



# PB TELECOM

*Define, Design, Deliver*

Complete Solutions for the Wireless Industry



[www.pbtelecom.net](http://www.pbtelecom.net)

PB TELECOM, INC.





# PB TELECOM

PB Telecom offers complete services and solutions for the Wireless Industry. Our experience spans more than 15 years and includes work on thousands of wireless facilities across the US.

Our combination of service, experience and technology enables fast response, fully developed solutions and consistent day-to-day support.

Our integrated approach to site design and project management is specifically tailored to meet the challenging build schedules you demand.

We use the latest technology in computer hardware and software in all aspects of design and documentation. We are constantly upgrading our capabilities to remain at the cutting edge, providing you with the best overall service and value.

PB Telecom is ready to apply its broad understanding of the Wireless Industry's expectations to your next project. We know the issues and concerns related to network integrity. We are organized to aggressively sustain activity on multiple facilities simultaneously.

## Our Services

### Architecture & Engineering

- RF Engineering - Analysis, Design and Optimization
- Site Analysis and Constructability Review
- Lease Exhibits; Zoning/Permitting Submittals with complete review of all applicable codes
- Presentation drawings, 3D renderings and computer animations/simulations for neighborhood reviews
- Structural, electrical and mechanical engineering support
- Detailed bid drawings; complete construction packages
- As-built record drawings and archival documentation

#### Technologies:

- Cellular
- PCS
- ESMR
- Messaging
- FM/TV broadcast
- Microwave
- Air-to-ground
- Fiber-Optic/DAS
- UMTS (WCDMA)

#### Project Types:

- Raw land and co-locate tower sites
- Monopoles, self-support and guyed towers
- Tenant improvements
- Rooftop installations
- Speciality sites; watertanks, utility poles, steeples and stealth structures.

### Real Estate

- File Audits
- Site Acquisition, Leasing, Site Candidate Identification
- Zoning and Permitting

### Technical

- Site Audits and Site Database Management
- Engineering Documentation and Drawing Development, Control and Distribution
- Technical Writing, CAD Design, 3D Modeling, Photosimulations, Animations
- Tower Upgrade and Replacement
- Distributed Antenna Systems
- Grounding Systems, Resistivity Testing

### Project & Program Management

- Guy Anchor Monitoring and Replacement
- Turnkey Services
- Tower Replacement



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## Some of Our Clients

Our recent projects include:



Engineering Documentation and Drawings - Development, Control and Distribution; Site Consolidation, Site Modifications and New Site Builds.

Over 1500 ground and tower Site Audits; tower replacements; guy anchor replacements; Site Consolidation, Site Modifications and New Site Builds; Real Estate services and full-service A&E.



Distributed Antenna System - Network and site design.



Civil, RF, Electrical and Structural engineering documentation and drawing development; Full-service A&E.



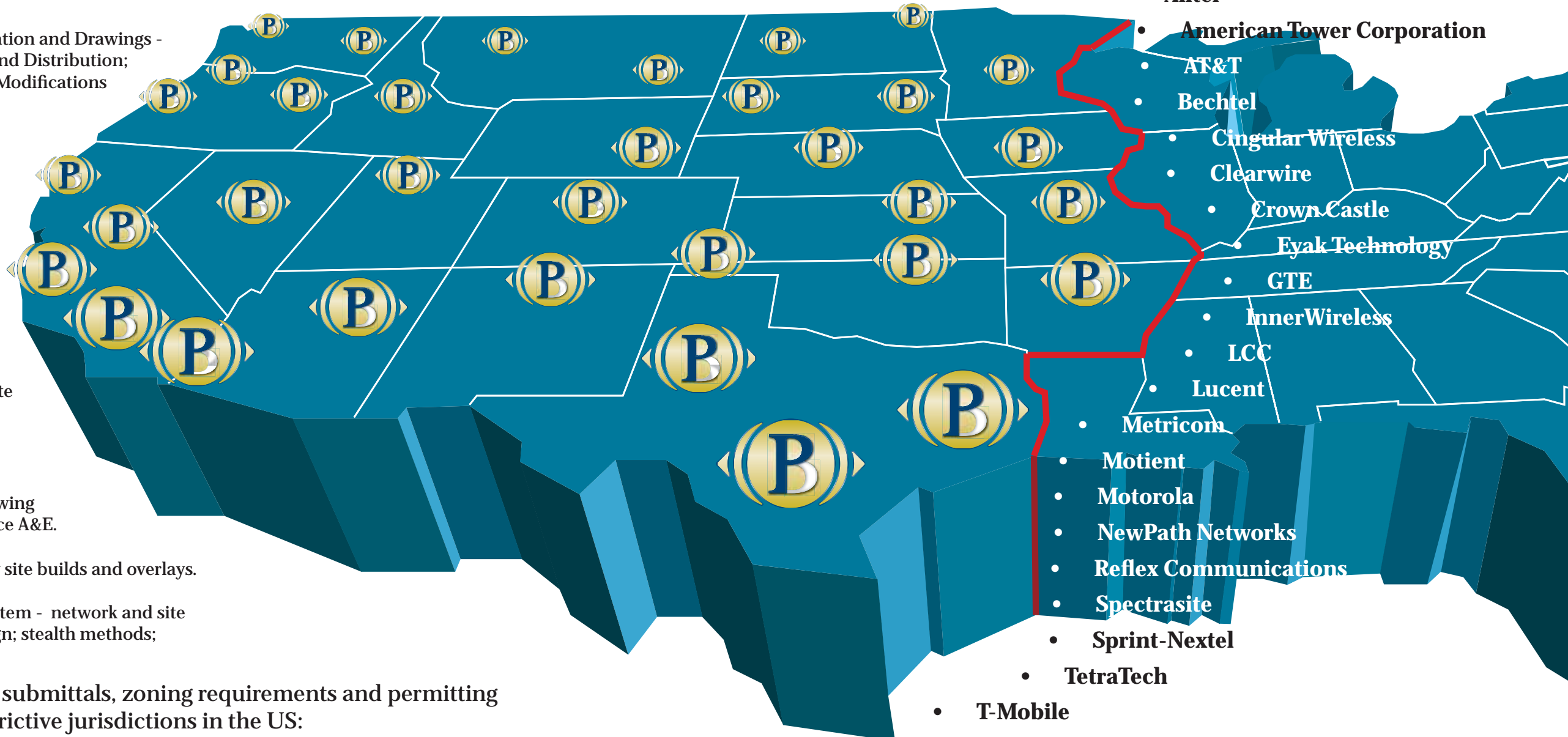
Full Service A&E for new site builds and overlays.



Distributed Antenna System - network and site design; equipment design; stealth methods; community relations.

We have experience with document submittals, zoning requirements and permitting procedures in some of the most restrictive jurisdictions in the US:

- Washington, including Seattle Metro and the Eastside
- Oregon, including Portland
- California, including San Francisco/Bay Area, San Diego, Orange County and Los Angeles
- Colorado, including Denver
- Metro and rural areas throughout the West and Midwest



- Alltel
- American Tower Corporation
- AT&T
- Bechtel
- Cingular Wireless
- Clearwire
- Crown Castle
- Eyak Technology
- GTE
- InnerWireless
- LCC
- Lucent
- Metricom
- Motient
- Motorola
- NewPath Networks
- Reflex Communications
- Spectrasite
- Sprint-Nextel
- TetraTech
- T-Mobile
- Trinity Broadcasting
- US West/Qwest
- Verizon
- WFI



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## Experience & Quality

### A&E Services

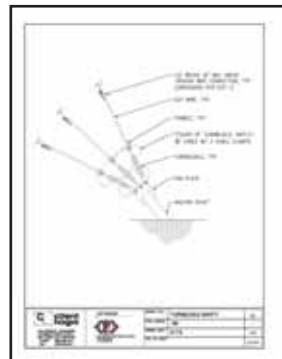
PB Telecom has systems in place to support every stage of overall project development. Site Acquisition personnel use our standardized site layout and leasing forms during the lease negotiation phase. Constructability reviews are enhanced with illustrations and renderings of facility plans, antenna configurations and equipment requirements. We create lease exhibits, zoning packages, permitting documentation and construction packages using strict document control methods and templates developed to present all the relevant information in the clearest way possible.



### Engineering Standards: Documentation Development and Control

Standards are documents and drawings that provide reusable guidelines and specifications for the consistent implementation of low-cost cell-site deployments.

PB Telecom has developed standard documents and drawings for several major carriers. We produce many different types of documents to support every level of network design, implementation and integration, including: Design and Construction Criteria, Manuals, Technical Specifications, Procurement Specifications, Product Specifications, Construction Specifications, Statements of Work, Site Model Drawings, Piece-Part Drawings, Assembly Drawings, Electrical Schematics and 3D Renderings.



No matter how large your document and drawing library, PB Telecom's Visual Document Finder can help you organize your engineering standards and enables you

to access them online 24-7. Your clients, contractors and subcontractors can view, download and update documents and drawings as required, using our intuitive GUI to find exactly what they need for any job.

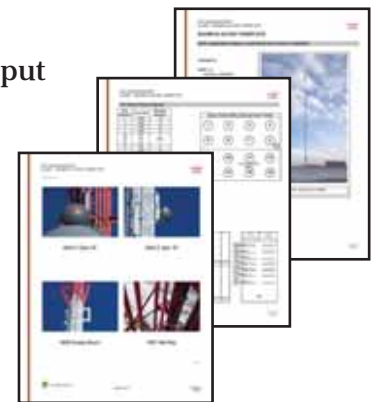


### Site Audit and File Audit Services

Our process for performing site and file audits utilizes our proprietary software, ISIS (Integrated Site Information System) featuring customized electronic data-input forms, constructed from separate modules that can be customized to suit the needs of any project. Additionally, our clients may specify the depth of information they require. We can handle anything from a site walkthrough with equipment inventory to a complete ground and tower inspection. Reports can include a detailed assessment of any deficiencies or compliance issues, with recommendations for corrections and repairs.

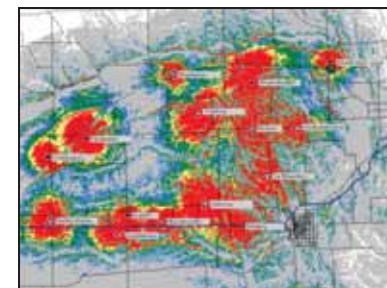


The electronic forms are interactive, responding to user input and ensuring that only relevant, accurate data is entered. Completed forms are quality-checked electronically and then downloaded to a searchable, reusable database of site facts and figures. Clients may then access their data online and generate reports as required. PB Telecom can also maintain the database indefinitely, so that site modifications and network alterations are always supported by up-to-date information.



### RF Engineering

From drive testing to establish baseline performance through sweep testing for coverage and capacity our RF Engineering team will help you achieve propagation objectives. We offer design solutions for quality and capacity enhancements without interfering with existing network coverage.



Our team has met various challenges in the integration and testing of E911 requirements established by the FCC and law enforcement agencies and has extensive experience developing sectorization and optimization solutions for GSM and CDMA networks.





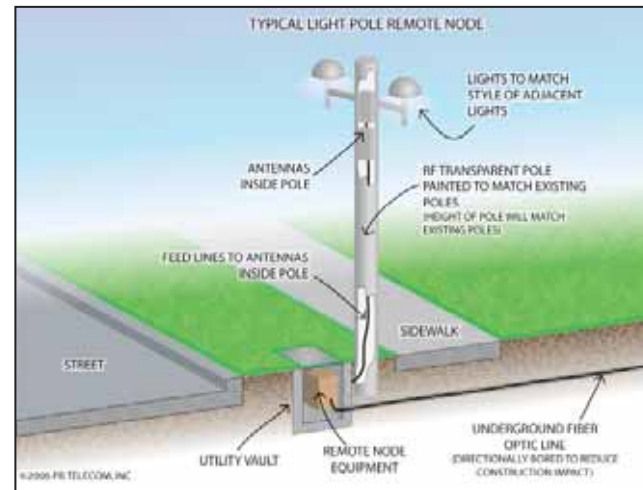
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## Service & Support

### Distributed Antenna Systems

Distributed Antenna Systems (DAS) offer enhanced communications coverage in areas of high wireless usage. Remote Access Nodes (RAN) within the network provide a low-impact alternative to typical cell or mini-cell sites and can be hidden in existing structures or vaulted to reduce visual impact.

PB Telecom's experience with DAS includes design development in the Seattle metro region, including working with area communities on extensive aesthetic concerns. Photosimulations show what intended installations will look like, and low-impact designs address aesthetic concerns.



### Photosimulations



Photosimulations provide a realistic view of how a proposed site impacts aesthetic aspects of the surrounding area. This valuable design tool is used to make decisions on materials and methods employed to integrate antennas and/or equipment into the existing environment.



Sites can be built in three-dimensional renderings that allow variable viewpoints or flyover capability, or photos of existing areas can be modified with various site components to effectively demonstrate what the completed site



### Guy Anchor Program



Guyed tower support structures create a system that encourages accelerated galvanic corrosion of guy anchors. Many guyed towers are at risk of failure, long before the end of their design life. We have investigated several facilities where towers have collapsed suddenly. Having learned much from our experience we have developed a comprehensive procedure, in conjunction with Sioux Falls Tower, for guy anchor inspection, centered on crew safety and protection of existing towers and surrounding structures. Anchor inspections are conducted by trained personnel, using methods that have already prevented tower collapse and saved lives.



PB Telecom has proven experience with cost-effective engineering and program management for the replacement of deteriorated guy anchors. Our



Guy Anchor Program can help you identify, assess and prioritize at-risk facilities based on upcoming overlay activity, network importance, revenue generation, age of structure, soil classification, proximity to sources of stray electrical current or proximity to towers with confirmed corrosion problems.



### Tower Replacement and Upgrade Program



Using proven methods and techniques developed during our investigation of tower manufacturing defects in a major network, PB Telecom has established the Tower Replacement and Upgrade Program. Our Structural Engineering Team coordinates the results of tower mappings, geotechnical surveys, field inspections, forensic investigations and tower analyses to determine the structural integrity of monopoles, guyed and self-supporting towers, in line with TIA/EIA 222-F and G standards.



We upgrade towers to meet new loading requirements, or provide hot-swap or minimal off-air replacement solutions if damage or defects place the tower beyond repair. Custom stabilization assemblies are used to ensure network integrity until a complete tower replacement can be scheduled.





# PB TELECOM

## Who We Are

**Peter Bocek**, President, is a registered architect with 20 years' professional experience. With a diverse background in commercial and residential projects Peter is now in his fourteenth year of providing A&E services to the Wireless Industry, completing full service and site modifications on over 2000 facilities.

In addition, Peter has been instrumental in improving his clients' technical capabilities, by programming standard procedures for site development and investing in technical development. Peter Bocek brings to the Wireless Industry a wealth of experience and a dedication to providing unequalled service.

**Duncan Findlay**, Chief Operating Officer, is a licensed attorney with 32 years' experience, including senior management positions in both legal and civil engineering practice. Duncan is a frequent speaker on legal and managerial challenges facing the Design-Professional community, and served as President and General Counsel for Shanon & Wilson, Inc., an internationally recognized consulting firm providing geotechnical, environmental and natural resource services.

**Eric Sladky**, Director of Telecom, has strong leadership skills and many years' experience with wireless projects. Eric's capabilities enable him successfully to combine staff, consultants and vendors into goal-oriented, integrated teams. Thanks to Eric's experience with a long list of efficiently managed projects and his unwavering commitment to meeting clients' demands, our clients are assured the highest level of customer service.

**Patti Ringo**, Director of Business Development and Regional Manager, Southern California, has over 12 years' experience in telecommunications management, with a solid background in site acquisition, design and deployment. Patti has been instrumental in bringing new business and clients to PB Telecom.

**Leslie Bradley**, Senior Program Manager, is responsible for Real Estate and Audit Services. Managing and coordinating a diverse team of engineers, contractors and auditors, Leslie has developed some of the most comprehensive file audit and site audit procedures in the industry, enabling carriers to make effective business decisions, confident that they have the best available information about their sites.

**Shawn Van Giesen**, Senior Project Manager, has experience in Overlay and New Site Build projects for several carriers. He is currently in charge of development, planning and day-to-day operations for structural, geotechnical and environmental engineering services, is overseeing design and development of the DAS program in the Seattle metro area and has led the development of PB Telecom's groundbreaking Guy Anchor Program.

**Rob Brown**, Program Manager for PB Telecom Standards, has several years' experience in civil engineering and the Wireless Industry. With a strong background in technical documentation, most recently in cell-site design and implementation, Rob manages a team of talented document specialists and CAD designers.

**Mitko Tanev**, Production Manager, directs the CAD team, effectively integrating resources between the Seattle headquarters and the various West Coast branch offices. Utilizing the latest technology, Mitko's team excels in supporting all the production activities of our dedicated project teams.

**Sean Carpenter**, Project Manager, has over 7 years' experience in the Wireless industry, with expertise in site acquisition and development and project management. He has worked with many major carriers on projects throughout the US.

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