

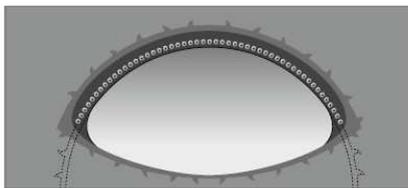
## AT-Casing System for Pipe Roofing and Drainage HCI

### Introduction

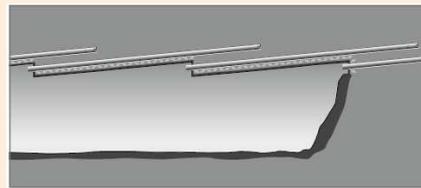
The AT - Casing System is a pre-piling pipe roof used as a support measure before excavation in weak ground condition thought to be soft, or subsidence-sensitive. The system theory is to put a series of steel pipes on top of the expected excavating face and grouting. The installed pipe roof can form a stable support in the working area by transferring loads in the longitudinal direction and decrease excavation induced deformations.

The system can increase safety in the working area of tunnel. In conjunction with the PANTEX Lattice Girder, steel fabric, HCI Self-Drilling anchors or SN Rock Bolts and shotcret after excavating, it can form a 3-dimension support for the open span of the tunnel.

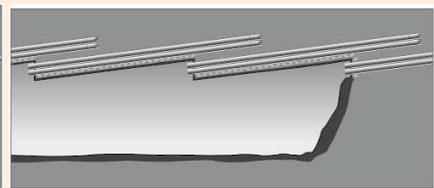
**HCI employs the Austria ALWAG-TECHMO AT-Casing System and has more than 20 years experience in operating the system. All of the system components are now manufactured locally in Taiwan. HCI can offer not only the whole system components, but also the technical assistance in filed operation if needed.**



Cross section  
of the AT-Casing system application



Single AT - Casing pipe roofing



Double AT - Casing pipe roofing

### Main Advantages

- Application in weak ground and ground conditions prone to subsidence
- Simple and robust system components can be installed by various drilling machines
- Simultaneous drilling and tubing design can save the installation time and reduce the cost
- Reduction of displacements by an immediate support of the borehole wall during installation
- Flushing water re-circulates inside the casing pipe without deteriorating the surrounding ground condition
- Accurate alignment of the casing pipes due to a minimized annular gap
- Flexibility in drilling depth due to the extendable casing pipes with a standard length of 3 m
- Easy extension of the casing pipes even in constricted space



## AT-Casing System for Pipe Roofing and Drainage

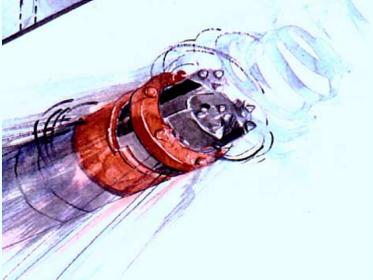
HCI

### System Description

- The AT-Casing System is composed of pilot drill bit, single-use ring bit, extendable steel pipes, extendable drill rods, and grouting plug.
- The steel pipes, depending on their position within a borehole, are in different section numbers, including section 1 (first section is welded with impact shoe allowing the pipes to advance with the main drill bit), section 2 and 3 (with small drilled holes on the pipe's body), second 4 (last section without drilled holes).
- The life cycle of the main drill bit depends on the geology condition. HCI will provide assistance for analyzing the quantity required for different projects. HCI can just offer the extendable pipes and single-use ring bit if the customer already has the AT-Casing System operated on site.
- Standard casing pipe, Type AT-76, AT-114 and AT-139, Steel Grade according to CNS 2056 G3030, test proved by CNS2111 and CNS10006

### System Components



		
	<p><b>Pilot drill bit</b></p> <ul style="list-style-type: none"> <li>■ Reusable</li> <li>■ Embedded with tungsten steel button</li> </ul>	<p><b>Single-use Ring bit</b></p> <ul style="list-style-type: none"> <li>■ Single-use</li> <li>■ Embedded with tungsten steel button</li> <li>■ different types according to the geology</li> </ul>
		
<p><b>Linear Positioner</b></p> <ul style="list-style-type: none"> <li>■ Keep the pilot drill bit to advance in the linear direction without deviation</li> </ul>	<p><b>Coupler</b></p> <ul style="list-style-type: none"> <li>■ connection between the pilot drill bit and the linear positioner</li> </ul>	<p><b>Impact Shoe</b></p> <ul style="list-style-type: none"> <li>■ A foothold for pilot drill bit allowing the pipes to advance with the pilot bit</li> <li>■ Allowing the ring bit to drop off after installation</li> </ul>

### AT-Drainage System

- The AT-Drainage System is another application of Austrian ALWAG-TECHMO AT-casing System
- The drainage pipe is made by PVC. The surface of the pipe body will receive special process and cut with fissures to allow the water to be drained more efficiently



### Specification

Item/Specification	Material	External Diameter (mm)	Internal Diameter (mm)	Thickness (mm)	Width of Saw Teeth (mm)
AT114 Drainage Pipe	PVC	118	108	5	2