

How to splice fiber optic cables during backfilling



Summary of Content

Use fusion splicing for permanent, low-loss underground fiber connections, with careful preparation, protection, and handling during backfilling.

Preparation of Fiber Optic Cables

Before splicing, prepare the fiber cables meticulously. Strip 3-5 cm of the outer jacket using a cable stripper, then carefully remove the buffer coating to expose the bare fiber. Clean the fiber with an IPA-soaked swab and avoid touching the glass surface to prevent contamination. Ensure the bending radius is greater than 30 mm to avoid microbends that can increase signal loss. Proper preparation is critical for both fusion and mechanical splicing.

Choosing the Splicing Method

- **Fusion Splicing:** Preferred for underground backfilled installations due to its permanent, low-loss connection (typically 0.1 dB or less). It uses an electric arc to melt and fuse fiber ends, creating a continuous light path. Fusion splicing is highly durable and suitable for long-term telecom or data network backbones.
- **Mechanical Splicing:** Uses alignment sleeves and index-matching gel to join fibers. It is faster but less permanent, with slightly higher loss (~0.3 dB). Mechanical splices are generally used for temporary repairs or short-term connections.

Splicing Procedure

- **Cleave the Fiber:** Use a precision cleaver to create a flat, perpendicular end on each fiber.

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