used)

3.5 Demonstration (Not Used)

3.6 Protection (Not Used)
4.0 LIST OF APPENDICES

NOT USED