

## **Trenchless Technology for Cable Installation**

Power cables are installed underground to deliver electricity power from substations to load centres. The trench excavation work must be well planned and the excavated trench should be suitable for cable laying. The bending radius of the trench must exceed the minimum bending radius of the cable (normally, 21 times the outer diameter of the largest cable or as specified by the cable supplier). Where the minimum cover on top of obstructions such as drains, pipes, nullahs, is not sufficient for the trench to run across them, the trench must be made deeper and the bottom of the trench on both sides of the obstacles should be gently graded to enable the cables to be laid smoothly underneath the obstruction without being stressed / damaged. Cable ducts are sometimes installed inside the trench to house the cables for better mechanical protection, especially across the carriageway.

When traditional open-cut method for cable trench excavation is not possible due to road traffic situation and existing underground facilities, pipe jacking or micro-tunneling is commonly employed to install underground cable ducts for housing power cables. Pipe Jacking is a relatively new "Trenchless Technology" but its application is now becoming more and more popular as the method can minimize disturbance. As a result, this trenchless method application can serve as one of the possible solutions to overcome those difficult site conditions where open-cut excavation is not allowed for cable laying.

In applying the trenchless method, the most important step is in the route planning and investigation stage, which dictates the feasibility of the project. Depending on the underground conditions, the cost of this method for cable installation could be higher than the open-cut trench excavation. However, it can provide benefits including less disruption to traffic, less damage to roads, fewer nuisances to public, less environmental pollution and less costs for reinstatement, signage, lighting and guarding.

[The Electrical Blog is contributed by the Electrical Division. If you would like to know more about this topic, please contact the Division Hon Secretary, Ir Geoffery L Chan at \[glchan@hec.com.hk\]\(mailto:glchan@hec.com.hk\)](#)