Basic Rules for Cable Installation and Termination in the Central Office/Head End/Point Of Presence

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All optical cables are terminated in the CO/HE/POP on a patch panel/ODF to enable the connection of active and/or passive equipment. Outdoor cables cannot be used inside buildings because they do not provide the required fire protection and must be terminated shortly after entering the facility. They are terminated in an ODF, where each fiber is spliced to a pigtail (a simplex cable, typically 1.5 m long, with a connector on one end).

There are specially designed cables with dual jackets that allow the outer protective layer to be removed after the cable enters the building, as well as cables with LSZH jackets. Such cables can be installed inside buildings without restrictions, although they are typically drop cables.

Cable entry and termination should be addressed during the planning and design phases. This includes a site survey, during which the exact cable entry point and routing through the building to the appropriate rack cabinet and ODF (Figure 1) are defined, as well as the location for storing the cable slack before the cable enters the ODF (Figure 2).

Figure 1. Cable Routing Through the Building

During installation, care must be taken to maintain the cable's minimum bend radius and to avoid pulling the cable around obstacles.

Cables may be installed through suitable conduits or cable ducts, or they may be secured to or laid on appropriate cable support systems. All cables must be properly labeled to ensure simple and rapid identification. If copper cables such as UTP, power cables, etc. are installed within the same supports/cable ducts, optical cables should be placed at the top to avoid damage caused by weight.

Figure 2. Cable Slack Storage and Termination in the ODF (Source: FOA)

At the cable entry point into the building, as well as at all cable penetrations through walls and floors, fire protection measures are required, specifically firestopping, as shown in Figure 3. Various firestop compounds and coatings are used for this purpose.

Figure 3. Fire Protection (Source: FOA)

In rare cases where optical cables, as well as other equipment (cabinets, shelves, patch panels, active equipment, etc.), contain metal elements, they must be properly

grounded to the facility where they are installed, i.e., potential equalization must be carried out.

Equipotential bonding of equipment in the CO/HE/POP is achieved by connecting the equipment using a copper braid (protective copper conductor, typically with a cross-section of around 6 mm²) to a copper busbar in each rack cabinet – a star topology. Each device has a clearly marked grounding terminal.

The copper busbars, located at the bottom of the rack cabinets, must have a sufficient number of connection points for all equipment within the cabinet. The busbars from all cabinets are then interconnected using a copper braid of approximately 16 mm² to a separate copper busbar – the main grounding bar, from which a connection is made to the facility's central (main) grounding system.

In this way, a unified potential for all equipment is ensured, reducing the risk of overvoltage and potential differences.

The final phase of this process includes cable entry and securing in the ODF, blanking, and fusion splicing.

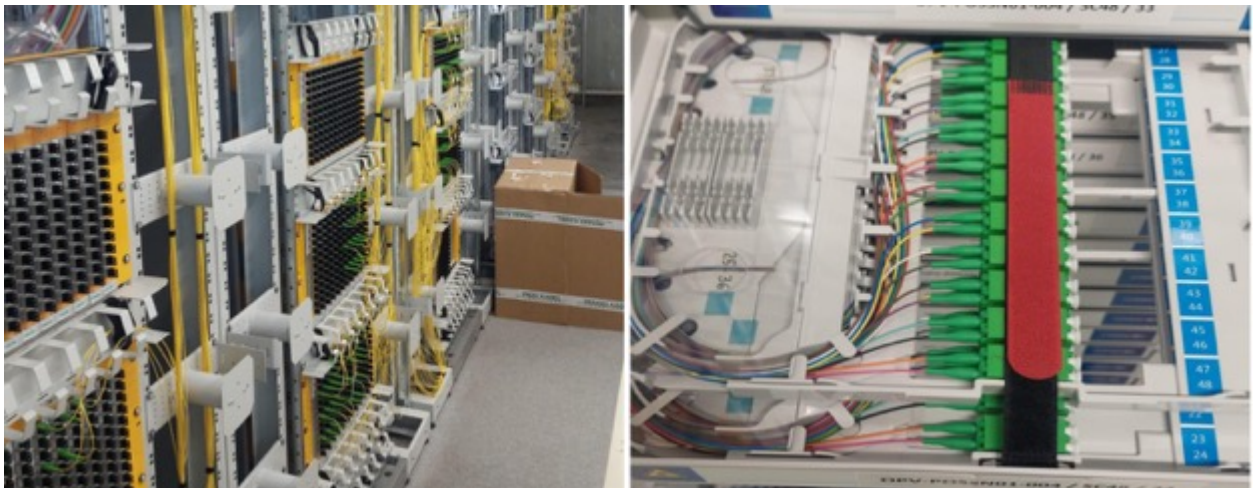

Figure 4. ODFs

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