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Installation of Communication Fiber Optic Cable Towers



Overview

Installation works shall be accomplished according to the general guidelines for fibre-optic cable and connectors.

Key Takeaways

Installing fiber optic cables on towers requires careful planning, adherence to safety standards, and proper handling to ensure network reliability and cable integrity.Planning and Preparation

Before installation, plan the cable route and tower layout to minimize stress on the fiber and avoid interference with other structures. Identify the type of fiber optic cable required—aerial outdoor cables are typically used for tower installations due to their durability against environmental stress, including wind, temperature fluctuations, and UV exposure . Ensure all necessary tools, such as pulling socks, unwind devices, clamps, and torsion compensating elements, are available .

Safety Considerations

Fiber optic installation involves working at heights and handling delicate glass fibers. Technicians must use personal protective equipment (PPE), including eye protection and gloves, and follow OSHA and local safety regulations . Avoid twisting or over-bending the fiber, as this can cause signal loss or permanent damage .

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Installation Procedure
• Cable Handling: Unwind the fiber cable from the drum using a suitable device to prevent twisting. Remove cable ties at the tip of the installation tube and after approximately 5 meters .

• Lifting and Securing: Lift the cable using standard techniques, attaching it to a pulling sock. Use torsion compensating elements like turning shackles to prevent twisting. Do not exceed the maximum pulling force specified on the cable label .

• Attachment to Tower: Fix the cable at intervals of 0.8–1 meter vertically and 1 meter horizontally using clamps of appropriate diameter. Ensure the cable does not touch the tower structure directly .

• Final Placement: Dismount the outdoor installation tubes just before connecting the fiber to the mast box or distributor casing . Ensure proper slack is maintained to accommodate thermal expansion and tower movement.
Compliance with Standards

Follow FOA installation standards and manufacturer guidelines to ensure proper performance and longevity . This includes maintaining cleanliness, avoiding fiber contamination, and adhering to pulling tension limits. Compliance with the National Electrical Code (NEC) and local regulations is also essential for safety and legal requirements .

Testing and Verification

After installation, perform optical testing to verify signal integrity, including insertion loss and continuity checks. Inspect all connections and ensure the cable is properly secured and free from stress points .

Best Practices
• Use factory-mounted installation tubes to protect the fiber during handling .

• Avoid sharp bends and excessive tension.

• Regularly inspect the cable during installation for damage.

• Document the installation route and cable specifications for future maintenance. By following these procedures, fiber optic cable installations on towers can achieve high reliability, long-term durability, and optimal network performance.

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