

**T/8-6 Issue 6**

The proper installation of Underground cables is very important to the electrical and physical life of the cable. These products are virtually free from storm damage and have lower maintenance costs than aerial cables. Belden provides a wide range of Direct Burial products for your installation needs.

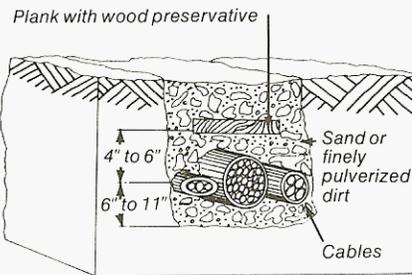


Figure 1.

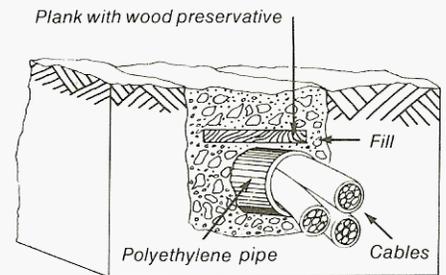


Figure 2.

### Underground Burial of Belden Cable

Why would anyone choose to bury a cable, when the procedure would appear to be more expensive and time-consuming than an aerial installation? One reason is that a direct burial cable is virtually free from storm damage and has lower maintenance costs than aerial cable. In addition, aerial installations often lack aesthetic appeal, and in some communities, are even prohibited

Although any cable can be buried in the earth, a cable that is specifically designed for direct burial will have a longer life. A cable with a high-density polyethylene jacket is particularly well equipped for direct burial because it can stand up well to compressive forces. High-density polyethylene is both non-porous and non-contaminating, and provides complete protection against normal moisture and alkaline conditions. In some direct burial cables, an additional moisture barrier of polyethylene grease may be applied under the jacket. If water should penetrate the jacket, it would not be able to travel under the jacket, damage would be localized and more readily repaired. Because buried cable is thermally insulated

by the earth, its year-round temperature will only vary a few degrees. If a buried cable is not damaged the attenuation will be constant for the useful life of the cable.

### Recommended Procedures for Cable Installation

Because the outer jacket is the cable's first line of defense, any steps which can be taken to prevent damage to it will go a long way toward maintaining the internal characteristics of the cable.

At Belden, we recommend the following: Bury the cable in sand or finely pulverized dirt, without sharp stones, cinders or rubble. If the soil in the trench does not meet these requirements, tamp four to six inches of sand into the trench, lay the cable, and tamp another six to eleven inches of sand above it. A creosoted or pressure-treated board placed in the trench above the sand, prior to back filling, will provide some protection against subsequent damage that could be caused by digging or driving stakes.

Lay the cable in the trench with some slack. A tightly stretched cable is likely to be damaged as the fill material is tamped.

Examine the cable as it is being installed to be sure the jacket has not been damaged during storage, by being dragged over sharp edges on the pay-off equipment, or by other means.

In particularly difficult installations, such as in rubble or coral, or where paving is to be installed over the cable, a polyethylene water pipe, which is available in long lengths and several diameters, may be buried and used as a conduit.

This pipe protects the cable and usually makes it possible to replace cable which has failed without digging up the area.

It is important that burial is below the frost line to avoid damage by the expansion and contraction of the earth during freezing and thawing.

## NEC Requirements

The National Electrical Code (NEC) states specific requirements for cables to be buried underground. Table 300.5 of the 2008 NEC specifies the minimum burial depth for 0-600 volt nominal applications.

If an installation must meet all NEC requirements, a local inspector should be consulted during the planning phase.

## Conclusion

This information is intended to aid the user in achieving the longest cable life possible in an underground application. It is assumed that the user has studied the application, has determined that any failure of the cable will not result in a hazardous condition, and accepts responsibility for cable choice.



## Belden's Direct Burial Rated Products

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- 300V PLTC
- 600V TC
- Multi-conductor Codes
  - 9883
  - 9886
  - 9803
  - 9890
  - 9894
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