

Calculation of Quota for High-Altitude Optical Cable Laying

Article Overview

Quota calculation for high-altitude optical cable laying involves estimating cable length, trenching requirements, protective conduits, jointing points, and labor based on terrain and installation method.

Key Factors in Quota Calculation

1. Cable Length and Route Planning Determine the total route length, including allowances for slack at joints, handholes, and terminations. In high-altitude areas, additional length may be required to accommodate uneven terrain, slopes, and obstacles such as rocks or streams . 2. Trenching and Conduit Requirements

- o Standard trench depth is typically 1.65 meters, with a bottom width of 250-300 mm to accommodate the cable and protective layers .

- o In rocky or sloped terrain, trenches may need to be deeper or reinforced with DWC pipes or HDPE/PVC conduits .

- o For high-altitude or uneven surfaces, additional tamped fill may be required at transitions to prevent cable stress . 3. Protective Measures

- o Use innerducts within conduits to separate multiple fiber strands and facilitate future expansion .

- o Protective conduits may include HDPE, PVC, or steel depending on environmental exposure and mechanical stress .

- o Consider extra protective layers for areas prone to landslides, snow, or ice accumulation. 4. Jointing and Termination Points

- o Identify probable locations for joints, splices, and terminations.

- o Each joint requires additional cable length (typically 1-2 meters per joint) and protective enclosures .

- o High-altitude conditions may necessitate more frequent handholes or manholes for maintenance access. 5.

Labor and Equipment

- o Labor quotas should account for slower progress in high-altitude conditions due to reduced oxygen, difficult terrain, and safety precautions.

- o Equipment such as trenchers, plows, or directional drilling machines may require additional time and fuel in steep or rocky areas . 6. Material Quantities

- o Calculate the number of fiber strands per cable based on network capacity requirements (e.g., 72, 144, 432 strands), .

- o Include conduit lengths, joint enclosures, cable markers, and slack loops in the quota.

- o Factor in wastage (typically 5-10%) for cutting, splicing, and installation errors. 7. Cost Considerations

- o Underground installation costs range from \$5,000 to \$20,000 per mile, while aerial installations may cost \$40,000 to \$60,000 per mile .

- o High-altitude projects may incur additional costs for specialized labor, equipment transport, and protective measures.

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Practical Steps for Quota Calculation

- o Survey the route to measure distances, slopes, and obstacles.
- o Determine trenching and conduit requirements based on soil type and terrain.
- o Estimate cable length including slack for joints, terminations, and future expansion.
- o Calculate protective materials (conduits, innerducts, tamped fill).
- o Estimate labor and equipment hours considering high-altitude conditions.
- o Add contingency for wastage, environmental challenges, and unforeseen obstacles. By systematically accounting for these factors, a comprehensive quota for high-altitude optical cable laying can be prepared, ensuring sufficient materials, labor, and protective measures for safe and efficient installation .

This document provides guidelines for laying optical fibre cables, including detailed surveying the cable route, soil

The optical cable crossing the river is left on the adjacent pole of the first pole on the

1.2 With the intent of providing Wi-Fi facility as conventional working of ATMS to provide unhindered traffic, the Authority intends to

Estimating Installation Expenses Calculating the financial outlay for fiber optic cable installation requires an

This document contains a bill of quantities (BOQ) for two fiber optic cabling projects. For the first project of supplying and installing a

The aim of this course is to acquaint the reader with basic numerical methods and methodology that is used in cable current sizing

Duct laying technique is the most traditional method of underground cable installation and involves creating a duct

The Department of Telecommunications (DoT) has amended the Indian Telegraph Right of Way Rules (RoW) by

Before carrying out the activities of OFC cable laying, JPO instructions vide Telecom Circular No. 17/2013 for undertaking digging

If under unavoidable circumstances, the excavation is to be done between the taxi track and runway, it shall be done to the full depth

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The Centre has announced guidelines to maintain overhead optical fibre cables by amending the Indian Telegraph

This standard describes procedures for installing and testing cabling networks that use fiber optic cables and related components to

The main problem was the high losses of optical fibres: fibres available during the 1960s had losses in excess of 1 000 dB/km. A

The Department of Telecommunications (DoT) revised the Indian Telegraph Right of Way Rules (RoW) to establish a

Outside plant cables often span distances longer than the limits of manufactured cables (5-15 km typically), Deploying cables of

This document provides guidelines for laying optical fibre cables using horizontal directional drilling (HDD) and the cable blowing

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