



An ISO 9001:2000 Company



Your Specialist Partner for Design & Build Projects



*One Stop Solution Provider for all Ground Engineering Works*



## Profile

*Bumi* is a specialist in design and build contracts to participate in sophisticated high-tech, modern and advanced construction activities. Our activities include Subways, Mass Rapid Transit tunnels, offshore structure, undersea structure, mineral exploration, dam construction, soil and rock stabilisation complicated foundation in restricted area, deep excavation and basement constructions etc.

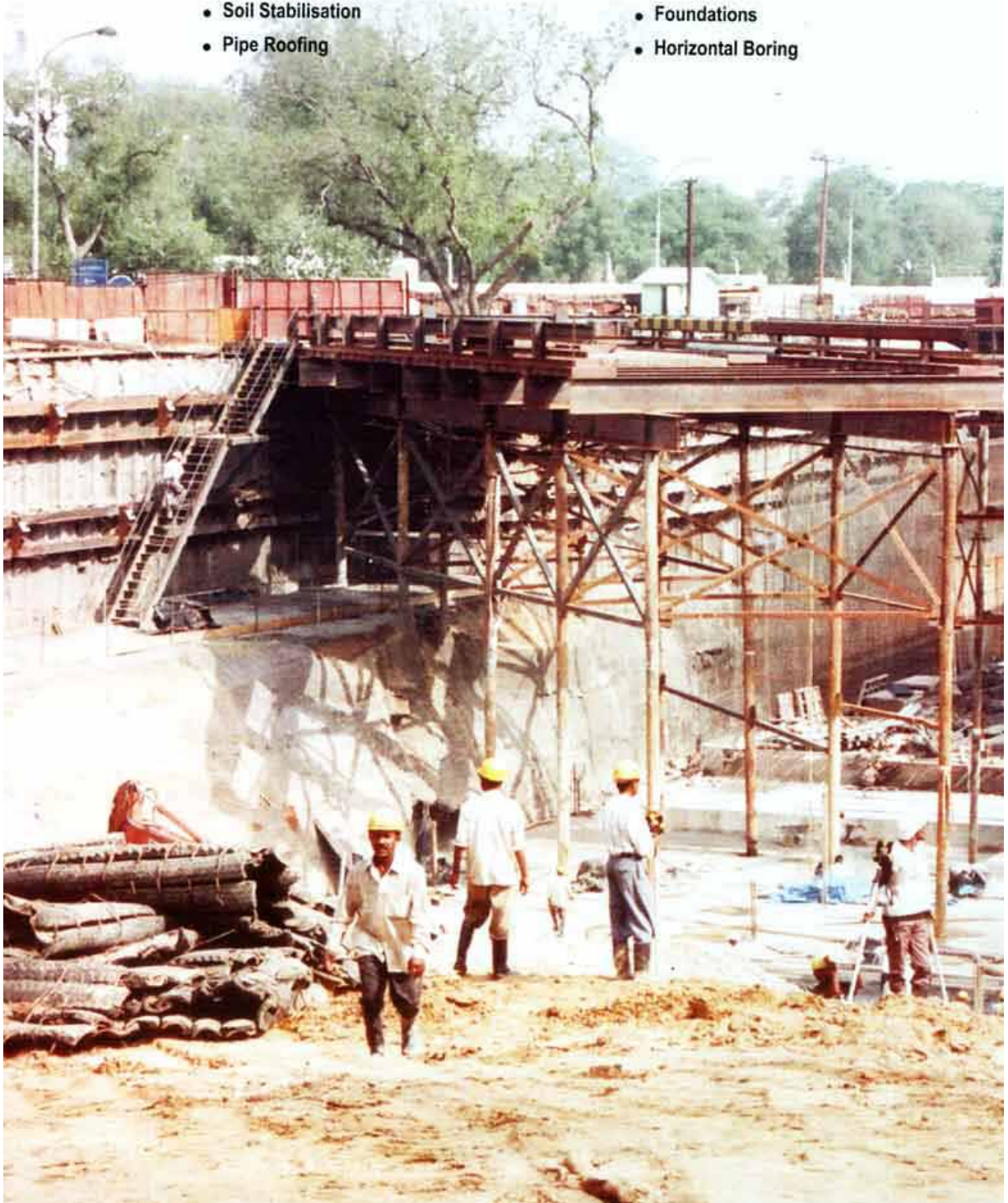
As a leading specialist contractor *Bumi* provides complete package to satisfy the most diverse requirements for construction task, with reliable and cost effective system as well as highly developed and advanced techniques.


With our professionals and expatriates from various countries, who have sound experience of working in several countries, with most complicated and difficult projects have the skills to adopt to the advanced construction methods. We are confident of giving solutions and carrying out construction works under challenging and tough circumstances.

To carry out construction work in relation to various specialised projects *Bumi* mobilises special and sophisticated equipments from the most reliable manufacturers such as BAUER, SOILMECH, NCB, ATLAS COPCO, INGERSOLLRAND and TECNIWELL.

## **SPECIALIST IN DESIGN AND CONSTRUCTION OF**

- Jet Grouting
- Chemical Grouting
- Geotechnical Instrumentation
- Soil Stabilisation
- Pipe Roofing
- Ground Anchors
- Micro Piling
- Bored Piling
- Foundations
- Horizontal Boring





### OUR MISSION

Excelsior is our goal to excel in achieving continual development and growth through the most competent human resources, and reliable machinery with advanced Technology, so as to put Bumi in the field of Ground Engineering to be a leading Contractor.

### OUR VISION

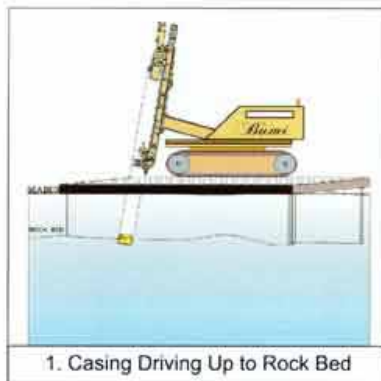
To be the best Design and Build Contractor in the ground engineering field to provide solution and execute the work within the budget and better efficiency.



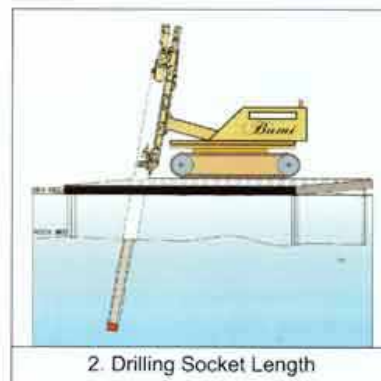
**500 Ton Rock Anchor Installation  
at Jurong Island Singapore**



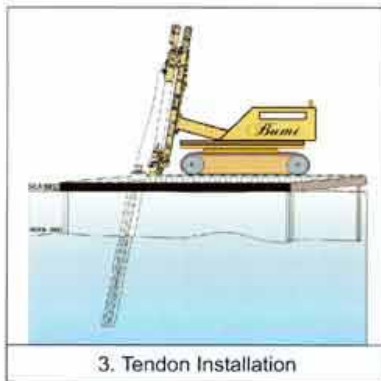
# OFFSHORE ROCK ANCHOR



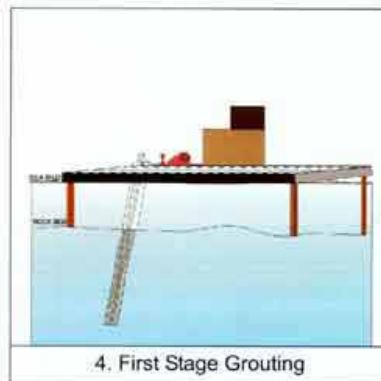
1. Casing Driving Up to Rock Bed



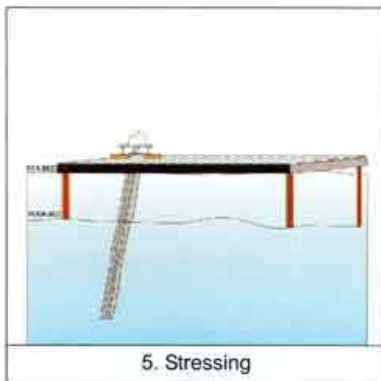
2. Drilling Socket Length



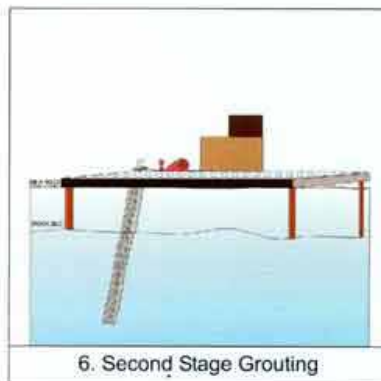
3. Tendon Installation



4. First Stage Grouting



5. Stressing



6. Second Stage Grouting

### Applications:

- ❖ Offshore jetties and Dolphins.
- ❖ Offshore Permanent and Temporary platforms.
- ❖ Temporary Dykes.
- ❖ Piling work for bridges in sea and river structures.

### Advantages:

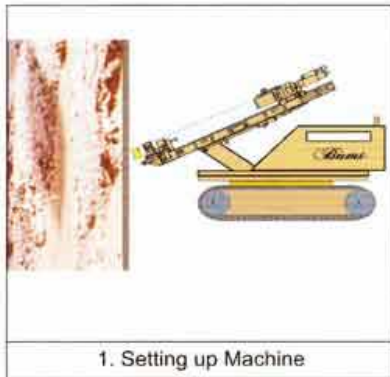
- ❖ Gives higher working capacity to the casing piles installed.
- ❖ Efficient and Economical method to increase the capacity of offshore piles



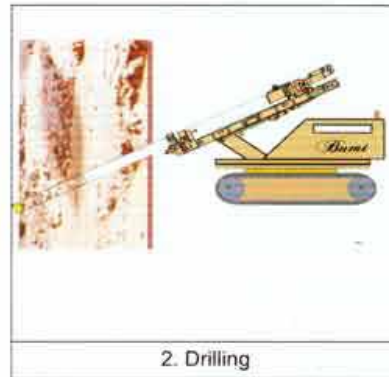
**Soil Anchor Installation at V.V. Station, MC1A,  
Delhi Metro Rail Corporation, New Delhi, India**



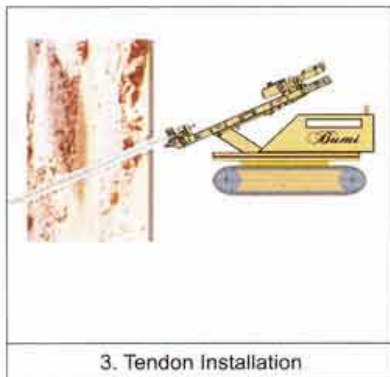
# REMOVABLE SOIL ANCHOR



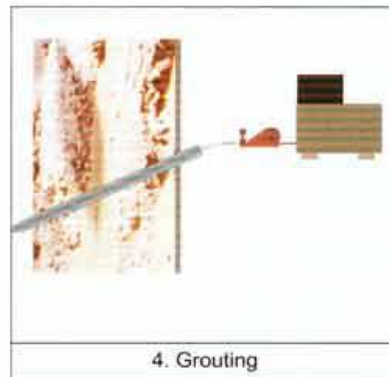
1. Setting up Machine



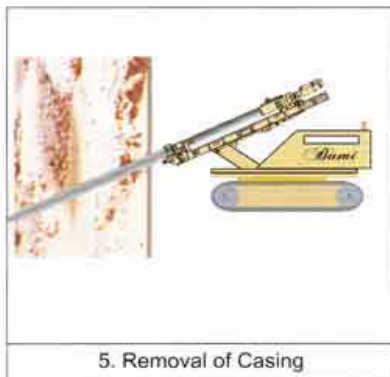
2. Drilling



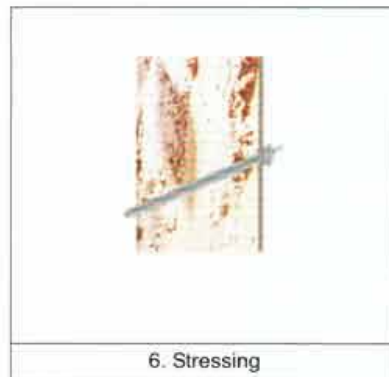
3. Tendon Installation



4. Grouting



5. Removal of Casing



6. Stressing

## Applications:

- ❖ Temporary Support for Retaining walls for deeper excavation.

## Advantages:

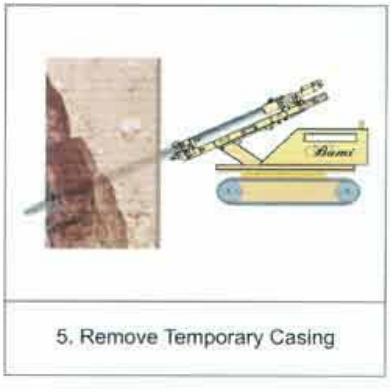
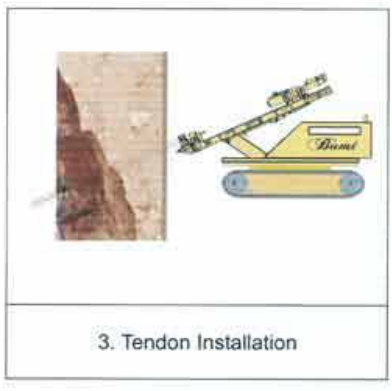
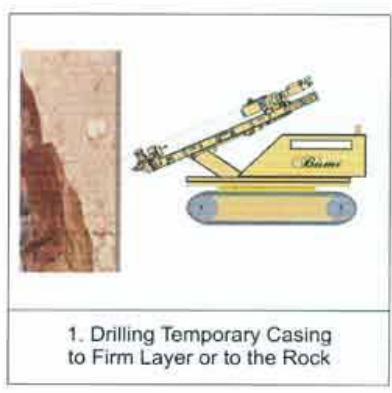
- ❖ Gives flexibility for deeper excavation without interfering into adjacent land.
- ❖ Free and un-obstructed area for movement of excavators and dumpers.
- ❖ Installation of anchors in collapsible soil layers.



Rock Anchor Installation at Central Secretariat, MC1B,  
Delhi Metro Rail Corporation, New Delhi, India



# REMOVABLE ROCK ANCHOR



### Applications:

- ❖ Temporary Support for Retaining walls for deeper excavation.

### Advantages:

- ❖ Gives flexibility for deeper excavation without interfering into adjacent land.
- ❖ Free and un-obstructed area for movement of excavators and dumpers.
- ❖ Installation of anchors with soil overburden and rock layers.



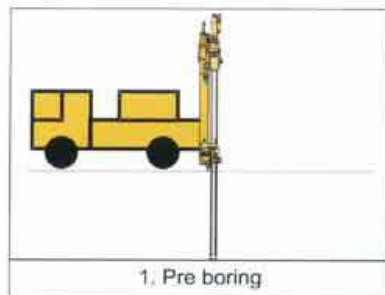
Grouting at DTSS-T02 Deep Tunnel Sewerage System, Singapore



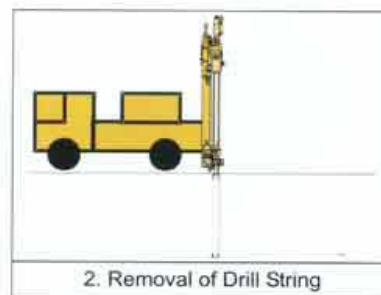
Jet Grouting at Omkareshwar Hydroelectric Power Project, MP, India



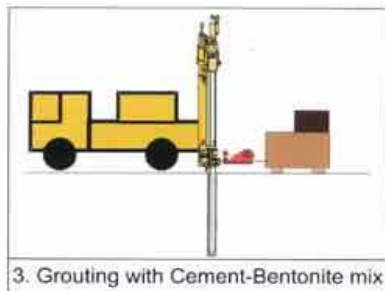
# JET GROUTING



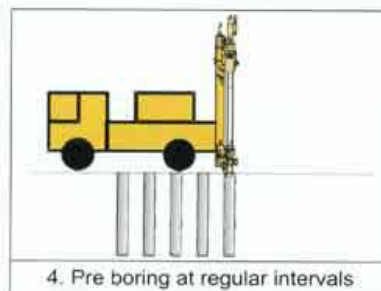
1. Pre boring



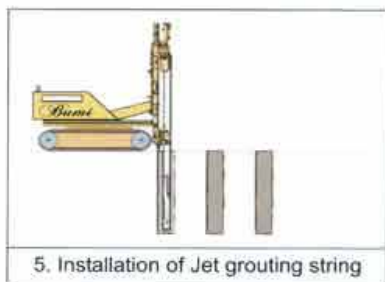
2. Removal of Drill String



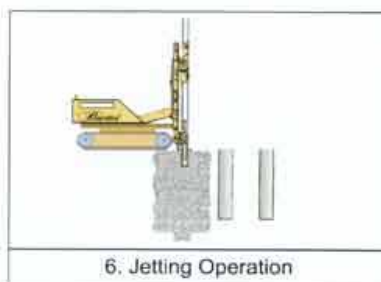
3. Grouting with Cement-Bentonite mix



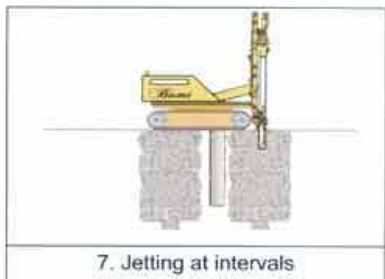
4. Pre boring at regular intervals



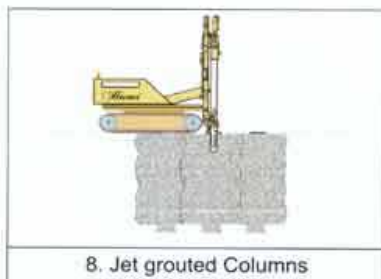
5. Installation of Jet grouting string



6. Jetting Operation



7. Jetting at intervals



8. Jet grouted Columns

## Application:

- ❖ Underpinning
- ❖ Diaphragm
- ❖ Tunnel consolidation
- ❖ Bottom plugs
- ❖ Slopes consolidation
- ❖ Impervious cut offs
- ❖ Diaphragm wall gaps
- ❖ Break-in and break out for TBM

## Advantages:

- ❖ Wide range of soils that can be successfully treated
- ❖ Capability to obtain columns of consolidating soil with diameter ranging from 60 to more than 200 cm by using small diameter drilled holes in general not larger than 100 to 140 mm
- ❖ Capability to overpass pre-existing foundations boulders, rocky layers
- ❖ Use of light weighing and small sized drilling rigs in small working areas

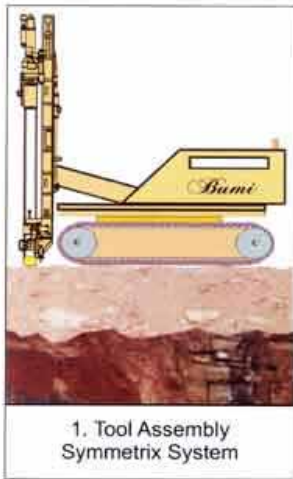


Tubular Kingpost at CS station MC1B,  
Delhi Metro Rail Corporation, New Delhi, India

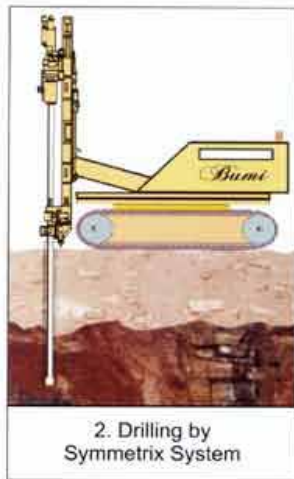




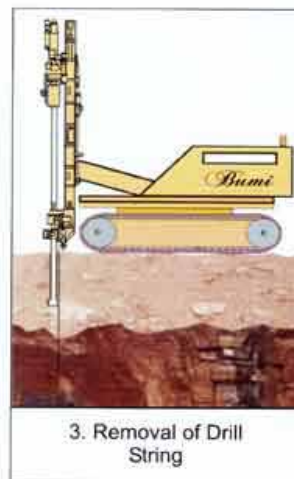
# CASING PILE / TUBULAR KINGPOST



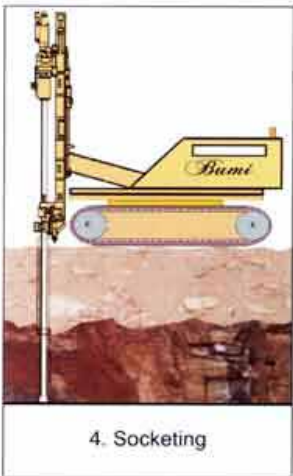
1. Tool Assembly Symmetrix System



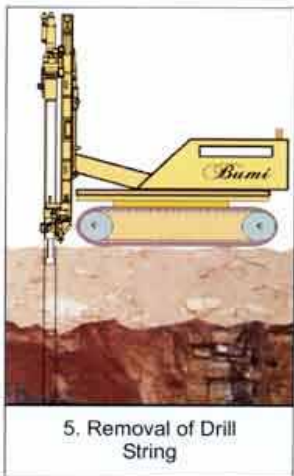
2. Drilling by Symmetrix System



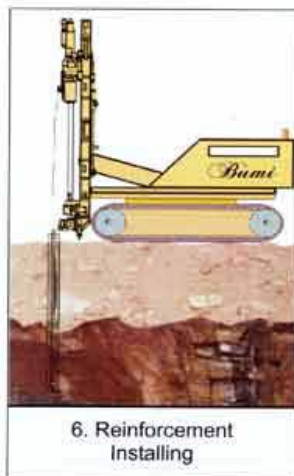
3. Removal of Drill String



4. Socketing



5. Removal of Drill String



6. Reinforcement Installing



7. Grouting

### Application:

- ❖ Tubular Kingpost for underground Structure
- ❖ Platform & Deckings
- ❖ Basement, Tunnels and Underground Construction Works

### Advantages:

- ❖ Give faster and rigid support for temporary works
- ❖ Economical solution for excavation activities
- ❖ Possible to Install at any kind of formation such as over burden, boulders, Very Strong and abrasive quartzite formation, where other methods are not possible



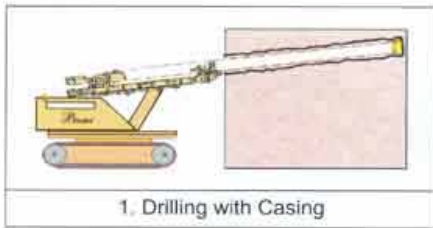
Anchors installed 8° upwards with high water ingress



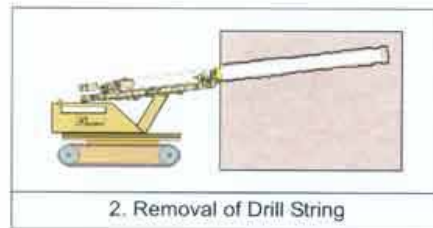
Pipe Roofing with Anchor at Amar Cinema Shaft, MC1B, Delhi Metro Rail Corporation, New Delhi, India



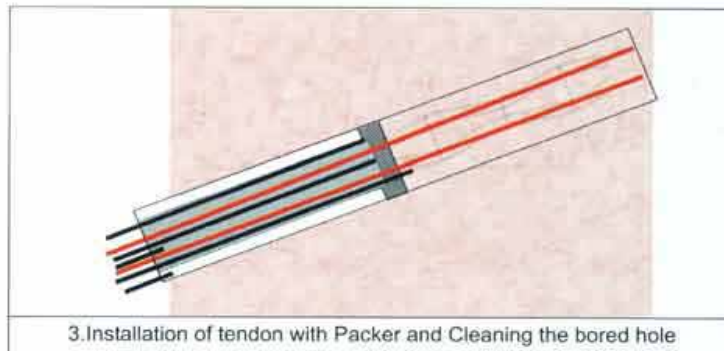
# PIPE ROOFING WITH ANCHOR



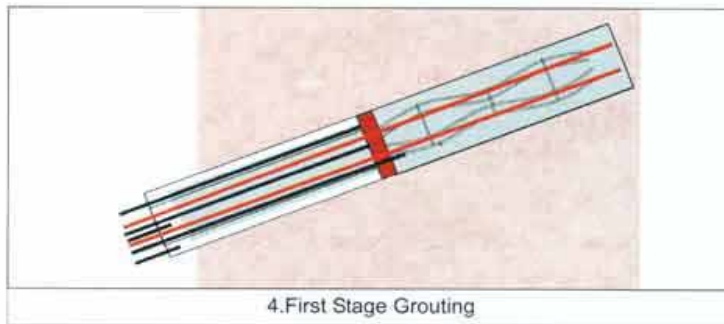
1. Drilling with Casing



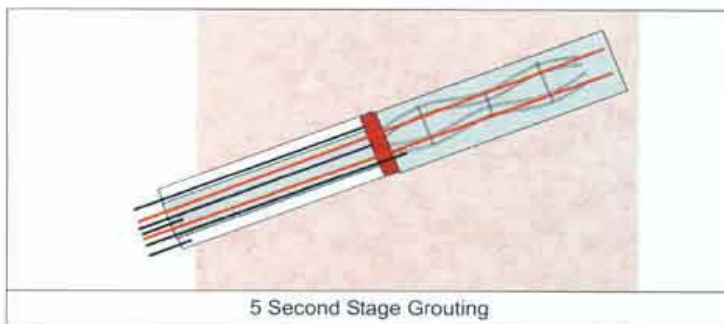
2. Removal of Drill String



3. Installation of tendon with Packer and Cleaning the bored hole



4. First Stage Grouting



5 Second Stage Grouting

## Application:

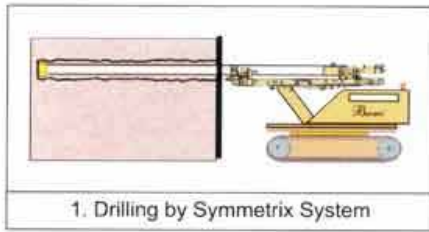
(In highly collapsible and unstable ground conditions)

- ❖ NATM Tunnel face
- ❖ TBM tunnel face
- ❖ Tunnel Service Shaft
- ❖ Under Pass & Crossings

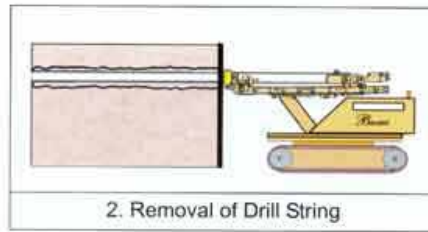


Pipe Roofing at Amar Cinema Shaft, MC1B,  
Delhi Metro Rail Corporation, New Delhi, India

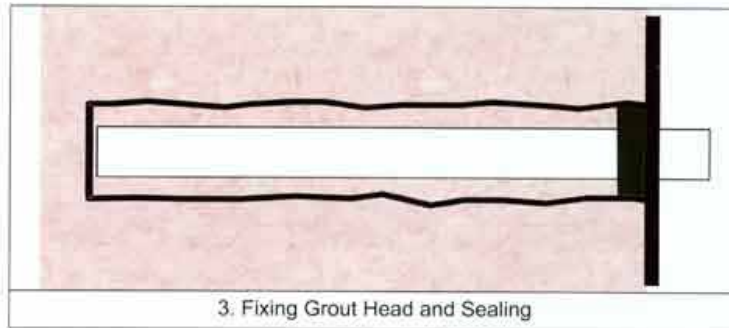




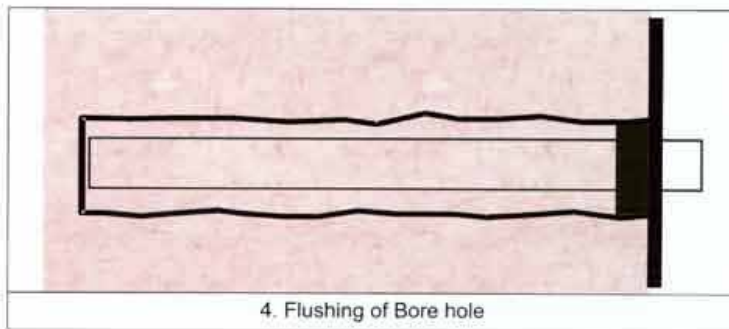
1. Drilling by Symmetrix System



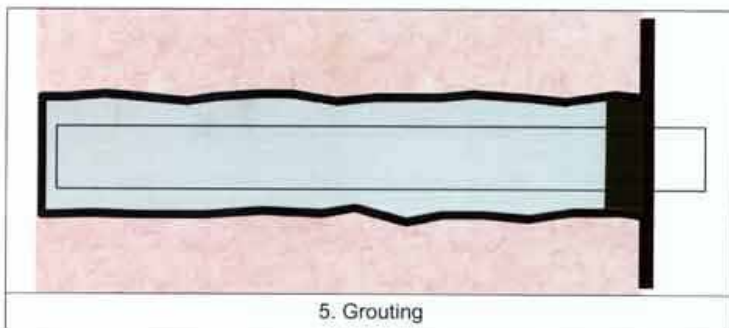
2. Removal of Drill String



3. Fixing Grout Head and Sealing



4. Flushing of Bore hole



5. Grouting

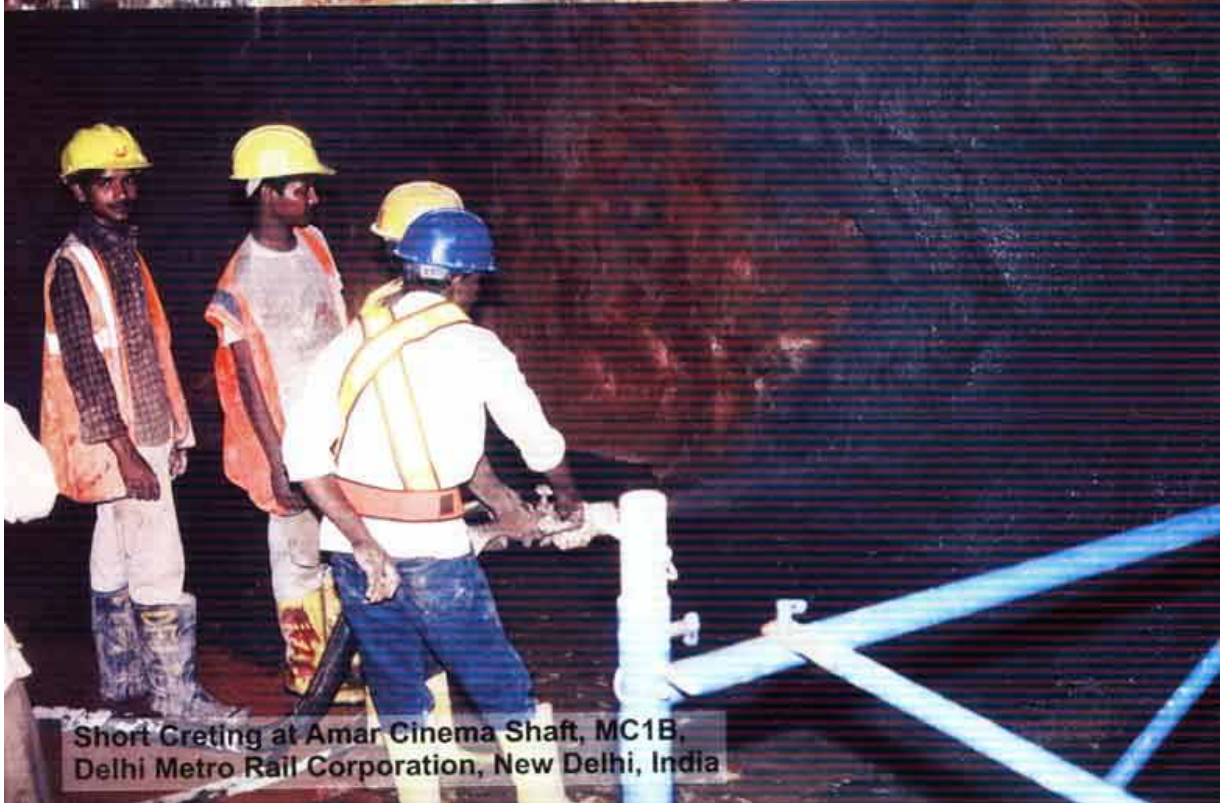
**Application:**

- ❖ NATM Tunnel face
- ❖ TBM tunnel face
- ❖ Tunnel Service Shaft
- ❖ Under Pass & Crossings

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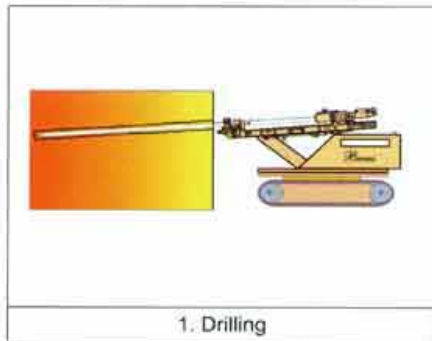
**Rock Bolt Installation at Amar Cinema Shaft, MC1B,  
Delhi Metro Rail Corporation, New Delhi, India**



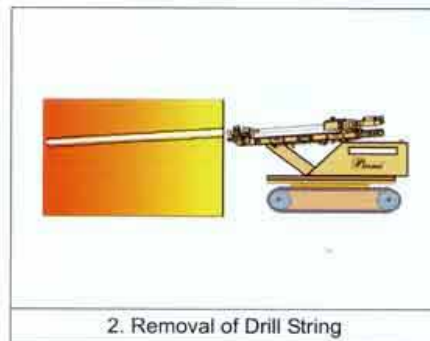
**Shot Grouting at Amar Cinema Shaft, MC1B,  
Delhi Metro Rail Corporation, New Delhi, India**



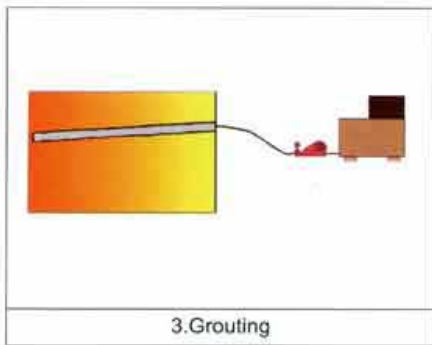
# ROCK BOLT & SHORT CRETE



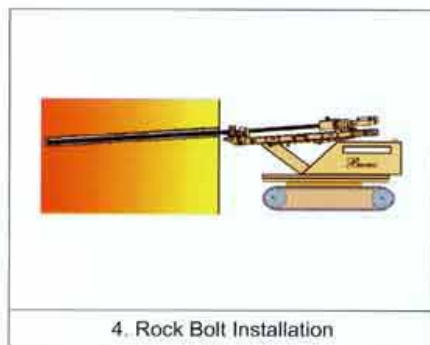
1. Drilling



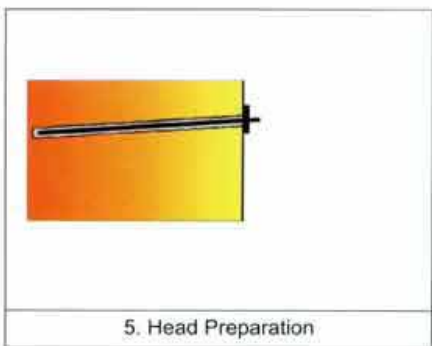
2. Removal of Drill String



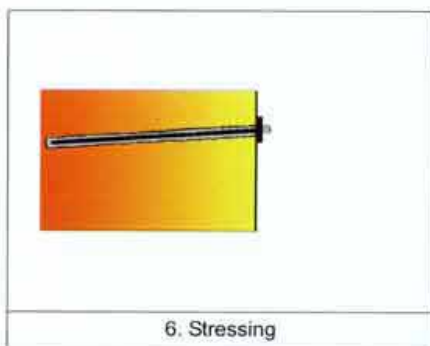
3. Grouting



4. Rock Bolt Installation



5. Head Preparation



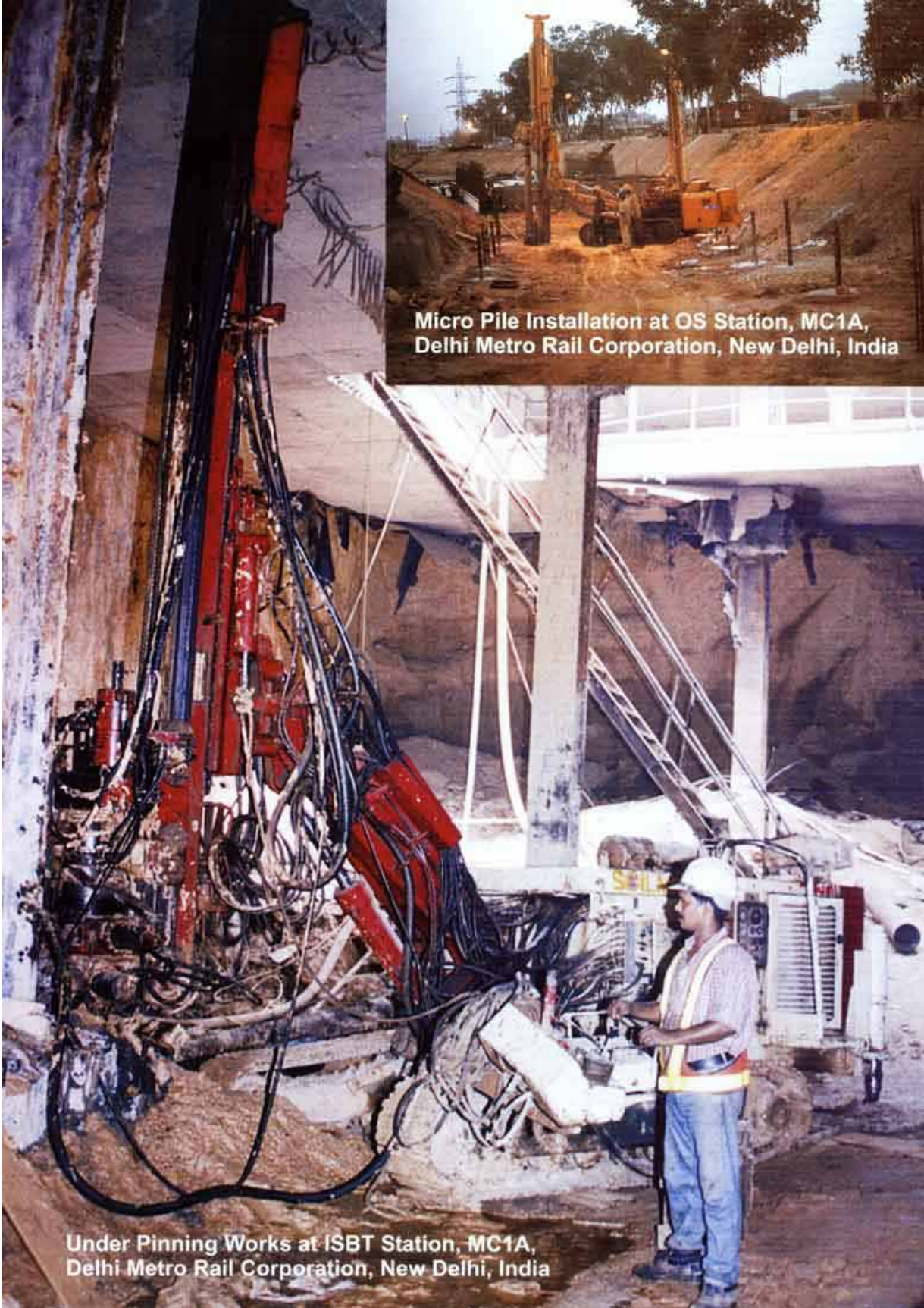
6. Stressing

## Application:

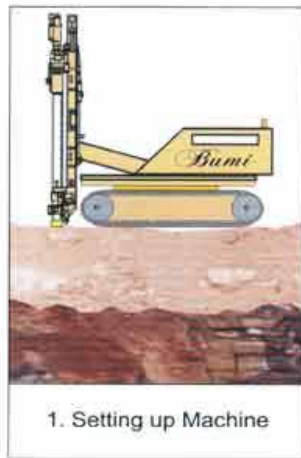
- ❖ Slope Stabilization
- ❖ Shafts Excavations
- ❖ Tunnels
- ❖ Under ground constructions
- ❖ Rock excavations



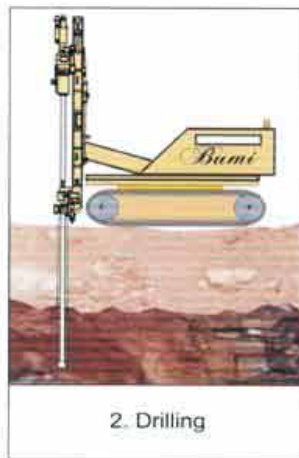
Micro Pile Installation at OS Station, MC1A,  
Delhi Metro Rail Corporation, New Delhi, India



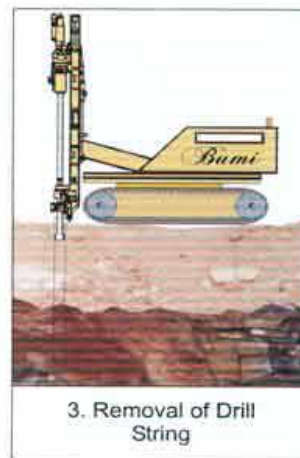
Under Pinning Works at ISBT Station, MC1A,  
Delhi Metro Rail Corporation, New Delhi, India



1. Setting up Machine



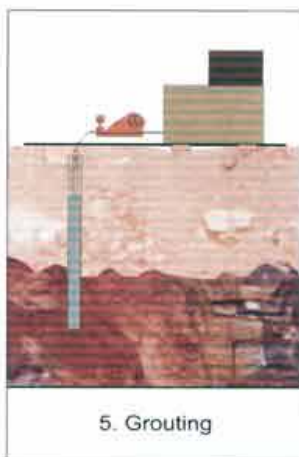
2. Drilling



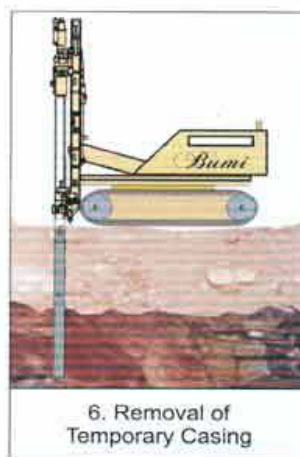
3. Removal of Drill String



4. Installation of Rebar Cage



5. Grouting



6. Removal of Temporary Casing

**Application:**

- ❖ Providing foundations at restricted, congested and limited space constraint area.
- ❖ Increasing the bearing capacity of existing building and structures.

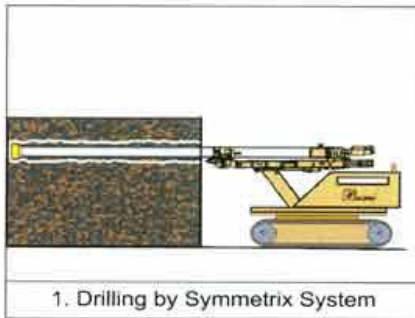
**UNDER PILING / MICRO PILING**



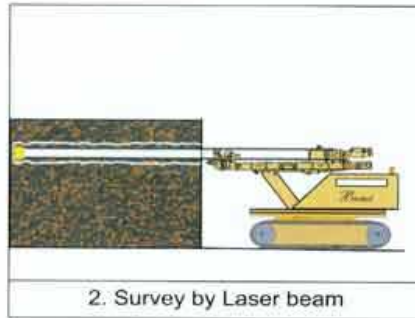
**Horizontal Boring & Dewatering at Amar Cinema Shaft,  
MC1B, Delhi Metro Rail Corporation, New Delhi, India**



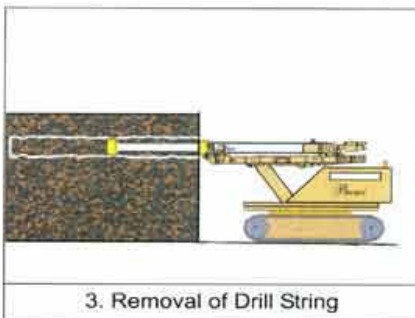
# HORIZONTAL BORING & DEWATERING



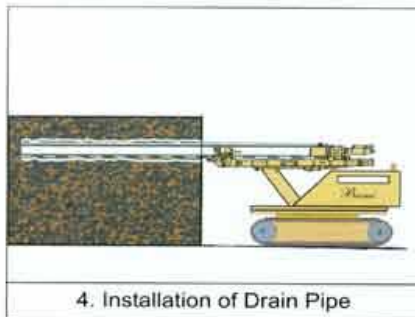
1. Drilling by Symmetrix System



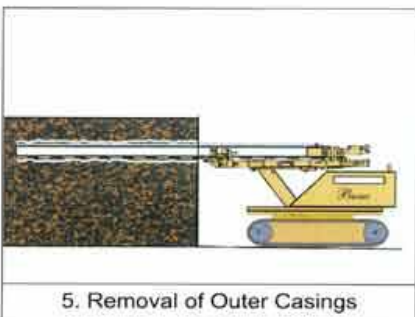
2. Survey by Laser beam



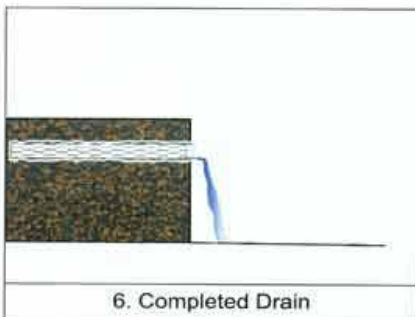
3. Removal of Drill String



4. Installation of Drain Pipe



5. Removal of Outer Casings

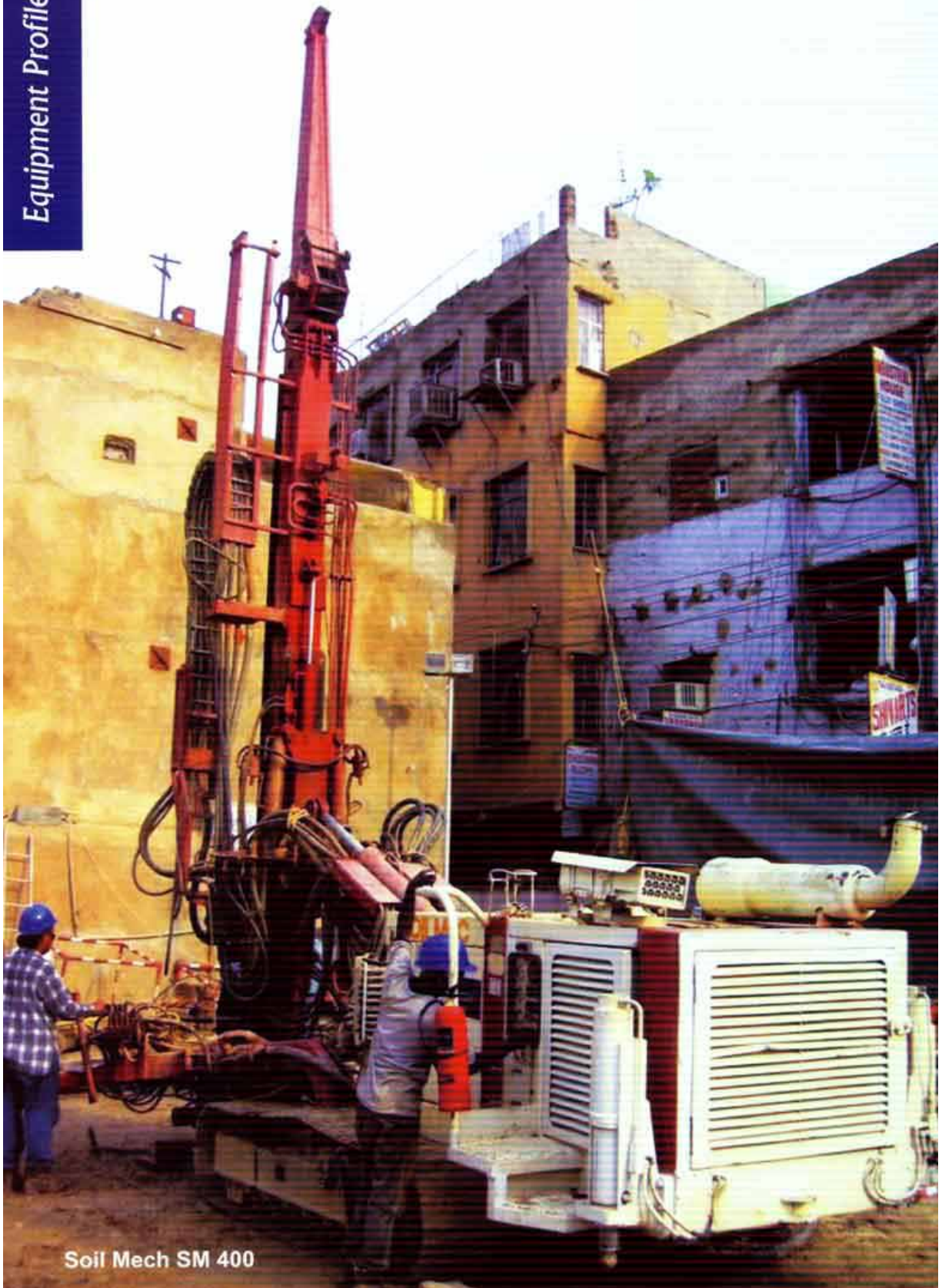


6. Completed Drain

## Application:

- ❖ Dewatering for tunnel Constructions and basement works.

Equipment Profile



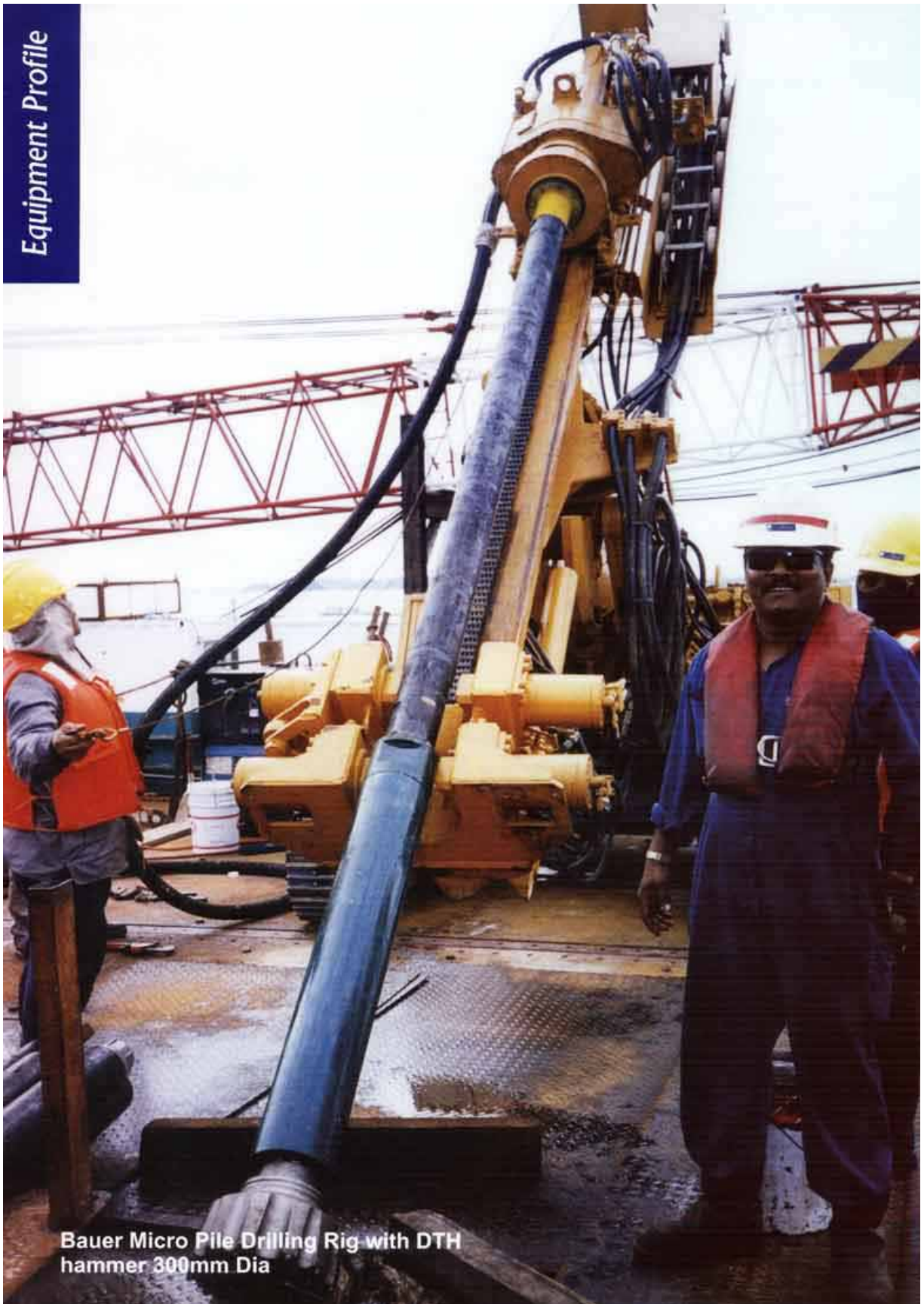
Soil Mech SM 400



Equipment Profile

NCB 1200 S

Equipment Profile



Bauer Micro Pile Drilling Rig with DTH hammer 300mm Dia

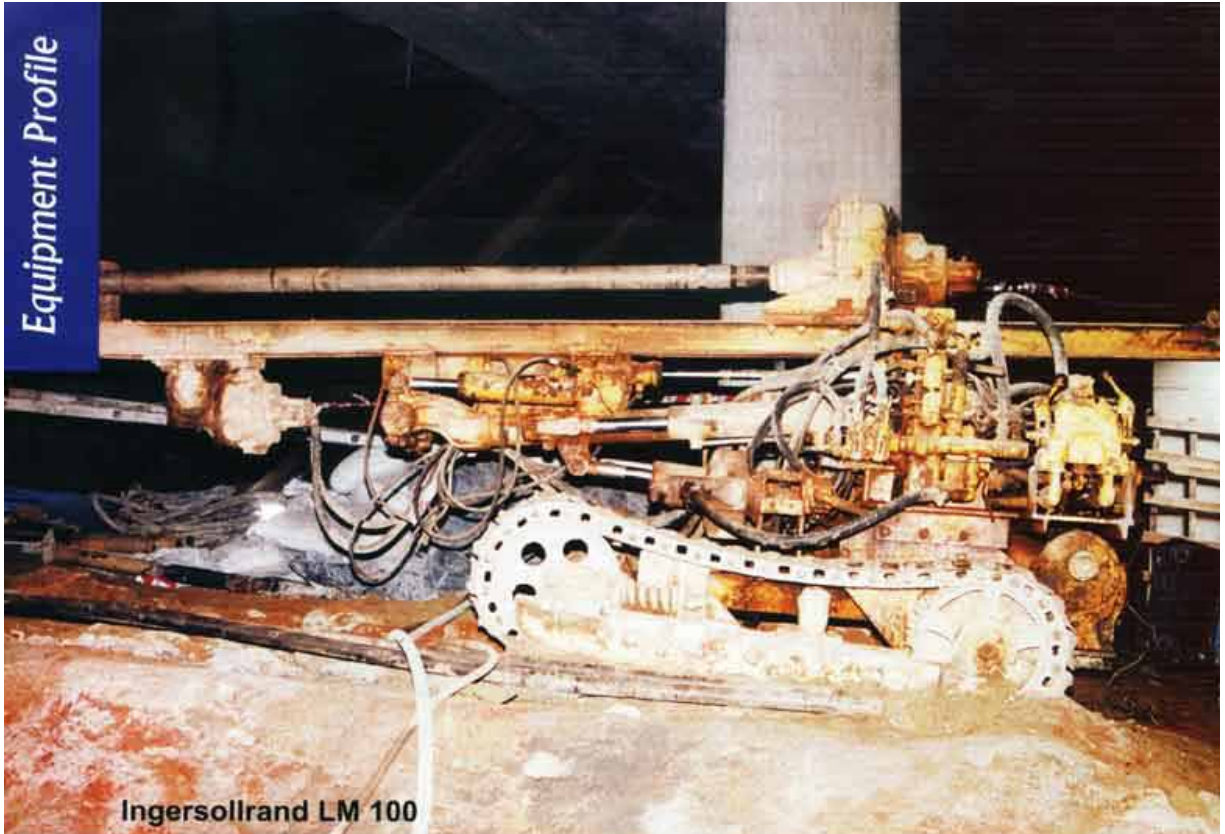


Bauer Anchor hole Drilling Rig with Top head hammer



Atlas Copco

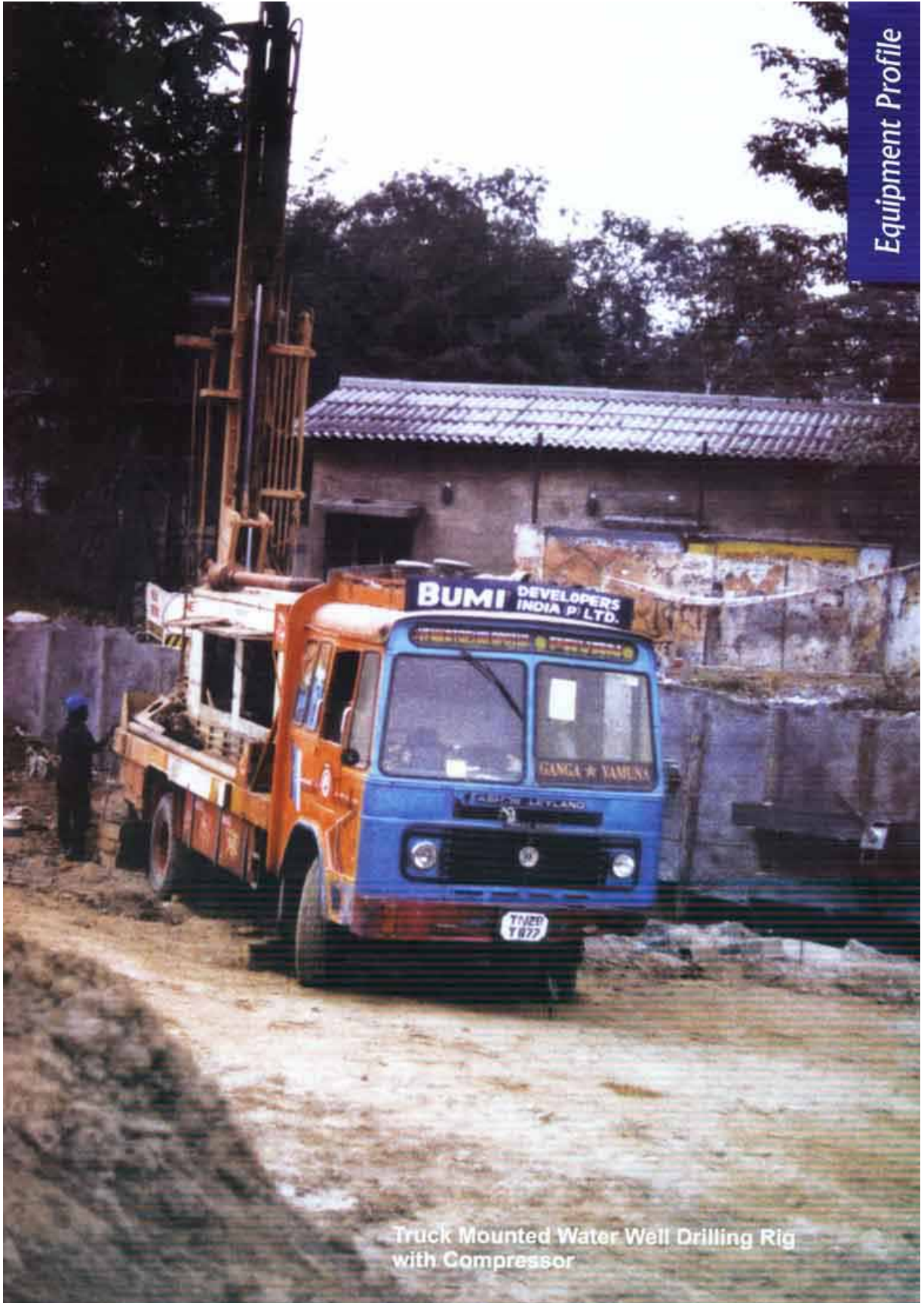
Equipment Profile



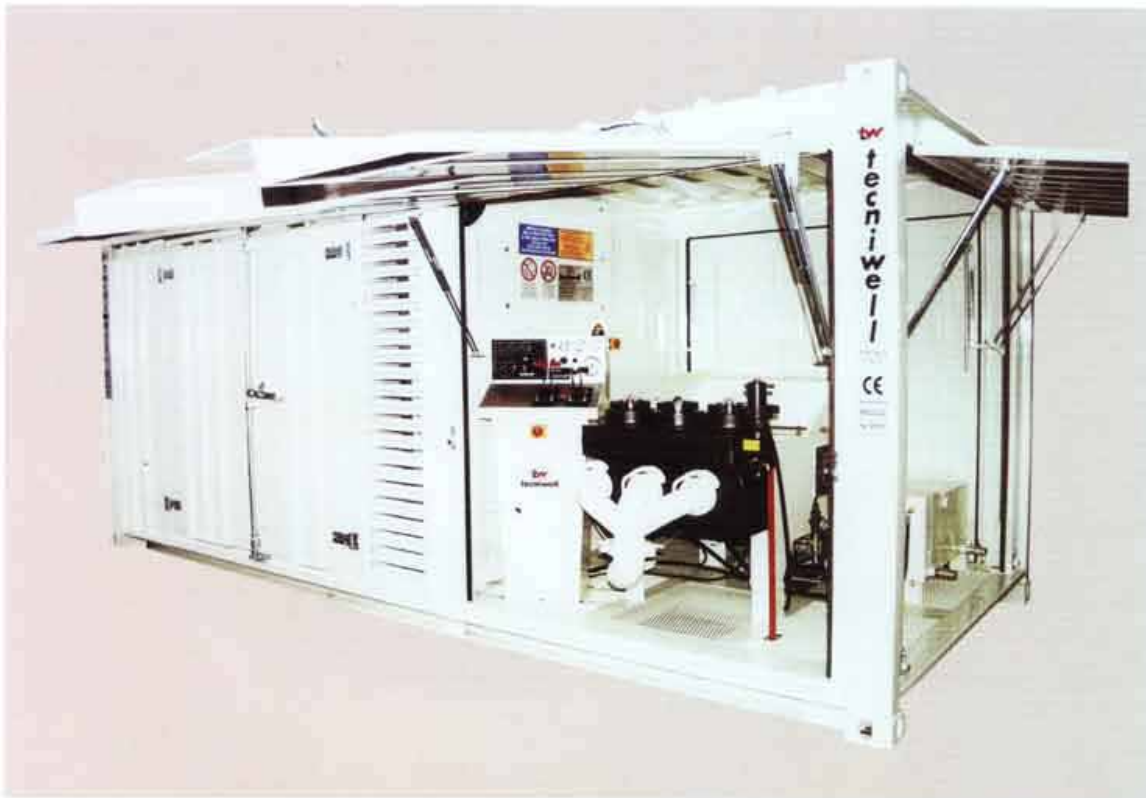
Ingersollrand LM 100



Atlas Copco ROC 203

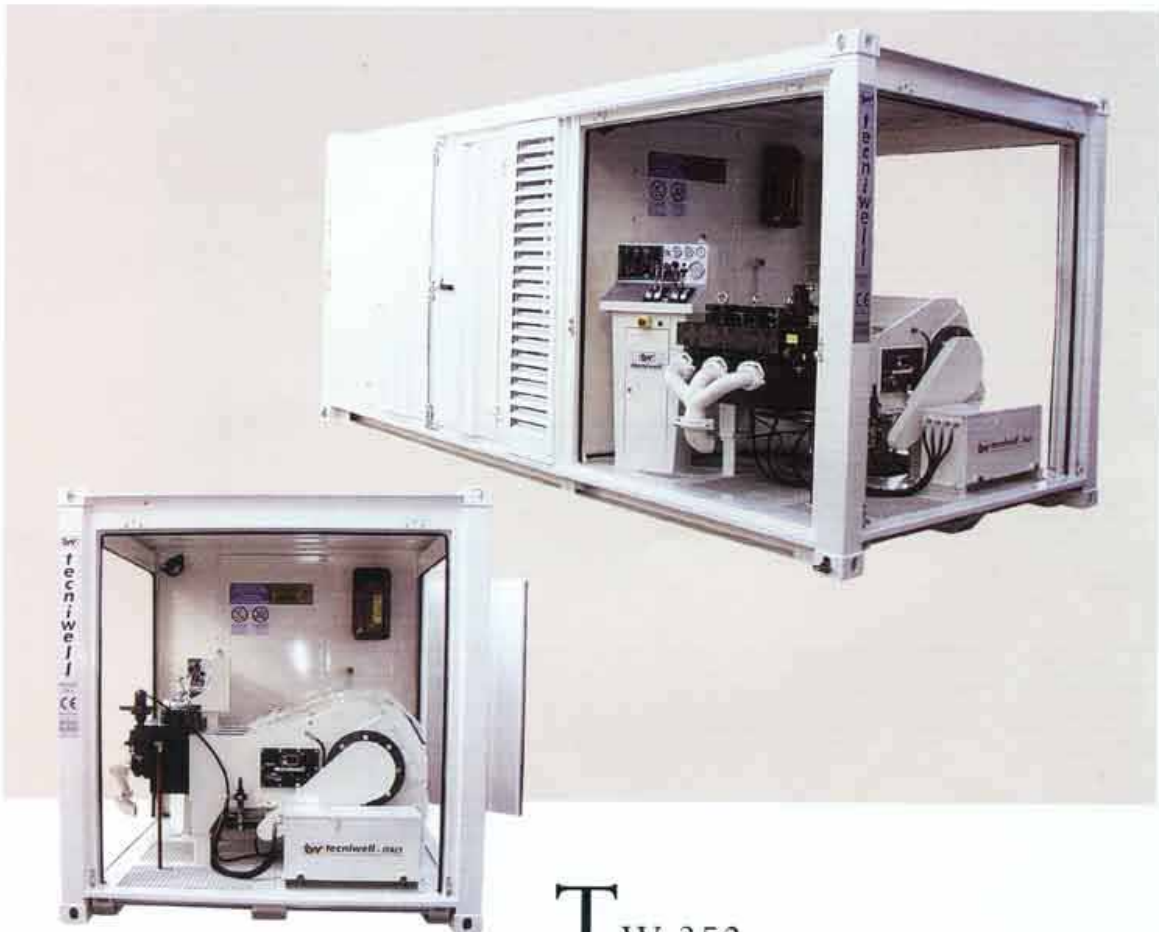


Truck Mounted Water Well Drilling Rig  
with Compressor



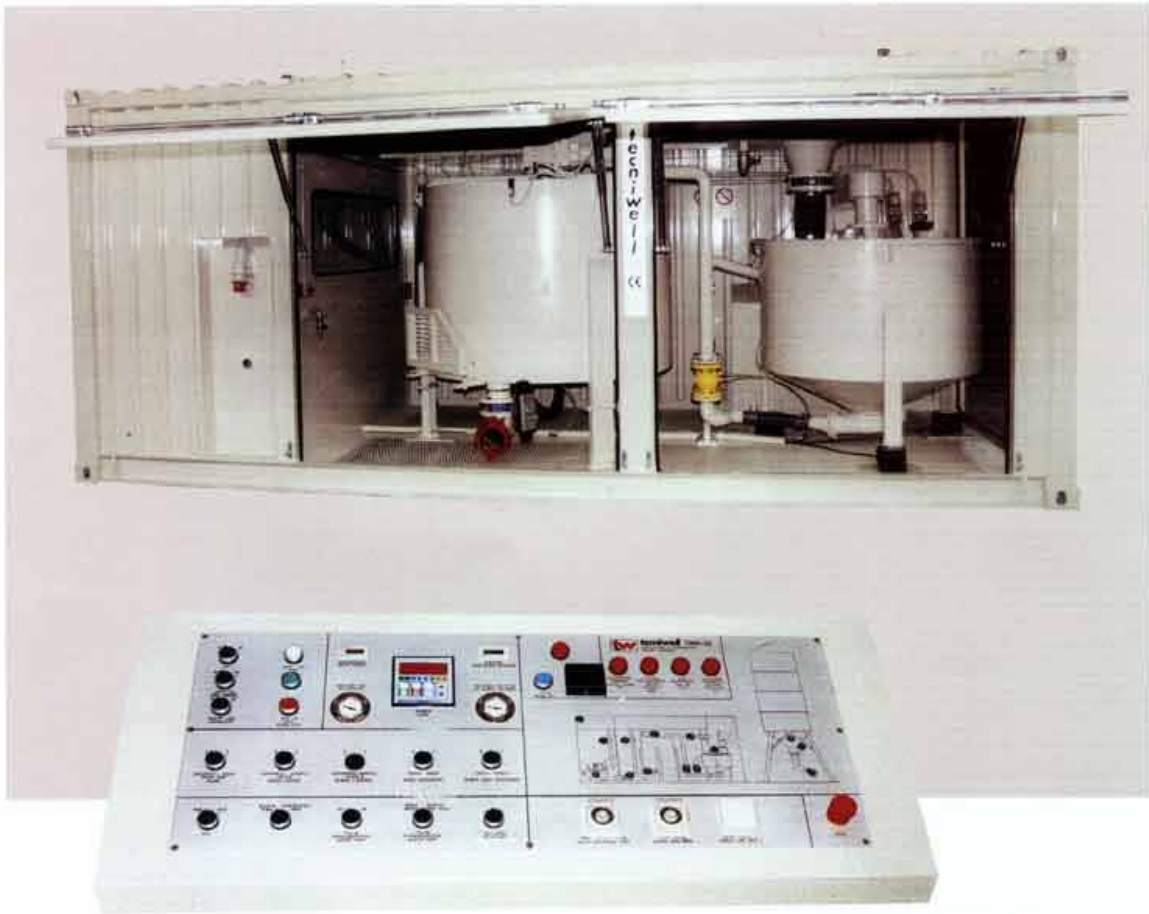
**T**W 400/S

POMPA TRIPLEX  
ALTA PRESSIONE  
HIGH PRESSURE  
TRIPLEX PUMP  
FOR JET GROUTING



T<sub>W</sub> 352

POMPA TRIPLEX  
ALTA PRESSIONE  
HIGH PRESSURE  
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