

**uponor**

## **ENGINEERED SYSTEMS**

Designed Solutions offered by Weholite



**WE CAN DO IT**

# WEHOLITE

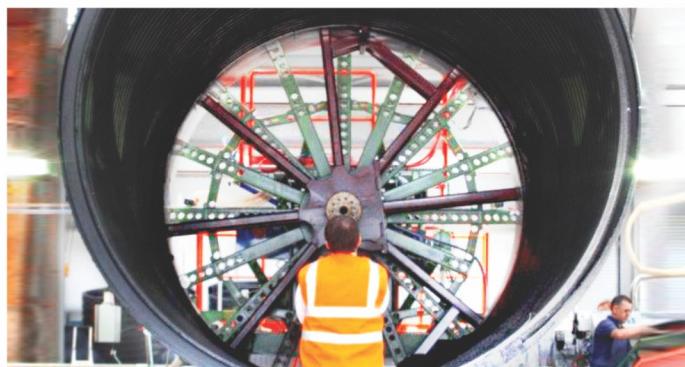
Uponor Infra Ltd. manufactures **Weholite®** large diameter polyethylene pipe and **Wehopanel®** structural panel. Uponor provides full service engineering support of creative, innovative and best-value designs for use in the water, wastewater and stormwater management industry.

**Weholite®** and **Wehopanel®** are lightweight profile wall high-density polyethylene (HDPE) materials that can be designed and fabricated for an infinite array of applications.

Weholite carries a 100 year design life in most applications. It will not corrode, tuberculate, or support biological growth. This makes it the material of choice in water, wastewater and harsh chemical environments. It is inert to salt water and the chemicals likely to be present in sanitary sewage effluent.

All of Uponor's Engineered Systems are manufactured under strict polyethylene welding standards and can be custom fabricated to meet the needs of any application. As a result,

Uponor is able to provide a superior system with a longer design life and at a reduced total cost of ownership.



- Infinitely Customizable
- 100 Year Design Life
- Full Engineering Support





## ANYTHING IS POSSIBLE

Anything is possible when you come to us at Uponor.

Our manufacturing team has perfected the science and art of Polyethylene Extrusion, Welding and Fabrication. Our manufacturing team works tirelessly to bring sustainable engineered solutions to life.

Our licensed, professional engineers and 3D CAD drafters provide technical support to our clients through design information, professional drawings and specifications. The latest finite element modeling and polyethylene structural design principles are applied to provide creative, innovative and best value designs for every challenge.

Our field engineering team is dedicated to support engineers, owners and contractors throughout the project from start to finish. Our ultimate objective is to ensure flawless project execution and exceptional customer service.

Let us help you with your project.

## Team Uponor

# STORMWATER MANAGEMENT

Uponor provides comprehensive engineering support for the design of Weholite large diameter Stormwater quality and quantity management systems to meet today's ever increasing regulatory requirements.

Weholite Stormwater systems are custom designed and fabricated to meet each project's specific NPDES and local regulatory requirements. Uponor works with the client and engineer to provide support and details for each system. The versatility of the Weholite polyethylene material enables prefabrication of any required internal component.

Weholite is available in diameters up to 11 feet and can be used to significantly reduce the footprint required to store and treat large volumes of stormwater. Additionally, all Weholite systems are pressure tested prior to shipment to ensure that all leak and draw down requirements are easily met on site.

- Outlet Control Structures
- Internal Baffle Walls
- Media Filtration
- Hydrodynamic Separation





## QUALITY AND QUANTITY MANAGEMENT

Uponor's **Quantity** Management systems address post development peak flow, channel protection volumes, pre-post attenuation and infiltration requirements. Large Diameter (up to 11') manifold systems provide a cost effective detention and retention solution with a 100 year material design life.

Each system's volume, layout, depth and outlet control configuration are coordinated with the civil engineer of record to meet the project's specific needs. Uponor provides details, drawings and specifications for incorporation into the civil plan set.

Uponor's **Quality** Management systems are custom designed to address nutrient and pollutant loads in post development stormwater runoff. Typically, targeted pollutants include Total Phosphorous (TP), Total Nitrogen (TN) and Total Suspended Solids (TSS). However, other regulated pollutants may be targeted based upon the local Watershed Improvement Plan (WIP) and permitting requirements.

Versatility of the Weholite material allows us to incorporate any Hydrodynamic Separation or Media Filtration system directly into the vessel. Conventional sand filters are a proven technology and fabricated directly into a Weholite or Wehopanel system.

- Manifold and Modular Systems
- Up to 11' Diameter
- Detention
- Infiltration
- Custom Outlet Controls
- Internal Baffle Walls
- Hydrodynamic Separation
- Media Filtration
- Sand Filter
- Custom Treatment Configurations



# WASTE WATER APPLICATIONS

Weholite is an ideal choice for wastewater treatment, storage and conveyance applications. Weholite offers distinct chemical and physical advantages over FRP, concrete and cast or ductile iron pipe. The Plastics Pipe Institute conservatively estimates the service life for Weholite HDPE pipe to be 100 years in most wastewater applications. Weholite is immune to pH and Hydrogen Sulfide deterioration typically experienced in other materials.

In Conveyance applications, Weholite can be field bent to a radius 200 times the nominal pipe diameter eliminating many fittings required for directional changes in piping systems made from other materials. In addition, the flexibility of Weholite pipe makes it well suited for dynamic soils and areas prone to earthquakes. The fact that it is lightweight makes it easier to transport and install. The fact that it utilizes reliable joining methods means years of maintenance free use.

Since its development, Weholite large diameter HDPE pipe has been used successfully in thousands of installations world-wide. Weholite has proven itself in both municipal and industrial applications including new pipeline and pipeline rehabilitation projects. Weholite provides all the advantages of solid wall polyethylene pipe with substantial savings in weight for increased ease of installation and cost effectiveness.



- Lightweight
- Impact Resistant
- Corrosion Resistant
- Chemical Resistant
- Fatigue Resistant
- Reliable Joints
- Flexible
- Long Life
- Environmentally Friendly





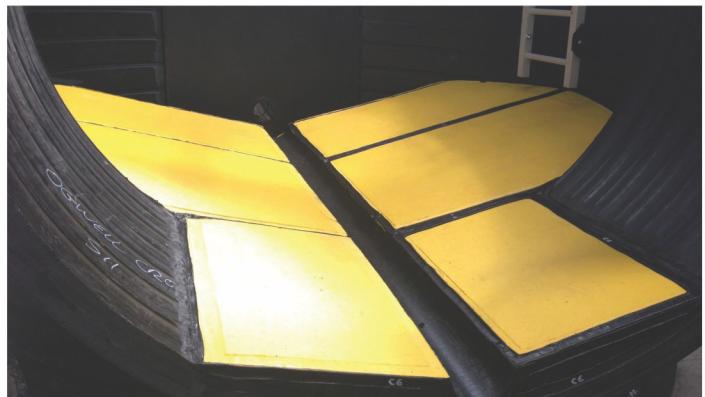
## COMBINED SEWER OVERFLOW (CSO)

Weholite and Wehopanel can be effectively designed to address Combined Sewer Overflow (CSO) storage systems where storm water flows often exceed the sewer system and treatment plant's hydraulic capacity.

"Storage is often the best measure for attenuating peak combined sewer flows. Storage facilities have been used extensively for Combined Sewer Overflow (CSO) mitigation" (Urbonas and Stahre, 1993; Field, 1997).

CSO storage projects are typically in older developed areas which often contend with existing site and utility constraints. Weholite large diameter manifold and modular CSO storage structures allow for large volumes of water to be stored in extremely tight footprints.

Uponor will work with the engineer of record to design and fabricate a system to meet the project's specific volume and geometric requirements. Uponor can also support the integration of pumps, controls and other equipment into the design as required. Weholite and Wehopanel provide a versatile and permanent solution to CSO Storage requirements.



- Large Diameter Pipe Manifold
- Rectangular Storage
- Infinitely Customizable
- Controls - Instrumentation
- Pumping
- 100 Year Design Life
- Immune to H<sub>2</sub>S

# PUMP STATIONS AND MANHOLES

Weholite's lightweight, strength and durability make it the ideal choice for prefabricated pump station and manhole applications. Weholite Pump Station and Manhole structures are immune to H<sub>2</sub>S and pH deterioration. When combined with Weholite conveyance piping, a complete polyethylene sanitary system with a 100 year design life is now achievable.

Weholite Pump Stations are delivered 'Turn Key' to the project location with all internal piping and fittings pre fabricated within a quality controlled plant setting. Uponor provides remote and onsite support during installation to ensure flawless execution. Weholite pump stations provide a superior system with a reduced total installation cost.

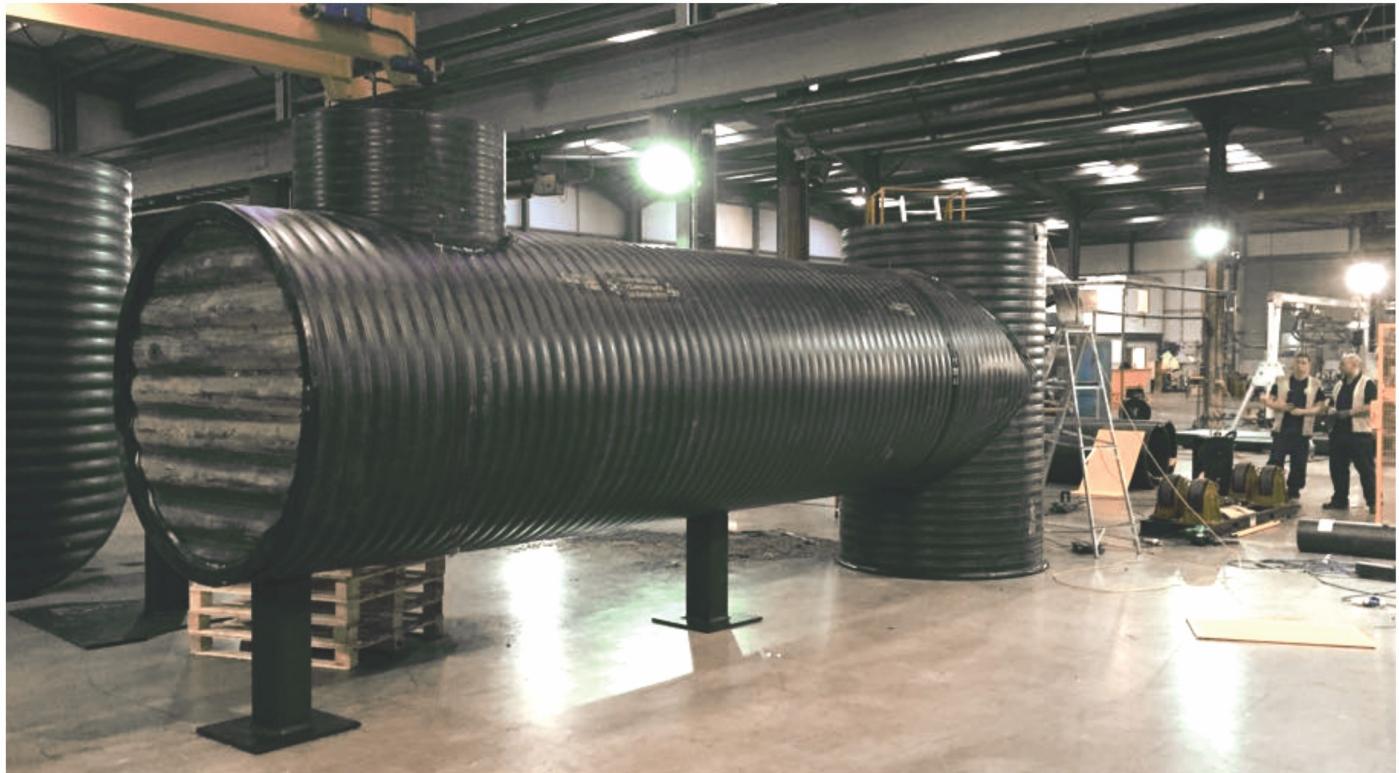
Uponor provides engineering support and drawings to meet each project's specific requirements. Infinitely configurable, Uponor's Weholite can provide horizontal and vertical structures to address depth and hydraulic storage parameters.

Weholite is the ideal choice for large diameter and deep structures. Weholite Pump Stations and Manholes can be designed to diameters of 11' and depths up to 55'.



- Diameters to 11'
- Depth to 55'
- Turn-Key Prefabricated Structures





## INFINITE CONFIGURATIONS



- Infinitely Customizable
- Controls - Instrumentation
- Pumping
- 100 Year Design Life
- Immune to H<sub>2</sub>S



# RAINWATER HARVEST

Water scarcity and usage restrictions have increased the demand for large scale rainwater harvest systems.

Municipal, industrial and commercial stake holders can benefit from a Rainwater Harvest and Reuse system to provide water for irrigation, toilet flushing, process water and other applications.

Weholite is an excellent choice for large scale applications requiring greater than 5,000 gallons of storage.

Uponor can provide a complete packaged rainwater harvest system including pretreatment, storage, controls instrumentation, post filtration, disinfection and pumping.

Uponor's engineering team works with the civil and mechanical engineers to provide system design and drawings to meet each project's specific requirements.



- Pretreatment
- Storage
- Post-filtration and Disinfection
- Custom Human Machine Interface (HMI) Controls
- Pumping
- Packaged Skid Systems





## COMPLETE PACKAGED SYSTEMS

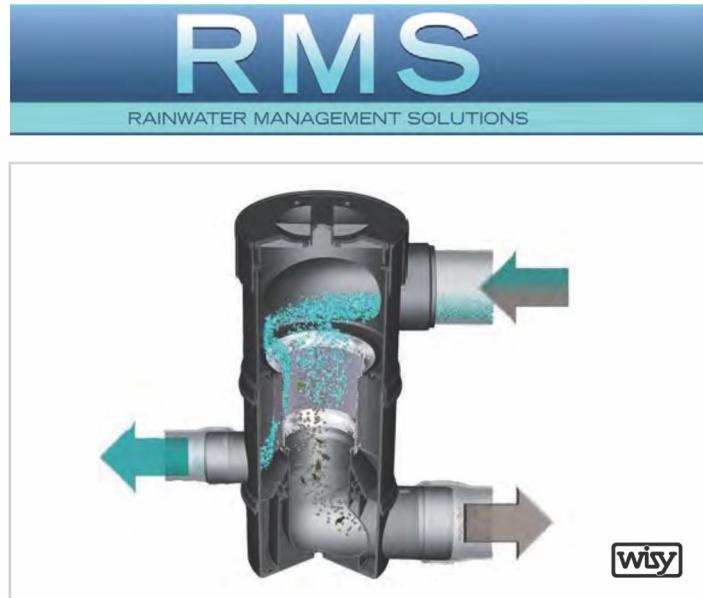
Uponor has partnered with Rainwater Management Solutions (RMS) to provide a complete packaged system and full on-site service and support during installation.

Pretreatment utilizing RMS Vortex Filters provide enhanced removal of debris and Total Suspended Solids prior to storage. Additional treatment can be achieved by incorporating internal baffles and quality measures directly into the Weholite vessel.

Custom designed skid systems can incorporate pumping, instrumentation, post filtration, disinfection and a control panel. All required components are coordinated and designed to provide a complete packaged rainwater solution. All systems are designed and manufactured in accordance with local building codes.

Rainwater harvest system control panels utilize Human Machine Interface (HMI) and Programmable Logic Controls (PLC) to support ease of operation and remote monitoring. Control panels also support Variable Frequency Drive (VFD) pump operation to enable constant pressure and constant flow as required by the project's irrigation or mechanical engineer.

Post Filtration incorporates 100 Micron Filtration and Ultraviolet (UV) and/or Chlorine disinfection as required.



- Complete Packaged System
- On-Site Support
- Full Service Engineering
- 20+ Years Experience

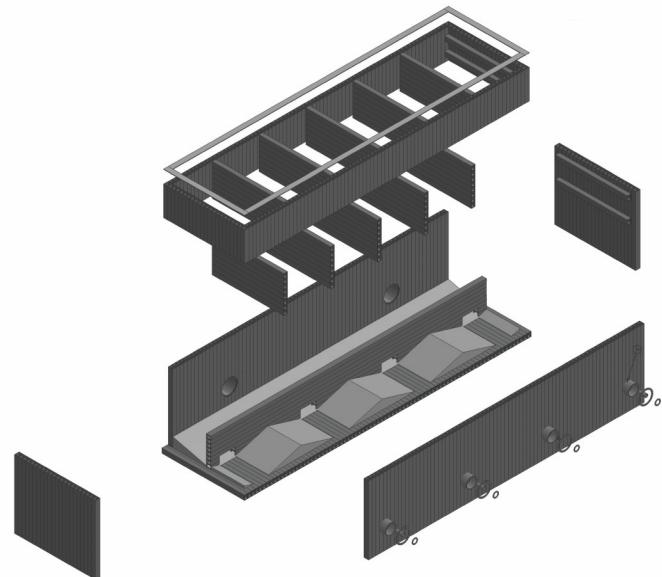
# WEHOLITE MODULAR

Weholite Modular is a unique Wehopanel based polyethylene system that enables the construction of rectangular CSO control chambers, pumping stations, flow control chambers, ventilation chambers, detention tanks and other strategic water applications.

Traditionally, large scale rectangular applications were limited to steel reinforced concrete. However, Weholite Modular polyethylene structures can now be designed and fabricated as a superior alternative to any concrete structure.

Weholite Modular structures offer the same versatility, longevity, eco-friendly qualities and value engineering as Weholite pipes and can be used above or below ground.

Uponor provides extensive engineering and onsite support for all Weholite Modular Structures.



- Above or Below Ground Applications
- Durable and Lightweight
- Completely Prefabricated - Turn Key
- Custom Designs and Engineering Support



# GEOTHERMAL VAULTS

Uponor Energy Geothermal Vaults are manufactured with high density polyethylene Weholite pipe which conforms to ASTM F894 and combined with high quality components to provide the most efficient and long lasting geothermal vault in the market place.

The Uponor Energy Geothermal Vaults and Uponor Energy Geothermal Manifold Vaults can be custom fabricated to meet the client's project specific needs and are leak tested before shipment. Uponor Energy Geothermal Vaults come prefabricated from Uponor Infra's manufacturing facilities, which help reduce cost and installation time for installers.

With more than 50 years of experience as a manufacturer of HDPE pipe, Uponor has the know how required to fabricate high quality geothermal manifolds for your geothermal needs. Uponor's geothermal manifold systems can be used for residential and commercial applications.



- Light colored interior for improved visibility inside the vault
- Butt-fused manifolds
- OSHA approved access ladder
- Pressure Temperature Ports (P/T) on all outlets
- Pressure Temperature gauges on headers
- Designed for easy pressure testing and purging
- Design assistance available

- Lightweight design
- Custom FRP flooring
- OSHA compliant ventilation riser
- Available lighting, sump pump, heater and inline fan
- Sealed inlet caps for shipment
- Optional H2O (Highway Traffic) load rating available
- Insulated headers





## About Uponor

Founded in 1918 in Finland, Uponor evolved into a plastic piping specialist and is now a leading international systems and solutions provider for buildings and infrastructure. About 4,000 dedicated Uponor employees are working in more than 30 countries across Europe, North America and other international markets. Uponor offers quality pipe systems for professional installation as well as tailored and turnkey solutions for contractors, developers, engineers and owners.

We serve a wide variety of markets including residential, commercial, industrial and civil engineering. Our safe drinking water delivery systems, energy-efficient radiant heating and cooling systems and reliable infrastructure solutions set standards in the industry. We are committed to sustainability and are passionate about developing new technologies and delivering systems to enrich people's way of life. This is how we build confidence.



Uponor Infra in North America is the result of a recent joint venture between Uponor and KWH Pipe with the goal of facilitating the transport of clean water and sewage in both urban and rural areas. Uponor Infra with two production plants is a leading manufacturer of Weholite and Sclairpipe high density polyethylene (HDPE) piping systems in North America which have applications across markets of water, wastewater, storm water, mining and gas transportation projects.

Uponor Infra's Weholite pipe is a large diameter, profile wall pipe made from high density polyethylene (HDPE) resin and manufactured to ASTM F-894. Designed for gravity and low-pressure applications, Weholite's raw material properties have been combined with a unique structural wall technology to create a lightweight engineered pipe with superior loading

capacity. Weholite can be easily fabricated and buried 40+ feet deep. We pride ourselves on being able to create total solutions with over 60 years of experience in the development and production of plastic pipes, components and systems that take account of individual needs and help create a pleasant setting for living, work and leisure. In addition to being technologically advanced, Uponor's solutions are sustainable and energy efficient.

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