



WORK INSTRUCTIONS FOR ENGINEERS

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**OP-3-23. SUPERVISION OF VERTICAL
DRAINS INSTALLATION**

SUPERVISION OF VERTICAL DRAINS INSTALLATION

23.0 SUPERVISION OF VERTICAL DRAINS INSTALLATION

23.1. INTRODUCTION

A checklist for supervision of vertical drains installation. G&P GEOTECHNICS Standard Specification for Vertical Drains.

23.2. DESK STUDY PRIOR TO SITE SUPERVISION

- Obtain a copy of Site Supervision Plan (ISO Form) from the Engineer in-charge.
- Thoroughly discuss with Engineer regarding :
 - Expected penetration length of vertical drains
 - Allowable offset distance if the first attempt to install vertical drain is not successful
 - Boundary of area to be treated
 - Manner and frequency of communication / reporting
- Prepare Field Advice Sheet
- Obtain the following :-
 - Site layout/survey plan
 - Vertical drain installation layout
 - Equipment Appraisal Form
 - Site Report Form
 - Site survey plan or topographical map showing existing underground services near the site boundary
 - Approved Method Statement from the Contractor on vertical drain installation
- Review the contract/tender document for special requirements
- Bring a camera and sufficient number of films

23.3. FIELD WORKS

23.3.1. General

- Take photographs of the site to show existing site condition.
- Ensure workers observe safety measures.
- Keep a record of weather conditions for the full duration of the field works.

23.3.2. Setting Out of Vertical Drain Point

- Cross-check the setting out of vertical drain point and work boundary.
- Keep proper records of bench-marks referred, survey method employed, names of surveyor or workers, time and dates of the survey carried out.
- If vertical drain points have to be offset due to site constraint, inform the Engineer for approval and keep proper records.

23.3.3. Tools, Equipment and Calibration

- Inspect tools and equipment to be used. Make sure they are complete and in acceptable condition and also according to the Specification.
- Cross-check the marking of length on the mandrel and ensure that it is correct. This is for vertical drain length measurement during installation.

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23.3.4. Material

- Check the following related to the band drain :-
 - only size and type of vertical drain approved by the Engineer are being used at the site.
 - certificate from the manufacturer.
 - quantity.
- Check the following related to the base plate :
 - The size (slightly bigger than the mandrel's cross-section)
 - The quality :
 - (i) not too hard, so that it bends-up and covers the end opening of mandrel to prevent soil squeeze in the mandrel.
 - (ii) not too soft otherwise it may easily tear off.
 - (iii) ensure that the welding point is strong enough to hold down the vertical drain when the mandrel is being pull up.
- Check that the drainage blanket is as per the Specification
 - Carry out sieve analysis test on the drainage material before accepting/approving it for use at the site.

23.3.5. Storage

- Ensure that the vertical drains are properly stored as per recommendations of the manufacturer.
- The drains shall be fully wrapped up for protection against ultra violet light until installation.

23.3.6. Working Platform

- Make sure that the Contractor has properly prepared the platform for the machine to do the installation work so that the machine will not tilt and overturn or have problem moving around on the soft ground.

23.3.7. Installation

- Ensure that the ground is free of debris.
- Ensure that the thickness for first layer of the drainage blanket is adequate
- Record the length of each vertical drain immediately after it has been installed.
- Ensure that the exposed portion of the vertical drain above the ground is at least 0.5m and that it does not slip into the hole
- After the installation, cover the drain with second layer of the drainage blanket
- If the vertical drain installation is not successful, try to install one more next to the original position. Abandon the point if the second attempt is also not successful
- Ensure that the joint of the band drain is strong and as per the approved Method Statement
- Installation machine should not be allowed to move over the top of the area where vertical drain has been installed

23.3.8. Earth Work

- Ensure that all earth fill material is free from any organic matter and comply to the specification.
- Each layer of earth fill shall be maximum 300mm loose thickness only and compacted to 90% standard Proctor.
- Maintain a record of

