Understanding

OSP Engineering & Planning

Outside Plant

Course Description

This extensive course was designed for those new to local loop planning and engineering, this course begins with the basic concepts such as outside plant components and loop transmission. It steadily builds to more advanced concepts and skills, including serving area designs, digital loop carrier systems and fiber optics.

Local loop facilities, sometime referred to as "the last mile, "are a critical and capital-intensive network component in delivering reliable and adequate telecommunications services to a local carrier's customers.

In today's competitive markets, local loop facilities that are cost-effective, reliable and capable of accommodating changing customer needs are key to your organization's success.

This course can be delivered in a 3-day version if only covering Copper or Fiber only, but to cover both Copper and Fiber it will be the full 5-days.

Students Will Learn

- **Properly Plan And Document Route Growth**
- **Optimize Loop Planning With Serving Area Designs**
- **Use Fiber Optics To Reinforce Feeder Routes**
- **Understand Electrical Code And Right-Of-Way Considerations**
- **Engineer Buried And Aerial Facilities**
- **And More**

Target Audience

This course is designed for technicians, engineers, planners and technical managers with little or no previous experience in planning or engineering telecommunications local loop facilities. It is ideal for those new to the telecommunications industry. While fundamentals will be addressed, some previous familiarity with general telecommunications terms and concepts, although not necessary to benefit, will be an advantage that will maximize your learning experience. This course is technical in nature, but it offers detailed material and practical concepts without complex mathematics.

Prerequisites

None.

Course Outline

Introduction to Outside Plant and the Local Loop

- Main distribution frame
- Feeder cables
- Distribution cables
- Pedestals and cross-connects
- Service entrances
- Termination

VF Transmission

- Basic circuits
- Voice frequency band
- Ohm's Law
- Cable properties
- Resistance design
- LoadingH88 and D66

Planning and Documenting Route Growth

- Fundamental routes
- Mapping
- Route layouts
- Forecasting
- Monitoring
- Copper versus fiber
- Structure considerations
- Powering

CSA/DSA Designs

- Feeder relief
- Transmission limits
- Loading and data transmission constraints
- Proving-in and sizing of facilities
- Lightwave versus copper feeder facilities
- Interfaces and locations

Digital Transmission

- Digital fundamentals overview
- Analog and digital conversions
- Digital voice and datatransmission and loop limitations
- T1, ISDN, DDS and xDSL
- Digital loop carrier (DLC) systems
- Competing digital access choices

Planning Fiber Optic Reinforcements

- Optics fundamentals overview
- Optical devices, cables, and equipment overview
- SONET standards
- Capacity, reliability and distance limitations
- SONET-based applications and fiber ring designs
- Wavelength Division Multiplexing (WDM) and MPLS

Competitive Impacts on Structure Use

- Telecom Act of 1996
- Obligations and privileges
- Allocations

Underground and Direct-buried Construction Methods

- Transitions
- Conduit and inner-duct
- Plowing
- Trenchless technology
- Open trenching
- Restoration

Aerial Design Methods

- Space allocation on poles
- Guying principles
- Span lengths
- Pole selection
- Construction methods and options

NESC Overview and OSP Safety

- Buried and aerial
- Clearance requirements from other utilities
- Clearance requirements from fixed objects and structures

Bonding, Grounding and Protection

- Principles of grounding and bonding
- Insulating joints
- Corrosion and electrolysis
- Protectors

Right-of-Way Use

- Property owner's rights
- Right of eminent domain
- AASHTO clear roadside rules

Service Entrances

- Aerial and buried
- Termination and protection
- Demarcation pointnetwork interface device (NID)

Engineering Economy

- Time value of money
- Analysis techniques
- Making economic decisions

Notes

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Delivery Method

Instructor-Led with numerous Hands-On activities and case-studies.

Equipment Requirements

(This apply's to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

Course Length

5 Days