HORIZONTAL DRAIN

What is Horizontal Drain?

Horizontal drain is a solution to improve slope stability and reduce water pressure within soil and rock formations. Horizontal drains are drilled into slopes or embankments to intercept groundwater and safely discharge it away, preventing excessive pore water pressure that may lead to slope failure. With proper design and installation, drains typically function for 20–30 years.

Using specialized drilling equipment, we install perforated pipes within boreholes that allow water to flow out while keeping soil and debris from entering. The system effectively lowers the groundwater table, enhances slope stability, and prolongs the lifespan of protective structures.

Applications

- Stabilization of natural slopes and cut slopes in highways, railways, and dams.
- Drainage in embankments, retaining structures, and landslide-prone areas.
- Securing sheet piles, quay walls, and cofferdams.
- Dewatering in mining and tunnelling projects.
- Reducing pore water pressure in soil and fractured rock masses.
- Long-term groundwater control for geotechnical and infrastructure projects.

Benefits

- Reduces excess pore water pressure to improve slope stability.
- Prevents landslides and soil erosion in vulnerable areas
- Cost-effective compared to large-scale surface drainage or structural measures
- Extends the service life of slopes, embankments, and retaining structures
- Minimizes maintenance and provides continuous passive drainage
- Environmentally friendly by controlling groundwater naturally without heavy pumping systems

Work Process

1. **Rig Setup & Alignment:** The drilling rig is positioned on a stable bench surface, secured, and aligned to the required angle of the drain. Proper mast direction is checked throughout drilling.
2. **Drilling:** Boreholes are drilled using a water flush system to remove cuttings and maintain hole stability. Temporary casing may be installed as drilling progresses to prevent soil collapse.
3. **Hole Cleaning:** After reaching the design depth, the borehole is flushed with clean water to remove

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sediment and prepare for pipe installation.

4. **Drain Pipe Installation:** Prefabricated perforated pipes (with geotextile wrap and bottom cap) are carefully inserted into the hole.
5. **Sealing & Grouting:** The annular gap near the surface is sealed with cement grout to protect against surface infiltration, while keeping the drain section open for groundwater flow.

Why Choose Geonusa Utama?

- 15+ years of experience in geotechnical solutions
- Proven track record in infrastructure and private sector
- Committed to safety and quality
- Experienced team an in-house equipment

Our Projects

Horizontal Drain installation in Pangalengan, West Java, Indonesia (2008)

Contact Us:

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