INFRAPIPE SOLUTIONS LTD.

Culvert Reline

CULVERT REHABILITATION SOLUTION BY WEHOLITE®

What is Weholite®

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

Weholite is lightweight profile wall high density polyethylene (HDPE) material that can be designed and fabricated for an infinite array of applications.

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

Weholite pipe is manufactured to ASTM F-894. Weholite's raw material properties have been combined with patented structural wall technology to create a lightweight engineered pipe with superior loading capacity. Uponor Infra produces Weholite to the exacting standards of its quality management system which is registered to ISO 9001.

Advantages offered by Weholite®

- Long service life
- Unlike metallic culverts does not corrode
- Superior abrasion resistance
- UV Resistant
- Hydraulically efficient (Design Manning 'n' factor of 0.01)
- As the pipe is light weight, it can be handled with light-duty lifting equipment at construction site

- Superior flow characteristics are maintained for the life of the system
- Long laying lengths for faster installation
- Fully restrained joints are available
- Smooth outer wall for easy insertion
- Maintains ductile properties in cold temperatures
- Extensive product offering
- Available in ovalized configurations

Don't Dig & Replace
Simply Reline with Weholite®

- Simple way to extend the service life of distressed culverts
- Minimal traffic control required
- No road/railway closures required
- Lower construction and maintenance costs required
- Relining with Weholite is significantly cost effective in comparison to the traditional ‘dig & replace’ method in most cases

- Minimal social and environmental impact
- Eliminates post-installation road problems
- Cost effective permanent solution
- Proven track record with many states, counties, municipal and railway authorities

Weholite®: An ideal Choice for Rehabilitation of Distressed Culverts

Especially the following:

- With abrasive bedloads and/or corrosive soils
- Where road salts are applied
- Under high traffic roads
- With high fills
- Under railway tracks

Weholite® Joining Methods

Threaded Joints

The unique 'threaded joint' enables the installation of Weholite pipe without the use of any special tools. This joining system provides for sand-tight connections which are made quickly in the field. Threaded joints will not seperate as is common with other products utilizing stab-type joining systems.
Threaded joints are fully restrained allowing for the pipe to be pushed or pulled into place.

Wehoseal® Joint Wrap

Wehoseal Joint Wrap may be used to seal threaded connections. Wehoseal Joint Wrap is made from a shrinkable cross-linked polyethylene material that conforms to the outside diameter of the pipe when heated. Installation is performed in the field using a propane torch and a hand roller. A Wehoseal wrapped joint reduces potential leakage during the grouting operation.

Extrusion Welded Joints

Extrusion welding is an appropriate joining method for both round and ovalized Weholite

Steps to Culvert Rehabilitation

Inspection

- Clean and inspect the existing culvert, with particular attention to any deformation and obstacles that may obstruct the sliplining operation

Pipe Selection

- After the correct host culvert diameter and length have been determined, an appropriately sized Weholite pipe is selected
- To determine the Ring Stiffness Constant (RSC), please refer to the Uponor Infra Online Calculator

Liner Insertion

- Prepare jobsite to receive Weholite pipe and facilitate insertion process
- Install grout/vent tubes or standpipe at each end of existing culvert
- Insert the first pipe length into the existing culvert by pushing and/or pulling until only the pipe end is exposed
- If necessary, secure the liner in the host culvert by blocking or by other suitable methods to prevent the Weholite from floating during the grouting process
- Place the next length and assemble if needed; repeat process until the existing culvert has been lined

Grouting

- Build bulkheads at culvert ends to contain grout within the annular void
- Bulkheads can be made from either concrete, native soils or wooden framework
- Internal bracing is used to minimize ovalization during grouting
- Grout annular void by pumping or by adopting gravity method using cementitious grouts
- Grout pressure must not exceed the maximum allowable grout pressure for the selected RSC
- Large diameter Weholite may have to be grouted in lifts to keep grout pressure within limits
- Restore jobsite to a preconstruction condition

Pipe dimensions and allowable grout pressures are provided in the 'Weholite Product Bulletin' found online or, by contacting your Weholite Sales Representative

Weholite® Ovalized Culvert Rehabilitation Systems

Across North America, many culvert pipe systems have reached their expected life span and are now failing at an alarming rate. Many of these culverts are a pipe arch shape and/or sometimes partially collapsed as a result of deterioration. Sliplining these culverts with round pipes can dramatically reduce the flow capacity. Traditionally, these culverts would be replaced rather than lined. Uponor is pleased to offer Weholite in ovalized configurations, so sliplining culverts with asymmetrical dimensions is now possible. Weholite's proven track record with DOT's, municipalities, towns, cities, counties and rail roads across North America make Weholite the ideal reline material for arch type applications.

The Weholite ovalized system is manufactured with Weholite HDPE pipe which conforms to ASTMF894. Ovalized sizes can be determined by reducing the rise dimensions of a round pipe and increasing the span dimension by an approximately equivalent amount.Round sizes from 18" to 132" are available with reduced rise dimensions. Standard pipe lengths are 20' and 25'. Please contact your Uponor representative for custom length requirements.

Ovalized Weholite lengths are joined in the field by thermal extrusion welding or, through the use of the Wehoseal joint wrap system.

Ovalized Weholite offers a long service life with superior corrosion and abrasion resistance. Due to its light weight design and smooth outerwall, installation time and costs are remarkably reduced.

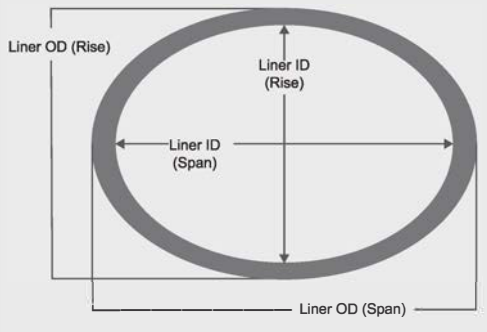
For more information and/or a quotation on Weholite Ovalized Culvert Rehabilitation Systems, please contact an Uponor sales representative.

NPS		RSC	Liner O.D. (Span)		Liner O.D. (Rise)		Liner I.D. (Span)		Liner I.D. (Rise)		No. of Grouts lifts		Shipping Weight	
mm	in		mm	in	mm	in	mm	in	mm	in	Grout SG: 1	Grout SG: 2	KGS/M	LBS/ FT
460	18	160	609	24.0	426	17	549	21.5	366	14.5	1	1	27	18
500	19.5	160	663	26.0	465	18.5	594	23.5	396	15.5	1	1	28	19
530	21	160	709	28.0	495	19.5	640	25.0	427	17.0	1	1	31	21
610	24	160	810	32.0	566	22.5	732	29.0	488	19.0	1	1	36	24
690	27	160	910	36.0	636	25.0	823	32.5	549	21.5	1	1	40	27
760	30	160	1010	39.5	705	27.5	914	36.0	610	24.0	1	1	45	30
840	33	160	1101	43.5	766	30.0	1006	39.5	671	26.5	1	1	57	38
910	36	250	1212	47.5	846	33.5	1097	43.0	732	29.0	1	1	76	51
1020	40	250	1347	53.0	941	37.0	1219	48.0	813	32.0	1	1	89	60
1070	42	250	1414	55.5	988	39.0	1280	50.5	853	33.5	1	1	104	70
1220	48	250	1603	63.0	1115	44.0	1463	57.5	975	38.5	1	1	119	80
1370	54	250	1803	71.0	1255	49.5	1646	65.0	1097	43.0	1	1	134	90
1520	60	250	2004	79.0	1394	55.0	1829	72.0	1219	48.0	1	2	149	100
1680	66	250	2204	87.0	1533	60.5	2012	79.0	1341	53.0	1	2	179	120
1830	72	250	2404	94.5	1673	66.0	2195	86.5	1463	57.5	1	2	224	150
1980	78	250	2587	102.0	1795	70.5	2377	93.5	1585	62.5	1	2	239	160
2130	84	250	2788	109.5	1934	76.0	2560	101.0	1707	67.0	1	2	283	190
2290	90	250	2970	117.0	2056	81.0	2743	108.0	1829	72.0	2	3	298	200
2440	96	250	3171	125.0	2195	86.5	2926	115.0	1951	77.0	2	3	343	230
2590	102	250	3371	132.5	2335	92.0	3109	122.5	2073	81.5	2	4	373	250
2740	108	250	3554	140.0	2457	96.5	3292	130.0	2195	86.5	2	4	403	270
3050	120	250	3937	155.0	2718	107.0	3658	144.0	2438	96.0	2	4	492	330

Notes:

Cross Bracing in both directions must remain in place until grout is fully cured.

1. Weholite Pipe in other Ring Stiffness Classes are available upon request
2. This chart represents pipe ovalization at 20%. Contact your Infra Pipe representative to secure pipe dimensions at alternative degrees of ovalization
3. Calculated shipping weight values include wooden bracing
4. Grout specific gravity of 1 has a maximum density of 62.4 lbl / cu. ft, grout specific gravity of 2 has a maximum density of 124.8 lbl / cu. ft
5. Contact your Infra Pipe representative for other grout lifts advice for differing conditions



Infra Pipe Solutions Ltd.
6507 Mississauga Road
Mississauga, ON, L5N 1A6
Canada

T: 905.858.0206
F: 905.858.0208
E: sales.infrapipes@infrapipes.com
W: www.infrapipes.com