

Analysis Table of Causes of Optical Cable Line Damage



Article Overview

Optical cable line damage is primarily caused by external forces, natural disasters, intrinsic cable defects, and human factors, each affecting fiber performance and reliability.

Causes of Optical Cable Line Damage

Category	Specific Cause	Mechanism of Damage	Technical Impact	Preventive Measures
External Factors	Excavation by machinery	Physical cutting or crushing of cables during construction or digging	Complete or partial fiber interruption, signal loss	Marking cable routes, using protective conduits, coordination with construction teams
	Vehicle accidents or hanging	Impact or tension from vehicles on aerial or buried cables	Fiber breakage, increased attenuation	Proper cable placement, protective barriers, regular inspections
	Shooting or projectile damage	Localized impact on cable	Partial fiber damage, difficult fault detection	Protective sheathing, secure routing
Natural Disasters	Rodent bites or bird pecks	Chewing or pecking on cable sheath	Partial fiber damage, signal degradation	Rodent-resistant sheaths, elevated or buried routing
	Fire	Heat exposure	Melting of sheath, fiber breakage	Fire-resistant materials, route planning away from high-risk areas
	Floods	Water ingress into splice boxes or ducts	Increased attenuation, fiber breakage	Waterproof enclosures, proper drainage
Cable Defects	Strong winds, ice, lightning, electric shock	Mechanical stress or electrical damage	Micro-bending, fiber interruption, signal loss	Reinforced aerial cables, grounding, lightning protection
	Natural fiber breakage	Glass or plastic fiber fatigue over time	Gradual signal loss, eventual fiber break	High-quality fiber, proof testing, adherence to standards (e.g., ITU G.652 C/D)
	Hydrogen-induced loss	C...		

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