

# Hydronic Piping with Wirsbo hePEX™

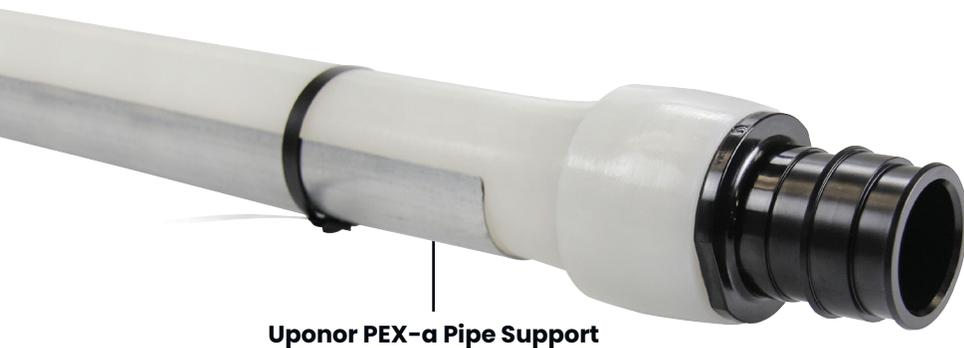
## The Superior Specified Solution

With more than 40 years of proven performance, Wirsbo hePEX™ is the superior choice for hydronic piping applications. More than 17 billion feet of Uponor crosslinked polyethylene (PEX-α) is in service worldwide, making it the professional's product for durable, long-lasting performance.

Using Wirsbo hePEX for chilled water and heating hot water distribution is a very durable, cost-effective solution for transporting water to terminal units such as chilled beams and fan coil units.

Uponor even offers a PEX-a Pipe Support steel channel for suspended piping applications that enables hanger spacing similar to that of copper. And Uponor's suspended piping assembly with Wirsbo hePEX pipe, PEX-a Pipe Support, and ProPEX® connections with engineered polymer (EP) fittings is listed to ASTM E84 and CAN/ULC S102.2 for use in plenum applications.

- Economical and sustainable alternative to metal pipe
- Won't pit, scale, or corrode
- Reliable ProPEX fittings offer faster installs with no dry-fit concerns
- Wirsbo hePEX pipe and ProPEX fittings available in sizes up to 3"
- Ecoflex Thermal pipes with Wirsbo hePEX service pipe available up to 4"
- WIPEX™ brass compression fittings available in 4"
- Backed by a 25-year warranty on Wirsbo hePEX pipe and ProPEX fittings
- Proudly made in the U.S.A.



## Typical Equipment Installations

### VAV Terminal Unit



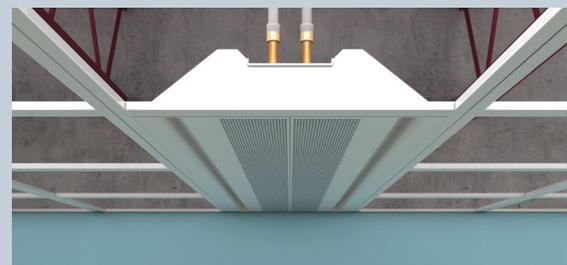
### Fan Coil



### Baseboard Radiator



### Chilled Beam





# Wirsbo hePEX Pipe and ProPEX Fittings

## The Core of Uponor Hydronic Piping Systems

Wirsbo hePEX oxygen-barrier pipe and ProPEX expansion fittings offer value, durability, and performance to your hydronic piping projects. With more than 40 years of service in installations around the world, Uponor products and systems are the proven solution that professionals require to meet the demands of the commercial building industry.

This guide is designed for architects, building officials, building owners, engineers, and mechanical contractors interested in Uponor

Hydronic Piping Systems. It describes general installation recommendations that use Wirsbo hePEX pipe and ProPEX fitting products. Uponor is not liable for installation practices that deviate from this guide or are not acceptable practices within the mechanical trades, codes, or standards of practice. Always refer to local codes for additional requirements. For further assistance, contact Uponor Technical Services at 888.594.7726 (U.S.) or 888.994.7726 (Canada) or email [technical.services@uponor.com](mailto:technical.services@uponor.com).

### Codes

ICC, IPC, IRC, IMC, UPC, UMC, NSPC, HUD, UFGS, NPC of Canada, NBC of Canada

### Listings

AWWA, BMEC, CCMC, cNSFus-fs, cNSFus-pw, cNSFus-rfh, cQAIus, CSA, ETL, IAPMO, ICC-ES, Intertek, ITS, PPI TR-4, UL, ULC, WH

### Standards

ASTM, NSF, AWWA, UL, ULC, ICC, IAPMO, NAHB, PHCC, PPI, HUD, NBC, NPC and CSA

- › ASTM F876 for PEX tubing
- › ASTM F877 for PEX hot and cold water distribution systems

- › CSA B137.5 for PEX piping systems
- › ASTM F1960 for cold expansion fittings for use with PEX tubing
- › ASTM F2657 for UV resistance of PEX material
- › ASTM E84 for plenum applications up to 3" (U.S.); CAN/ULC S102.2 (Canada)
  - › Uponor PEX-a Pipe Support with Wirsbo hePEX pipe, ProPEX EP fittings and/or WIPEX™ fittings (up to 3")
- › ASTM E814 for through-penetration fire stop up to 3" (U.S.); CAN/ULC S115 (Canada)
- › ASTM E119/UL 263 for fire-resistive construction up to 3" (U.S.); CAN/ULC S101 (Canada)
- › ANSI/NSF 14 and 61

## Hydrostatic Temperature and Pressure Ratings

Excessive Short-term Temperature - Pressure Capacity:

- › 210°F (98.9°C) at 150 psi tested up to 720 hours
- › In accordance with Section 6.6 of ASTM F876, the minimum hydrostatic burst pressure for ½" pipe is 480 psi at 73.4°F (23°C). For ¾" pipe and larger,

Uponor maintains standard-grade ratings for Wirsbo hePEX pipe as tested in accordance with PPI TR-3. Uponor PEX products have the following continuous operating temperature and pressure ratings:

- › 200°F (93.3°C) at 80 psi
- › 180°F (82.2°C) at 100 psi
- › 73.4°F (23°C) at 160 psi

the minimum burst pressure is 475 psi at 73.4°F (23°C). Uponor's quality lab performs daily burst pressure testing on all pipe sizes above and beyond the ASTM F876 standard. All samples are tested at 73.4°F (23°C) and burst at an elevated pressure of 800 psi (+/- 20 psi) - nearly twice the pressure requirement of ASTM F876.

- › It can also be noted, through extensive testing at 200°F (93.3°C) Uponor PEX will burst at 240 psi which is 3x higher than the ASTM F876 requirements of 80 psi and 200°F (93.3°C).

Wirsbo hePEX has similar flow characteristics to other distribution pipes. Please reference our online Pipe Sizing Calculator at [uponor.com/calculator](http://uponor.com/calculator).

## Suspended Piping Installation Detail

For suspended runs of piping, Wirsbo hePEX can be supported by the same conventional means as metallic pipe using copper tube size (CTS) pipe hangers or supports.

Uponor recommends using hangers and supports designed for use with plastic pipe. Uponor PEX-a Pipe Support or pipe support channel that continuously supports the pipe can be used to achieve nearly the same support spacing as copper pipe. And because PEX pipe expands at a rate of 1.1" per 100' per 10°F temperature rise, PEX-a Pipe Support also helps control pipe movement.

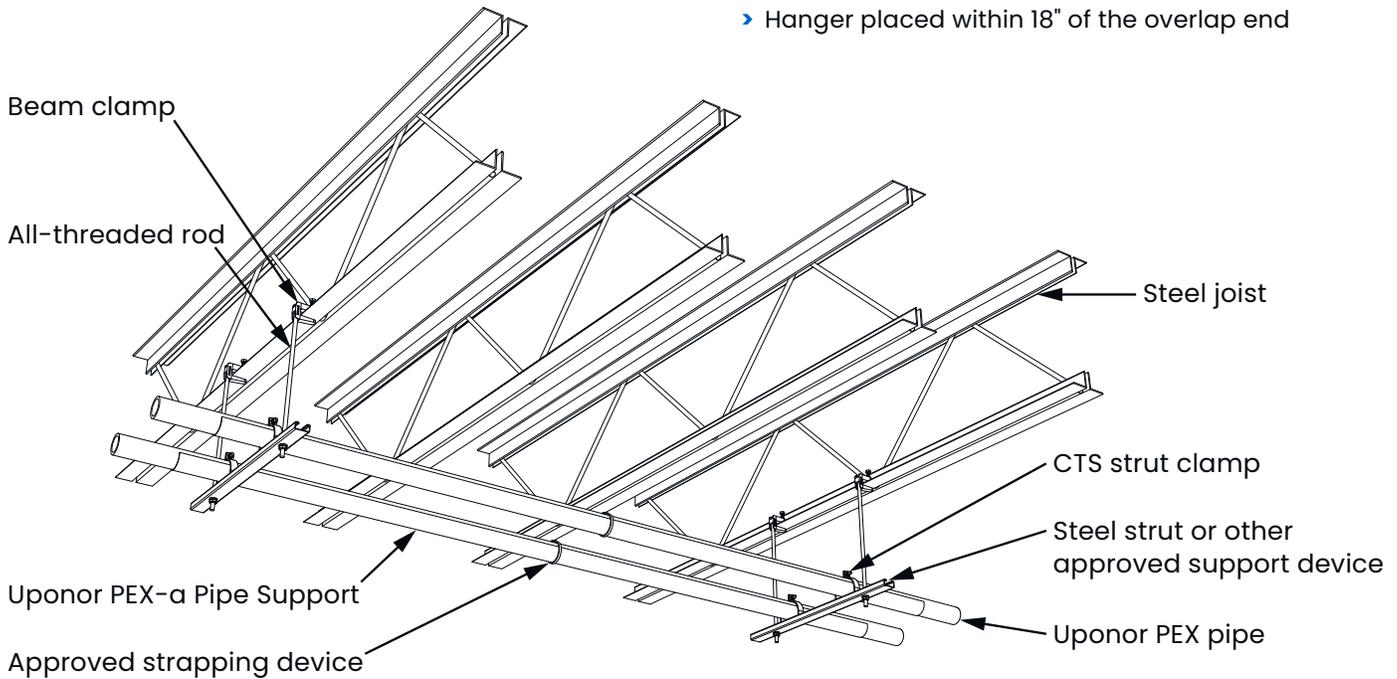
Suspended piping should be supported at intervals not to exceed 6' for ½" and ¾" pipe; 8' for 1" to 3" pipe.



Maximum distance from clamp/hanger to end of PEX-a Pipe Support is 18".

Overlapping PEX-a Pipe Support is permitted with the following guidelines:

- › Minimum 6" overlap
- › Minimum 120-lb., tensile-rated, stainless-steel straps (included with product)
- › Hanger placed within 18" of the overlap end



### Belmont University Academic Center

- › Nashville, TN
- › Uponor Hydronic Piping, and Plumbing
- › Completed August 2014



### JW Marriott Mall of America

- › Bloomington, MN
- › Uponor Hydronic Piping, Plumbing, and Snow Melt
- › Completed November 2015



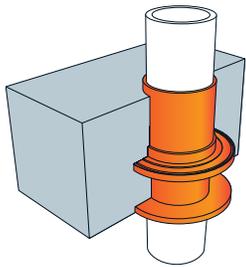
### The Wick Tower

- › Youngstown, OH
- › Uponor Hydronic Piping
- › Completed October 2015

## Risers

PEX risers typically feature Wirsbo hePEX pipe in sizes from 1¼" to 3" with CTS riser clamps at the top and bottom of each floor to limit expansion and contraction of the pipe. For example, a riser installed at 60°F running 180°F water has a 120°F Delta T, resulting in 1.1" of expansion over 12'. In this application, the piping will flex slightly in areas where it is not constrained.

Additionally, the Uniform Mechanical Code (UMC) and International Mechanical Code (IMC) require mid-story guides on all plastic piping, including PEX, to control deflection. Ensure the guide has no sharp edges and is fire-rated for risers in walls requiring fire-resistant construction (see Hydronic Piping Riser detail on **page 5**).



### Firestop Solutions

All assemblies are tested in accordance with ASTM E814 (U.S.) and CAN/ULC S115 (Canada) for use with Uponor PEX pipe. See firestop manufacturer's website for selection of appropriate fire assembly and product.

Commonly available firestop manufacturers:

- › 3M™
- › Hilti®
- › RectorSeal®
- › Holdrite®
- › Passive Fire Protection Partners
- › ProSet Systems®
- › Specified Technology Inc.

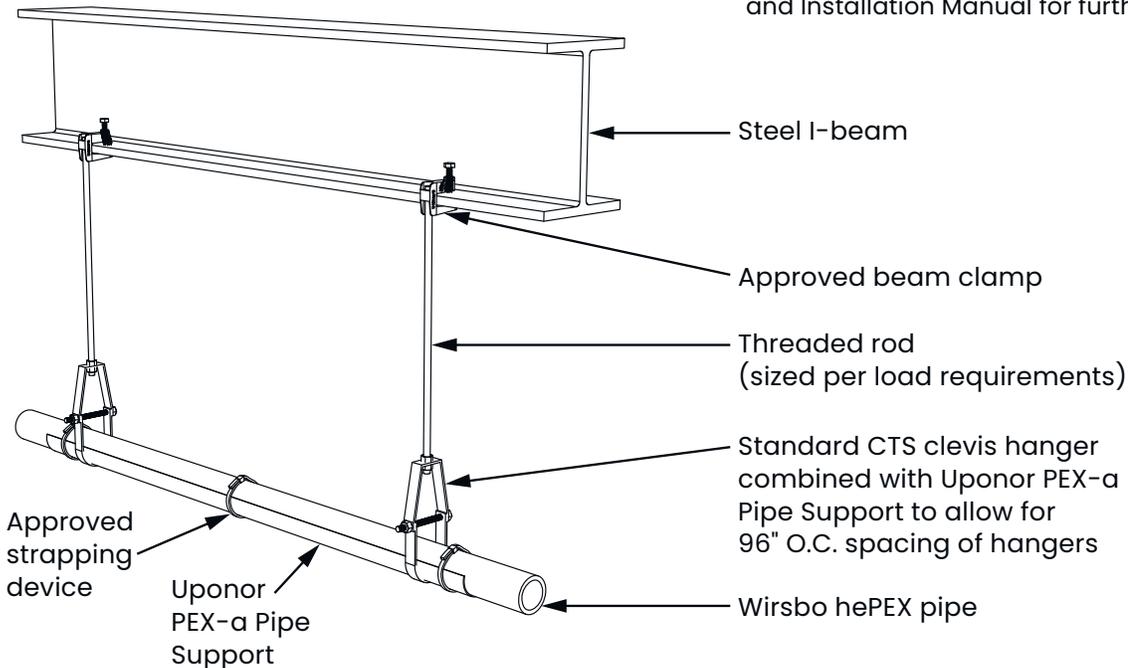
## Expansion and Contraction

Best practice for controlling expansion forces is to continuously restrain the pipe with Uponor PEX-a Pipe Support.

- › PEX with PEX-a Pipe Support and strut and strut clamps has a thermal expansion rate of 0.08"/10°F ΔT/100 ft. (2.03mm/5.56°C ΔT/30.48m).

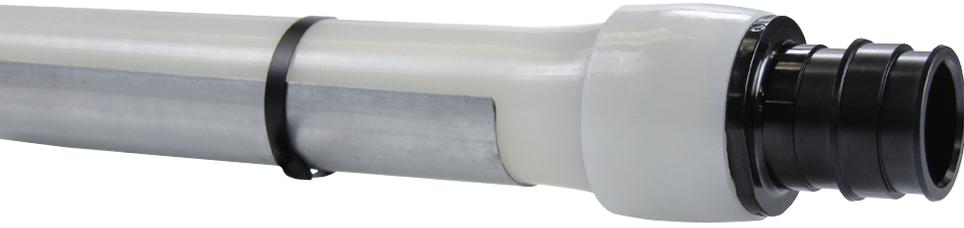
- › PEX with PEX-a Pipe Support and clevis hangers or loops has a thermal expansion rate of 0.12"/10°F ΔT/100 ft. (3.05mm/5.56°C ΔT/30.48m).
- › PEX has a free-body thermal expansion rate of 1.1"/10°F ΔT/100 ft. (27.94mm/5.56°C ΔT/30.48m).

**Note:** Refer to the Uponor PEX Piping Systems Design and Installation Manual for further details.

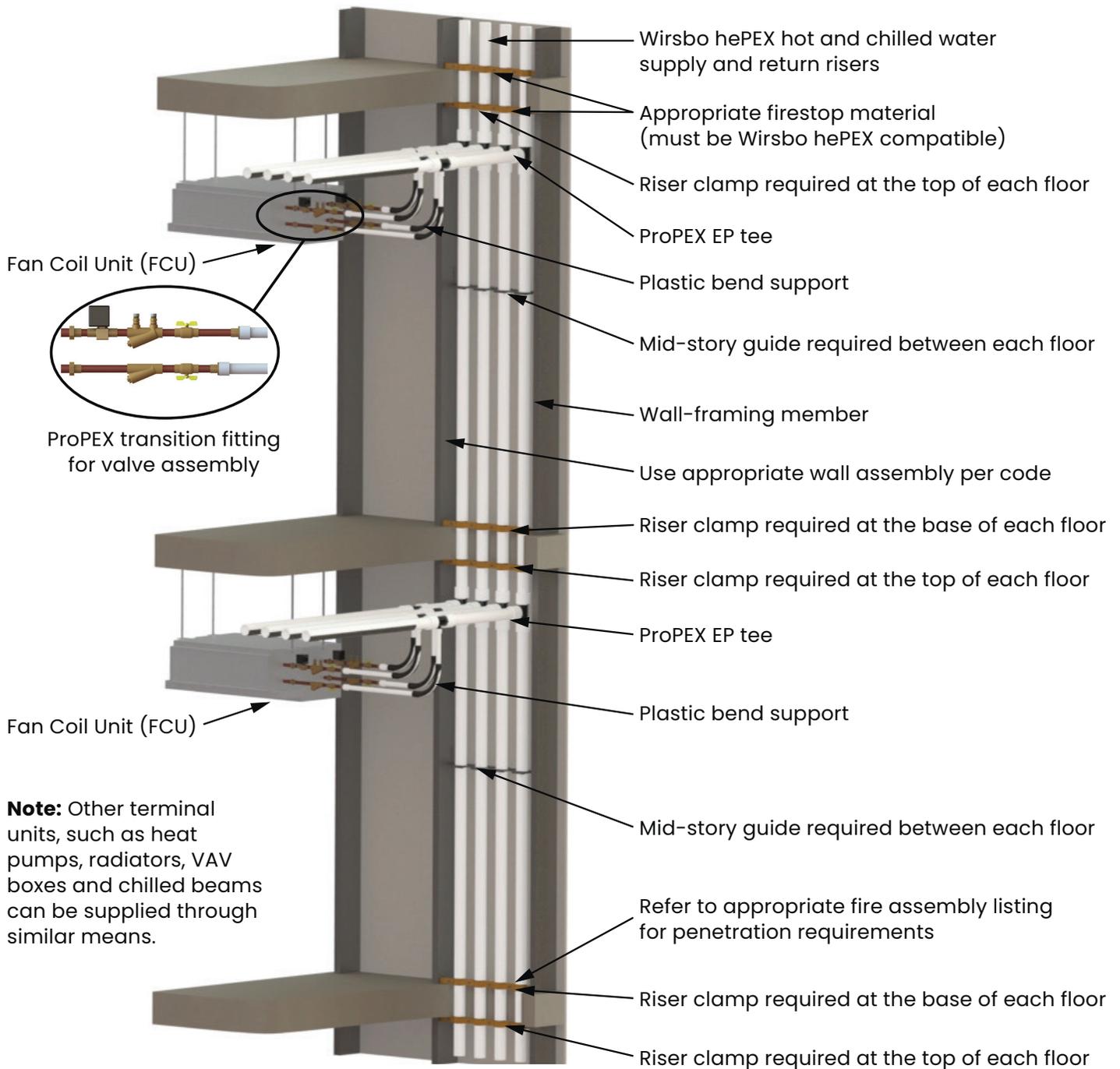


## PEX-a Pipe Support

PEX-a Pipe Support is available in 1/2", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", and 3" sizes.



## Hydronic Piping Riser Detail



**Note:** Other terminal units, such as heat pumps, radiators, VAV boxes and chilled beams can be supplied through similar means.

## Ecoflex® Pre-insulated Piping Systems

Uponor Ecoflex® pre-insulated pipe features single or twin Wirsbo hePEX service pipes surrounded by multi-layer, PEX-foam insulation and covered by a corrugated, HDPE jacket. Designed for fluid transfer in a variety of hydronic heating and cooling applications, Ecoflex pre-insulated piping systems are easy to install, dependable, cost effective, and energy saving. Recognized for its ability to stand up to harsh environments, Ecoflex is virtually maintenance-free and is an ideal solution for applications that require overhead or underground piping.

### Ecoflex Thermal Single



Ecoflex Thermal Single features Wirsbo hePEX service pipe in sizes from ¾" to 4".

### Ecoflex Thermal Twin

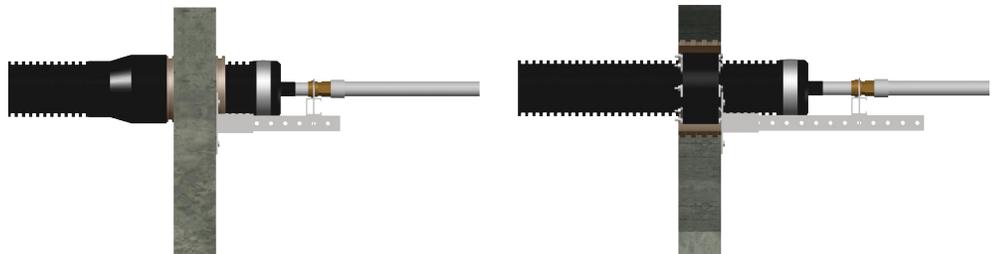


Ecoflex Thermal Twin features Wirsbo hePEX service pipe in sizes from 1" to 2½".

## Product Accessories

Uponor offers the following components designed exclusively for use with Uponor Ecoflex:

- Reducer Bushings
- Wall Sleeve with Heat Shrink Kit
- Compression Wall Seal
- Insulation Kits
  - » Straight Insulation Kits
  - » Tee Insulation Kits
  - » 90-degree Insulation Kits
  - » H-insulation Kits



## Rubber End Caps

Made from EPDM rubber, these end caps are required on all exposed ends of Ecoflex pipes to avoid groundwater contamination. It is crucial to create a water-resistant seal on the ends of the piping. Without this seal, water can enter the pre-insulated pipe and dramatically reduce the effectiveness of the system performance.



## ProPEX Fittings

Available in both brass and engineered polymer (EP) up to 3", ProPEX fittings include a full line of products designed to ensure a strong, reliable connection with Uponor PEX pipe.



## WIPEX Fittings

Manufactured from dezincification-resistant brass, WIPEX compression fittings connect 4" Wirsbo hePEX pipe to a male NPT thread.



## Installation Time Comparison: Logistic International (Québec, Canada)

### Project Highlights

- > LEED® Gold
- > 5,000 feet of Ecoflex hydronic piping system
- > Radiant application
- > Humidity-controlled
- > Geothermal

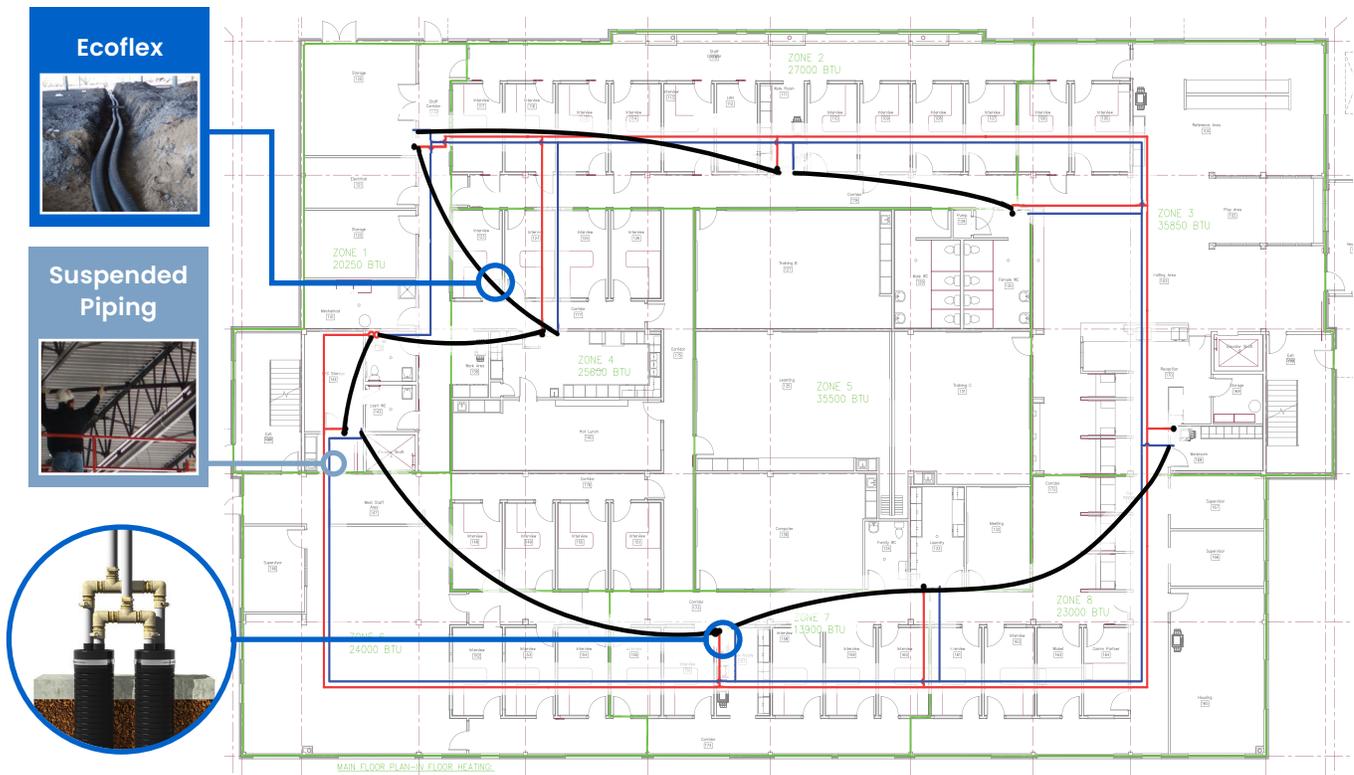
### Installation Time Comparison

- > Original design used site-insulated, suspended-steel pipe
- > Bid was submitted consisting of four, two-installer crews

**65%**  
Time Savings



## Piping Layout (Ecoflex vs. Suspended Piping)

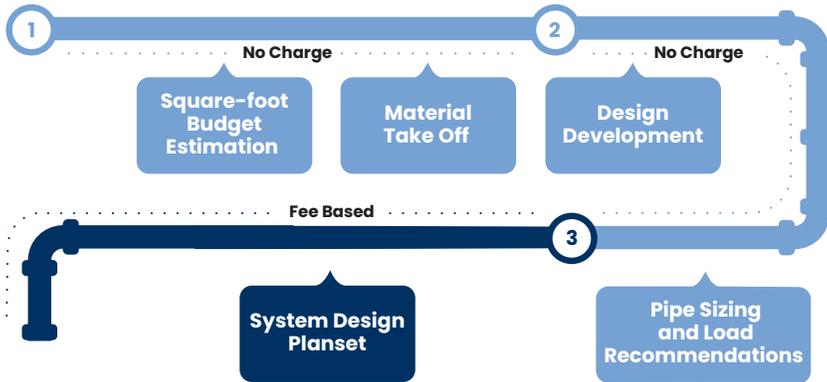


Traditional Suspended Hydronic Perimeter Loop Distribution System Overlaid with an Underground Ecoflex Pre-insulated Distribution System

# Uponor Construction Services Maximizes Project Schedules and Profitability

Working with Uponor provides more than products and systems. With a robust menu of service offerings and a wide range of experts in Uponor product, design and engineering, project management, and CAD applications, the Uponor Construction Services team is ready to provide assistance through each stage of the construction cycle. We are here to help streamline your project for greater efficiencies, value, and productivity.

## Uponor Construction Services Offering



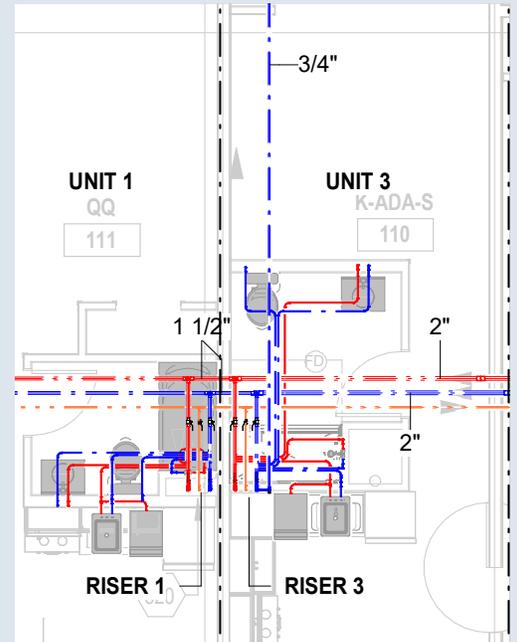
### Menu of Services

- > Square-foot budget estimation
- > Material take off
- > Design development
- > Loop layout
- > Pipe sizing and load recommendations
- > System design planset



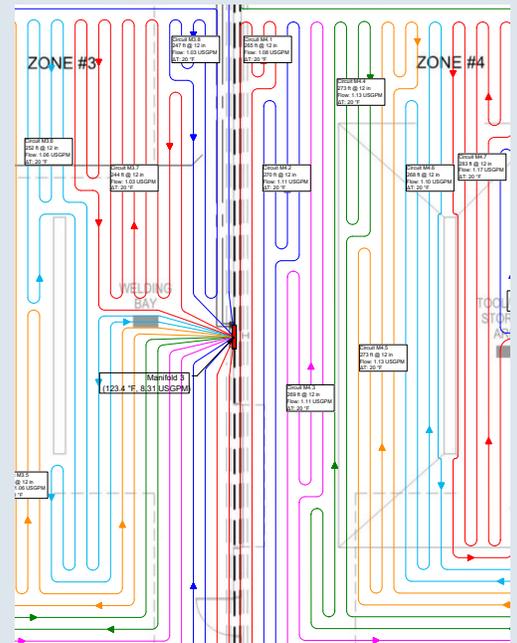
Scan here to request a design

> Learn more about how Uponor can help drive your business forward at [uponor.com](http://uponor.com).



### Cost-Effective Solution

Uponor Construction Services rates are up to **25% less** than standard industry rates



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