

TRENCHLESS ALTERNATIVES

In our constant efforts to improve both the range and flexibility of our offerings, **Cro-Bar Construction Ltd.** can provide the following solutions to its clients, in situations where traditional open-cut trench is not an option. Using the latest in cable avoidance tools and x-ray equipment, our highly trained and experienced staff can quickly assess which of the following options can be offered as an alternative to conventional trenching methods.

The advantages of "Trenchless Technology" over traditional open cut cannot be overlooked when site & project conditions are favourable.



ADVANTAGES OF TRENCHLESS ALTERNATIVES

- ***Environmentally Friendly***



- ***Minimal disruption to traffic and public***
- ***Reduced construction costs***



- ***Time Saving***
- ***Avoids open cut trenching***



- ***Eliminates extra Local Authority charges relating to reinstatement & long term damages***



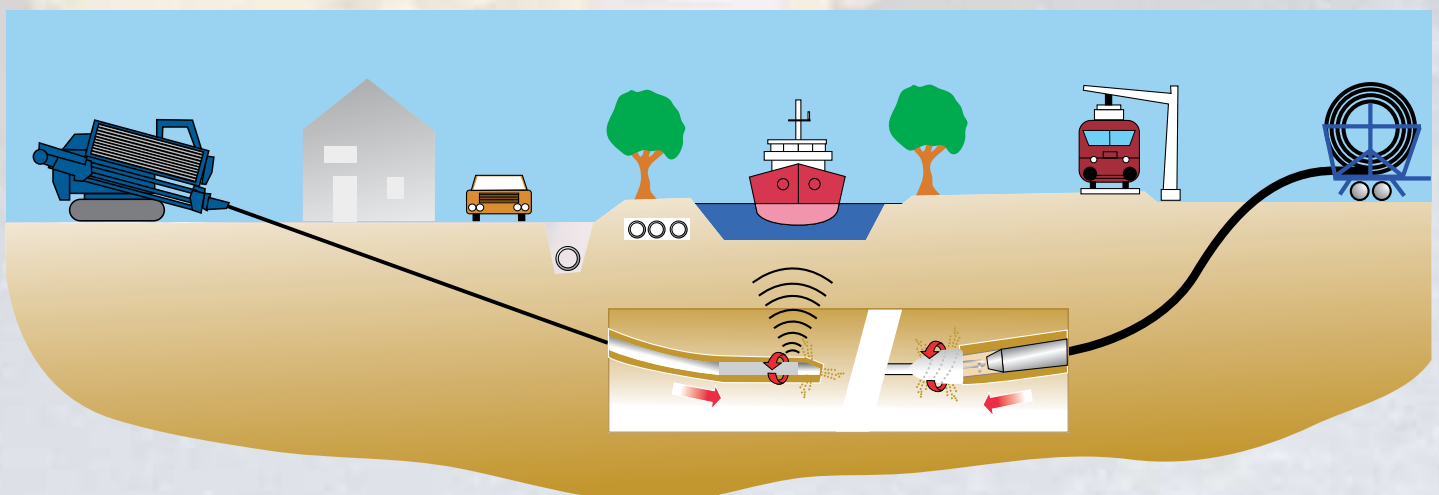
HORIZONTAL DIRECTIONAL DRILLING (HDD)

In situations such as the crossing of busy motorways, railway-lines or rivers the direction boring system is an excellent alternative.

The capability to monitor the depth and line of the bore head from a launch pit on one side to a pre-determined end point on the other side, is by far the best straight line solution in such situations.



Cro-Bar Construction Ltd. can offer a range of such equipment to meet any challenges which may arise due to length of bore, ground conditions or duct/pipe formations.



TRENCHLESS ALTERNATIVES

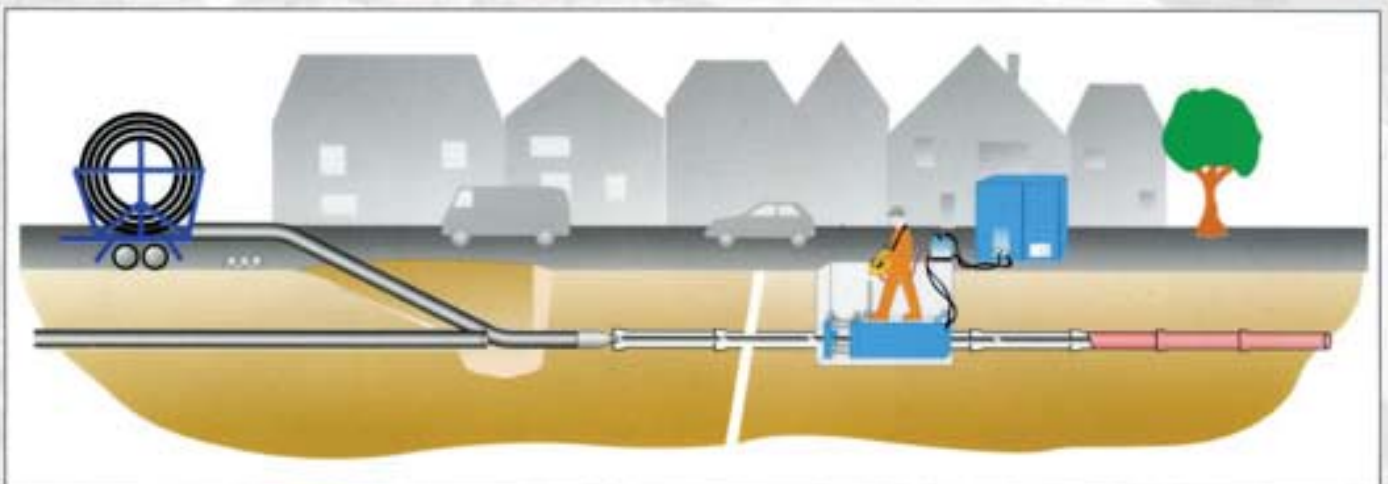
PIPE BURSTING

The static pipe bursting method is an installation system used by **Cro-Bar Construction Ltd.** for the trenchless renewal of gas and water lines in sensitive soil conditions, where other external lines and buildings are within the immediate vicinity.

When replacing pipes with the static bursting technique, a bursting rod is pushed from a start pit (shaft) through the old pipe into a target pit (shaft).

On arrival in the target pit, the bursting blade with the new pipe connected is attached to the rod string.

When pulling back the rod string the old pipe is destroyed by the blade, the pipe fragments are displaced into the surrounding soil and the new pipe (of equal or larger diameter) is pulled in simultaneously.

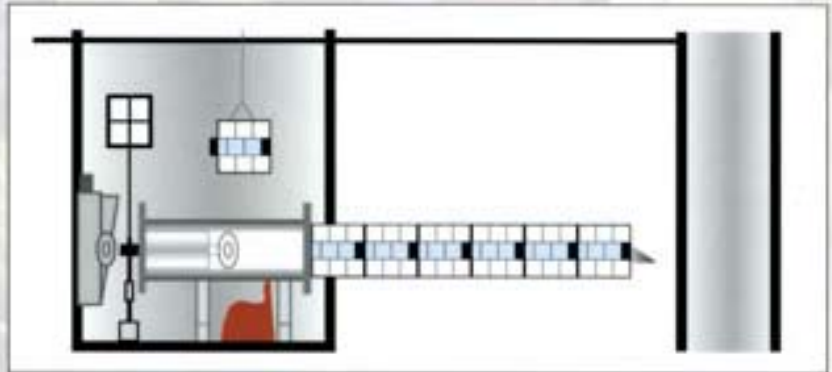


GUIDED AUGER BORING

Guided Auger Boring is a trenchless method of installing pipe by **Cro-Bar Construction Ltd.** in situations of limited access, such as beneath a busy road or railway crossing, where no surface heave or settlement is acceptable.

Installation is a three-step operation:

1. Pilot rods are accurately guided through the ground using a theodolite-camera and laser target.
2. Steel casings containing auger drills are attached to the last pilot rod and pushed through the ground. Excavated material is conveyed back to the launch pit as the pilot rods are pushed into the reception pit.
3. The steel casing can be left as sacrificial duct or the product pipe is installed behind the steel casings that are pushed into the reception pit.



PIPE RAMMING

For the dynamic pipe installation according to the ramming technique pneumatically driven pipe ramming machines are used. These machines enable the economic installation of open steel pipes as casing or product pipes up to 4000 mm diameter over lengths up to 80 m.

Steel casings with a cutting edge are driven horizontally using compressed air, leaving displaced soil inside the casing.

This is later removed by either:

1. Compressed air or water
2. Manually, depending upon size of bore

