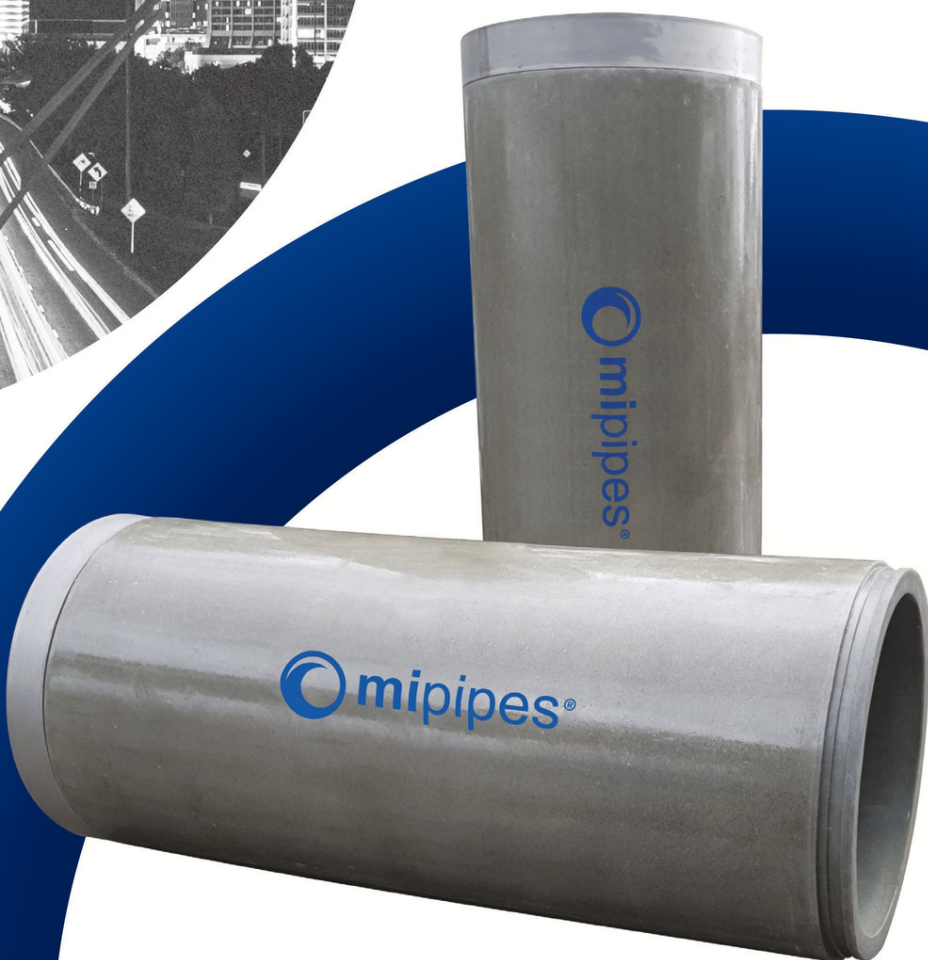




The Future of Microtunneling



www.mipipes.net British / European Standard BS EN 14636-1
Singapore Standard SS183
American Standard ASTM D6783
SPAN Approved (Malaysia)
PUB Approved (Singapore)
Maynilad Approved (Philippines)



Polymer Concrete

- Jacking Pipes
- Open Cut Pipes
- Steel Jacket Pipes (Patented)
- Fittings

Service Life More Than 100 Years

Long life – 100 years!

mipipes® have undergone long term tests of 10,000 hours (14 months) as per international standards to confirm the endurance and long life even under load and chemical attack.

100
YEARS

Totally Corrosion Resistant

The unique design of mipipes® with the internal and external GRP liners make it totally corrosion resistant to all chemicals found in water, sewage and the ground.



Smooth Internal Surface

The internal GRP liner provides a smooth surface, with a minimum Hazen William's coefficient of 150, and a Manning coefficient of only 0.009. This allows for **increased flow when compared with conventional VC & RC pipes** which have a manning coefficient > 0.013.



Low Friction Loss

The smooth and glossy surface of the external GRP liner reduces friction and thus reduces the jacking loads resulting in easier and faster installations; and make longer drives possible. Because of its smooth and glossy surface, the jacking load is also reduced tremendously at recommence after a stoppage.



High Strength

Polymer Concrete is 3 times stronger than conventional concrete, it has a compressive strength of more than 90 N/mm².



Maintenance Free

Being completely non-corrosive, there is no maintenance necessary. With its smooth shiny internal surface, a simple water jetting returns it to its original condition.



Special Joint Design

Although the jacking pipes are installed as gravity sewer lines, all joints of mipipes® have been tested to internal pressure of 5 bar and external pressure of 4 bar. The innovative joint design features a groove that firmly holds the rubber gasket in place, minimizing chances of any flipping or displacement during installation.



Fittings & Backdrops

We offer a comprehensive range of standard and custom-made fittings, including bends, tees, wyes, tumbling bays, backdrops, reducers, and couplers. These fittings ensure a seamless and uniform pipeline system, providing complete connectivity from manhole to manhole.



mipipes®
Advantages

We are mipipes®

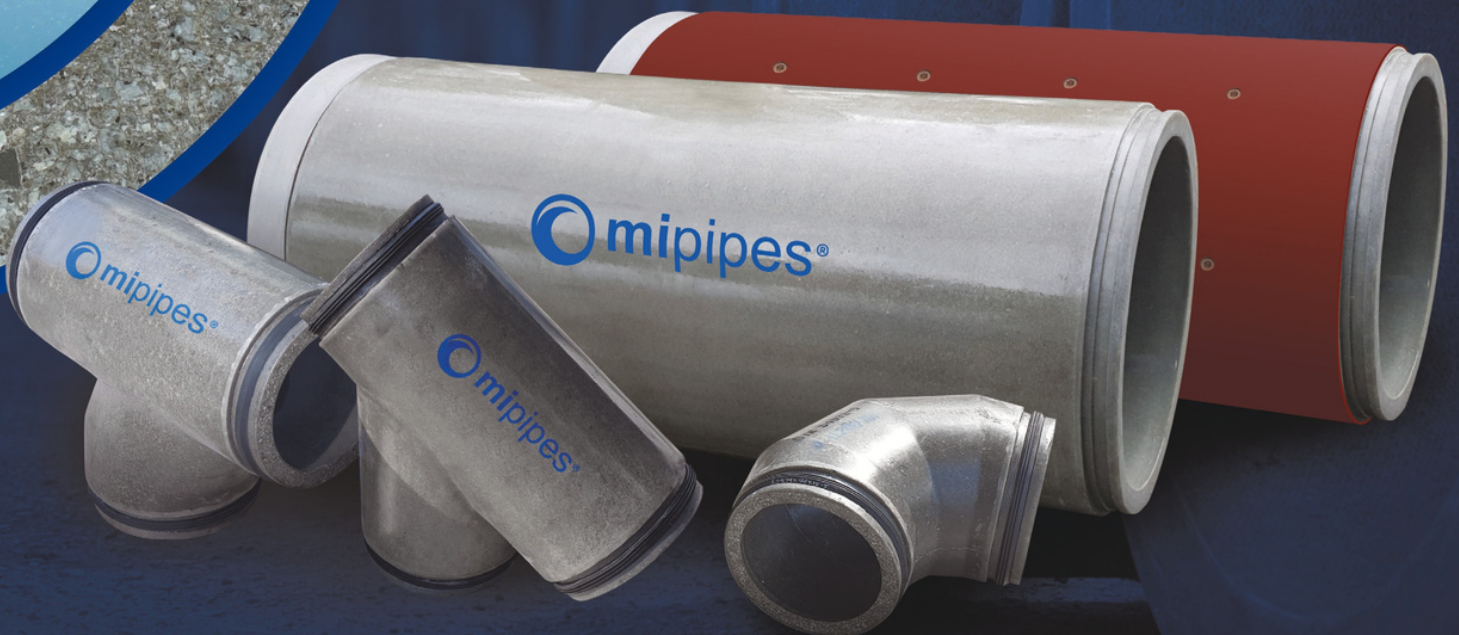
Project designers always face a dilemma when given the task of selecting the right material for a sewage and/or highly corrosive pipeline project. One of the important criteria they need to meet is to select a material that will maximize the service life of the pipe, with minimal maintenance and repairs, in order to maximize the client's investment. Therefore, a strong and highly corrosion-resistant pipe material must be used.

mipipes® Polymer Concrete Pipes are the answer to this dilemma. We have carried out long term tests as per international standards which require that pipe samples are put in solutions of pH1 and pH10 under load for a period of 10,000 hours (14 months). Upon completion of the test period, the obtained results are extrapolated to ensure that the pipe material can withstand loads under media attack for a 50 year period. We have extrapolated these results further and proven that our mipipes® can serve for a period exceeding 100 years.

mipipes® are very strong and highly corrosion resistant!

We are committed to take the company to new frontiers globally by offering high quality and long-lasting solutions.

100 YEARS LIFE!



Jacking Pipes for Trenchless Installations

Properties & Dimensions

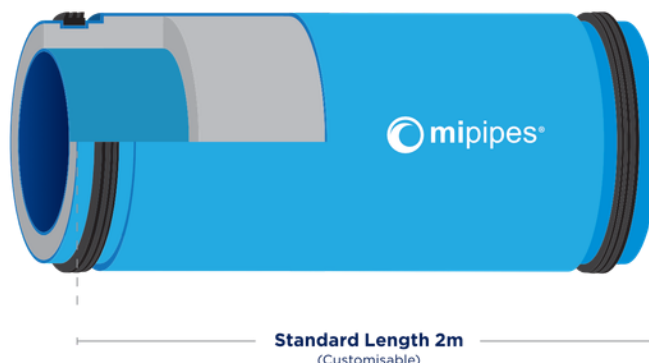
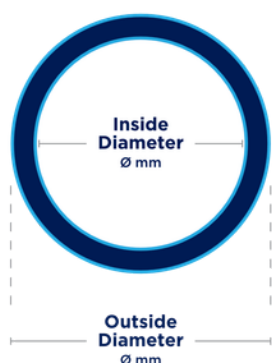
mipipes® are manufactured in standard lengths of 2m. Depending on project and site requirements, other lengths can also be manufactured upon request.

Standard Duty Pipes have thinner walls and less weight compared to our Heavy Duty Pipes and are designed to be used in ground where the jacking loads anticipated are low. The smaller outside diameter enables the contractor to use a smaller machine to install them, and the amount of slurry removed is reduced.

These pipes are suitable for installations at depths reaching 25 meters. At shallow depths, the contractor must ensure that any vehicle access over the pipe does not exceed the pipe strength.

Standard Duty mipipes®

Inside Diameter (ID)	Outside Diameter (OD)	Wall Thickness	Crushing Test Result	mipipes® Pipe Class	BS EN 14636-1 Required Pipe Class	Equiv. ASTM D6783 Pipe Class	Approx. Pipe Weight	Allowable Jacking Force
Ø mm	Ø mm	mm	kN/m				kg/m	Tons (See Note 2)
200	280	40	200	1000	160	V	63	38
225	305	40	207	920			72	43
260	337	38.5	200	769			78	45
300	374	37	175	583			85	46
400	483	41.5	147	368			125	79
450	544	47	170	378	140	IV	160	113
500	600	50	152	304			188	139
600	710	55	152	253			248	196
700	820	60	142	203			313	261
800	940	70	161	201			418	377
900	1,060	80	165	183			545	435
1,000	1,180	90	165	165			682	581



Note:

Pipes are joined by a Sleeve/Collar. The material of the Sleeve/Collar can be SS316, SS304, Mild Steel, or GRP depending on client requirements.

Heavy Duty mipipes®

Inside Diameter (ID) Ø mm	Outside Diameter (OD) Ø mm	Wall Thickness mm	Crushing Test Result kN/m	mipipes® Pipe Class 	BS EN 14636-1 Required Pipe Class	Equiv. ASTM D6783 Pipe Class	Approx. Pipe Weight kg/m	Allowable Jacking Force Tons (See Note 2)
200	280	40	200	1000	160	V	63	38
225	305	40	207	920			72	43
260	350	45	241	927			94	62
	400	70	>334	>1285			160	139
300	383	41.5	193	643			97	60
	400	50	221	737	140	V	120	87
400	520	60	230	575			189	156
	540	70	289	723			226	200
450	556	53	184	409			183	140
500	620	60	165	330		IV	230	191
600	740	70	230	383	140	V	322	289
700	840	70	179	256		IV	370	333
	870	85	234	334		V	459	443
800	960	80	198	248			484	459
	984	92	207	259			564	560
900	1,100	100	186	207			688	619
1,000	1,200	100	186	186			757	683

With higher wall thickness, our Heavy Duty Pipes can sustain higher jacking loads, and can be installed in any type of soil.

The Heavy Duty Pipes are strong enough to withstand ground loads exceeding 25 meters deep even after **100 Years of Life!**

In addition to the above sizes, Mi Polymer Concrete Pipes Sdn. Bhd. manufactures pipes that match the dimensions set by the BS EN 14636-1 Standard:

BS EN 14636-1 Dimensions

Inside Diameter (ID) Ø mm	Outside Diameter (OD) Ø mm	Wall Thickness mm	BS EN14636-1 Required Pipe Class	Approx. Pipe Weight kg/m	Allowable Jacking Force Tons (See Note 2)
200	275	37.5	160	61	33
225	317.5	46.3		86	58
250	360	55		115	89
300	400	50		120	87
350	475	62.5		177	148
375	512.5	68.8	140	209	184
400	550	75		245	223
450	605	77.5		281	260
500	660	80		319	300
600	760	80		374	353
700	860	80	140	429	406
800	960	80		484	459
900	1,100	100		688	619
1,000	1,185	92.5		695	606



Notes:

- 1 Mi Polymer Concrete Pipes Sdn. Bhd. reserves the right to modify any mentioned specifications without prior notice.
- 2 The allowable jacking forces are calculated based on full surface contact with zero angular deflection with a factor of safety of 3.2.
- 3 Mi Polymer Concrete Pipes Sdn. Bhd. is capable of manufacturing pipes with custom dimensions and/or strengths to meet special client/project requirements like wall thickness, pipe class, cutter head size, jacking force, etc.

Comprehensive Range of Standard & Custom Fittings

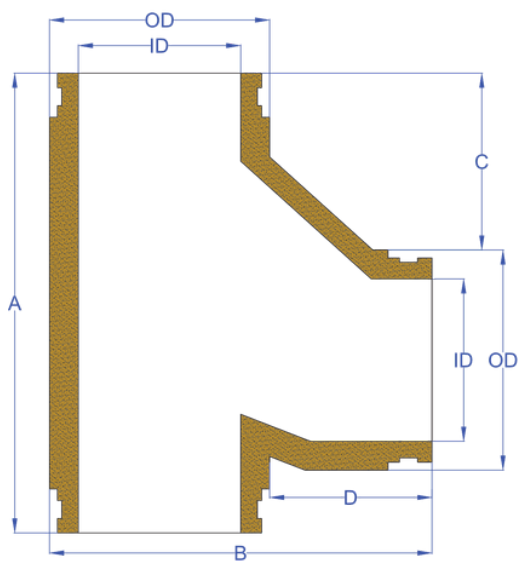
To ensure a seamless pipeline system, we offer a **complete range of polymer concrete fittings** designed to perfectly complement our pipes.

Standard-Sized Fittings:

- Tee
- Wye (Y)
- Elbow / Bend 90°
- Elbow / Bend 45°

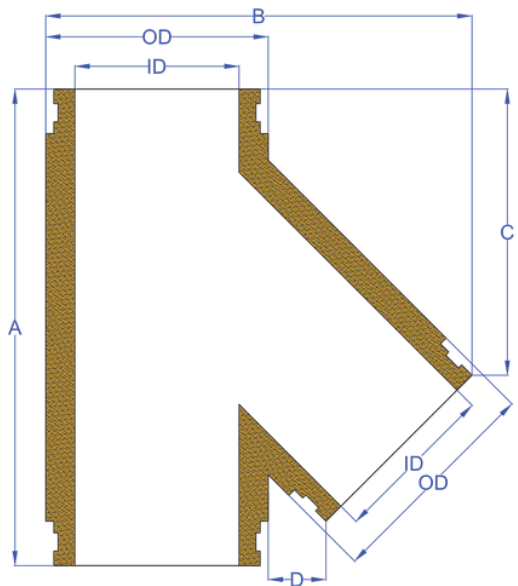


Tee



Inside Diameter (ID)	Outside Diameter (OD)	A	B	C	D
Ø mm	Ø mm	mm	mm	mm	mm
225	305	654	530	262	225
260	337	699	586	275	249
	350	717	608	280	258
300	374	751	650	290	276
	383	764	666	294	283
	400	788	695	301	295
400	483	905	839	335	356
	520	958	904	351	384
	540	986	938	359	398
450	556	1009	966	366	410
500	600	1071	1043	384	443
	620	1099	1077	392	457
600	710	1227	1234	430	524

Wye (Y)



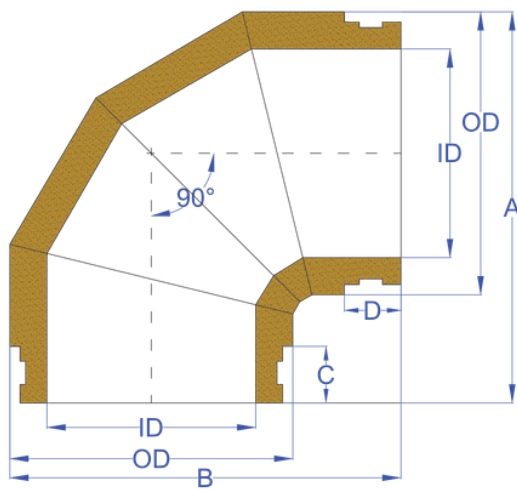
Inside Diameter (ID)	Outside Diameter (OD)	A	B	C	D
Ø mm	Ø mm	mm	mm	mm	mm
225	305	654	584	392	79
260	337	699	639	415	79
	350	717	661	424	79
300	374	751	702	441	79
	383	764	717	448	79
	400	788	746	460	79
400	483	905	888	519	79
	520	958	951	545	79
	540	986	985	559	79
450	556	1009	1013	570	79
500	600	1071	1088	601	79
	620	1099	1122	616	79
600	710	1227	1275	679	79



Note:

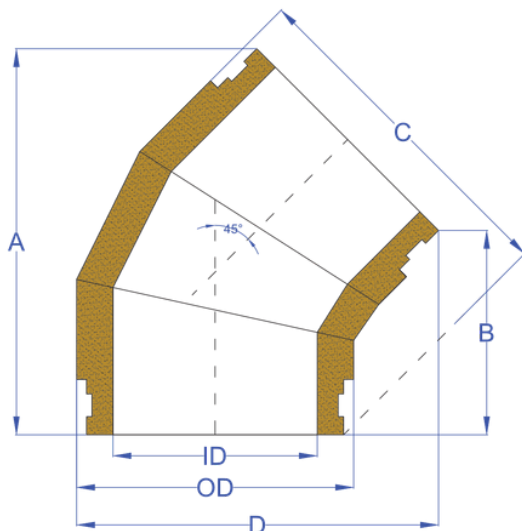
Other Diameters & Sizes are available upon request.

Elbow / Bend 90°



Inside Diameter (ID)	Outside Diameter (OD)	A	B	C	D
Ø mm	Ø mm	mm	mm	mm	mm
225	305	458	458	61	61
260	337	506	506	61	61
	350	525	525	61	61
300	374	561	561	61	61
	383	575	575	61	61
	400	600	600	61	61
400	483	628	628	61	61
	520	676	676	61	61
	540	702	702	61	61
450	556	723	723	61	61
500	600	780	780	61	61
	620	806	806	61	61
600	710	923	923	61	61

Elbow / Bend 45°



Inside Diameter (ID)	Outside Diameter (OD)	A	B	C	D
Ø mm	Ø mm	mm	mm	mm	mm
225	305	425	225	387	387
260	337	472	249	429	429
	350	490	258	446	446
300	374	525	276	478	478
	383	538	283	489	489
	400	562	295	511	511
400	483	582	256	578	578
	520	628	276	624	624
	540	652	286	648	648
450	556	673	295	667	667
500	600	719	310	722	722
	620	752	329	745	745
600	710	862	376	855	855

Custom Fittings — Tailored for Your Project Needs

We understand that unforeseen challenges can arise on-site, requiring **specialized solutions**. That's why we offer **custom-made fittings**, designed to accommodate unique project constraints and non-standard requirements.

Our custom fittings include:

- **Non-standard size fittings** — Designed to fit specific project needs.
- **Specialized fittings** — Engineered to overcome unique site challenges.
- **Couplers, reducers, and connectors** — Ensuring seamless pipeline integration.

Some of the Custom Fittings already supplied to customers are:

- 1-Piece Backdrop & Wye (Y)
- GRP Couplers & Reducers
- Polymer Concrete Reducer
- Fiberglass Testing Spool
- Custom Length Short Pipe
- GRP Manhole Cover



One Piece Backdrop



One Piece Tumbling Bay



GRP Coupler (Spigot to Pipe Body)



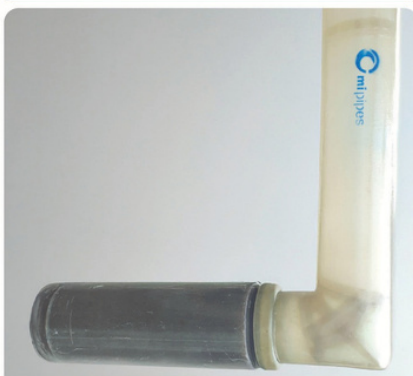
GRP Coupler (Body to Body)



GRP Reducer (Body to Body)



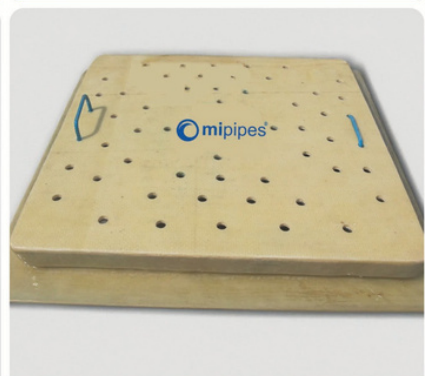
Polymer Concrete Reducer



Fiberglass Testing Spool



Custom Length Short Pipe



GRP Manhole Cover

Polymer Concrete Pipe with Steel Jacket

Revolutionary Patented Pipe — Exclusive to mipipes®

We are proud to be the **sole manufacturer** of this **patented** pipe, designed to address critical concerns of clients looking to **protect partial or entire jacking spans** from potential external damage.

Superior Corrosion Protection with a Solid Steel Jacket

This innovative pipe features a Polymer Concrete Pipe Encased in a **steel jacket**, available in **SS 316, SS 304, or Mild Steel**, customized to meet client requirements. It is the ideal solution for projects where future civil works may pose a risk of accidental damage to the installed lines.

How Our Patented Solution Outperforms Traditional Methods

For years, engineers relied on one of three costly and inefficient methods to tackle these challenges:



Extra-Thick Pipes ►► High Costs & Environmental Impact

- Increases material costs significantly.
- Requires larger jacking machines, leading to higher installation costs.
- Increased slurry removal, **increasing CO₂** emissions and transportation costs for disposal.



Installing a Sleeve Line ►► Double the Investment, Double the Effort

- Requires purchasing **two pipe lines instead of one**—a costly upfront investment.
- Jacking two lines doubles **installation costs, labor, and project timelines**.
- Increased slurry removal, **increasing CO₂** emissions and transportation costs for disposal.



Laying Two Parallel Lines ►► Wasted Resources & Additional Risks

- **Doubles the cost** of a single line, with the second line often remaining unused.
- If damage occurs, **both parallel pipes could be affected**, rendering the backup ineffective.
- Increased slurry removal, **increasing CO₂** emissions and transportation costs for disposal.

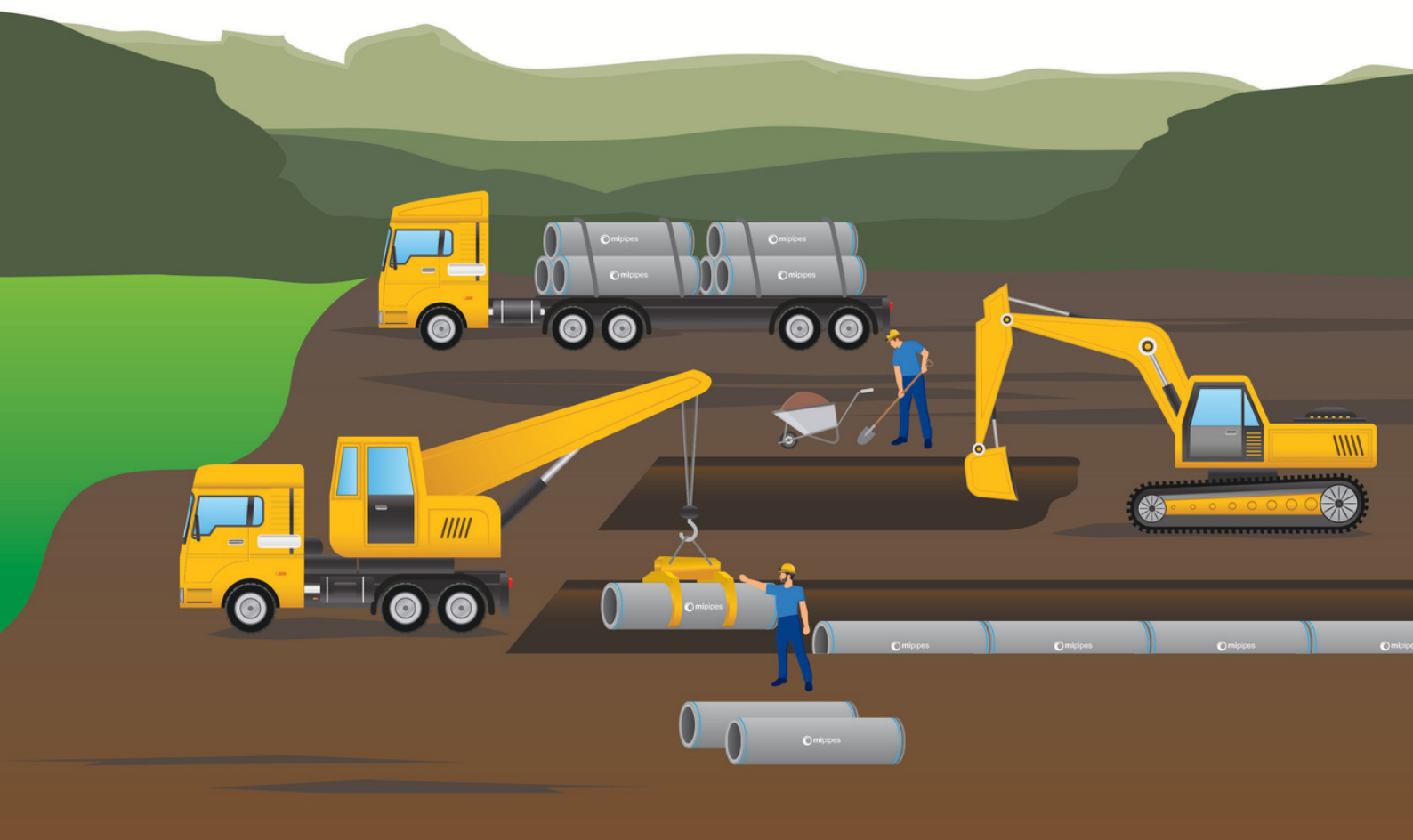


Our patented technology eliminates the need for these outdated methods, offering a smarter, more efficient, and cost-effective solution.

Proven Success in Real-World Projects

Our **innovative pipes have been successfully installed in multiple projects across Singapore**, setting a new standard for durability, efficiency, and cost savings.





Open-Cut Pipes for Trench Installations

These pipes are ideal for open-cut/trench installations. Whilst maintaining all of the advantages of mipipes® – Jacking Pipes, they differ in the wall thickness. Since they do not have to endure the great jacking loads during the installation process, they can be manufactured with reduced thicknesses.

They can be supplied in one of two types of joints:

- Spigot/Spigot (See Figure A)
- Socket/Spigot (See Figure B)

The choice of joint depends on client/project requirements.

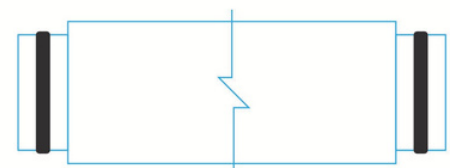


Figure A - Spigot / Spigot Joint

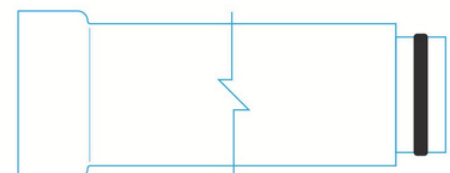


Figure B - Socket / Spigot Joint

Inside Diameter (ID) Ø mm	Outside Diameter (OD) Ø mm	Wall Thickness mm	BS EN14636-1 Required Pipe Class	Pipe Length mm	Approx. Pipe Weight kg/m
200	240	20	140	2,000	30
225	265	20			33
250	290	20			36
300	360	30			43
350	420	35			90
375	448	36.5	120	2,000	106
400	474	37			104
450	530	40			136
500	590	45			168
600	700	50			228

Note: 1 Other sizes are available upon request.



What is Polymer Concrete?

Polymer Concrete is a composite made of aggregates and Unsaturated Polyester Resin – UPR.

No Cement no Water and No Steel Reinforcement are used in the manufacturing of Mi Polymer Concrete.

The resin once cured, binds the aggregates together, giving Polymer Concrete a strength three times greater than conventional concrete.

Polymer Concrete has been around for over fifty years in one form or another.

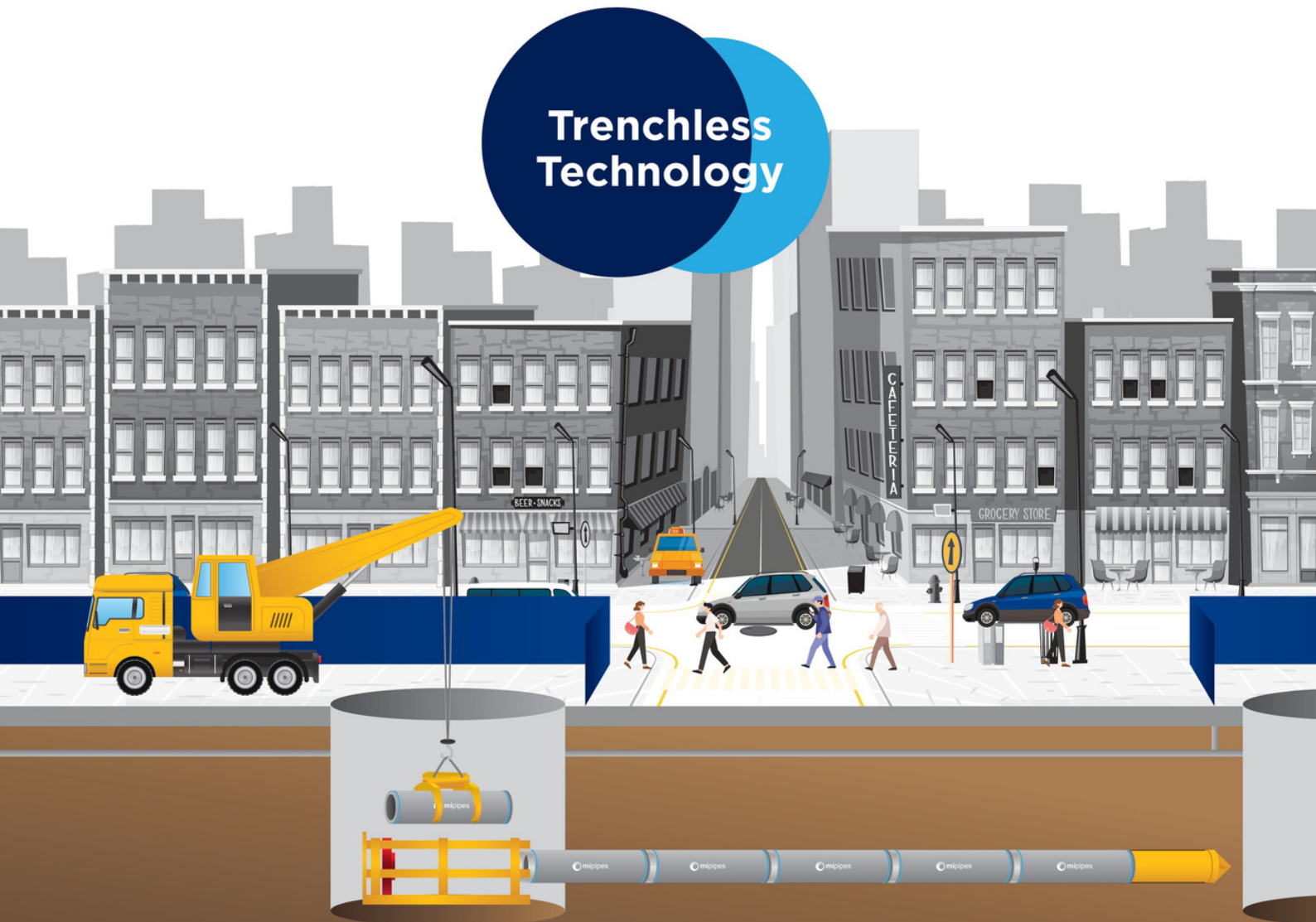
Polymer Concrete can be cast into many shapes, making it ideal for producing prefabricated structures normally produced in Reinforced Concrete particularly where the high strength of Polymer Concrete can be used in the design resulting in much thinner wall sections.

The main properties of Polymer Concrete are high strength & corrosion resistance.



What is Microtunneling?

**Trenchless
Technology**



**Conventional
Open-cut Installation**

mipipes® Benefits

100 Years Life

Placed in Solutions of PH1 & PH10 and kept under load for 14 months



High Strength

Compressive Strength Requirements



Maintenance Free



0.009 Manning Coefficient >0.013



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