ZITHA TECH SPECIALTY CABLES (Pty) Ltd

Precautions for Optical Cable Line Engineering



Overview

this document describes the general safety precautions that should be adhered to while working in the Fiber Optic industry.

Key Takeaways

Proper handling, pulling, and environmental protection are essential to prevent damage and ensure reliable optical cable installation.Cable Handling and Storage
• Keep the protective covering on reels intact until installation to prevent damage during transit or storage .

• Store reels vertically on flanges, edge-to-edge, and chocked to prevent rolling .

• Protect cables from vandalism, vehicular traffic, or environmental hazards using barricades or cones .

• Use a figure-eight configuration when uncoiling to avoid kinking and twisting; loops should be 1.5–2.4 meters in diameter .
Pulling and Installation
• Do not exceed the maximum pulling tension specified for the cable; use cable breakaways and swivels to prevent twist accumulation .

• Maintain the minimum bend radius: typically 20 times the cable diameter under tension and 10 times under static conditions .

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• Use cable lubricants to reduce friction when pulling through ducts, and clean up spills to prevent slips .

• Avoid sharp bends, sudden direction changes, and crossing other cables in trenches or ducts .

• For long pulls exceeding 1000 meters, use segment traction or auxiliary pulling to reduce tension .

Trench and Burial Considerations

• Ensure the trench bottom is flat and free of debris; use 10 cm of fine soil or sand if the ground is stony .

• Backfill with 30 cm of fine soil or sand as a protective layer; avoid mixing gravel or hard blocks .

• Lay optical cables flat or naturally bent to release stress; do not step on or forcefully bend the cable .

• Maintain adequate burial depth to prevent mechanical damage and freezing in cold regions .

Jointing and Identification

• Avoid placing joints in the middle of ducts; protect splices with hoses or soft plastic pipes .

• Leave reserved lengths in manholes or handholes for maintenance and bending .

• Clearly mark cables and splices with serial numbers, type, and specifications for future reference .

Safety Precautions

• Ensure all personnel are familiar with OSHA, NESC, and local regulations before starting installation .

• Use barricades, ladders, and scaffolding safely to prevent injury .

• Maintain clear communication between pull, feed, and monitoring locations .

• Avoid working directly under cables under tension unless a clear path to safety exists .

Environmental and Mechanical Protection

• Apply antifreeze measures in cold climates to prevent cable damage .

• Use insulating plates or protective barriers to prevent collision damage .

• Avoid co-locating metallic optical cables near power lines to prevent interference .

Following these precautions ensures mechanical integrity, signal quality, and long-term reliability of optical cable installations.

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