

Addendum #1

22 11 16

PEX DOMESTIC WATER PIPING

HOT AND COLD POTABLE WATER DISTRIBUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes ASTM F877 cross-linked polyethylene (PEX) tubing hot and cold water distribution systems, ASTM F876 cross-linked polyethylene (PEX) tube, ASTM F1807 fittings and ASTM F2159 fittings.
- B. The contractor may use PEX Domestic Water Piping as a substitute to the copper water distribution pipe specified in Section 22 11 00 Facility Water Distribution.

1.2 REFERENCES

- A. ASTM International
 - 1. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM F876 Standard Specification for Cross-linked Polyethylene (PEX) Tubing.
 - 3. ASTM F877 Standard Specification for Cross-linked Polyethylene (PEX) Plastic Hot and Cold Water Distribution Systems.
 - 4. ASTM F1807 Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing.
- B. National Sanitation Foundation (NSF)
 - 1. Standard 14 Plastics Piping System Components and Related Materials.
 - 2. Standard 61 Drinking Water System Components - Health Effects.
- C. Canadian Standards Association (CSA)
 - 1. CAN/CSA B137.5 Cross-linked Polyethylene (PEX) Tubing Systems for Pressure Applications.
- D. International Code Council (ICC)
 - 1. International Mechanical Code
 - 2. International Plumbing Code
- E. International Association of Plumbing Officials (IAPMO)
 - 1. Uniform Plumbing Code

- 2. Uniform Mechanical Code
 - F. Plastic Pipe Institute (PPI)
 - 1. Technical Report TR-3 Policies and Procedures for Developing Recommended Hydrostatic Design Stresses for Thermoplastic Pipe Materials.
 - 2. Technical Report TR-4 Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Piping and Fitting Compounds.
 - G. PEX Manufacturer's
 - 1. Plumbing Installation Guide
- 1.3 SYSTEM DESCRIPTION
- A. Design Requirements
 - 1. Standard Grade hydrostatic pressure ratings from the Plastic Pipe Institute in accordance with TR-3 and listed in TR-4. The following three standard-grade hydrostatic ratings are required:
 - a. 200 degrees F at 80 psi
 - b. 180 degrees F at 100 psi
 - c. 73 degrees F at 160 psi
 - 2. Tubing tested in general accordance with ASTM E84 for a flame spread/smoke developed index of 25/50 or less for the following PEX tube sizes encased with ½ inch fiberglass insulation:
 - a. 1 ¼ inch
 - b. 1 ½ inch
 - c. 2 inch
 - 3. Tubing tested in general accordance with ASTM E84 for a flame spread/smoke developed index of 25/50 or less for the following PEX tube sizes:
 - a. 3/8 inch
 - b. ½ inch
 - c. 5/8 inch
 - d. ¾ inch
 - e. 1 inch
 - B. Performance Requirements
 - 1. To provide a PEX tubing hot and cold potable water distribution system, which is manufactured, fabricated and installed to comply with regulatory agencies and to

maintain performance criteria stated by the PEX tubing manufacturer without defects, damage or failure.

- a. Comply with NSF Standard 14.
- b. Comply with NSF Standard 61.
- c. Show compliance with ASTM F877.

1.4 SUBMITTALS

A. General

1. Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Product Data

1. Submit manufacturer's product submittal data and installation instructions.
2. Submit manufacturer's Professional Installation Limited Warranty.

C. Shop Drawings

1. Provide installation drawings indicating tubing layout, manifold locations, plumbing fixtures supported and schedules with details required for installation of the system.

D. Samples

1. Submit selection and verification samples of piping.

E. Listing Certifications

1. Submit manufacturers' third party listings.

1.5 QUALITY ASSURANCE

Installer Qualifications

1. Utilize an installer having demonstrated experience on projects of similar size and complexity and possesses the skills and knowledge to install a PEX potable water distribution system.
2. Installer will utilize skilled workers holding a trade qualification license or equivalent or apprentices under the supervision of a licensed tradesperson.

A. Pre-installation Meetings

1. Verify project timeline requirements.
2. Manufacturer's installation instruction.
3. Manufacturer's warranty requirements.

1.6 DELIVERY, STORAGE AND HANDLING

A. General

1. Comply with Division 1 Product Requirement Section.
- B. Delivery
 1. Deliver materials in manufacture's original, unopened, undamaged containers with identification labels intact until ready for installation.
- C. Storage and Protection
 1. Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
 2. Store PEX tubing indoors, in cartons or under cover to avoid dirt or foreign material from entering the tubing.
 3. Do not expose PEX tubing to direct sunlight for more than six months. If construction delays are encountered, cover the tubing that is exposed to direct sunlight.

1.7 WARRANTY

- A. Project Warranty
 1. Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty
 1. Shall cover the repair or replacement of properly installed tubing and fittings proven defective as well as incidental damages.
 2. Warranty period for PEX tubing and subsequent system shall be 25 year non-prorated warranty against failure due to defect in material or workmanship, beginning with the date of installation.
 3. It is the installer's responsibility to avoid mixing fittings manufactured by others as it will reduce the owner's warranty.

PART 2 - PRODUCTS

2.1 HOT AND COLD POTABLE WATER DISTRIBUTION SYSTEM

- A. The following manufacturers have been accepted for providing PEX piping, fittings, adaptors, copper bands, and other products for this project. All manufacturers are required to meet the requirements of this specification.
 1. Zurn
 2. Uponor
 3. Viega

- 4. Watts
 - 5. Nibco
 - B. All products, components, etc. specified herein are manufactured by and/or are available from the above listed tubing manufacturers
- 2.2 MATERIALS
- A. Tubing
 - 1. Cross-linked polyethylene (PEX) manufactured by the Silane method
 - 2. Non-barrier type
 - a. Shall have a pressure and temperature rating of 160 PSI at 73°F, 100 PSI at 180°F and 80 PSI at 200°F
 - b. Tubing shall have a minimum of 6 months UV protection
 - 3. Manufactured in accordance with ASTM F876 and ASTM F877 and tested for compliance by an independent third-party agency
 - B. Fittings
 - 1. Manufactured in accordance with ASTM F1807 or ASTM F2159 and/or comply with ASTM F877 system standard as identified on the fitting
 - C. Crimp Systems
 - 1. Copper Crimp Ring: Listed to ASTM F1807 and/or ASTM F877.
 - D. Tools
 - 1. Copper Crimp Ring tools shall be supplied by the PEX tubing manufacturer or approved by the PEX tubing manufacturer for use.
 - E. Manifold
 - 1. Copper Manifold System
 - 2. Multi-Port Fittings
 - 3. Copper Manifold Header
 - F. Valves
 - 1. Shall be of the metal type, meeting the requirements of ASTM F877, identified as such with the appropriate mark on the product.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacture's product data, including product technical bulletins, technical memos, installation instructions

and design drawings, including manufacturers PEX Plumbing Installation Guide.

3.2 EXAMINATION

A. Site Verification of Conditions

1. Verify that site conditions are acceptable for the installation of the PEX potable water system.
2. Do not proceed with installations of the PEX potable water system until unacceptable conditions are corrected.

3.3 INSTALLATION

- A. Install PEX tubing in accordance with tubing manufacturer's recommendations and as indicated in the manufacturers PEX Plumbing Installation Guide.
- B. Do not install PEX tubing within 6 inches of gas appliance vents or within 12 inches of any recessed light fixtures.
- C. Do not solder within 18 inches of PEX tubing in the same waterline. Make sweat connections prior to making PEX connections.
- D. All supplies to the plumbing fixtures shall be made with copper stub out elbows (630 series) as manufactured by Sioux Chief or equal. The stub out elbows shall be fastened to the metal studs using copper stub out brackets (521-85 series) as manufactured by Sioux Chief or equal.
- E. All connections to domestic water heaters shall be made of copper and extend a minimum of 18-inches from water heater before adapting to PEX piping. The water heater connectors shall be a series 633 as manufactured by Sioux Chief or equal.
- F. All fittings, couplings, adapters, compression rings, etc shall be made of bronze or copper. Plastic fittings and compression rings are not acceptable.
- G. Ensure no glues, solvents, sealants or chemicals come in contact with the tubing without prior permission from the tubing manufacturer.
- H. Do not expose PEX tubing to direct sunlight for more than 6 months.
- I. Use grommets or sleeves at the penetration for PEX tubing passing through metal studs.
- J. Use a PEX manufacturer recommended fire stop sealant manufacturer.

- K. Protect PEX tubing with sleeves where abrasion may occur.
- L. Use nail plates where PEX tubing penetrates wall stud or joists and has the potential for being struck with a screw or nail.
- M. Allow slack of approximately 1/8 inch per foot of tube length to compensate for expansion and contraction.
- N. Minimum horizontal supports are to be installed not less than 32 inches between hangers in accordance with model plumbing codes and the manufacturers PEX Plumbing Installation Guide.
- O. Pressurize PEX tubing in accordance with applicable codes or in the absence of applicable codes, test pressure shall be at least equal to 150 percent of normal system working pressure, but not less than 75 PSI water or air and not greater than 225 PSI water, 125 PSI air.
- P. Refer to other sections listed in Related Sections paragraph herein for related products installation.

3.4 FIELD QUALITY CONTROL

A. Site Tests

1. To ensure system integrity, pressure test the system before covering tubing in concrete and after other trades have worked in the vicinity of the tubing.
2. Repair and replace any product that has been damaged according to manufacturer's recommendation.

3.5 PROTECTION

- A. Protect installed work from damage due to subsequent construction activity on the site.