

WE ALWAYS  
DELIVER  
WHAT WE  
PROMISE

# COMPANY OVERVIEW

01

Founded in 1980, Mersing Group of Companies is a leading engineering and construction services company, specializing in Trenchless Technology.

Mersing keeps abreast with the latest technologies for machineries, and always invests in the best equipment that encompasses state-of-the-art tools and machineries, to ensure efficiency in Trenchless Technology.

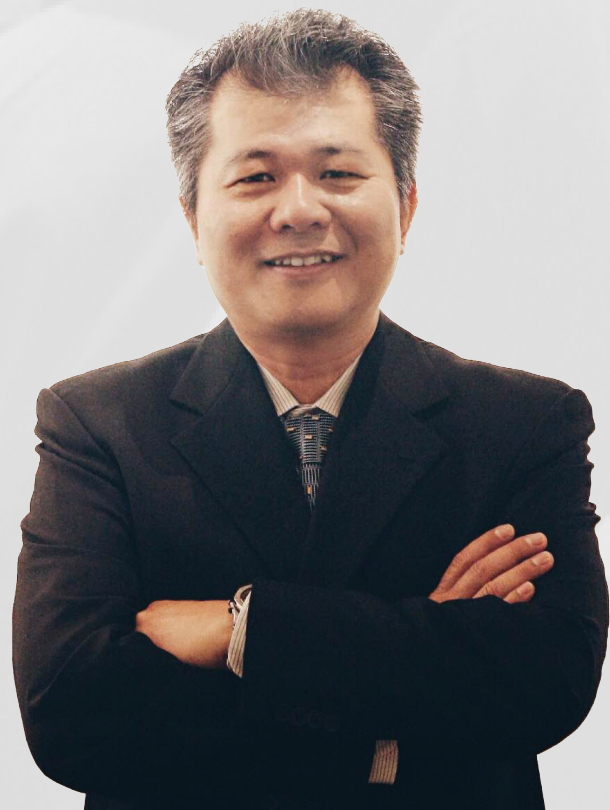
We pride ourselves in providing optimum engineering solutions and methods, proficient project management and relentless efforts to overcome engineering challenges. We are always about building a world-class trenchless provider in deploying innovative techniques and equipment to constantly move to greater technology advancements.





# MANAGING DIRECTOR (LIM CHEE KON)

02



“Certainty is the answer in our engineering design process. It is vital to ensure that every part is designed precisely, till it meets the goal. We believe that by cooperation and having a bird’s-eye view, it will make things happen.”

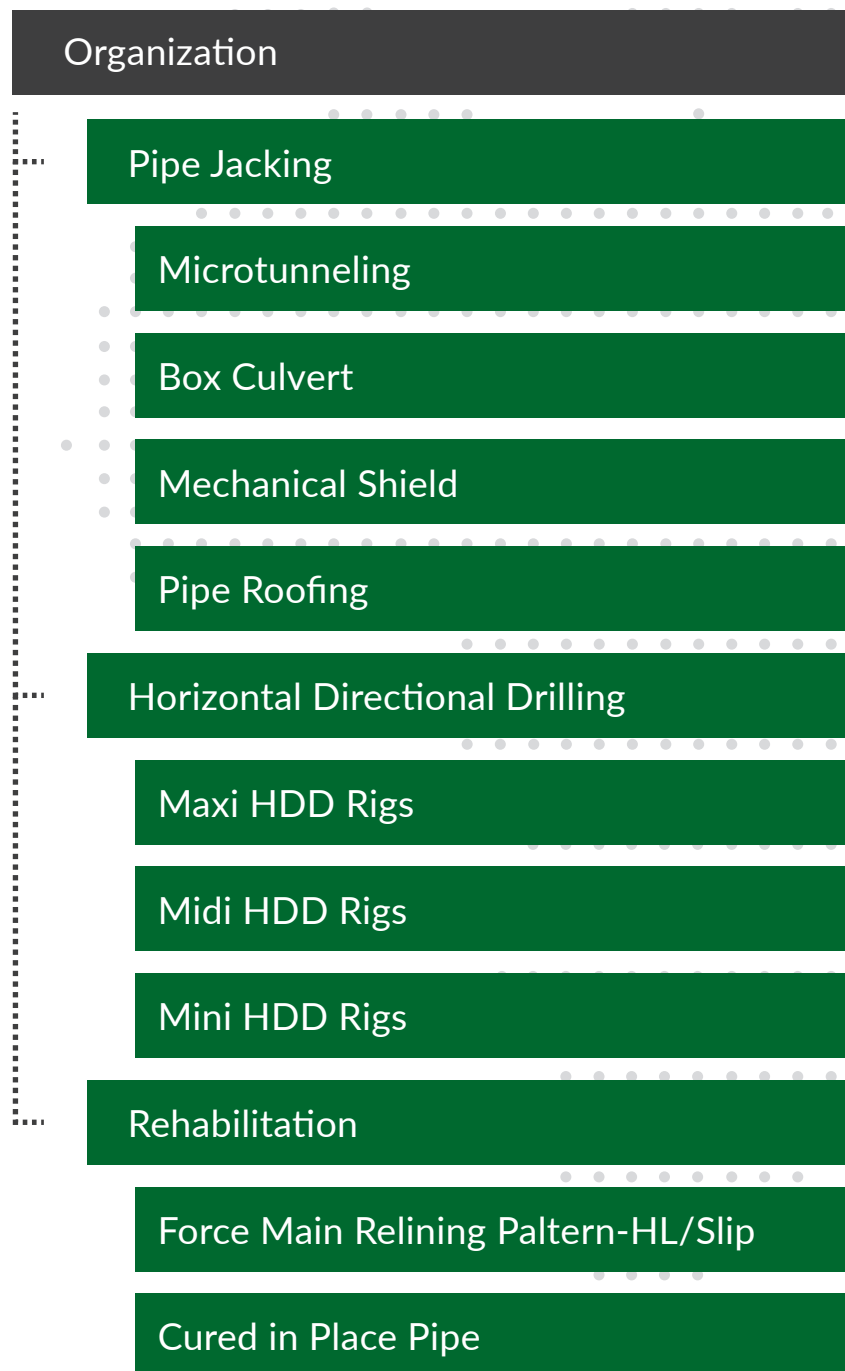
– C.K Lim

After assuming the helm at Mersing as the 2nd generation owner and Managing Director, C.K. Lim directly manages the Horizontal and Pipe Jacking division. He continues to achieve significant breakthroughs by means of complex and creative engineering. Under his leadership, Mersing was the first and largest Horizontal Directional Drilling Operator in Malaysia.

He is an active member of Trenchless Asia & ISTT. Many of Mersing’s trenchless projects have set the standards and are being emulated by other construction companies & engineering consultants in Malaysia.

# OUR FOOTPRINT

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## We started here

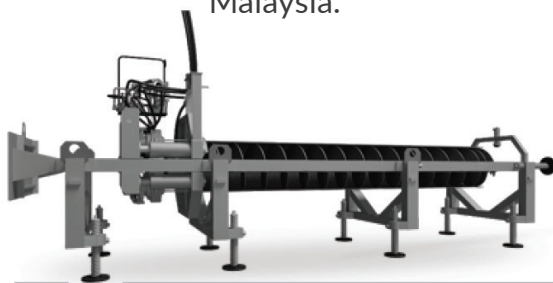
- Malaysia
- Sabah
- Singapore
- Indonesia
- Philippines
- India
- Taiwan
- Hong Kong
- Bangladesh

# MERSING'S HISTORY

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**1980**

Mersing Started as a trenchless engineering company in Malaysia.



**1985**

Introduced Mansfield-Pipe Jacking Method in Malaysia Pioneer in Auger Boring Method in Malaysia

**1987**

Purchased the Biggest Auger Boring Machine in Malaysia

**1994**

Invested in more machineries for Auger Boring, and begun purchasing Micro tunneling Machines.

**1995**

Purchased its 1st HDD Rig in Malaysia – Flow Mole and Completed its 1st HDD Crossing in Malaysia for a 16" Gas Steel Pipeline



**1996**

Registered under CIDB Civil Engineering (G6)

**1997**

Mersing's Largest Box Culvert Jacking Project

**1999**

Executed its 1st international HDD project - Cochin, India

**2000**

Executed its 1st HDD Project in Yuan Shan, Taiwan

**2002**

Executed its 1st Pipe Roofing Project in Malaysia - (L) 48m x (W) 10m x (H) 5m (Kuala Lumpur). And also executed its 1st HDD Project in the Philippines

**2003**

Executed its 1st HDD Project in Hong Kong - Hard Rock Mountain Crossing

**2004**

Executed its Largest Micro Tunnelling Project in Malaysia 8 Micro Tunnelling Machines Deployed Executed its 1st HDD Project in Indonesia Shore Approach (Barge to Shore)



**2005**

Executed its 1st HDD Project in Singapore - HDD Crossing Below Changi Airport Runway. The company was upgraded by CIDB to Civil Engineering and Construction (G7)

**2007**

Executed its 1st HDD Project in Abu Dhabi, UAE. And also executed its 1st HDD Project in Bangladesh

**2011**

The company was registered under SPAN Water Sewerage (C1) Water Supply (C1)

**2012**

Mersing won the McMillan Woods Global Awards 2012 for the Industry Class Awards in Construction and Engineering. Completed one of the most challenging Pipe Rehabilitation Project with Pipe Bursting and CIPP Lining method in Labuan, West Malaysia

**2014**

Completed one of the most challenging twin line HDD project for hard rock drilling from Ap Lei Chau to Aberdeen, in Hong Kong at 1960m twice for 2 crossings.

**2015**

Completed the pipe replacement with 1960m HDD in Pulau Ketam, Malaysia. Won the SME 100 award for being some of the Fastest Moving Companies in Malaysia.

**2016**

Completed the longest double WSD 2,000m HDD drilling in Hong Kong at 100m below seabed from Peng Chau to Sunshine Island and Hei Ling Chau Island.



# HOW WE DELIVER VALUE TO CLIENTS AND SOCIETY

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## Engineers

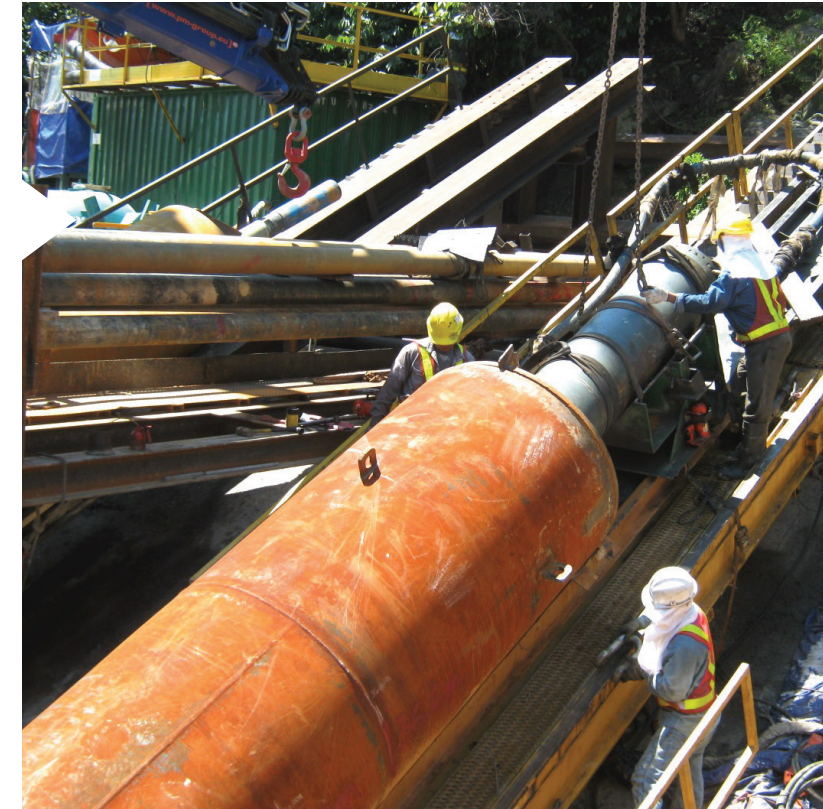
Our engineers are highly committed and experienced in providing long term, practical and cost effective solutions to our clients. They are adept with the efficient use of machineries and situation management to ensure a high quality and timely delivery of service. With the combined effort of great partnerships, a team of engineers and consultants, it gives us immense confidence to resolve engineering challenges with utmost precision.



## High Performance Equipment, Plant & Machineries

Our plant and machineries are imported with the surety of its performance and unfaltering delivery, on time, every time. Our team of mechanical engineers ensures that custom fabrication not only tighten loose ends, but also enhance productivity of our machineries as well.

Having used our machineries and putting it through pressure test, and stress analysis in order to ensure a smooth operation with no obstacles, we continuously enhance and raise our machineries' quality and capacity to achieve greater service standards.



## Green Technology & Being Responsible to the Community

We execute our jobs with the knowledge that it is beneficial to the environment and the whole eco-system in the long run. We pride ourselves in our clean records of catastrophic accidents/disasters and major injuries. Having operated efficiently and productively in countries with strict marine protection policies, noise pollution policies, as well as ecological policies, we have strategically designed our execution to meet and adhere to world standards.

With increasing channels of pipes within the ground, we are constantly aware of the effects they have on nature's environment. Together with our integrated chain of solutions, we have the technology, resources and skills to consistently deliver our services sustainably.





# TRENCHLESS ENGINEERING SERVICES & SOLUTIONS

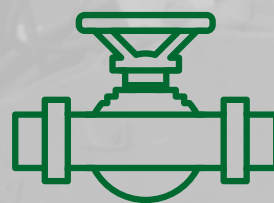
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Mersing has proven its expertise in the design and execution of trenchless works present in complex environments, tight environmental regulations and difficult geological or soil conditions.

We provide comprehensive civil engineering services that includes planning, design and feasibility studies, trenchless installations as well as technical and construction management and supervision. “Zero major accidents” is what drives us to minimize downtime and it’s a way to ensure that we’re about ultimate precision when it comes to the minutest of technical process.

In addition, to ensure that service delivery were engineered to last, with minimum environmental and surrounding impacts, we administer risk management services for all of our engineering services and solutions.

## Market Segments :



Wastewater



Electricity



Oil & Gas



Water Supply



Telecommunication



# HORIZONTAL DIRECTIONAL DRILLING (HDD)

07

This trenchless method of installing pipelines is extremely protective to the environment. It does not involve a large working space and does not disrupt other works as well as urban traffic systems. It can be done at any time of the day and requires a shorter duration for completion, hence it is cost effective when compared to conventional open-trench methods.

The HDD technology involves the use of special drilling tools that can be precisely steered to avoid any obstructions for any pipeline crossing to be completed.

This technology is flexible when it is adapted to any pipe size or length and pipe material necessary to be installed. This technology is used to install pipelines carrying oil, natural gas, and water.

Being a leader in the HDD industry, we started with our first overseas HDD crossing in Cochin, India in 1991. We have successfully engineered and completed many long HDD crossings in South East Asia. To date, Mersing has drilled 915 millimetres in diameter, with drilled lengths of 2,000 meters.

Our engineering excellence, technical innovation and in-depth experience have resulted in the development of Mersing, with advanced applications of HDD technology in the trenchless engineering industry.

## Types of Services that use Horizontal Directional Drilling

Island to Island, Highway and road crossings, Railway crossings, River Crossing, Underground tunnel and pipes crossings, Canal crossings, Swamp/marshland crossings.

### *Utilities that it carries :*

Water Supply, Drainage, Sewerage, Oil and Gas, Electricity, and Telecommunications

## Our Capabilities in HDD:

- 1) Feasibility studies, project risk analysis, project planning for HDD projects
- 2) HDD Construction Management Services, including equipment/tooling supply and technical personnel assistance
- 3) HDD profile design, calculations and analysis
- 4) Environmental risk assessment
- 5) HDD equipment and tooling design, selection and consultancy services

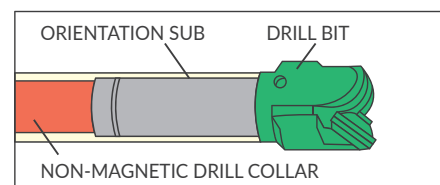
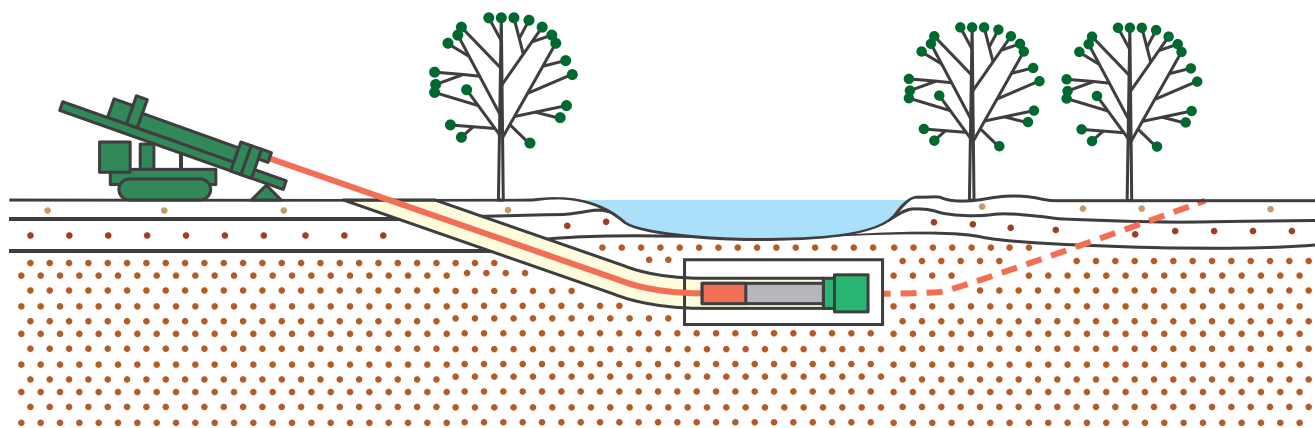


# HDD PROCESS [HOW IT WORKS]

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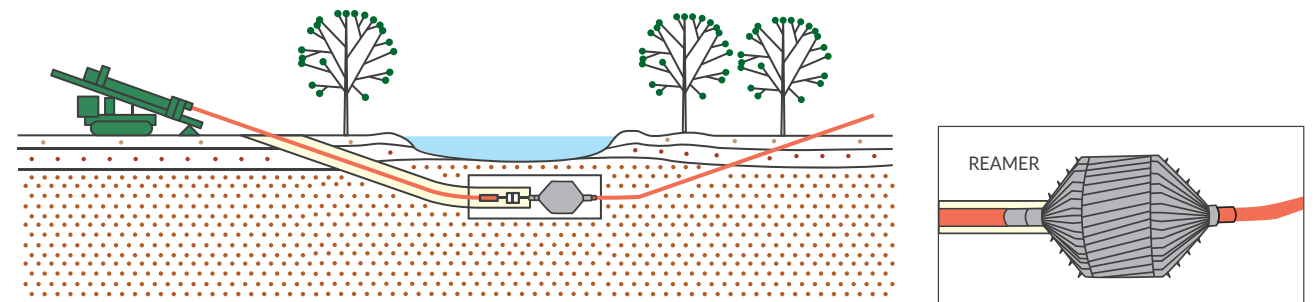
## STAGE 1 : Pilot hole drilling

Using a suitable pilot hole drilling BHA (Bottom Hole Assembly), a small diameter pilot hole is drilled from the ground surface. The pilot hole BHA spuds in at the entry point and drills into the ground following a predetermined path crossing underneath the elements of obstruction (rivers, lakes, channels, roads, railways, runways, existing tunnels, marsh lands, shorelines and the like). The pilot hole drilling is completed as it punches out of the ground at the designated exit point.



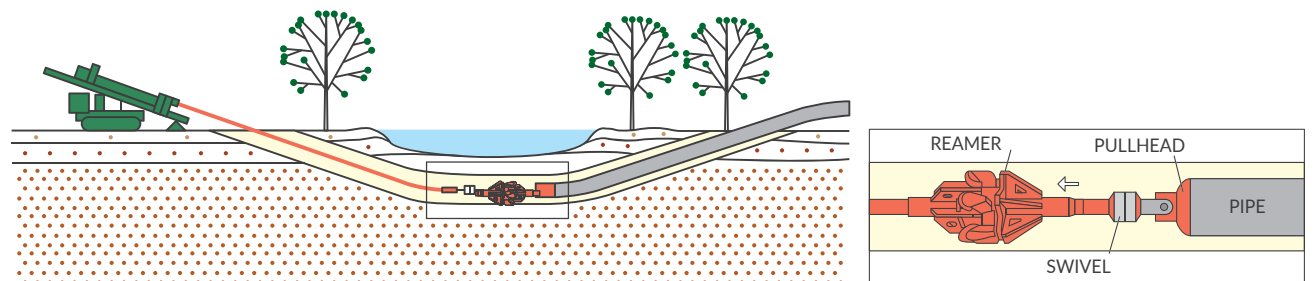
## STAGE 2 : Reaming

As soon as the pilot hole drilling process is completed, the small diameter pilot hole is enlarged to accommodate the intended product pipe. This process is done by installing a larger diameter BHA and reaming it (rotating while pulling or pushing) along the already drilled pilot hole. This process comes in stages / sizes depending on the final HDD borehole diameter designed for the product pipe.



## STAGE 3 : Pipe pull back

Upon completion of the reaming process, the product pipe is pulled in and installed inside the HDD borehole. This process is done by connecting a pulling head to the leading end of the product pipe and attaching the pulling head to the pullback assembly. The pullback assembly, together with the product pipe, will be pulled in the HDD borehole by the HDD Rig. The process is completed once the pullback assembly together with the product pipeline reaches the surface at the rig side. The pullback assembly is then dismantled from the product pipe for pipe tie-in or other works to follow.



# PIPE JACKING

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Mersing's second expertise is in pipe jacking. It is another trenchless method where pipe strings are being connected unit by unit until it reaches the length and destination required.

The hydraulic jacks would push the pipe string that is led by a cutter connected to the front of the pipe string, from the launch shaft towards the direction of the target shaft.

## Our Capabilities in Pipe Jacking:

- 1) Planning and design of alignment and profile
- 2) Analyse prediction of ground and tunnel deformations
- 3) Assessment of effect of tunnel boring works on adjacent structures
- 4) Construction advisory services
- 5) Provide design optimization
- 6) Consultancy on services in machineries and tooling selection

Pipe jacking is most ideal for new sewer construction. It is also used for sewer replacement and relining, gas and water mains, oil pipelines, electricity and telecommunication installations, culverts and subways. Mersing has the capacity to drill up to 2,500 millimetres in diameter and has drilled lengths up to 700 meters.

## HOW IT WORKS

### STEP 1 :

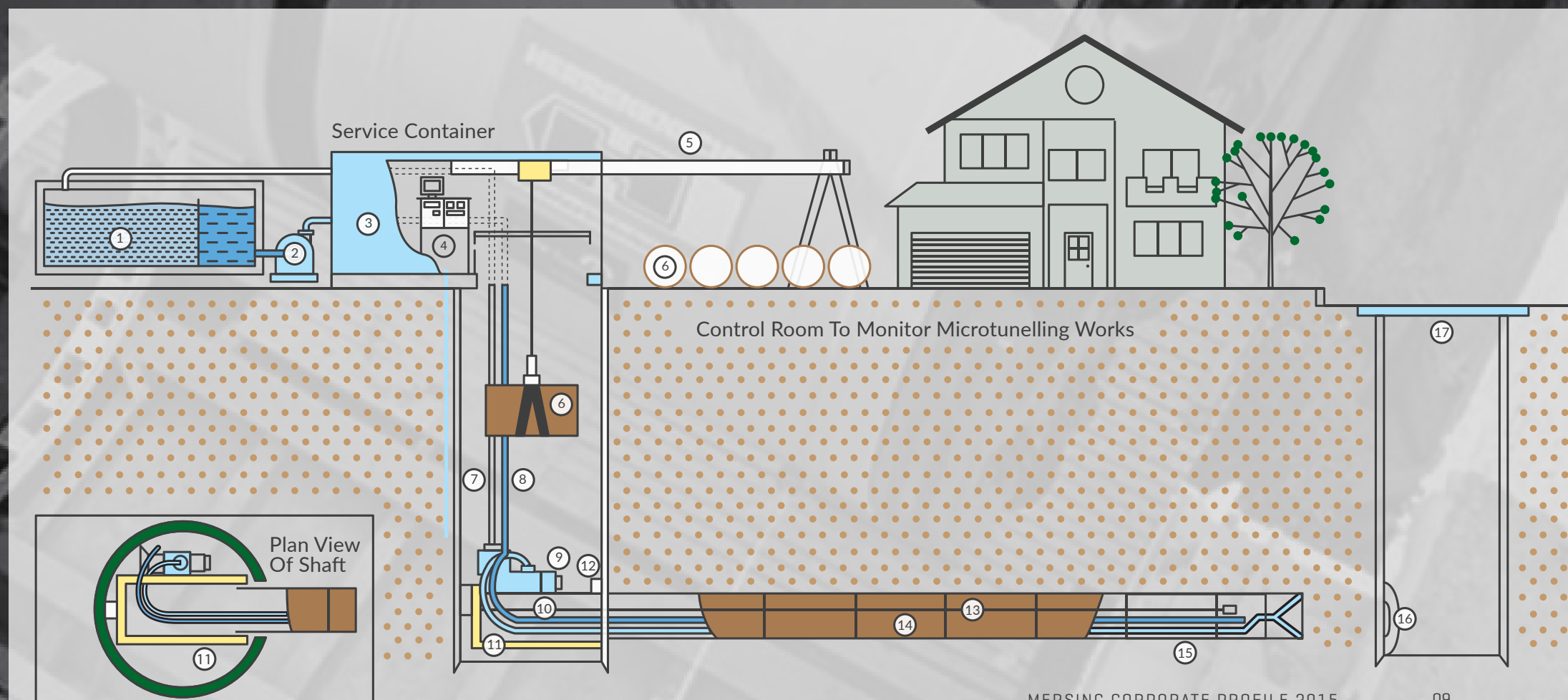
Firstly, the virgin ground is being excavated to create a manhole pit, the hydraulic jack is then placed at a strategic spot. The size and depth of the manhole pit varies, depending on the specification requirements.

### STEP 2 :

The pipe strings are strung together piece by piece towards the destined direction, from the launch shaft to the target shaft. Each pipe unit is being lifted down into the manhole pit by a crane.

### STEP 3 :

Once the string of pipes are connected from the launch shaft to the target shaft, the crane will then remove the cutter head from the manhole pit. Finally, both manhole pits will be sealed with cement seamlessly.





# OTHER TRENCHLESS SERVICES

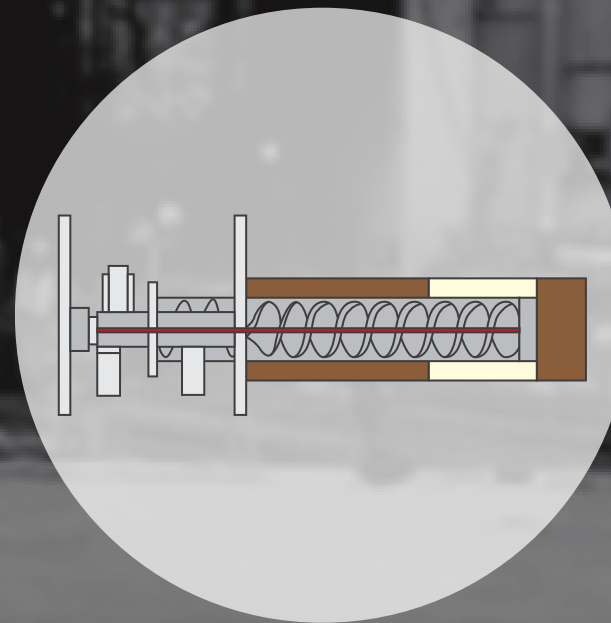
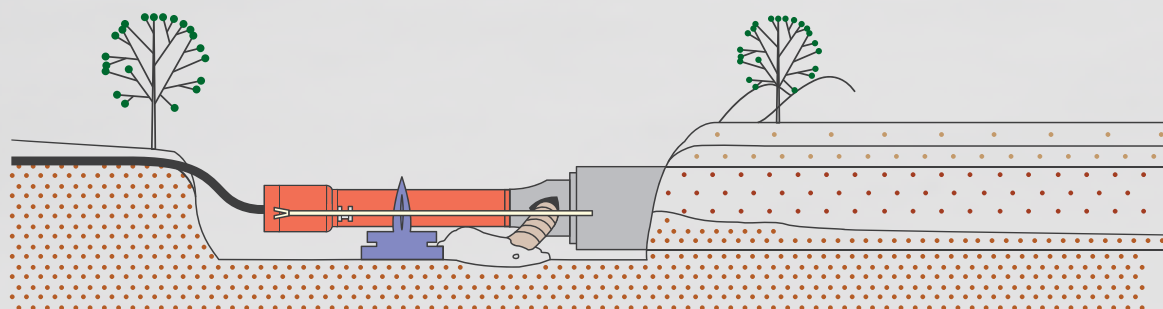
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## Pipe Ramming

Pipe ramming is an alternative trenchless technology to install steel pipes underneath roads, highways, railways, hills and earth bund walls. This method is most suitable for relatively straight gradient pipelines.

The process involves the use of a pneumatic hammer that is attached to a pipe casing end. The leading end of the pipe casing is left open and fabricated with a casing shoe of a slightly bigger diameter than the casing to ensure an over-cut. The pneumatic hammer is powered by an air compressor that converts the air flow to a succession of percussive blows that drives the casing into the ground. As the pipe casing is driven into the ground, its internal annulus is filled with excavated material. The internal annulus of the pipe casing is constantly cleared and cleaned off from the excavated material as it advances along the intended crossing.

We have the capability and experience to install pipe casings by pipe ramming method for steel pipes ranging from **600mm to 1600mm** in diameter.



## Pipe Roofing

Pipe roofing is essentially lined pipes, forming into a roof matching the shape of the tunnel that is formed earlier, by tunnel excavation, and by installation of steel pipes.

We have done several pipe roofing projects, particularly in 2002- highway Jacking, and 2009 - NKVE Tunnel at Jalan Persiaran Tropicana. Mersing has the capability to do up to lengths of 100 meters, and at the diameters of **1,500mm - 2,000mm**.

## Guided Auger Boring

We have 30 years of experience in the guided Auger Boring method. It is one of the most reliable methods for short crossings, which is non-steerable and it is an ideal method for straight and accurate drives in various ground conditions. Our capacity of drilling ranges from 60 meter - 80 meter maximum, 300mmØ.

During installation, the pipe fully supports the ground while the cut spoil is conveyed by continuous flight auger back to the work pit. A laser or theodolite guidance system steers the asymmetrical head through the hollow tubes.

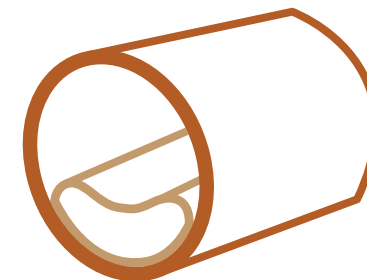
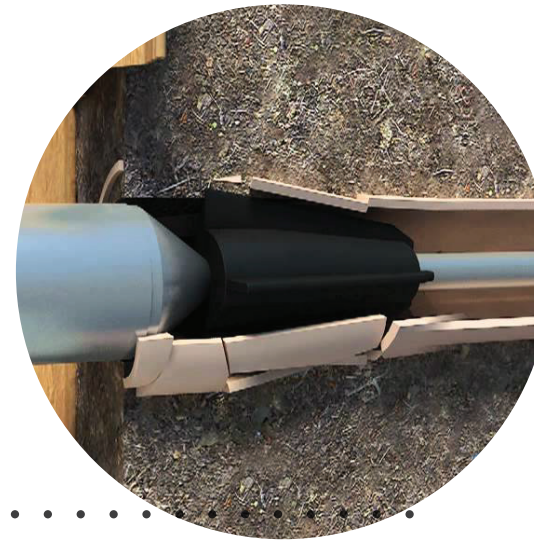
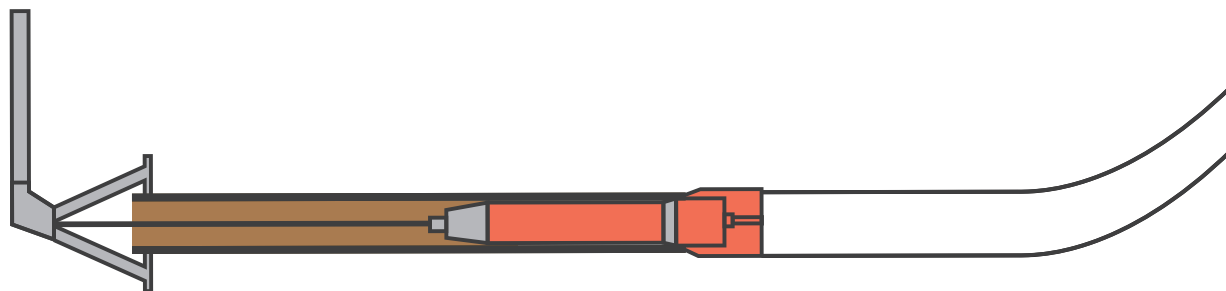
Once the pilot tube reaches the exit shaft, an accurate line that has been established, either the upsizing or pipe pull can begin. Quite similar to pipe jacking, the Auger Boring machine is pushed from the launch shaft to the exit shaft.

# OTHER TRENCHLESS SERVICES

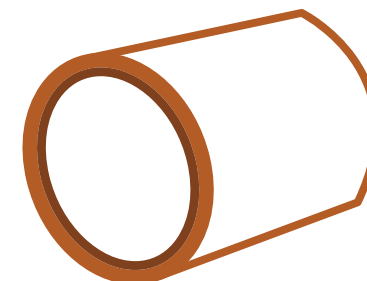
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## Pipe Rehabilitation

We have the necessary expertise and experience to provide the solution and services for a wide range of pipe rehabilitation, as we understand that every underground structure deteriorates over time, therefore it is vital that diameter sizes and estimations of length are determined strategically to ensure the longest use of each pipeline.



Flexible Liner



Finished Pipe



## Pipe Bursting

Pipe bursting is a trenchless rehabilitation method of replacing or renewing deteriorated buried pipelines. This method uses a hydraulic bursting mandrels to crush the existing lining of faulty pipes, while pulling a new pipe into place at the same time. The crushed pieces from the pipe is forced into surrounding soils, acting as a bedding material for the new pipe. Pipe bursting is well suited to brittle pipes and allows for the size-for-size or increased size replacement of the existing pipe, such as sewer, water, or natural gas pipes. It is sometimes also used to replace an undersized pipelines as well.

## Cured-in-Place Pipe [CIPP]

Cured in Place is a trenchless engineering method that is most suited for pipe rehabilitation in restricted accesses, as it can also be reconnected internally without excavation. CIPP is a popular method for pipe rehabilitation, due to its seamlessness, and ability to cover the widest range of pipe materials including clay, HDPE, concrete pipes and etc. CIPP is a preferred method to rehabilitate cracked, broken and failed sanitary or storm sewer pipes. Mersing has the capability to rehabilitate pipes with minimum surface disruption ranging from 101mm–203mm in diameter.



# HEALTH, SAFETY & ENVIRONMENT COMMITMENT

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Mersing understands that excellence in Health, Safety and Environment processes and standards are vital to the well-being of the people and is essential to all aspects of our global business. Hence, we look for long term solutions to address the needs of our clients, whilst adopting the safest methods to execute the job, understanding the geology of the grounds we work on, and protecting the condition of the environment, as well as the flora and fauna of the project area. Our company has developed and implemented formal Quality Management System which meets the requirements of **ISO 9001:2008**, **ISO 14001:2015**, and **OHSAS 18001**.

The following are some principles of our company on Health, Safety and Environment commitment:

- We ensure that design methods and tooling equipment are applicable to laws and regulations of the country we operate on.
- We minimise risk to our employees, the public and the environment.
- We keep ourselves updated with any external factors, and improvise our safety plans accordingly, without delays.
- We ensure that employees are operating in a state of good health and alertness.
- We believe all occupational injuries and illnesses are preventable.
- We respect the diverse environment and cultures in which we operate in.
- We endeavour to collaborate as a team, with sub-contractors which share our Health, Safety and Environment commitment.
- We support open communication between Mersing and the client; and we work with their public interest groups who conduct research, report, develop and implement standards for Health, Safety and Environment protection.
- We encourage reporting of all Health, Safety and Environment related hazards, potential hazards, incidents and near-hits. We take each report seriously.
- We are committed to improve our Health, Safety and Environment standards every year.

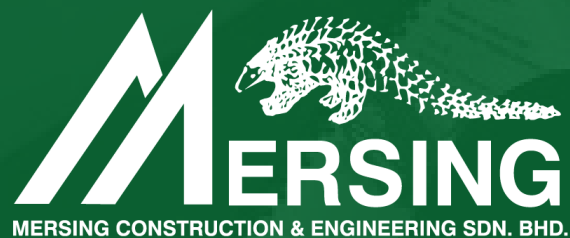


# OUR EQUIPMENT & MACHINERIES

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To achieve precision drilling, we constantly invest in imported and world-class engineering machineries and equipment that are able to assist us efficiently. We also fabricate machineries to increase performance. Mersing deploys specially trained mechanics to job sites for equipment assessments and maintenance during projects. It is our priority to ensure that our equipment are always up and running smoothly to avoid downtime.





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