



Rail Communications Infrastructure

BUILDING A WORLD OF DIFFERENCE®
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DESIGN-BUILD CAPABILITIES

ONE COMPANY — DESIGN TO DELIVERY

Rail communication networks are increasingly critical to the monitoring and control of the rail operation. Reliable, resilient and secure communications infrastructure is the foundation for the next generation of technology and innovation anticipated with the continued deployment of digital systems.

For over 50 years, Black & Veatch has served the communication needs of critical infrastructure, and has been on the leading edge of communication advancement since the first fiber optic networks through generations of wireless network deployments. Today, we are a leading designer and builder of communication systems for carrier and industrial networks. Black & Veatch offers rail and transit clients proven turnkey communication system deployment expertise, the same valued services top carriers count on us to deliver for their premier networks.

Whether it's an LTE, Land Mobile Radio or fiber optic network, Black & Veatch provides a complete solution from master planning, site acquisition and engineering design through procurement and construction with expert project management oversight. Our experience with over 100,000 wireless sites and over 40,000 miles of fiber optic networks allows us to manage any size project from the focused site to large-scale, multi-region programs. We work with every wireless service provider and tower company and have committed professionals with the mindset and tools to effectively deliver projects, on-time and on-budget.

- **RADIO FREQUENCY (RF) SERVICES**

- Frequency interference and propagation analysis for Positive Train Control, Communication Based Train Controls and communications systems interconnection
- Site selection of antenna/tower optimization
- Antenna design

- **SITE ACQUISITION**

- Site selection
- Lease negotiations
- Permitting and zoning
- Regulatory (FAA/FCC) and environmental (NEPA/SHPO) compliance

- **TOWER AND ANTENNA ENGINEERING, PROCUREMENT, AND CONSTRUCTION**

- Civil engineering for tower specification and construction
- Foundation design
- Antenna installation
- Site prep (power, cabling, fencing, etc.)
- Turn up and test

- **FIBER OPTIC SYSTEMS FOR WAYSIDE SYSTEMS**

- Fiber network design
- Construction and installation

- **NETWORKING SERVICES FOR DIGITAL SYSTEMS**

- IP/MPLS network designs and installations
- Cybersecurity assessment and architecture design

Black & Veatch takes a system-wide approach to communication systems. We go beyond the physical network to the intelligent virtual network to build an integrated network architecture that reduces network complexity. Through digitalization, comes greater automation, enabling operators to deliver services more safely and efficiently. Let us help you design and build the resilient and reliable communications infrastructure needed to keep the rail industry moving forward.

Black & Veatch

LEGACY

Design to Delivery

- Founded in 1915 and headquartered in Overland Park, Kansas
- Over 60 U.S. offices and 110 worldwide offices
- Global workforce of more than 10,000 professionals
- Extensive experience in mission critical communication systems
- Designed and/or constructed approximately 25% of the United States communications infrastructure
- Deployed over 100,000 wireless sites nationwide
- Deployed more than 40,000 miles of optical fiber systems
- Local offices and local talent - meeting regional needs
- Registered engineers in all 50 states
- Engineering News Record (ENR) rankings
 - Ranked 1 in Telecommunications for U.S.-based engineering companies
 - Ranked 1 out of Top 5 Contractors in Towers and Antennae
 - Ranked 10 in Top 100 Design-Build Firms
- Quality assurance and quality control - ISO 9001:2015 certified
- Industry leading Safety Rating EMR = 0.38

