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PEOPLE'S REPUBLIC OF CHINA**

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Code for design of telecommunication cable line engineering

通信线路工程设计规范

(English Translation)

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Table of Contents

- 1 General
- 2 Acronyms
- 3 Communication line network
 - 3.1 Composition of communication line network
 - 3.2 Design of communication line network
- 4 Selection of optical (electrical) cables and terminal equipment
 - 4.1 General provisions
 - 4.2 Selection of fiber optic cable
 - 4.3 Selection of cables
 - 4.4 Selection of terminal equipment
- 5 Selection of Communication Line Routing
 - 5.1 General provisions
 - 6.2 Installation Requirements for Direct Buried Optical Cables

1 General

1.0.1

This code is formulated to standardize the compilation of communication line engineering design and improve the level of communication line engineering design and management.

1.0.2

This specification is applicable to the engineering design of outdoor lines for new construction, reconstruction and expansion of land communication transmission systems.

1.0.3

The engineering design should implement the national basic construction guidelines and policies, rationally use resources, save land, energy and raw material consumption, and pay attention to the protection of historical relics, natural environment and landscape.

1.0.4

In the construction of communication lines, the overall planning, joint construction, and resource sharing of multiple users should be fully considered to meet the requirements of building a resource-saving and environment-friendly society.

1.0.5

The engineering design shall ensure the overall communication quality of the communication network, advanced technology, reasonable economy, safety and reliability. In the design, comparison of multiple schemes should be carried out, and efforts should be made to improve economic benefits and reduce project cost.

1.0.6

The engineering design should be combined with the communication development plan, and the existing network facilities and equipment should be rationally used. The construction plan, technical plan, and equipment selection should be based on the network development plan, fully considering the medium and long-term development and needs.

1.0.7

When constructing communication line projects in areas with seismic fortification intensity 7 and above in my country, the seismic performance of the communication network should be considered.

1.0.8

The engineering design of communication lines shall not only comply with the provisions of this specification, but also comply with the provisions of the current relevant national standards.

2 Acronyms

ADSS (All Dielectric Self Supporting) All Dielectric Self Supporting Optical Cable CPN (Customer Premises Network) Customer Premises Network DP (Distribution Point) distribution point FP (Flexible Point) flexible point MDF(Main Distribution Frame) (cable) main distribution frame ODF(Optical Distribution Frame) Optical Distribution Frame OPGW (Optical Fiber Composite Overhead Ground Wire) Optical Fiber Composite Overhead Ground Wire PMD(Polarization Mode Dispersion) Polarization Mode Dispersion SN (Service Node) business node

3.1 Composition of communication line network

3.1.1

The communication line network (Figure 3.1.1) shall include long-distance lines, local lines and access lines, including transmission media such as optical cables and electric cables.

Figure 3.1.1 Communication line network reference model

3.1.2

The access network part (Figure 3.1.2) shall include feeder, wiring and lead-in, including transmission media such as optical cable and electric cable.

Figure 3.1.2 Schematic structure of access network lines

3.2 Design of communication line network

3.2.1

The design of optical cable network should meet the following requirements.

1. The optical cable network should be safe and reliable, and gradually extend downwards to the end users of communication services.

2 For the capacity and routing of the optical cable network, on the basis of communication development planning, the construction scale should be determined by comprehensively considering the long-term business needs and the development trend of network technology.

3 The number of cores of long-distance optical cables should be determined according to long-term needs, and the local network and access network should be configured according to medium-term needs, and sufficient redundancy should be left.

4 The optical cable line of the access network should fully consider the geographical environment, pipeline pole resources, the capacity of the original optical cable and broadband optical fiber access according to the distribution of service access points, user nature, development quantity, density, geographical and time distribution. Based on various factors such as the system construction method, select the appropriate routing, topology and fiber distribution method to form a network with flexible scheduling, high fiber core utilization, investment savings, easy development, and conducive to operation and maintenance.

3.2.2

When building a new optical (electrical) cable line, the requirements for co-construction and sharing should be considered.

3.2.3

The laying of optical cable lines in urban areas should be mainly in the form of pipelines. For areas that do not have pipeline laying conditions, plastic pipe protection, channels or other suitable laying methods can be used.

3.2.4

When laying optical cable lines in non-urban areas in the wild, it is advisable to use pipelines or direct burial methods, and overhead methods can also be used according to the local natural environment and economic and social development conditions.

3.2.5

Optical cable lines can be laid in the air under the following circumstances.

- 1 Crossing canyons, deep ditches, steep mountains and other areas where the safety of pipelines or direct burial cannot be guaranteed.
 - 2 There are other facilities underground or on the ground, the construction is particularly difficult, and the owner of the original facilities does not allow crossing or compensation costs are too high.
 - 3 Lot where other laying methods cannot be adopted due to environmental protection, cultural relics protection and other reasons.
 - 4 Affected by other construction plans, it is impossible to carry out long-term construction.
- 1 Difficult to expand areas.
 - 2 Areas that may develop in the future and require flexibility in line equipment.
 - 3 The section where the pipe hole is tense.

3.2.16

The capacity of branching equipment can be selected according to 1.2 to 1.5 times of the number of users accommodated within the specified years, combined with the nominal series of branching equipment.

3.2.17

The division of the cable handover area should be based on the natural geographical conditions and the number of users accommodated. According to the principle of combining the far and near future, the technology and economy are reasonable, combined with the division of residential quarters and neighborhoods in urban planning, it can also be combined with the original handover area Or the distribution and routing of the distribution area, distribution cables and optical cables, according to the user's development division, reasonable division or merger. After the handover area is demarcated, it should remain stable. The range of the handover area should not be too large to shorten the length of wiring cables.

3.2.18

The arrangement of the cable sequence and the distribution equipment should be arranged from far to near, and from small to large.

4.1 General provisions

4.1.1

Single-mode fiber should be used in the optical transmission network.

4.1.2

The configuration of the number of optical fibers in the optical cable should fully consider factors such as network redundancy requirements, expected future system standards,