



SECTION 23 05 53

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

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PART 3 GENERAL

3.1 SECTION INCLUDES

- A. Pipe and equipment markers of the following types:
 - 1. Wrap around and strap around pipe markers.
 - 2. Self-adhesive pipe markers.
 - 3. Duct markers.
 - 4. Arrow banding tape.
 - 5. Specialty pipe markers.
- B. Valve Tags of the following types:
 - 1. Brass valve tags.
 - 2. Plastic valve tags.
 - 3. Stainless steel valve tags.
 - 4. Anodized aluminum valve tags.
 - 5. Valve tag accessories.
- C. Equipment Nameplates and Labels of the following types:
 - 1. Plastic nameplates.
 - 2. Phenolic plastic nameplates.
 - 3. Stainless steel nameplates.
 - 4. Anodized aluminum nameplates.
 - 5. Aluminum nameplates.
 - 6. Non-detectable underground marking tape.
 - 7. Detectable underground marking tape.

3.2 RELATED SECTIONS

- A. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

3.3 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM D709 - Standard Specification for Laminated Thermosetting Materials.
- B. American Society of Mechanical Engineers (ASME):
 - 1. ASME/ANSI A13.1 - Scheme for the Identification of Piping Systems.
- C. IIAR Bulletin 114 - Ammonia Refrigeration and Piping System Components Identification; International Institute of Ammonia Refrigeration.
- D. National Fire Protection Association (NFPA):
 - 1. NFPA 99C - Gas and Vacuum Systems.
- E. US Military Standard (MIL):
 - 1. MIL LP387A - Plastic Sheet, Laminated, Thermosetting (for Designation Plates).

3.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data:
 1. Manufacturer's data sheets on each product to be used.
 2. Preparation instructions and recommendations.
 3. Storage and handling requirements and recommendations.
 4. Typical installation methods.
- C. Shop Drawings: Submit list of wording, symbols, letter size, and color coding for equipment, piping and valve identification including the following:
 1. Equipment Label Schedule: Provide a schedule of all equipment to be labeled with the proposed content for each label.
 2. Pipe Label Schedule: Provide a schedule of each piping systems indicating a proposed nomenclature and location of all pipe markers.
 3. Valve Tag Schedule: Provide a proposed valve numbering scheme and schedule for each piping system. Tabulate valve number, piping system, system abbreviation as shown on tag, room or space location of valve, normal-operating position (open, closed, or modulating), and variations for identification. Mark valves intended for emergency shut-off and similar special uses.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.

3.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
- C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
- D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
 1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
 2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
 3. Retain mock-up during construction as a standard for comparison with completed work.
 4. Do not alter or remove mock-up until work is completed or removal is authorized.

3.6 PRE-INSTALLATION CONFERENCE

- A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

3.7 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
- B. Protect from damage due to weather, excessive temperature, and construction operations.

3.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

3.9 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

3.10 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's standard limited warranty.

PART 4 PRODUCTS

4.1 MANUFACTURERS

- A. Acceptable Manufacturer: Kolbi Pipe Marker Co., which is located at: 416 W Campus Drive, Arlington Heights, IL 60004; Toll Free Tel: 800-499-8450 ; Fax: 800-xxx-xxxx; Email: [request.info \(sales@kolbipipemarkers.com\)](mailto:request.info@kolbipipemarkers.com); Web: <http://www.kolbipipemarkers.com>
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

4.2 PERFORMANCE REQUIREMENTS

- A. Standards Compliance:
 - 1. Color Coding and Nomenclature for Building Piping: Conform to ASME/ANSI A13.1.
 - 2. Color Coding and Nomenclature for Medical Gas Piping: Conform to NFPA 99C.
 - 3. Color Coding and Nomenclature for Pulp and Paper Processing Materials Piping: Conform to OSHA.
 - 4. Color Coding and Nomenclature for Ammonia Refrigerant Piping: Conform to IIAR Bulletin 14.

4.3 PIPE AND EQUIPMENT MARKERS

- A. Wrap Around or Strap Around Pipe Markers:
 - 1. Basis of Design: Wrap Around Pipe Markers as manufactured by Kolbi Pipe Marker Co.
 - 2. Material: Vinyl.
 - 3. Temperature Rating: -40 degrees F to 160 degrees F (-40 degrees to 71 degrees C).
 - 4. For indoor or outdoor use.
 - 5. Marker Visibility: 360 degree.
 - 6. Chemical Resistance: Acids, alkalis, alcohols, fuels, solvents, oils, and ammonia.
 - 7. Size, WAAA: Wrap Around.
 - a. Outside Pipe Diameter: Less than 5/8 inch (15.9mm).
 - b. Length: 2-1/4 inches (57 mm).

- c. Thickness: 0.015 inch (.38 MM).
- d. Maximum Temperature: 160 degrees F (71 degrees C).
- 8. Size, WAA: Wrap Around.
 - a. Outside Pipe Diameter: 5/8 inch to 3/4 inch (15.9 to 19.1 mm).
 - b. Length: 4 inches (102 mm).
 - c. Thickness: 0.015 inch (.38 MM).
 - d. Maximum Temperature: 160 degrees F (71 degrees C).
- 9. Size, WA: Wrap Around.
 - a. Outside Pipe Diameter: 3/4 to 1 inch (19.1 to 25.4 mm).
 - b. Length: 8 inches (203 mm).
 - c. Thickness: 0.015 inch (.38 MM).
 - d. Maximum Temperature: 160 degrees F (71 degrees C).
- 10. Size, WB: Wrap Around.
 - a. Outside Pipe Diameter: 1-1/8 to 2-3/8 inch (28.6 to 60.3 mm).
 - b. Length: 12 inches (305 mm).
 - c. Thickness: 0.015 inch (.38 MM).
 - d. Maximum Temperature: 160 degrees F (71 degrees C).
- 11. Size, WC: Wrap Around.
 - a. Outside Pipe Diameter: 2-1/2 to 3-1/4 inch (63.5 to 82.6 mm).
 - b. Length: 12 inches (305 mm).
 - c. Thickness: 0.025 inch (0.64 mm).
 - d. Maximum Temperature: 160 degrees F (71 degrees C).
- 12. Size, WD: Wrap Around.
 - a. Outside Pipe Diameter: 3-3/8 to 4-1/2 inch (85.6 to 114.3 mm).
 - b. Length: 12 inches (305 mm).
 - c. Thickness: 0.025 inch (0.64 mm).
 - d. Maximum Temperature: 160 degrees F (71 degrees C).
- 13. Size, WE: Wrap Around.
 - a. Outside Pipe Diameter: 4-5/8 to 5-7/8 inch (117.5 to 149.2 mm).
 - b. Length: 12 inches (305 mm).
 - c. Thickness: 0.025 inch (0.64 mm).
 - d. Maximum Temperature: 160 degrees F (71 degrees C).
- 14. Size, WF: Wrap Around.
 - a. Outside Pipe Diameter: 6 to 7-7/8 inch (152.4 to 200 mm).
 - b. Length: 12 inches (305 mm).
 - c. Thickness: 0.025 inch (0.64 mm).
 - d. Maximum Temperature: 160 degrees F (71 degrees C).
- 15. Size, WG: Wrap Around.
 - a. Outside Pipe Diameter: 8 to 10 inch (203.2 to 254 mm).
 - b. Length: 24 inches (610 mm).
 - c. Thickness: 0.025 inch (0.64 mm).
 - d. Maximum Temperature: 160 degrees F (71 degrees C).
 - e.
- 16. Size, WH: Wrap Around.
 - a. Outside Pipe Diameter: Over 10 inch (812.8 mm).
 - b. Length: 32 inches (813 mm).
 - c. Thickness: 0.025 inch (0.64 mm).
 - d. Maximum Temperature: 160 degrees F (71 degrees C).
- 17. Color: White on Green.
- 18. Color: White on Blue.
- 19. Color: White on Red.
- 20. Color: White on Purple.
- 21. Color: White on Black.
- 22. Color: White on Brown.
- 23. Color: White on Gray.
- 24. Color: Black on Orange.
- 25. Color: Black on Yellow.

26. Color: Black on White.
27. Color: _____.
28. Wording: As indicated on Drawings.
29. Wording: To be selected by Architect.
30. Wording: _____.

B. Self-Adhesive Pipe Markers:

1. Basis of Design: Kolbi Adhesive Pipe Markers as manufactured by Kolbi Pipe Marker Co.
2. Material: Vinyl, 0.004 inch (0.102 mm) thick.
3. Temperature Rating: -40 to 176 degrees F (-40 to 82 degrees C).
4. For indoor or outdoor use.
5. Marker Visibility: Front facing.
6. Chemical Resistance: Acids, alkalis, oils, and ammonia.
7. Application Method: Self-adhesive.
8. Size, A:
 - a. Outside Pipe Diameter: 3/4 to 1-1/4 inch (19 to 32 mm).
 - b. Length: 9 inches (228 mm).
9. Size, B:
 - a. Outside Pipe Diameter: 1-1/2 to 2-3/8 inch (38 to 60 mm).
 - b. Length: 9 inches (228 mm).
10. Size, C:
 - a. Outside Pipe Diameter: 2-1/2 to 6 inch (64 to 152 mm).
 - b. Length: 14 inches (355 mm).
11. Size, D:
 - a. Outside Pipe Diameter: 8 to 10 inch (204 to 254 mm).
 - b. Length: 24 inches (610 mm).
12. Size, E:
 - a. Outside Pipe Diameter: Over 10 inch (254 mm).
 - b. Length: 32 inches (813 mm).
13. Color: White on Green.
14. Color: White on Blue.
15. Color: White on Red.
16. Color: White on Purple.
17. Color: White on Black.
18. Color: White on Brown.
19. Color: White on Gray.
20. Color: Black on Orange.
21. Color: Black on Yellow.
22. Color: Black on White.
23. Color: _____.
24. Wording: As indicated on Drawings.
25. Wording: To be selected by Architect.
26. Wording: _____.

C. Duct Markers:

1. Basis of Design: Kolbi Duct Markers as manufactured by Kolbi Pipe Marker Co.
2. Material: Vinyl, 0.004 inch (0.102 mm) thick.
3. Temperature Rating: -40 to 176 degrees F (-40 to 82 degrees C).
4. Marker Visibility: Front facing.
5. Application Method: Self-adhesive.
6. Chemical Resistance: Acids, alkalis, oils, and ammonia.
7. Size, DC: 2 x 14 inches (51 x 356 mm).
8. Size, DD: 3 x 24 inches (76 x 610 mm).
9. Size, DM: 4 x 10 inches – includes arrows (102 x 254mm)
10. Arrow Size, CA: 2 x 4-1/2 inches (51 x 114 mm)
11. Arrow size, DA: 3 x 6 inches (76 x 152mm)
12. Color: White on Green.
13. Color: White on Blue.

14. Color: Black on Yellow.
15. Wording: As indicated on Drawings.
16. Wording: To be selected by Architect.
17. Wording: _____.

D. Arrow Banding Tape:

1. Basis of Design: Arrow Banding Tape as manufactured by Kolbi Pipe Marker Co.
2. Material: vinyl, 0.004 inch (0.102 mm).
3. Temperature Rating: -40 to 176 degrees F (-40 to 82 degrees C).
4. Marker Visibility: 360 degree.
5. Application Method: Self-adhesive.
6. Chemical Resistance: Acids, alkalis, alcohols, fuels, solvents, oils, and ammonia.
7. Size A: 1 inch (25 mm) x 30 yards (27.4 m). Arrow size: $\frac{1}{2}$ inch (12.7 mm).
8. Size B: 1 inch (25 mm) x 30 yards (27.4 m). Arrow size: $\frac{3}{4}$ inch (19.1 mm).
9. Size C: 2 inch (51 mm) x 30 yards (27.4 m). Arrow size: 1-1/4 inch (31.8 mm).
10. Size D: 3 inch (76 mm) x 30 yards (27.4 m). Arrow size: 2-1/2 inch (63.5 mm).
11. Size E: 4 inch (102 mm) x 30 yards (27.4 m). Arrow size: 3-1/2 inch(88.9 mm).
12. Color: White on Green.
13. Color: White on Blue.
14. Color: White on Red.
15. Color: White on Purple.
16. Color: White on Black.
17. Color: White on Brown.
18. Color: White on Gray.
19. Color: Black on Orange.
20. Color: Black on Yellow.
21. Color: Black on White.
22. Color: _____.
23. Wording: As indicated on Drawings.
24. Wording: To be selected by Architect.
25. Wording: _____.

E. Specialty Pipe Markers:

1. Basis of Design: Medical Gas Markers as manufactured by Kolbi Pipe Marker Co.
2. Basis of Design: Conduit and Cable Adhesive Markers as manufactured by Kolbi Pipe Marker Co.
3. Basis of Design: Conduit and Cable Wrap Around Markers as manufactured by Kolbi Pipe Marker Co.
4. Basis of Design: Adhesive Ammonia Markers as manufactured by Kolbi Pipe Marker Co.
5. Basis of Design: Wrap Around Ammonia Markers as manufactured by Kolbi Pipe Marker Co.
6. Basis of Design: Ammonia Markers as manufactured by Kolbi Pipe Marker Co.
7. Basis of Design: Ammonia Component Markers as manufactured by Kolbi Pipe Marker Co.
8. Basis of Design: Ammonia Carrier Markers as manufactured by Kolbi Pipe Marker Co.
9. Basis of Design: Fire Protection Markers as manufactured by Kolbi Pipe Marker Co.
10. Color: Ammonia Markers available in Orange or Yellow.
11. Color: Fire Protection Markers available in White on Red.
12. Color: White on Blue.
13. Color: White on Blue.
14. Color: White on Red.
15. Color: White on Purple.

16. Color: White on Black.
17. Color: White on Brown.
18. Color: White on Gray.
19. Color: Black on Orange.
20. Color: Black on Yellow.
21. Color: Black on White.
22. Color: _____.
23. Wording: As indicated on Drawings.
24. Wording: To be selected by Architect.
25. Wording: _____.

4.4 VALVE TAGS

A. Brass Valve Tags:

1. Basis of Design: Brass Valve Tags as manufactured by Kolbi Pipe Marker Co.
2. Material: Brass.
3. Type: Stamped.
 - a. Thickness: 0.036 inch (0.913 mm).
 - b. Shape and Size: 1-1/2 inch (38 mm) diameter circle.
 - c. Shape and Size: 2 inch (51 mm) diameter circle.
 - d. Shape and Size: 1-1/2 inch (38 mm) square.
 - e. Shape and Size: 2 inch (51 mm) square.
 - f. Shape and Size: 1-1/2 inch (38 mm) hexagon.
 - g. Shape and Size: 2 inch (51 mm) octagon.
 - h. Color/Fill: Black filled.
 - i. Color/Fill: Red filled.
 - j. Color/Fill: Natural, no fill.
4. Type: Digitally Printed.
 - a. Thickness: 0.030 inch (0.913 mm).
 - b. Shape and Size: 1-1/2 inch (38 mm) diameter circle.
 - c. Shape and Size: 2 inch (51 mm) diameter circle.
 - d. Shape and Size: 1-1/2 inch (38 mm) square.
 - e. Shape and Size: 2 inch (51 mm) square.
 - f. Color/Fill: Black.
 - g. Color/Fill: Red.
 - h. Color/Fill: Natural.
5. Type: Blank.
 - a. Thickness: 0.030 inch (0.913 mm).
 - b. Shape and Size: 1-1/2 inch (38 mm) diameter circle.
 - c. Shape and Size: 2 inch (51 mm) diameter circle.
 - d. Shape and Size: 3 inch (76 mm) diameter circle.
 - e. Shape and Size: 1-1/2 inch (38 mm) square.
 - f. Shape and Size: 2 inch (51 mm) square.
 - g. Shape and Size: 3 inch (76 mm) square.
6. Hole: 3/16 inch (4.7 mm).
7. Temperature Rating: Up to 1200 degrees F (648 degrees C).
8. For indoor or outdoor use.
9. Accessories:
 - a. No. 6 beaded chain (brass or stainless steel).
 - b. No. 16 jack chain (brass or stainless steel).
 - c. Nylon ties.
 - d. S-hook fastener (brass or stainless steel).

B. Plastic Valve Tags:

1. Basis of Design: Engraved Valve Tags as manufactured by Kolbi Pipe Marker Co.
2. Material: Acrylic, 1/16 inch single sided(1.6 mm), 1/8 inch double sided(3mm)
3. Type: Engraved, single sided.
4. Type: Engraved, double sided.
5. Shape and Size: 1-1/2 inch (38 mm) diameter circle.

6. Shape and Size: 2 inch (51 mm) diameter circle.
7. Shape and Size: 1-1/2 inch (38 mm) square.
8. Shape and Size: 2 inch (51 mm) square.
9. Color: Black with white core.
10. Color: Red with white core.
11. Color: White with black core.
12. Color: Yellow with black core.
13. Color: Green with white core.
14. Color: Blue with white core.
15. Color: Orange with black core
16. Color: White with red core
17. Color: Grey with white core
18. Hole: 5/32 inch (4.0 mm).
19. Temperature Rating: -40 to 175 degrees F (-40 to 80 degrees C).
20. For indoor use.
21. Accessories:
 - a. No. 6 beaded chain (brass or stainless steel).
 - b. No. 16 jack chain (brass or stainless steel).
 - c. Nylon ties.
 - d. S-hook fastener (brass or stainless steel).

C. Stainless Steel Valve Tags:

1. Basis of Design: Stainless Steel Valve Tags as manufactured by Kolbi Pipe Marker Co.
2. Material: Grade 304 Stainless Steel.
3. Type: Laser etched.
 - a. Thickness: 0.030 inch (0.762 mm).
 - b. Shape and Size: 1-1/2 inch (38 mm) diameter circle.
 - c. Shape and Size: 2 inch (51 mm) diameter circle.
 - d. Color/Fill: Black.
4. Type: Engraved.
 - a. Thickness: 0.030 inch (0.762 mm).
 - b. Shape and Size: 1-1/2 inch (38 mm) diameter circle.
 - c. Shape and Size: 2 inch (51 mm) diameter circle.
 - d. Shape and Size: 1-1/2 inch (38 mm) square.
 - e. Shape and Size: 2 inch (51 mm) square.
 - f. Color/Fill: Black filled.
 - g. Color/Fill: Natural, no color.
5. Type: Blank.
 - a. Thickness: 0.030 inch (0.762 mm).
 - b. Shape and Size: 1-1/2 inch (38 mm) diameter circle.
 - c. Shape and Size: 2 inch (51 mm) diameter circle.
 - d. Shape and Size: 3 inch (76 mm) diameter circle.
 - e. Shape and Size: 1-1/2 inch (38 mm) square.
 - f. Shape and Size: 2 inch (51 mm) square.
 - g. Shape and Size: 3 inch (76 mm) square.
 - h. Shape and Size: 4 inch (102 mm) square.
6. Hole: 3/16 inch (4.7 mm).
7. Temperature Rating: Up to 2700 degrees F (1482 degrees C).
8. For indoor or outdoor use.
9. Accessories:
 - a. No. 6 beaded chain.
 - b. No. 16 jack chain.
 - c. Nylon tie.
 - d. S-hook fastener.
 - e. Portable stamping set.

D. Anodized Aluminum Valve Tags:

1. Basis of Design: Laser Etched Anodized Aluminum Valve Tags as manufactured by Kolbi Pipe Marker Co.

2. Material: Anodized Aluminum, 0.032 inch thick (0.81 mm).
3. Type: Laser etched, single sided.
4. Type: Laser etched, double sided.
5. Shape and Size: 1-1/2 inch (38 mm) diameter circle.
6. Shape and Size: 2 inch (51 mm) diameter circle.
7. Shape and Size: 1-1/2 inch (38 mm) square.
8. Shape and Size: 2 inch (51 mm) square.
9. Color: Black.
10. Color: Blue.
11. Color: Green.
12. Color: White.
13. Color: Gold.
14. Color: Natural.
15. Color: Red.
16. Hole: 3/16 inch (4.7 mm).
17. Temperature Rating: -40 to 1400 degrees F (-40 to 760 degrees C).
18. For indoor or outdoor use.
19. Accessories:
 - a. No. 6 beaded chain.
 - b. No. 16 jack chain.
 - c. Nylon tie.
 - d. S-hook fastener.

E. Aluminum Valve Tags:

1. Basis of Design: Laser Etched Aluminum Valve Tags as manufactured by Kolbi Pipe Marker Co.
2. Material: Aluminum, 0.030 inch thick (0.91 mm).
3. Type: Laser etched.
4. Shape and Size: 1-1/2 inch (38 mm) diameter circle.
5. Shape and Size: 2 inch (51 mm) diameter circle.
6. Shape and Size: 1-1/2 inch (38 mm) square.
7. Shape and Size: 2 inch (51 mm) square.
8. Color/Fill: Black/White.
9. Color/Fill: Red/White.
10. Color/Fill: Blue/White.
11. Color/Fill: Green/White.
12. Hole: 3/16 inch (4.7 mm).
13. Temperature Rating: Up to 1400 degrees F (760 degrees C).
14. For indoor or outdoor use.
15. Accessories:
 - a. No. 6 beaded chain.
 - b. No. 16 jack chain.
 - c. Nylon tie.
 - d. S-hook fastener.

4.5 EQUIPMENT NAMEPLATES AND LABELS

A. Plastic Nameplates:

1. Basis of Design: Engraved Plastic Equipment Nameplates as manufactured by Kolbi Pipe Marker Co.
2. Material: Durable, high-quality, thick, satin-surfaced multi-ply plastic.
3. Thickness: 1/16 inch (1.6 mm).
4. Chemical Resistance: Acids, alkalis, alcohols, fuels, solvents, oils, and ammonia.
5. Size: 2-1/2 x 3/4 inch (64 x 19 mm).
6. Size: 2 x 1 inch (51 x 25 mm).
7. Size: 3 x 1 inch (76 x 25 mm).
8. Size: 4 X 1 inch (102 X 35 mm).

9. Size: 4 x 1-1/2 inch (102 x 38 mm).
10. Size: 3 X 2 inch (76 X 51 mm).
11. Size: 4 x 2 inch (102 x 51 mm).
12. Size: 4 x 2-1/2 inch (102 x 64 mm).
13. Size: 6 x 2 inch (152 x 51 mm).
14. Size: 4 x 3 inch (102 x 76 mm).
15. Size: 5 x 3 inch (127 x 76 mm).
16. Size: 6 x 3 inch (152 x 76 mm).
17. Size: 6 x 4 inch (152 x 102 mm).
18. Size: 8 x 4 inch (203 x 102 mm).
19. Size: 12 X 4 inch (305 X 152 mm).
20. Size: 12 x 6 inch (305 x 102 mm).
21. Size: 12 x 8 inch (305 x 203 mm).
22. Size: 12 x 12 inch (305 x 305 mm).
23. Size: 12 x 18 inch (305 x 457 mm).
24. Color: White on Green.
25. Color: White on Blue.
26. Color: White on Red.
27. Color: White on Black.
28. Color: White on Grey.
29. Color: Black on Orange.
30. Color: Black on Yellow.
31. Color: Black on White.
32. Color: Red on White.
33. Color: _____.
34. Temperature Rating: -40 to 175 degrees F (-40 to 80 degrees C).

B. Phenolic Plastic Nameplates:

1. Basis of Design: Phenolic Plastic Equipment Nameplates as manufactured by Kolbi Pipe Marker Co.
2. Material: Rigid phenolic, 1/16 inch (1.6 mm) thick.
3. Type: Engraved
4. Conforms to ASTM D709, Type 1 and MIL LP387A, Type N.D.P. LP509.

 1. Size: 2-1/2 x 3/4 inch (64 x 19 mm).
 2. Size: 2 x 1 inch (51 x 25 mm).
 3. Size: 3 x 1 inch (76 x 25 mm).
 4. Size: 4 X 1 inch (102 X 35 mm).
 5. Size: 4 x 1-1/2 inch (102 x 38 mm).
 6. Size: 3 X 2 inch (76 X 51 mm).
 7. Size: 4 x 2 inch (102 x 51 mm).
 8. Size: 4 x 2-1/2 inch (102 x 64 mm).
 9. Size: 6 x 2 inch (152 x 51 mm).
 10. Size: 4 x 3 inch (102 x 76 mm).
 11. Size: 5 x 3 inch (127 x 76 mm).
 12. Size: 6 x 3 inch (152 x 76 mm).
 13. Size: 6 x 4 inch (152 x 102 mm).
 14. Size: 8 x 4 inch (203 x 102 mm).
 15. Size: 12 X 4 inch (305 X 152 mm).
 16. Size: 12 x 6 inch (305 x 102 mm).
 17. Size: 12 x 8 inch (305 x 203 mm).
 18. Size: 12 x 12 inch (305 x 305 mm).
 19. Size: 12 x 18 inch (305 x 457 mm).
 20. Color: White on Black.
 21. Color: Black on White.
 22. Color: White on Blue.
 23. Color: _____.
 24. Temperature Rating: 20 to 175 degrees F (-7 to 79 degrees C).
 25. For indoor use.

B. Stainless Steel Nameplates:

1. Basis of Design: Stainless Steel Equipment Nameplates as manufactured by Kolbi Pipe Marker Co.
2. Material: Stainless steel, 0.030 inch thick (0.762 mm).
3. Type: Laser etched
4. Mounting: Two 3/16 inch (4.8 mm) holes – centered left and right.
5. Mounting: Two 3/16 inch (4.8 mm) holes – Top corners.
6. Mounting: Four 3/16 inch (4.8 mm) holes - corners.
7. Mounting: Permanent adhesive.
1. Size: 2-1/2 x 3/4 inch (64 x 19 mm).
2. Size: 2 x 1 inch (51 x 25 mm).
3. Size: 3 x 1 inch (76 x 25 mm).
4. Size: 4 X 1 inch (102 X 35 mm).
5. Size: 4 x 1-1/2 inch (102 x 38 mm).
6. Size: 3 X 2 inch (76 X 51 mm).
7. Size: 4 x 2 inch (102 x 51 mm).
8. Size: 4 x 2-1/2 inch (102 x 64 mm).
9. Size: 6 x 2 inch (152 x 51 mm).
10. Size: 4 x 3 inch (102 x 76 mm).
11. Size: 5 x 3 inch (127 x 76 mm).
12. Size: 6 x 3 inch (152 x 76 mm).
13. Size: 6 x 4 inch (152 x 102 mm).
14. Size: 8 x 4 inch (203 x 102 mm).
15. Size: 12 X 4 inch (305 X 152 mm).
16. Size: 12 x 6 inch (305 x 102 mm).
17. Size: 12 x 8 inch (305 x 203 mm).
18. Size: 12 x 12 inch (305 x 305 mm).
19. Size: 12 x 18 inch (305 x 457 mm).
20. Color/Fill: Black filled.
21. Color/Fill: Natural, no color.
22. Temperature Rating: Up to 2700 degrees F (1482 degrees C).

B. Anodized Aluminum Nameplates:

8. Basis of Design: Anodized Aluminum Equipment Nameplates as manufactured by Kolbi Pipe Marker Co.
1. Type: Laser Etched
2. Material: Anodized aluminum, 0.032 inch thick (0.81 mm).
3. Mounting: Two holes.
4. Mounting: Four holes.
5. Mounting: Adhesive.
6. Size: 2-1/2 x 3/4 inch (64 x 19 mm).
7. Size: 2 x 1 inch (51 x 25 mm).
8. Size: 3 x 1 inch (76 x 25 mm).
9. Size: 4 X 1 inch (102 X 35 mm).
10. Size: 4 x 1-1/2 inch (102 x 38 mm).
11. Size: 3 X 2 inch (76 X 51 mm).
12. Size: 4 x 2 inch (102 x 51 mm).
13. Size: 4 x 2-1/2 inch (102 x 64 mm).
14. Size: 6 x 2 inch (152 x 51 mm).
15. Size: 4 x 3 inch (102 x 76 mm).
16. Size: 5 x 3 inch (127 x 76 mm).
17. Size: 6 x 3 inch (152 x 76 mm).
18. Size: 6 x 4 inch (152 x 102 mm).
19. Size: 8 x 4 inch (203 x 102 mm).
20. Size: 12 X 4 inch (305 X 152 mm).
21. Size: 12 x 6 inch (305 x 102 mm).
22. Size: 12 x 8 inch (305 x 203 mm).
23. Size: 12 x 12 inch (305 x 305 mm).
24. Size: 12 x 18 inch (305 x 457 mm).
25. Color/Fill: Black filled.
26. Color/Fill: Natural, no color.

27. Temperature Rating: Up to 1400 degrees F (760 degrees C).

A. Non-Detectable Underground Marking Tape:

1. Basis of Design: Non-Detectable Underground Warning Tape as manufactured by Kolbi Pipe marker Co.
2. Material: Polyethylene tape, 0.005 inch (0.13 mm) thick.
3. Mounting: Self-adhesive.
4. Color: Yellow.
5. Color: Red.
6. Color: Blue
7. Color: Orange
8. Color: Green
9. Color: _____.
10. Roll Length: 1000 feet (304,800 mm).
11. Roll Length: _____.
12. Width: 3 inches (76 mm).
13. Width: 6 inches (152 mm).

B. Detectable Underground Marking Tape:

1. Basis of Design: Detectable Underground Warning Tape as manufactured by Seton Identification Products.
2. Material: Aluminum, 0.005 inch (0.13 mm) thick.
3. Mounting: Self-adhesive.
4. Color: Blue.
5. Color: Yellow.
6. Color: Green.
7. Color: Red.
8. Color: Orange.
9. Roll Length: 1000 feet (304,800 mm).
10. Roll Length: _____.
11. Width: 3 inches (76 mm).
12. Width: 6 inches (152 mm).

PART 2 EXECUTION

2.1 EXAMINATION

- A. Do not begin installation until substrates have been properly constructed and prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.

2.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. For labels that are installed using pressure-sensitive adhesives, 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.
- D. For pipe markers that are pre-coiled or strap-on type and do not adhere directly to the piping, no surface preparation is necessary.

2.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions, approved submittals and in

proper relationship with adjacent construction, and the following:

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 and on both sides of 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 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.

B. Valve Tags: Install valve tags on all shut-off valves and control devices in piping systems, except valves within factory-fabricated equipment units.

C. Duct Labels: Locate duct labels where ducts enter into and exits from concealed spaces or is concealed by removable ceiling system as follows:

1. Near penetrations and on both sides of walls, floors, ceilings, and inaccessible enclosures.
2. At access doors, manholes, and similar access points that permit view of concealed duct.
3. Near major equipment items and other points of origination and termination.
4. Spaced at maximum intervals of 50 feet along each run.
5. Mark location of equipment or valves located above ceilings with identifying ceiling tacks to help in identification for maintenance

2.4 CLEANING AND PROTECTION

- A. Clean products in accordance with the manufacturer's recommendations.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION