

Prefabricated Vertical Drains (PVD) to accelerate consolidation of soft clay

Band drains installed through soft clay shorten the drainage path, so a surcharge consolidates the ground in months rather than years.

CAN BE CONSIDERED WHERE

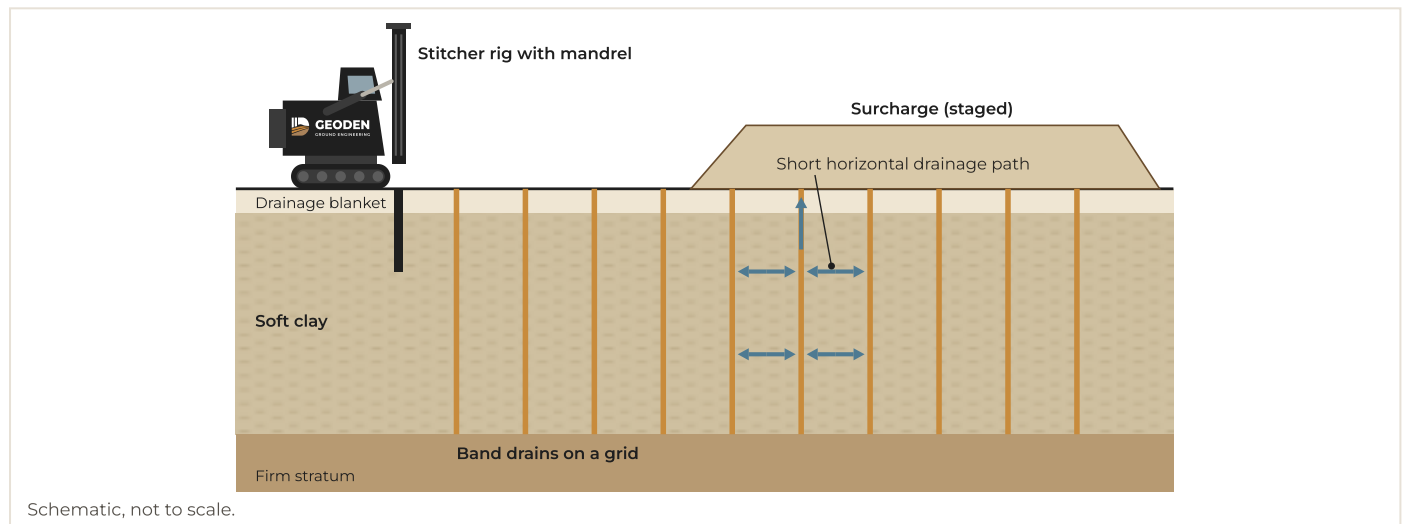
- Soft, saturated clays and silts with large expected consolidation settlement.
- Reclamation, embankments, roads, tank farms and storage yards.
- Programmes that cannot wait for natural consolidation.

LIMITATIONS

- Drains speed up consolidation; a surcharge, preload or vacuum is still needed to cause it.
- Settlement still occurs and must be allowed for in levels and services.

HOW IT WORKS

A drainage blanket of sand or granular material is placed as a working platform. A mandrel mounted on a stitcher rig pushes the drain through the soft layer to the design depth; an anchor plate holds the drain in place as the mandrel is withdrawn, and the drain is cut above the blanket.



DESIGN INPUTS

- Site investigation: clay thickness, consolidation and permeability parameters, CPTu dissipation tests.
- Required settlement and time to reach it.
- Drain spacing and pattern, depth and drain type.
- Surcharge height, staging and stability.

EXECUTION CONTROLS

- Drain position, depth and verticality recorded for each drain.
- Continuous drain material, splices to the manufacturer's method.
- Mandrel penetration resistance logged to identify obstructions.
- Surcharge placed in the approved stages.

VERIFICATION AND ACCEPTANCE

Design intent: What is required

Target degree of consolidation, residual settlement and time agreed with the consultant.

Production control: What was done

Drain installation records and as-built grid.

Acceptance: What was proven

Settlement plates, extensometers and piezometers against the predicted curves before surcharge removal.

DELIVERABLES

Method statement and risk assessment · Drain layout plan · Installation records · Surcharge staging plan · Monitoring records and consolidation analysis