



The Challenge

A leading healthcare provider faced critical communication challenges across its hospital campus, which consists of:

- **A Main Building:** Housing administrative offices, diagnostic labs, and patient services.
- **Two Towers:** Dedicated to hospital beds and specialized care units.
- **A Basement:** Containing parking, storage, and critical mechanical systems.

The site survey revealed several pressing issues:

- **Weak Public Safety Signals:** Dead zones in the basement, stairwells, and remote wings of the towers compromised emergency responder communication, putting staff and patient safety at risk.
- **Paging System Inefficiencies:** Paging signals were inconsistent, with some areas receiving no coverage and others experiencing overlapping signals causing interference.
- **Interference with Other Systems:** The existing communication systems interfered with medical equipment and Wi-Fi networks, further degrading performance.
- **Regulatory Non-Compliance:** The public safety system did not meet NFPA and IFC standards, exposing the hospital to potential penalties and operational delays in emergencies.

The AMEC Wireless Solution

The healthcare provider engaged AMEC Wireless to design and implement an integrated solution to address these challenges and ensure seamless communication across the campus.

Site Assessment and Analysis

AMEC Wireless conducted a detailed site survey to:

1. **Identify Dead Zones:** Map areas with poor or no public safety and paging signal coverage.
2. **Assess Interference Sources:** Analyze signal overlap and interaction with other systems.
3. **Understand Operational Workflow:** Evaluate the hospital's communication needs across departments and emergency scenarios.
4. **Review Compliance Requirements:** Ensure alignment with NFPA and IFC codes for public safety systems.

Custom System Design

AMEC Wireless developed a comprehensive solution tailored to the hospital's needs:

1. **Enhanced Public Safety DAS:**
 - Installed bi-directional amplifiers (BDAs) to boost signal strength in critical areas, including stairwells, the basement, and patient rooms.
 - Deployed antennas strategically across the campus to ensure 99% coverage in critical areas and 95% in general areas.
 - Integrated battery backup systems to maintain operation during power outages.
2. **Optimized Paging System:**
 - Redesigned the paging network to eliminate dead zones and signal overlap.
 - Implemented zoning to allow precise paging in specific areas without causing interference.
3. **Interference Mitigation:**
 - Installed filters and shielding to minimize interference with medical equipment and Wi-Fi networks.
 - Conducted frequency coordination to optimize signal clarity across all systems.
4. **Compliance Assurance:**
 - Designed the public safety system to meet NFPA and IFC requirements, ensuring smooth inspections and certification.

Implementation and Testing

The implementation process was executed in stages to minimize disruption to hospital operations:

1. **Infrastructure Upgrades:** Replaced outdated equipment and installed new DAS components, antennas, and cabling.
2. **System Calibration:** Conducted grid-based testing to verify signal strength and eliminate interference.
3. **Compliance Testing:** Worked with the Authority Having Jurisdiction (AHJ) to certify the public safety system.
4. **Staff Training:** Provided hands-on training for the hospital's facilities and IT teams to manage and maintain the new systems.

Results

The integrated solution delivered significant improvements across the campus:

1. **Seamless Public Safety Communication:**
 - Reliable coverage in all critical areas, ensuring first responders can communicate effectively in emergencies.
2. **Efficient Paging System:**
 - Consistent and precise paging coverage, improving staff coordination and response times.
3. **Reduced Interference:**
 - Medical equipment and Wi-Fi networks now operate without disruptions, enhancing overall hospital efficiency.
4. **Regulatory Compliance:**
 - The public safety system passed AHJ inspections and achieved full compliance with NFPA and IFC standards.
5. **Improved Patient and Staff Safety:**
 - Enhanced communication reliability contributes to a safer, more secure environment for patients and healthcare professionals.

Client Testimonial

“AMEC Wireless transformed our hospital’s communication infrastructure, addressing every challenge with expertise and precision. The new public safety and paging systems have improved our operational efficiency and enhanced safety across the campus. We couldn’t be more satisfied.” – Facilities Director, Hospital Campus

Conclusion

By addressing weak signals, interference, and compliance issues, AMEC Wireless delivered a robust communication solution tailored to the hospital’s unique needs. This project underscores AMEC Wireless’s ability to enhance public safety and operational efficiency in complex healthcare environments.

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