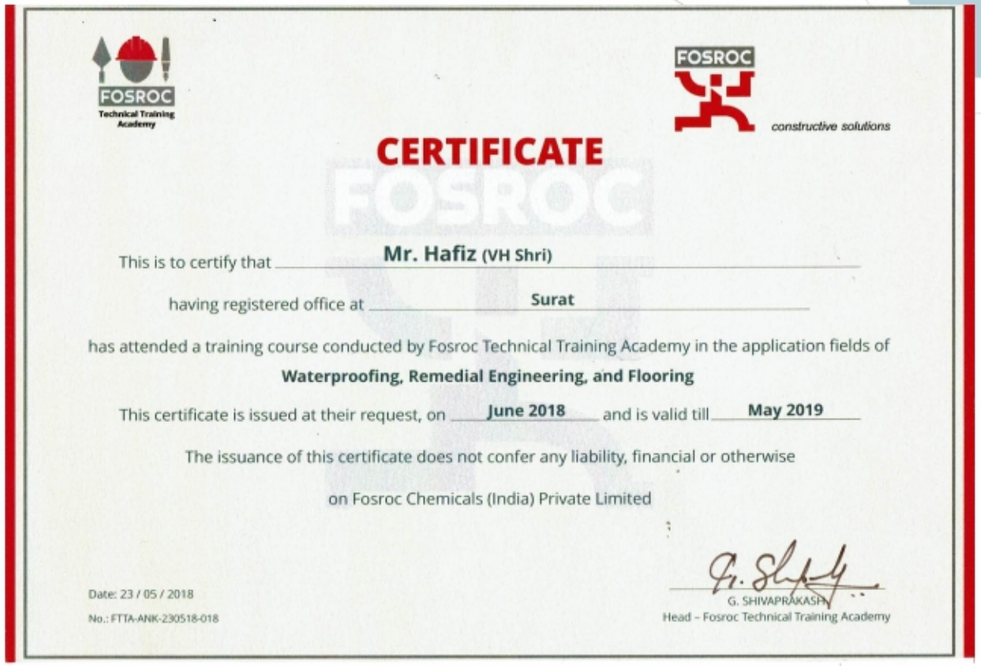
vh® ईश्री
ENTERPRISE

- Ground Improvement & Support Systems
  - Soil nailing techniques
  - Soil and rock anchoring techniques
  - Ground anchoring for diaphragm wall
  - Guniting techniques
- Waterproofing solutions and construction chemicals
- Manufacture & Supply of PT Components



FOSROC Technical Training Academy

FOSROC constructive solutions

**CERTIFICATE**

This is to certify that **Mr. Hafiz (VH Shri)**

having registered office at **Surat**

has attended a training course conducted by Fosroc Technical Training Academy in the application fields of

**Waterproofing, Remedial Engineering, and Flooring**

This certificate is issued at their request, on **June 2018** and is valid till **May 2019**

The issuance of this certificate does not confer any liability, financial or otherwise

on Fosroc Chemicals (India) Private Limited

Date: 23 / 05 / 2018

No.: FTTA-ANK-230518-018

G. SHIVAPRAKASH

Head – Fosroc Technical Training Academy

VH Shri ENTERPRISE was established in 2016 is the subsidiary company of reputed

VH PT SYSTEM

providing services in the field of specialized construction industry having presence in PAN India.

We are expedite team giving construction services such as

## GROUND IMPROVEMENT & SUPPORT SYSTEMS

- Soil nailing techniques
- Soil and rock anchoring techniques
- Ground anchoring for diaphragm wall
- Guniting techniques
- Soil grouting techniques
- Rock grouting techniques
- Jet grouting techniques
- Gabion support techniques
- Micropiles techniques

## BASEMENT WATERPROOFING

## MANUFACTURE & SUPPLY OF PT COMPONENTS

## 1.0 GROUND IMPROVEMENT & SUPPORT SYSTEMS

Why these techniques to be adopted?

These techniques are based on high end engineering requirement where traditional engineering is either not possible or very costly or time consuming. These engineering techniques provide solutions in a very technical and cost effective way without much hindrance to the nearby properties.

Where do these techniques required?

- Retaining earth & Slope Stabilization
- Basement walls
- Multistoried basement parking
- Embankment strength and safety
- Great replacement for diaphragm wall
- Tunnel portals at steep & unstable stratified slopes
- Construction and retrofitting of bridge abutment

### 1.1 SOIL NAILING TECHNOLOGY

Soil nailing is a technique used to reinforce and strengthen existing ground. Soil nailing consists of installing closely spaced bars into a slope or excavation. It goes back to 1960's where the first attempt to use this technology was made. Due course of time studies and research carried out and sound engineering has been developed.



**Application:**

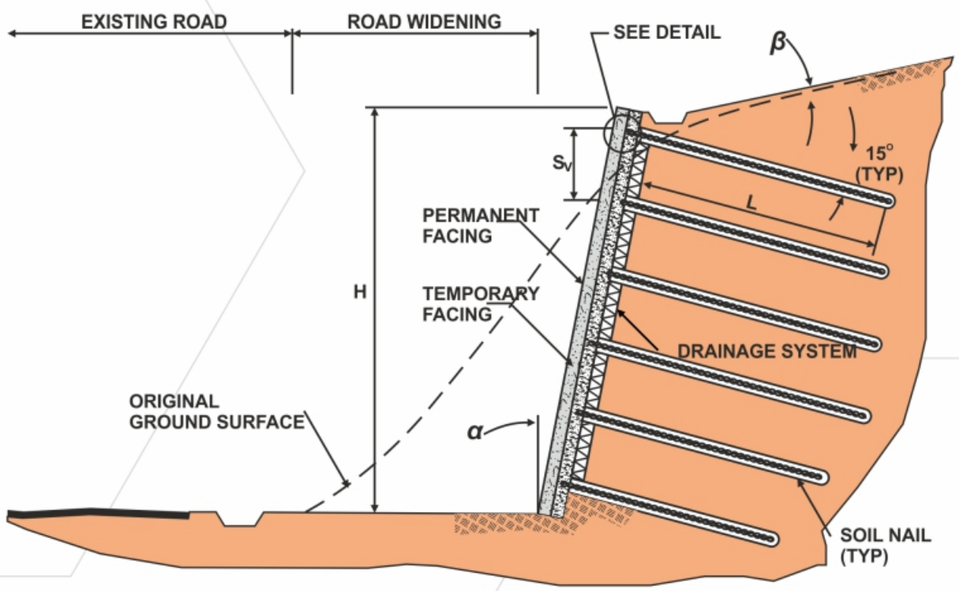
1. Stabilization of steep slopes for rail route and highways.
2. Urban excavation retaining structures such as high-rise buildings and underground facilities.
3. Tunnel portals in steep and unstable stratified slopes.
4. Construction and retrofitting work for existing concrete and masonry walls and bridge abutments.

**Advantages**

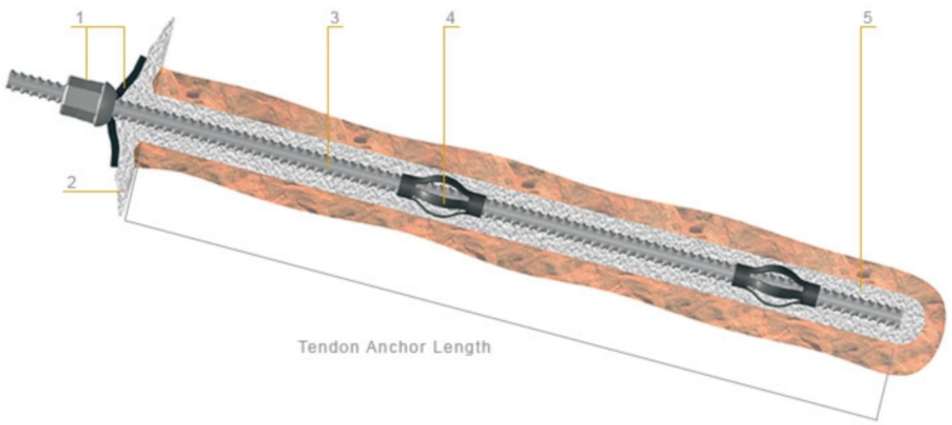
1. Rapid execution and less uses of machineries and manpower.
2. Easy, flexible in installation & financially economical.
3. Requires small area for working and advantageous in remote locations.
4. Easy working in congested place.
5. Less environmental impact.

**Disadvantages**

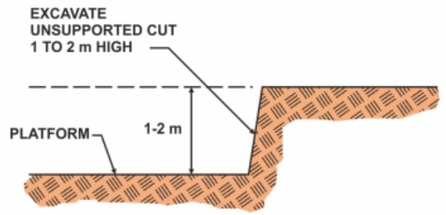
1. Not suitable during rainy or water logged area.
2. Not suitable for precise working condition and deformation.
3. Requires specialized and experienced applicators.



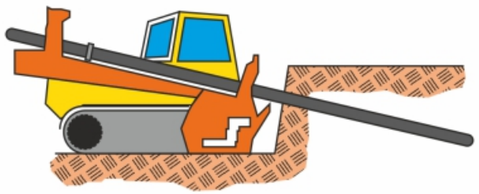

TYPICAL DETAIL OF SOIL NAILING TECHNIQUE



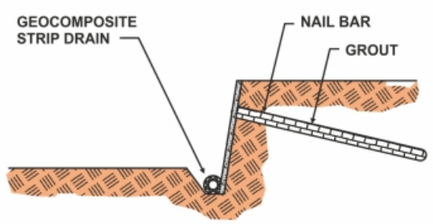


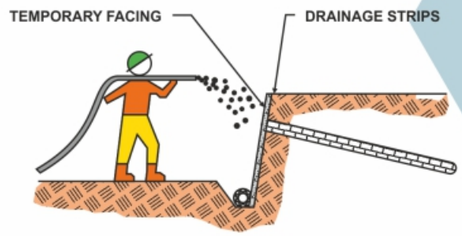

STEP 1. EXCAVATE SMALL CUT



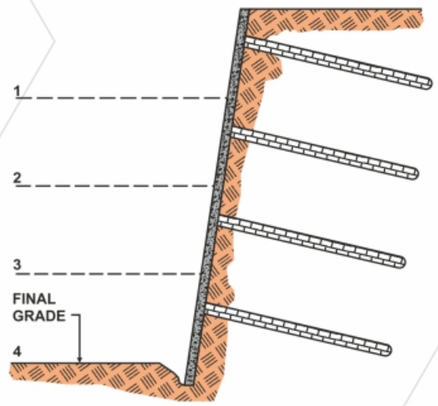
STEP 2. DRILL NAIL HOLE



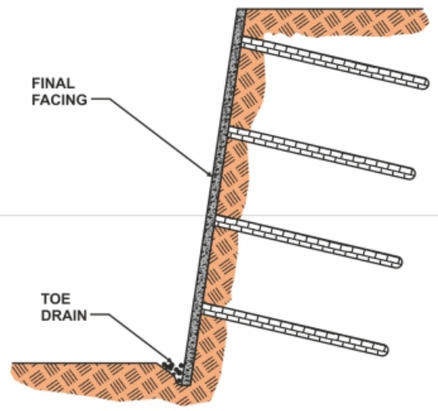

STEP 3. INSTALL AND GROUT NAIL
(INCLUDES STRIP DRAIN INSTALLATION)




STEP 4. PLACE TEMPORARY FACING
(INCLUDES SHOTCRETE,
REINFORCEMENT,
BEARING PLATE, HEX NUT, AND
WASHERS INSTALLATION)




STEP 5. CONSTRUCTION OF
SUBSEQUENT LEVELS

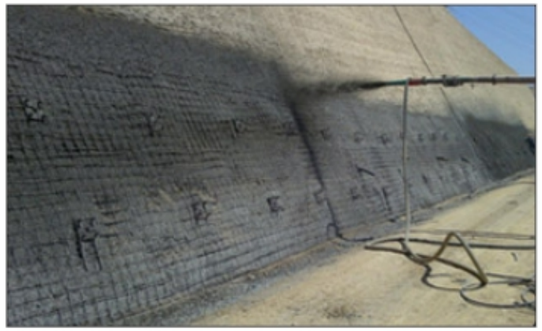



STEP 6. PLACE FINAL FACING
ON PERMANENT WALLS
(INCLUDES BUILDING
OF TOE DRAIN)









## 1.2 SOIL & ROCK ANCHORING TECHNOLOGY

Soil & rock anchoring is similar to soil nailing which are used to reinforce and strengthen existing ground. The only difference is that of reinforce bar which are replaced by high tensile steel cables.

**Application:**

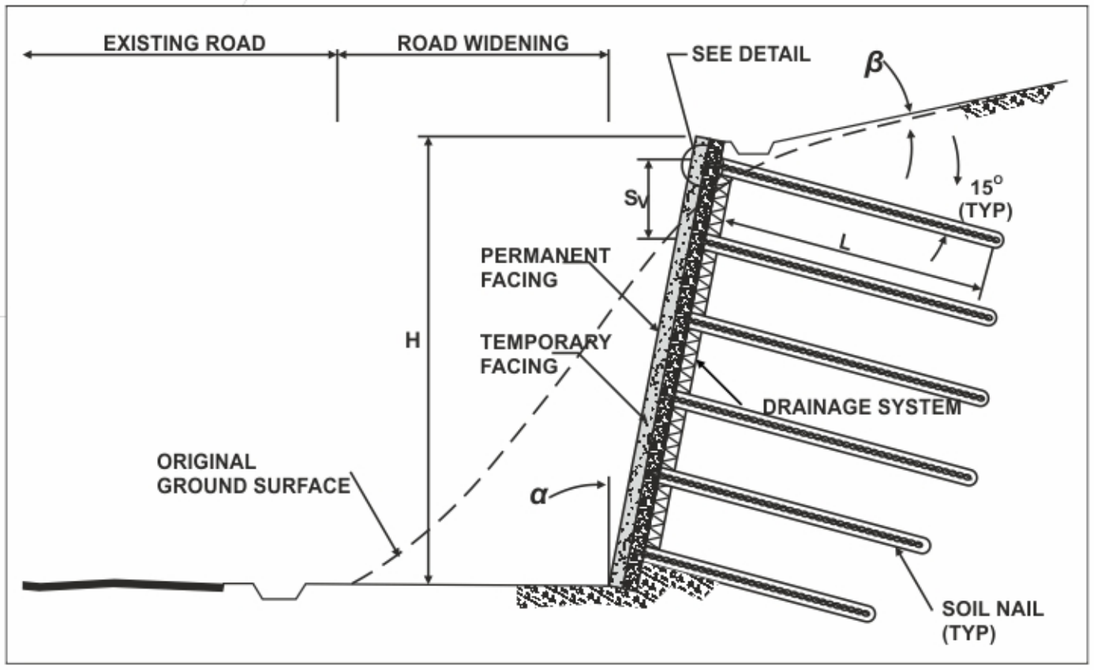
1. Stabilization of steep slopes for rail route, tunnels and highways.
2. Urban excavation retaining structures such as high-rise buildings and underground facilities.
3. Uses in diaphragm walls and bracings.
4. Tension anchors for uplifts and wind pressure such as cableways, advertizing boards, guy wires & abutments on hilly areas.
5. Bracing of various types of support construction such as sheet piling and hexagonal pile walls, anchoring of foundations on soil or rock and rock support.

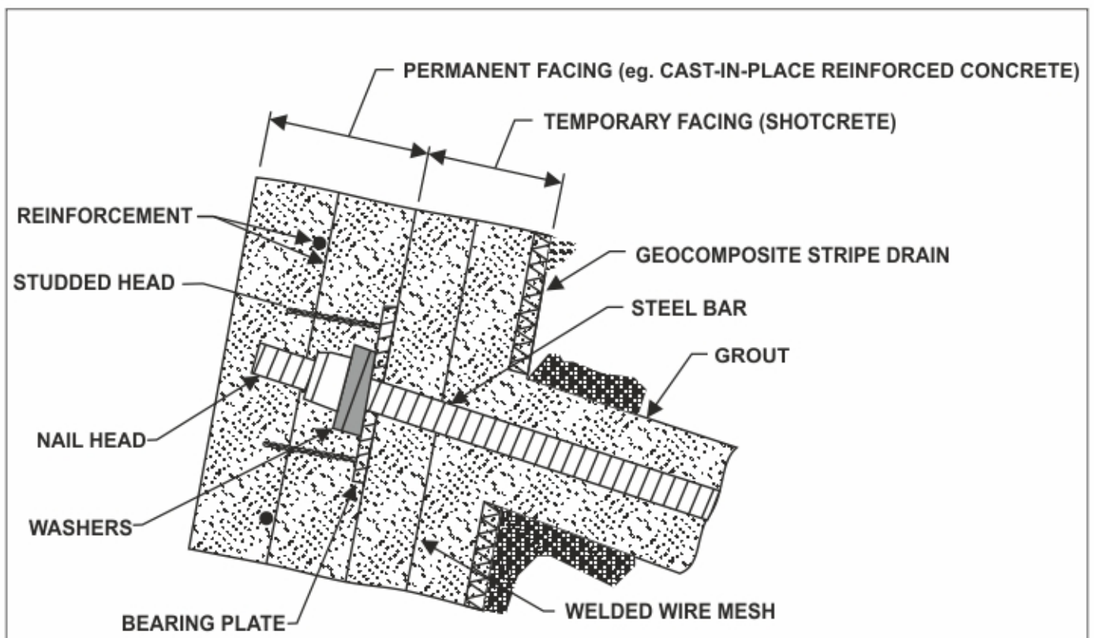
**Advantages**

1. Rapid execution.
2. Easy, flexible in installation & financially economical.
3. Requires small area for working and advantageous in remote locations.
4. Easy working in congested place.
5. Less environmental impact.

**Disadvantages**

1. Not suitable during rainy or water logged area.
2. Not suitable for precise working condition and deformation.
3. Requires specialized and experienced applicators.

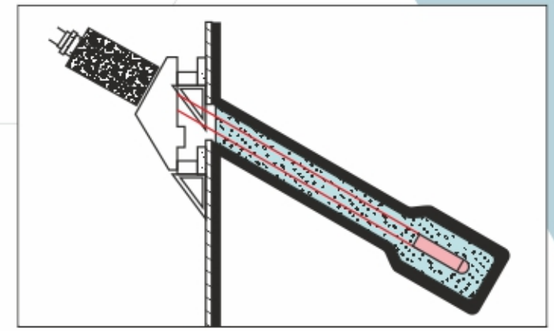


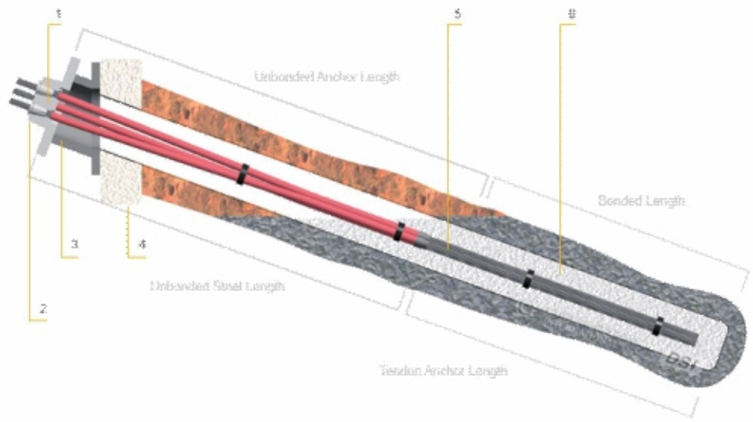






## 1.3 GROUND ANCHORING

Ground anchors consisting of cables or rods connected to a bearing plate are often used for the stabilization of steep slopes or slopes consisting of softer soils, as well as the enhancement of embankment or foundation soil capacity, or to prevent excessive erosion and landslides.





**Application:**

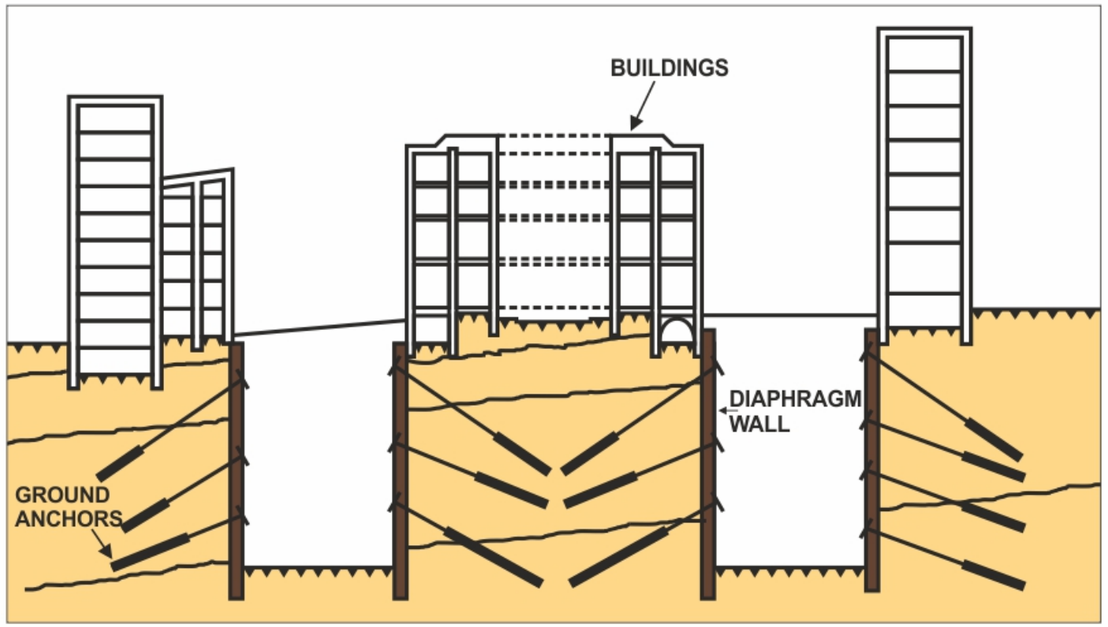
1. Construction of Retaining wall, stabilization of slopes for very loose and marshy type of land, uplift slab & concrete dam stabilization.
2. Urban excavation retaining structures such as high-rise buildings and underground facilities using diaphragm walls and bracings.

**Advantages**

1. Neat execution of excavation for large construction plan.
2. Deep excavations are easily possible with no threat to adjoined structures.
3. Anchoring helps in reducing size of retaining wall thereby reducing the overall cost of the project.
4. Can be applied in any directions i.e. horizontal, vertical, and inclined.

**Disadvantages**

1. Not suitable during rainy or water logged area.
2. Difficult to apply in loose/soft soil.
3. Hard to anchor in great depth.
4. Requires specialized and experienced applicators.






## 1.4 GUNITING TECHNIQUES

Guniting is a process used in construction for the application of slope stabilization and certain rehabilitation purpose mainly in the construction of retaining walls, swimming pool construction, tunnel construction, in fluid tank construction and some of the concrete repair works.
The guniting is hence called as the dry-mix shotcrete process which conveys dry material from a machine to surface of application through a nozzle by means of compressed pressure and high velocity.
The application is facilitated by the addition of water at the nozzle area. The mix that finally comes out is a combination of dry material and water. The operator has the control on the addition of water and the combination water content.
The mix used in guniting is cement mortar mix. There may be variations based on the application and requirements of the area.

**Application:**

1. Slope stabilization
2. Basement support systems
3. Dome Construction
4. Tunneling
5. Retention walls
6. Water tanks and pools
7. Artificial ponds
8. Ditches and Channels
9. As structural reinforcement
10. Mining applications
11. Dikes and dams

**Advantages**

1. Placing and consolidating at the same time
2. Better adherence than regular concrete
3. Good replacement of welded wire meshes when used with steel fiber
4. Lower costs when compared to traditional concrete
5. It offers reduced shrinkage and lower permeability

**Disadvantages**

1. Careful and skillful operation and control of the nozzle
2. Initial production cost is very high
3. Dusting problems persists

## 1.5 JET GROUTING

Soil grouting can be defined as the process of controlled injection of material into the soil formation, where the material stiffens to improve the physical characteristics of the ground for geotechnical engineering reasons.

**Application:**

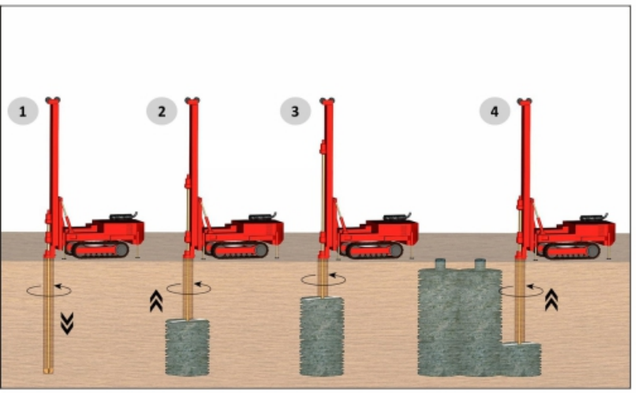
1. Sealing of soil mass for foundations, slope stability, leakage controlling.
2. Consolidation the loose soil masses.

**Advantages**

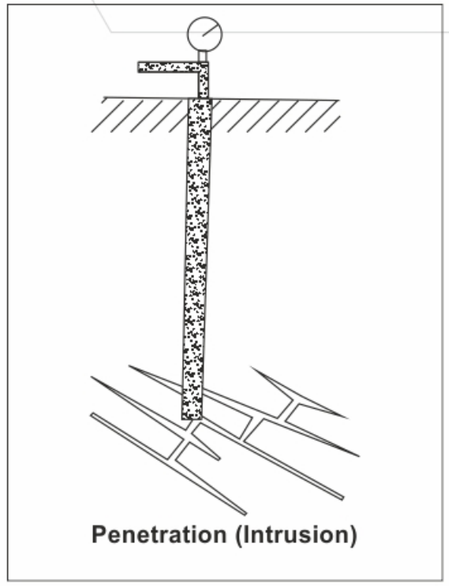
1. Improving the soil's strength properties.
2. Reducing permeability.
3. Filling of voids and cavities.
4. Water-tightening of structures.

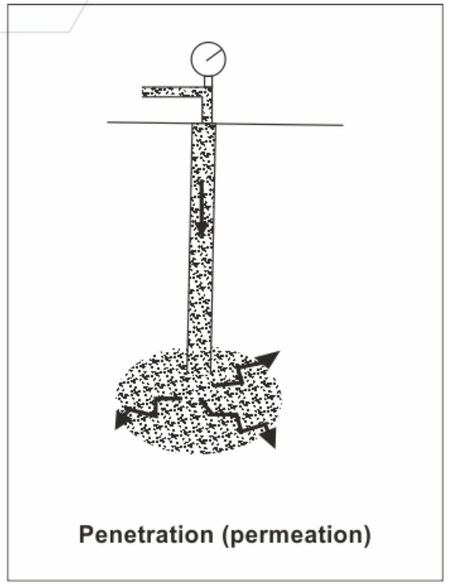
**Disadvantages**

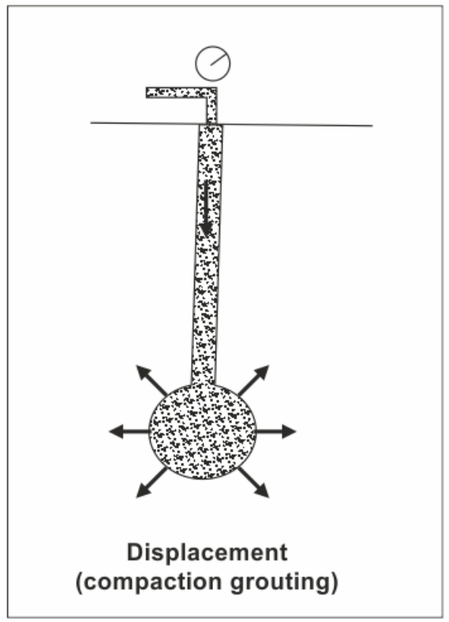
1. Messy technique but effective.
2. Requires specialized and experienced applicators.

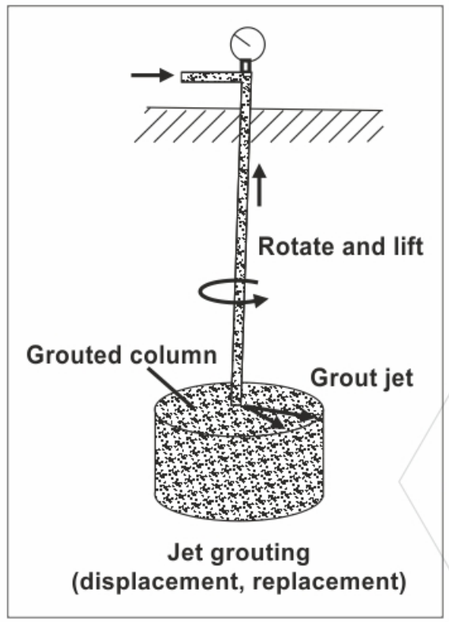





SCHEMATIC REPRESENTATION OF BASIC MODES OF GROUTING

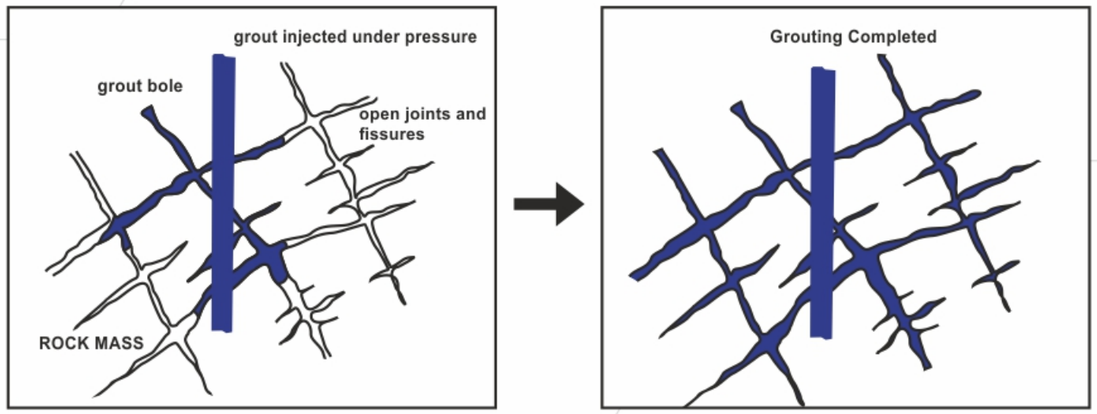
### 1.6 ROCK GROUTING

Rock grouting tends to be used to fill fissures in the rock, reducing the amount of water that filters through the rock mass. It is usually carried out with a single packer that is inserted into the previously drilled bore to the pre-established level; grouting is carried out and then the packer is raised by stages, normally every 5m, until grouting of the bore is complete. Grouting has traditionally been carried out with cement-bentonite mixes, and occasionally micro concrete is used.

**Application:**

1. Sealing of rock fissures for foundations, slope stability, leakage controlling.
2. Consolidation the cavity or honeycomb rock mass.

| Advantages | Disadvantages |
|---|---|
| 1. Improving the rock strength properties. | 1. Full consolidation is very hard to achieve. |
| 2. Filling of voids and cavities. | 2. Requires specialized and experienced applicators. |
| 3. Water-tightening of structures. | |




GROUTING IN PROGRESS

GROUTING COMPLETED



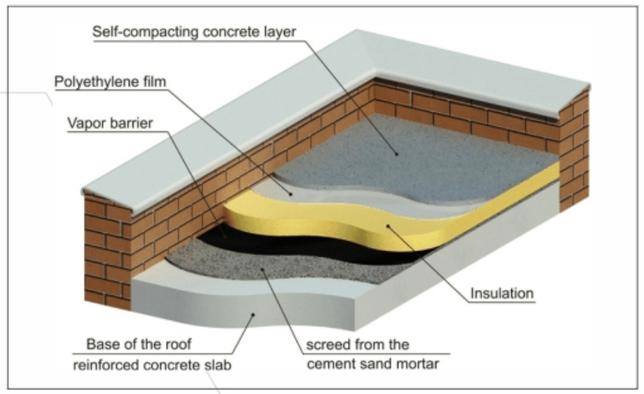
## 2.0 WATERPROOFING SOLUTIONS AND CONSTRUCTION CHEMICALS

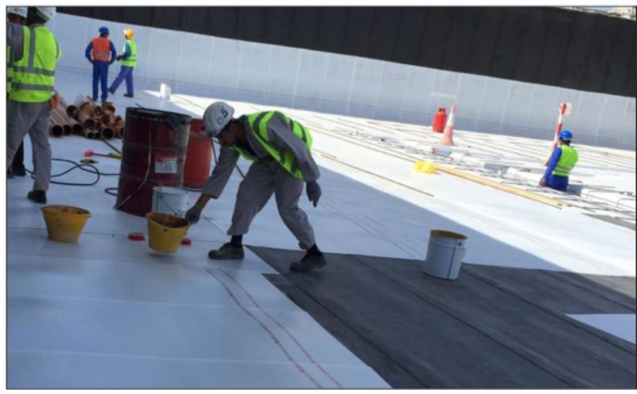
The future of cities is going to be massive buildings having many souls residing in single buildings. To overcome the ancillaries of these buildings such as parking services etc multi level basement parking are need of the day. To meet the requirement and demand for durable structures includes waterproof structures.

This lead to good requirement of waterproofing techniques which is durable and efficient enough for future.

Thus, to render this service, we introduce ourselves as

- Water Proofing of Roof, Wet areas, Basements etc.
- Crystalline waterproofing, Acrylic cementitious, PU based water proofing & APP membrane etc.
- Grouting & injection works for concrete.
- Cementitious, Epoxy and PU grout and injection
- Epoxy flooring
- Self-Leveling epoxy flooring, floor coating, epoxy screed and under lay etc.
- Sealant & Adhesive application
- Groove cutting, epoxy, PU sealant for joints, Epoxy tile grouting and joint filing.
- Structure repairs / rehabilitation



## Crystalline Waterproofing Technology

Crystalline Technology waterproofs and thus enhances the durability of concrete structures by pore-blocking mechanism, where in the pores, capillaries and micro-cracks in the concrete are blocked with a non-soluble, crystalline formation.



## Crystalline Waterproofing Coating

Crystalline waterproofing as a coating system can be brush-applied or sprayed. The crystalline waterproofing coating system has a unique chemical diffusion characteristic. Hence, for efficient results, workmanship, viz. surface preparation, surface saturation, dosage and curing, etc. is highly important.



## Negative Side Waterproofing

Existing basements that are subject to water seepage through foundation walls and floors can be treated by crystalline waterproofing on the negative side, i.e, the inside of the structure. Coatings that depend on their adhesion to the surface will delaminate. Since crystalline waterproofing penetrates into the concrete and blocks the pores beneath the surface, it does not depend on surface adhesion and therefore will not peel off.

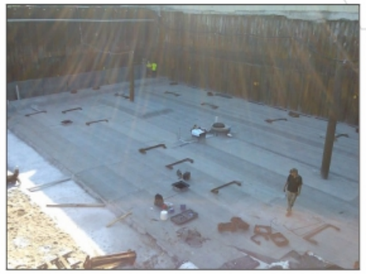




## Positive Side Waterproofing

Exterior basement waterproofing systems stop ground water from reaching the basement walls as well as prevent mold and other damage which can occur in wet basement areas.

Waterproofing an exterior is the recognized IBC method to prevent damage caused by water. Exterior sealants were once only asphalt-based damp proofing, but now the most common kind of exterior basement waterproofing systems use a polymer base. This kind of material will last for the life of the building.


## Water Drainage

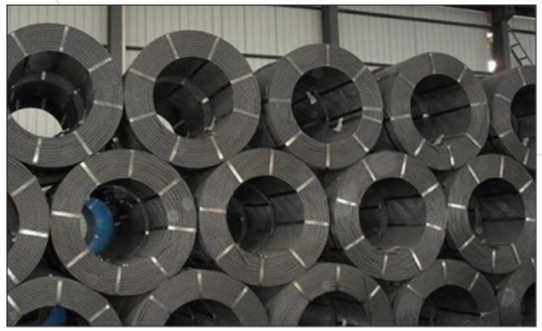
Drainage can be used to mitigate basement water and is often considered to be another form of basement waterproofing. Water drainage functions by drawing water away from the foundation, and forcing it into a drain, or through a pump system.



## 3.0 MANUFACTURE & SUPPLY OF PT COMPONENTS

### 3.1 BONDED SYSTEM

TENDON



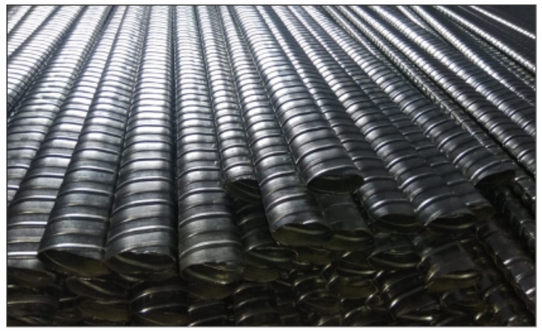
CABLE ROLL

ROUND DUCT

CABLE

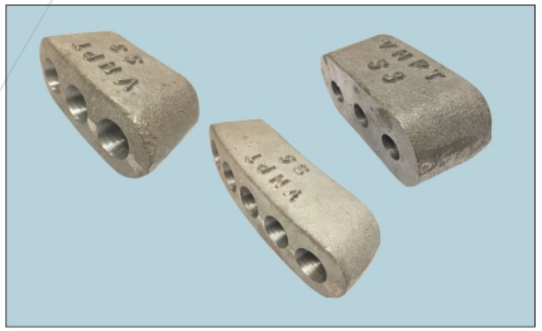


WEDGE (0.5" & 0.6")

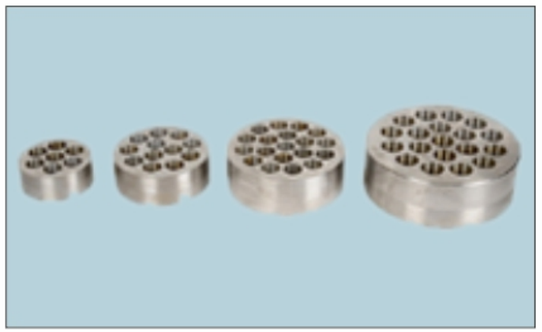


FLAT DUCT

5-S, 7-S, 12-S,13-S, 15-S, 19-S ROUND CASTING

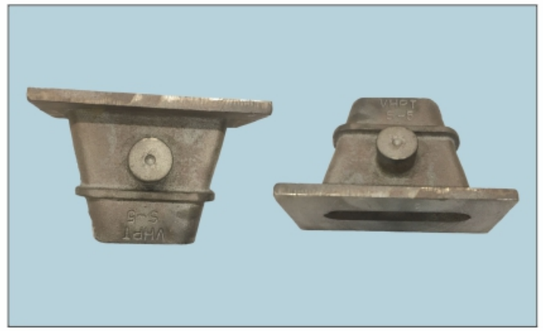







2-S, 3-S, 4-S, 5-S, 6-S, 7-S, 12-S, 19-S
ROUNDED AND FLAT BEARING PLATE






3 S, 4 S, 5 S FLAT ANCHORS

## 3.2 UNBONDED SYSTEM (ENCAPSULATED)

TENDON


ANCHOR PLATES

POCKET FORMER

END CAP

## Clientele

1. Ergoninfra
2. Surat Multispeciality Hospital surat

* Some works are executed as sub contractor to main contractors.

24


25

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**Corporate Office : Surat**
804, Rajhans Bonista, Behind Ram Chowk Temple, Ghod dod Road, Surat.
Mobile : 09924733111, Ph.: 0261-2666515, 2656515
E-mail: vhshrienterprise@gmail.com

**Branch Office :**

**Mumbai (Maharashtra)**
Mobile : 09924733111, 07573004020, 07096000365

**Ahmedabad (Gujarat)**
Mobile : 07573004016, 09924733111, 07573004020, 07096000365

**Vadodara (Gujarat)**
Mobile : 09924733111, 07573004020, 07096000365

**Pune (Maharashtra)**
Mobile : 08237866946, 09924733111, 07573004020, 07096000365

**East Zone Office : Patna**
Lh/1, Sri Krishna Nagar, Ground Floor, HSG Colony, Patna.
M – 09924733111
E-mail: vhshrienterprise@gmail.com

**Branch Office :**

**Kolkata (West Bengal)**
Mobile : 09924733111, 07573004020, 07096000365

**Varanasi (Uttar Pradesh)**
Mobile : 07573004022, 09924733111, 07573004020, 07096000365

**Lucknow (Uttar Pradesh)**
Mobile : 07573004022, 09924733111, 07573004020, 07096000365

**Bhubneshwar (Odisha)**
Mobile : 09924733111, 07573004020, 07096000365

**South Zone Office : Banglore**
Flat No T-2, Prabhavathi Classic Apartment, No 20, 'B' Cross,
Rama Temple Road, Ejipura, Po. – Viveknagar, Bangalore - 560047
M – 09952125350, 07096000837, 07573004020
Email – vhshrienterprise@gmail.com

**Branch Office :**

**Cochin (Kerala)**
Mobile : 09952125350, 07096000837, 09924733111,
07573004020, 07096000365

**Amravati (Andra Pradesh)**
Mobile : 09952125350, 07096000837, 09924733111,
07573004020, 07096000365

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Mobile : 09952125350, 07096000837, 09924733111,
07573004020, 07096000365

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