

Conduit Selection

Differences Between Above Ground and Below Ground Conduit

The difference between above ground and below ground conduit is in their relative fire resistance. Above ground conduit has fire resistance per UL 2515 and CSA C22.2 No. 2515 standards, meaning that the conduit will self-extinguish within 15 seconds after each of five successive flame applications per the UL 94 (vertical) flame test standard. Below ground conduit meets UL 94 (horizontal burn) requirements, which are less stringent than vertical burn requirements.

Above and below ground conduit share many other properties: dimensions, colors, physical and mechanical properties are the same. Because of its higher flame resistance, conduit that is manufactured and labeled for use in "above ground" applications is suitable and can be used for "below ground" applications as well.

Conduit Application Guidelines

The following recommendations must be verified by the contractor/installer and approved by the engineer of record. The information is strictly for use as a guideline and should be taken as a suggestion only.

Above Ground and Under Bridge

For above ground applications, we recommend that all conduit joints be bonded together with epoxy adhesive.

- The conduit types that have connections that require epoxy adhesive are Straight Socket.
- These joining systems are available with XW epoxy resin conduits.

It is recommended that the conduit diameter be based on the allowable wire fill section in this catalog. Determine the support span of your conduit by reviewing the support span section of this catalog. Champion Fiberglass has UL-Listed, NEC-compliant extended support span distances that exceed the charts shown in Article 355 of the NEC. A mid-span deflection of 5/8" (16 mm) should not be exceeded.

Encased in Concrete (EB quality)

For most concrete encasement applications, XW conduit is more than sufficient.

- Due to its high temperature rating (250°F), epoxy fiberglass conduit performs well when encased in concrete. (This recommendation may not apply for core boring applications.)

Jack and Bore

Due to the possibility of high pressure caused by concrete, XW (Extra Heavy Wall) conduit should be used.

- The installing contractor must observe and apply proper industry-accepted standards and procedures when pumping the concrete into the core.
- If excessive pressures are reached, even XW conduit may fail.

Direct Buried (DB quality)

For direct buried applications that have deep trenches, special soil conditions, or high rates of soil compaction, XW conduit can be used.

High-impact Areas - Bullet Resistant

For high-impact or Class I, Division 2 applications, XW conduit may be used.

- Many utility companies utilize XW conduit for the protection of their fiber-optic cables in above ground and under bridge applications.
- XW conduit has been shown to stop a .45 caliber bullet at 20 ft.

Note: ID (inside diameter) tubular type conduit has a smaller OD and therefore standard pipe clamps may be used with this type of conduit, but the sizing and fit will not be as designed. Care should be taken to choose the right size pipe clamp inside diameter for the appropriate sized ID tubular type conduit outside diameter.