

# Guided Auger Boring Techniques

Horizontal guided auger boring is fast gaining a reputation as being a cost effective way of accurately installing small to medium diameter gravity sewers or steel ducts by means of trenchless technology. In reality, guided auger boring is indeed going some way towards filling the gap between conventional auger boring, where close tolerances may not be that much of an issue and in appropriate conditions, guided auger boring can match many of the benefits of micro-tunnelling.

The well-established Akkerman GBM system, a US company with a worldwide reputation for excellent mechanical pipejacking equipment is very well developed and is capable of installing pipes to precise vertical and horizontal alignments. In collaboration with the Akkerman GBM system a world record was achieved for pipejacking advanced in seven days.

The Akkerman GBM system is used in conjunction with a specially designed theodolite guided system, which provides extremely accurate pipe installation. The GBM 240 is capable of installing 100 - 600mm diameter pipes to extreme tolerances.

Accurate pipeline installation is achieved through video monitor surveillance of an illuminated target through a theodolite; the steering of the pilot tube is accomplished by aligning an angled steering head to the desired course and thrusting forward. The rotation of the angled steering head allows the operator to keep the pilot tube on the planned line and grade.

The pilot tubes are installed sequentially behind the steering head. After the head has reached the reception shaft a reaming or cutter head and auger tube sections are installed behind these pilot tubes. With addition of each section of auger and tube in the launch shaft, a section of pilot tube is removed in the reception shaft. The process is repeated until all pilot sections have been removed.

A pipe adapter is then fitted to the last section of auger casing in the launch pit and the product pipe is jacked in while auger tubes are removed from the reception shaft.

Video monitoring of the illuminated target ensures that the precise tolerances needed for the gravity pipeline market are met. The theodolite, with its vertical lift and side-shift base, has a designed accuracy of  $\pm 5$ mm up to 100m distance.



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1. Drive pit - Introduction of the Auger



2. Drive pit - Installation of a pilot tube



3. Reception pit - Arrival of the pilot tube

## Summary

The choice of trenchless technique will always be a case of 'horses for courses'. However, it appears from some of the latest projects that, in appropriate conditions, guided auger boring can match many of the benefits of micro-tunnelling, but without the high cost.



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