

uMkhomazi Water Project

Potable Water Module

GEOTECHNICAL INVESTIGATIONS: METHOD STATEMENT FOR TEST PIT EXCAVATION AND REINSTATEMENT

Test pits will be excavated by locally sourced TLB machines, logged and backfilled such that no open pit is left unattended or remains open overnight. The test pits will be excavated to refusal depth or to the maximum reach of the machine and logged in situ by an engineering geologist according to standard practise. Representative soil samples will be taken for laboratory testing. Disturbed samples will generally be taken of all the different materials encountered for foundation indicator tests (Atterberg Limits, grading and hydrometer tests), whilst undisturbed block samples will be taken of proposed foundations below structures for strength and consolidation testing to determine bearing strength and settlement characteristics.

The size of test pits is normally determined by the width of the bucket of the machine. The standard TLB bucket width is in the range of 550mm to 650mm. Single bucket width pits will generally be excavated unless the size of boulders is such that wider pits become necessary to remove boulders. The depth of the pit will be dictated by the invert depth of the pipe; typically 3.5 metres. It is customary to excavate about 500mm deeper than the design depth of the pipe.

The general procedure for the excavation of the test pits is as follows:

- Remove a 200mm thick topsoil layer and stockpile separately.
- Excavate a further one meter depth in maximum 500mm thick layers, which will be placed separately in positions such that it does not contaminate the top soil.
- Excavate remainder of the pit and temporarily store material such that the spoil does not extend closer than 500mm from the edge of the pit.
- After inspection, logging and sampling, the spoil will be used to backfill in one meter layers, properly compacted with the back of the backhoe bucket until all spoil material has been used. A red flag will be placed on the spoil material while logging is in progress as part of safety procedures.
- The top one metre deep section below the topsoil will be backfilled in 2 x 500mm thick layers using the spoil material stockpiled separately.
- The topsoil will then be replaced and compacted. The back wheel of the TLB will be used to compact the surface layers.
- It is typically found that the completed backfilled test pit will form a mound above natural ground level, which usually settles back to the original ground surface after the first rains or after natural compaction has taken place.

Please note that all excavation and backfilling will be undertaken under supervision of the site engineering geologist or his representative. No test pits will be left open overnight.