

SECTION 02601 - PREINSULATED PIPE

City of San Diego, CWP Guidelines

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing all preinsulated piping systems, complete and operable.

\$# _____

NTS: List the applicable piping sections below.

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1.2 RELATED SECTIONS

The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

- [1. Division 2 Sitework, as applicable]
- [2. Division 15 Mechanical, as applicable]
- 3. Section 15250 Pipe and Equipment Insulation

1.3 CODES

- A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:
 - 1. Uniform Building Code
 - 2. Uniform Mechanical Code
 - 3. Uniform Plumbing Code

1.4 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:
 - 1. ASTM D 1784 Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
 - 2. ANSI/ASME B31.1 Piping and Piping Systems

1.5 SHOP DRAWINGS AND SAMPLES

- A. The following shall be submitted in compliance with Section 01300:
 - 1. **Shop Drawings:** The CONTRACTOR shall submit complete shop drawings of all preinsulated piping systems with manufacturer's data on materials, covering, coating, insulation, piping, fittings, anchors, expansion joints, supports, seals, and closures, for review by the CONSTRUCTION MANAGER.

2. **Manufacturer's Data:** The data submitted with the shop drawings shall certify that all materials used are meeting the indicated standards and conductivity (k)-factors, and that the proposed sealing method will assure a watertight system.
3. **Samples:** The CONTRACTOR shall include in his submittal samples of the proposed insulation system.

1.6 OWNER'S MANUAL

- A. The following shall be included in the OWNER'S MANUAL in compliance with Section 01300:
 1. Catalogue literature and technical specifications of the preinsulated pipe.
 2. Name, address and telephone number of the supplier.

1.7 PROJECT RECORD DRAWINGS

- A. The following shall be included in the PROJECT RECORD DRAWINGS in compliance with Section 01300:
 1. Record drawings of all buried and concealed piping, indicating exact locations, sizes, pipe materials, and service media.

1.8 SERVICES OF MANUFACTURER

- A. An authorized factory service representative shall visit the site for not less than [] days, to instruct the CONTRACTOR in the proper handling and installation of the preinsulated pipes, and inspect the finished work before backfilling or concealment takes place.

1.9 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. **Delivery of Materials:** Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.
- B. **Storage:** Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.

1.10 QUALIFICATIONS

- A. **Installer:** Authorized installer of manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL

- A. **Scope of Work:** All preinsulated piping systems shall be completely sealed and waterproof, and they shall be capable of allowing sufficient movement for thermal expansion and contraction. Each assembly shall be factory-designed for the specific service medium, temperature, and pressure. Expansion loops, expansion joints, anchors, and guides shall be furnished and installed to provide a trouble-free system and avoid stress on any equipment.

B. **Schedule of Preinsulated Piping:** The CONTRACTOR shall provide the following preinsulated piping systems:

Fluid Abbrev	Service	Pipe Size (inches)	Working Press. (psi)	Service Temp: (deg. F)	Pipe Material (Standard Dwg M-1)	Notes:
[HWS]	[Plumbing]	[1-1/2]	[100]	[140]	[24]	[buried]
[]	[]	[]	[]	[]	[]	[]
[]	[]	[]	[]	[]	[]	[]

2.2 BASIC MATERIALS

A. **Conduit:** The outer conduit, encasing the insulated piping, shall consist of one of the following materials:

1. Minimum 10-gauge steel pipe with the outside surface mill-primed and machine-coated with asphalt to a minimum thickness of 3/16-inch, with an interposed layer of fiberglass screen, and a final wrap of asphalt-impregnated, fiberglass reinforced, pipe line felt, applied spirally under tension.
2. Seamless polyvinyl chloride conforming to ASTM D 1784 or similar suitable plastic conduit, of minimum 0.060-inch wall thickness for pipes 6 inches and smaller, and 0.120-inch wall thickness for pipes 8 inches and above. Where buried, this conduit shall be wrapped with a heavy duty, flexible coal tar tape protection.
3. Machine coated with a continuous layer of multi-directional tension filament-wound fiberglass reinforced polyester resin of minimum 0.060-inch wall thickness for pipes 6 inches and below, and 0.120-inch wall thickness for pipes 8 inches and above. Where buried, this conduit shall be wrapped with a heavy duty, flexible coal tar tape protection.
4. Conduit assemblies shall be fabricated in 20 to 40-foot lengths with sealed ends and pre-formed or fabricated fittings of the same material as the conduit.

B. **Insulation:** Unless otherwise indicated, all pipes shall be insulated with preformed, foamed urethane or polyurethane, with a K-factor of 0.14 or better, at 75 degrees F, and a density of not less than 1.8 lb/cu ft. The insulation shall be factory-applied to prevent any voids, and it shall be suitable for a service temperature range from -30 degrees F to +250 degrees F. All field joints, fittings and valves shall be field-foamed to provide machine quality foam that bonds with the adjacent insulation as a monolithic, seamless product. Unless otherwise indicated, the pipes shall be insulated to the following thickness:

Pipe Size: (inches)	Minimum Insulation Thickness: (inches)
4 and below	one
6 to 12	1-1/2
14 and above	2

C. **Service Pipe:** The service pipes shall be in accordance with the materials listed in the schedule above and as indicated in Divisions [2 and 15] with abbreviations listed in the

pipng schedule. Generally, the pipes shall be furnished in lengths of 20 to 40 feet. Anchors shall be permanently attached to the pipe prior to insulating. All ends of preinsulated pipes shall be permanently sealed with insulated plugs and bulkheads or similar approved methods. Pipes shall be joined as indicated under Section [] or by means of double-seal couplings, where suitable.

2.3 MANUFACTURERS

- A. Products of the type indicated shall be manufactured by one of the following (or equal):
1. Insta-Foam Products, Inc.
 2. Intergy, Inc., (Ricwil Piping Systems)
 3. Johns-Manville (Thermal Pipe Systems, Inc.)
 4. Perma-Pipe, a Division of Midwesco, Inc.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. **General:** All preinsulated pipes shall be installed in strict accordance with the manufacturer's written instructions and under the supervision of a manufacturer's field service representative.
- B. **Standard:** The WORK shall be carried out by qualified pipe fitters in conformance with these Specifications and ANSI/ASME B31.1.
- C. **Expansion and Contraction:** All preinsulated pipes shall be installed with sufficient provision for expansion and contraction. Anchors shall be installed where required and expansion loops or joints with guides shall absorb the thermal expansion of the piping system. Where preinsulated pipes pass through walls of structures, wall sleeves with waterstops shall be cast into the walls.
- D. **Backfilling:** After completion of testing the pipe trenches shall be carefully backfilled to prevent damage to the conduits. Backfilling with sand and fine gravel shall be accomplished in accordance with the manufacturer's written instructions.

3.2 FIELD TESTING

- A. Field testing of the preinsulated pipe shall be performed as follows:
1. **Inspection and Testing:** After completion of the pipe installation, and prior to covering of field joints and backfilling, the entire piping system shall be subject to a hydrostatic test of 150 psig or 1-1/2 times the working pressure, whichever is greater, for a period of 4 hours. Any leaks or loss of pressure shall be traced and repaired at that time, and the system shall be re-tested until found tight.
 2. **Acceptance Criteria:** Acceptance of the preinsulated piping system shall be dependent on the satisfactory completion of the above mentioned test and after approval by the manufacturer's field representative.

** END OF SECTION **

