DRIVEN NAIL

What is Driven Nail?

Driven nail is a soil stabilization technique similar to soil nailing, but it utilizes a drive installation method for reinforcing bars without the need for drilling—offering a fast and economical solution for specific soil conditions. Driven nails can be used to reinforce slopes, excavations, and retaining walls. Steel bars are driven into the ground to act as inclusions that enhance the shear strength of the soil structure, thereby improving overall ground stability.

The installation of driven nails is performed using a vibratory hammer mounted on a rig. We operate rigs of various heights to accommodate different overhead clearance requirements. Driven nails can be installed either with or without grouting.

This technique is particularly effective in expansive soils where drilling with water could compromise soil stability. The process is generally faster and more cost-effective than traditional soil nailing, making it ideal for construction projects that require immediate action or where minimal environmental impact is a priority.

Applications

- **Slope Stabilisation:** Used on natural slopes, embankments, or cuttings to prevent landslides.
- **Excavation Support:** Provides stabilization for vertical or near-vertical cuts during road, building, or infrastructure excavation.
- **Retaining Structures Reinforcement:** Strengthens retaining walls or embankments that show signs of distress or require additional stability.
- **Highway & Railway Cuts:** Applied on cut slopes along transport corridors to reduce erosion and failure risks.
- **Temporary Works:** Used in construction sites as temporary support where speed and cost-efficiency are crucial.

Benefits

- **Faster Installation:** Eliminating the need for drilling and, therefore, suitable for projects with tight schedules.
- **Cost-Effective:** Lower material, equipment, mobilisation, and site preparation costs compared to fully grouted soil nails.
- **Immediate Reinforcement:** Provides instant resistance once driven into the ground—no curing time required like grouted systems.
- **Simple Equipment Needs:** Can be installed using readily available equipment (jackhammers, vibratory hammers, or small rigs)
- **Reduced Ground Disturbance:** Minimal soil removal compared to drilled nails, making it suitable for areas with sensitive soil conditions.
- **Versatile Use:** Can be applied in both cohesive and granular soils, especially effective in medium-dense to dense soils.

Technical Specification

- High-strength steel bars with the diameter of 25 mm -32 mm (threaded or plain).

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- Installation length of 4 - 12 m (depends on design & slope height).
- Corrosion protection using hot-dip galvanised or epoxy-coated surface.
- Installation inclination is between 10–20° downward from horizontal.
- Can be combined with shotcrete, wire mesh, or geomat to support surface stability.
- Pull-out test on selected nails to verify load capacity.

Equipment

Driven Nail Rig

Driven Nail Rig on a Slope

Our Projects

Sinamar Dam, West Sumatra, Indonesia (2020)

Leuwikeris Dam, Tasikmalaya, West Java, Indonesia (2019)

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