CONCEPT

Telecom Tower and Cell Site Infrastructure: Structures, Mounting, Power and Maintenance

8 – 12 February 2027
Dubai - Five-star CBD venue



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Introduction:

Telecom tower and cell site infrastructure fails in the field long before the radio layer does: overloaded steel, loose antenna brackets, water ingress on jumpers, corroded down conductors, flat battery strings and generators that never start. Each fault means a site outage, a climb and a repeat visit. This Core Concept course gives site engineers, towerco staff and contractors the practical method to plan, build, inspect and maintain greenfield towers, rooftop sites and small cells, from structure and mounting to power, earthing and safety. Participants produce a Shared Tower Build and Maintenance Plan for a colocated case site.

Course Objectives:

- Classify greenfield, rooftop, stealth and small cell sites and select a lattice, monopole or guyed mast structure for a given plot and tenancy demand
- Check antenna, remote radio unit and microwave dish loading against tower capacity using effective projected area and wind load summaries
- Lay out a site compound, equipment shelter or outdoor cabinets, cable ladders and feeder or fibre-to-the-antenna routes to a build drawing
- Specify site earthing rings, bonding bars, surge protection and lightning air terminals for tower and rooftop installations
- Size site power from grid, diesel generator, battery bank and hybrid solar sources against load and autonomy targets
- Prepare a Shared Tower Build and Maintenance Plan with audit checklists, preventive maintenance intervals and safe climbing and RF exposure controls

Target Audience:

- Site engineers who survey, design and supervise the build of towers, rooftops and small cell poles
- Passive infrastructure staff at tower companies who manage colocation, tenancy loading and site upgrades
- Operator field operations staff who maintain power, cooling and earthing at macro and rooftop sites
- Build and maintenance contractors who install antennas, radio units, microwave links and feeders at height
- Site audit and quality inspectors who verify installations against drawings and handover checklists

Course Outline:

Day 1: Cell Site Types, Tower Structures and Site Acquisition

- Greenfield Macro, Rooftop, Stealth Monopalm and Cells on Wheels Site Classification
- Lattice Self-Supporting Tower, Monopole and Guyed Mast Structural Comparison
- Small Cell Poles, Street Furniture and Lamp-Post Mounting Options
- Site Acquisition Workflow: Search Ring, Candidate Ranking and Landlord Lease Terms
- Existing Site Condition Survey Using a Tower Profile Sheet

Day 2: Structural Loading, Compound Layout and Mounting Hardware

- Wind Load, Effective Projected Area and Antenna Loading Summary Sheet
- Guy Wire Tension, Anchor Blocks and Foundation Footprint Checks
- Compound Layout Drawing: Shelter, Outdoor Cabinets, Fence and Access Road
- Antenna Head Frames, Sector Brackets and Pole Mounts for Multiple Tenants
- Microwave Dish Mounting, Line-of-Sight Height and Pan-and-Tilt Alignment

Day 3: Radio Units, Feeders, Earthing and Lightning Protection

- Remote Radio Unit Placement at Height and Fibre to the Antenna Routing
- Coaxial Feeder, Jumper and Hybrid Cable Installation with Weatherproofing Kits
- Tower Earthing Ring, Main Earth Bar and Feeder Bonding Kit Arrangement
- Lightning Air Terminal, Down Conductor and Surge Protection Device Placement
- Cable Ladder, Hoisting Grips and Cable Tray Loading Inspection

Day 4: Site Power, Safety at Height, Audits and Towerco Models

- Grid Connection, Diesel Generator Set and Automatic Transfer Switch Sizing
- Battery Bank Autonomy and Hybrid Solar Array Energy Balance Worksheet
- Climbing Safety: Fall Arrest Harness, Rescue Plan and Permit to Climb
- RF Exposure Zones, Antenna Exclusion Boundaries and Power-Down Requests
- Tower Sharing Models: Colocation, Tenancy Ratio, Build-to-Suit and Sale-and-Leaseback

Day 5: Inspection Walkthrough: Shared Tower Case and Build Plan

- Inspection Walkthrough: Tower Structure, Bolts, Corrosion and Guy Anchors
- Inspection Walkthrough: Earthing Resistance, Surge Devices and Feeder Bonding
- Preventive Maintenance Calendar for Generators, Batteries, Rectifiers and Cooling
- Tenant Addition Request Review Against Structural Capacity and Power Headroom
- Shared Tower Build and Maintenance Plan Assembly and Peer Review

Skills You Will Gain:

- Cell Site Classification
- Tower Loading Assessment
- Site Compound Layout
- Antenna and Dish Mounting
- Site Earthing and Surge Design
- Telecom Site Power Sizing
- Work at Height Planning
- Passive Infrastructure Auditing

Why Attend This Course:

- Return with a Shared Tower Build and Maintenance Plan covering structure, mounting, power, earthing and inspection intervals for a colocated site
- Judge whether a new tenant's antennas and radio units fit an existing tower before equipment is ordered or climbed
- Cut repeat site visits by catching water ingress, loose bonding and weak battery strings during scheduled audits
- Compare site practice with engineers from operators, tower companies, utilities and installation contractors

Conclusion:

Reliable mobile coverage depends on steel, brackets, cables, earthing and power that are planned and kept in good condition. The week moves from site types, tower structures and acquisition, through wind and antenna loading, compound layout and mounting hardware, to radio units, feeders, fibre to the antenna, earthing and lightning protection. It then covers site power, climbing and RF exposure safety and towerco sharing models, and closes with inspection walkthroughs and a Shared Tower Build and Maintenance Plan for a colocated case site.