

SECTION 33 01 12

IDENTIFICATION FOR UTILITIES PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Underground Pipeline Detection and Warning.
 - a. Tracer wire system
 - 1) Vinyl/PVC adhesive tape.
 - 2) Polyethylene adhesive tape.
 - 3) Direct bury wire splice kits.
 - b. Tracer wire system testing
 - c. Metal detectable underground warning tape.
 - d. Marker posts.
2. Above Ground Piping and Valve Identification at CFPUA Facility Sites.
 - a. Tags
 - b. Applied pipe markers.

B. Related Requirements:

1. Section 09 91 00 - Painting and Protective Coating: Execution requirements for painting specified by this Section.
2. Section 33 05 07.13 - Horizontal Directional Drilling: Materials and methods for piping and appurtenances.
3. Section 33 05 07.23 - Jacking and Boring: Materials and methods for carrier pipes and appurtenances.
4. Section 33 14 13 - Water Distribution Piping and Appurtenances: Materials and methods for piping and appurtenances.
5. Section 33 14 14 - Public Water Service Connections: Materials and methods for piping, valves, and appurtenances.
6. Section 33 31 23 - Sanitary Sewer Force Mains, Valves and Appurtenances: Materials and methods for piping, valves, and appurtenances.
7. Section 40 71 00 - Magnetic Flow Meter
8. Section 43 21 39.13 - Submersible End Suction Pumps: Materials and methods for piping, valves, pumps, and other station equipment.

1.2 REFERENCE STANDARDS

- A. NCGS 87-8A Underground Utility and Damage Prevention Act
- B. American Public Works Association: Uniform Color Code
- C. American Society of Mechanical Engineers: ASME A13.1 - Scheme for the Identification of Piping Systems.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's catalog literature for each product required.

PART 2 PRODUCTS

2.1 UNDERGROUND PIPELINE DETECTION AND WARNING

1. Tracer Wire
 - a. Vinyl/PVC adhesive tape.
 - b. Polyethylene adhesive tape.
2. Direct bury wire splice kits.
3. Metal detectable underground warning tape.
4. Refer to CFPUA Material Specification Manual (MSM) for the following products:

MSM Section	Material
K-Miscellaneous	Warning Tape
L-Electrical	Wire and splice kits

2.2 ABOVE GROUND PIPING AND VALVE IDENTIFICATION

- A. Above Grade Pipe Identification
1. Color-Coding and Lettering Size: Conform to ASME A13.1.
 2. Applied Pipe Markers
 - a. Factory-fabricated, flexible, semi-rigid plastic.
 - b. Preformed to fit around pipe or pipe covering.
 - c. Larger sizes may have maximum sheet size with spring fastener.
 3. Applied Tape Pipe Markers
 - a. Flexible, vinyl film tape with pressure-sensitive adhesive backing and printed markings.
 4. Stencils
 - a. Clean-cut symbols.
 - b. Letters:
 - 1) Up to 2-inch Outside Diameter of Insulation or Pipe === ½-inch high letters.
 - 2) 2-½- to 6-inch Outside Diameter of Insulation or Pipe == 1-inch high letters.
 - 3) Over 6-inch Outside Diameter of Insulation or Pipe == 1-¾-inch high letters.
 - 4) Stencil Paint: As specified in Section 099000 - Painting and Coating; semi-gloss enamel.
- B. Valves
1. Plastic Tags
 - a. Laminated three-layer plastic with engraved letters on light, contrasting background color.
 - b. Minimum Tag Size and Configuration: 1-½ inch.
 2. Metal Tags
 - a. Stainless-steel construction; stamped letters.
 - b. Minimum Tag Size and Configuration: 1-½ inch with finished edges.

PART 3 EXECUTION

3.1 PREPARATION

- A. Identify prescribed materials and color code for each pipeline type to be installed.
- B. Degrease and clean surfaces to receive adhesive for identification materials.
- C. Prepare surfaces as specified in Section 09 90 00 - Painting and Protective Coating for stencil painting.

3.2 INSTALLATION

- A. Buried Pipeline Detection and Warning
 - 1. Tracer wire system termination and access.
 - a. Tracer wire systems must be installed as a single continuous wire. No looping or coiling of wire is allowed.
 - b. All tracer wire termination points must be grade level/in-ground access boxes identified with "sewer" or "water" cast into the cap.
 - c. A minimum of 2 ft. of excess/slack wire is required in all tracer wire access boxes after meeting final elevation.
 - d. Runs without service laterals or hydrants shall provide intermediate tracer wire access at minimum 1,000-foot intervals and must be provided utilizing a grade level/in-ground access box located at the edge of the road right-of-way and outside the roadway surface.
 - e. Termination and access shall be installed as indicated on the Drawings for all pressure piping at the following locations:
 - 1) Cast iron boxes located at minimum 1,000-foot intervals
 - 2) All in-line valve boxes on water mains and services and on sewer force mains and services.
 - 3) At hydrant valve boxes and hydrants
 - 4) Water meter service boxes
 - 2. Tracer wire repairs
 - a. Any damage occurring during installation of the tracer wire must be immediately repaired by removing the damaged wire and installing a new section of wire with approved connectors. Taping and/or spray coating shall not be allowed.
 - 3. Tracer wire attachment and connections
 - a. Tracer wire shall be installed at the top half (11-1 o'clock position) of the pipe and secured (taped/tied) at 12-foot intervals.
 - b. Mainline tracer wire shall not be connected to existing conductive pipes. Treat as a mainline dead end and ground using an anode buried at the same depth as the tracer wire.
 - c. All service lateral tracer wires shall be a single wire, connected to the mainline tracer wire using a mainline to lateral lug connector, installed without cutting/splicing the mainline tracer wire.
 - d. In occurrences where an existing tracer wire is encountered on an existing utility that is being extended or tied into, the new tracer wire and existing

- tracer wire shall be connected using approved splice connectors and shall be properly grounded at the splice location as specified.
- e. A mainline tracer wire must be installed, with all service lateral tracer wires properly connected to the mainline tracer wire, to ensure full tracing/locating capabilities from a single connection point.
 - f. Lay Mainline tracer wire continuously on the North or East side of valves and fittings.
 - g. Tracer wire on all service laterals must terminate at an approved tracer wire access located directly above the service lateral at the edge of road right of way.
 - h. Connect tracer wire using direct bury splice kits in accordance with manufacturer's recommendations
4. Tracer wire testing and verification
- a. Provide locating equipment to verify tracer wire locating system in presence of CFPUA or ENGINEER construction observer.
 - b. The test will take the following form:
 - 1) A standard 5-watt generator will be used to provide an AC current on the wire.
 - 2) The frequency of the signal from the generator will be initially restricted to 33 kHz or less.
 - 3) A standard hand-held detector will be used to trace the signal.
 - c. The installed tracer wire will be deemed to pass the test if using the above set up:
 - 1) The tracer wire is accessible at all access points.
 - 2) The tracer wire can be traced from access point to access point.
 - 3) Widely spaced access points can be traced out in the worst-case from each end to a common meeting point between them.
 - 4) Depth readings are consistent and accurate to within a 15:1 depth to diameter ratio.
5. Horizontal Directional Drill and Bore/Jack Crossings
- a. Follow special tracer wire procedures identified in those specification sections.
- B. Buried Pipeline Metal Detectable Warning Tape
- a. For all diameter potable water mains (excluding 1-inch service lines) and all diameter sewerage force mains
 - 1) Install 1'-6" deep and directly above pipeline during backfilling operation.
- C. Above Ground Piping and Valve Identification at CFPUA Facility Sites:
- 1. Piping:
 - a. Identify with plastic tape pipe markers or stenciled painting.
 - b. Apply stencil painting as specified in Section 09 90 00 - Painting and Protective Coating.
 - c. Identify service, flow direction, and pressure.
 - d. Install in clear view and align with axis of piping.
 - e. Locate identification not to exceed 20 feet on straight runs, including risers and drops, adjacent to each valve and tee, at each side of penetration of structure or enclosure, and at each obstruction.
 - 2. Valves:
 - a. Install tags using corrosion-resistant chain.

- b. Number tags consecutively by type and location.

END OF SECTION