MIDWEST ALARM SERVICES

CASE STUDY

Research Facility Emergency Communications

- **Client**: A Midwest Pre-Clinical Research Facility
- **Location**: Midwest Region
- **Industry**: Research and Biotechnology/Life Sciences
- **Services Provided**: Emergency Responder Communication Enhancement System (ERCES)

Illustrative image representing a modern research facility.

The Challenge: Life Safety Risk in a New Facility

During the final stages of the construction for a state-of-the-art research facility in the Midwest region, a critical safety gap emerged. The building's modern construction materials—including masonry walls, specialized refrigeration units, and extensive metal ductwork—significantly blocked essential over-the-air (OTA) wireless communications.

The Regulatory Mandate:

An ERCES (in-building radio amplification system) is required because many buildings with concrete, steel, low-E glass, or underground areas can block or weaken public safety radio signals. Under the 2015 International Fire Code (IFC) Section 510, buildings must provide approved emergency responder radio coverage. This is enforced because consistent radio communication is critical for incident command, firefighter safety, and timely rescue operations.

The Critical Problem:

First responder public safety radio signals were not penetrating the building's interior. An initial engineering survey confirmed widespread communication failures, with signal strength falling significantly below the mandatory -95 dBm threshold. This severe lack of reliable, two-way communication created a critical life safety and compliance issue, impacting the ability of emergency personnel to communicate during a crisis.

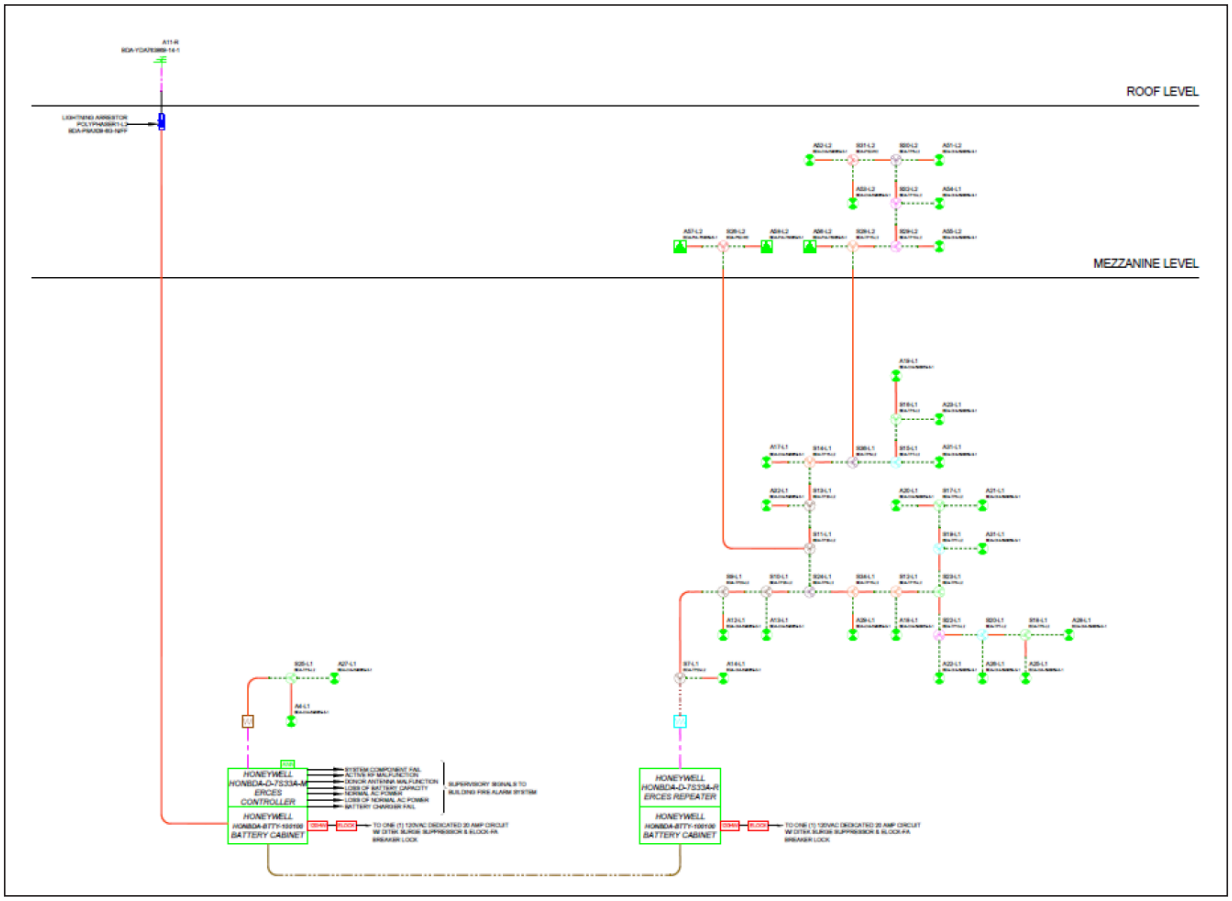
The Solution: Midwest Alarm Services ERCES Expertise

At the direction of The Construction Manager and in collaboration with The Electrical Contractor, Midwest Alarm Services (MWAS) was contracted to immediately resolve this compliance and safety issue.

MWAS designed and implemented an Emergency Responder Communication Enhancement System (ERCES), also known as a Bi-Directional Amplifier (BDA). This indispensable solution is specifically designed to eliminate communication dead spots caused by modern building materials.

Core Technology & Implementation:

- **Initial Survey**: MWAS utilized industry-recognized equipment (such as PCTEL's SeeHawk "Public Safety Network Testing Solution") to complete an engineering survey, measuring RSSI (Received Signal Strength Indicator) and SINR (Signal to Noise Ratio) to precisely map all dead zones in the facility.
- **System Design**: The ERCES was engineered to capture the weak public safety signal using an external antenna and route it to a powerful booster unit.
- **The DAS Network**: The amplified, enhanced signal was distributed throughout the facility via a Distributed Antenna System (DAS) strategically installed to eliminate all signal attenuation.



DAS: A Distributed Antenna System (DAS) was installed throughout the facility as shown in the diagram to ensure adequate signal coverage.

The Results: Quantifiable Success & 100% Compliance

The implementation of the MWAS ERCES solution delivered immediate and verifiable success, assuring the facility owners and local authorities that critical emergency communications were secured.

Key Quantifiable Metrics

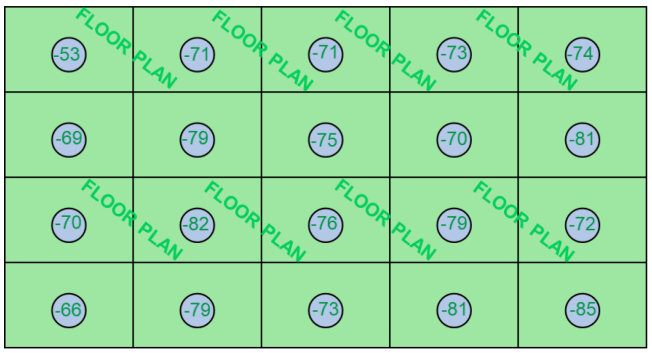
Metric	Pre-Enhancement (Failure)	Post-Enhancement (Pass)	Improvement
Required Signal Threshold	Weaker than -95 dBm	Stronger than -95 dBm	Compliance Achieved
Worst Measured Signal	-119 dBm	-53 dBm	Major Signal Boost
Average Signal Reading	In the -100 to -115 dBm range	In the -70 to -85 dBm range	Clear Communication

RF Test Data: Pre- and Post-Enhancement:

Pre-Enhancement Test "FAILED"

Widespread signal failures, with many areas deep in the red zone.

Pre-Enhancement Test "PASSED"



100% green coverage, confirming excellent signal strength.

(floor plan drawing not shown)

Problem Solved: Assuring Safety for the Future

After all areas of the facility were confirmed as adequate by the MWAS test equipment, local Fire Department and Building Department officials met for a final radio test. Two-way radio transmissions were confirmed as excellent throughout the facility.

Project Outcome Summary:

"Two-way radio transmissions were confirmed as excellent throughout the facility, assuring timely emergency responder communications."

By quickly delivering a certified ERCES solution, Midwest Alarm Services ensured the client's compliance with critical life safety regulations, providing the necessary infrastructure to maximize first responder effectiveness during any potential emergency.

Need a compliance solution for your facility?

Contact Midwest Alarm Services today for a comprehensive RF survey.

midwestalarmservices.com/rf-verification-survey

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