

INFORMATIONAL BULLETIN

Emergency Responder Radio Coverage Systems (ERRCS): Building Owner Responsibilities

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Many building owners today have, or shortly will, encountered requirements for providing Emergency Responder Radio Coverage in their buildings. The *2009 International Fire Code (IFC)* includes requirements for ensuring buildings are provided with adequate radio communications for first responder and emergency responders.

"510.1 Emergency responder radio coverage in buildings. *All buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building.*"¹

Today, these systems are commonly referred to as Emergency Responder Radio Coverage Systems (ERRCS).

Code requirements are becoming more complex with each adoption. Authorities Having Jurisdiction (AHJ) are integrating these requirements into their building codes. Current code references and technical requirements have integrated into a growing number of building and fire codes including, but not limited to:

- International building codes
- Local building codes
- International fire codes
- Local fire codes
- NFPA 72
- NFPA 1221
- NFPA 5000
- Technical documentation provided by AHJ and emergency agencies

Many cities are beginning to adopt complex AHJ requirements that exceed the national and local codes. In addition, they are amending and/or modifying these requirements, adding to the stringent technical and deployment challenges. Most notably, New York City dictates very exacting requirements under the rules and regulations of the Auxiliary Radio Communications Systems (ARCS)² documentation. These codes and requirements are constantly evolving and changing quickly, many times without wide-spread notification. If the Emergency Responder Radio Coverage systems fails to gain acceptance from the AHJ, the building owner may experience additional costs to correct engineering deficiencies or code compliance issues, and may cause delay in the issuance of occupancy permits for the structure.

Building owners may rely on architects, developers, building management firms, or construction management firms for building construction and specifications. However, it is ultimately the responsibility of the building owner to meet these requirements and ensure that the building is prepared for deployment of an ERRCS, providing ample qualified equipment spaces, power and protected pathways for cabling per code requirements. Building owners must understand these requirements to avoid costly mistakes and delays in occupancy.

Typical building owner responsibilities includes:

- Design/Permit Submittal and Approval
- Equipment Rooms
 - Sizes and locations
 - Security requirements
 - Power requirements
 - Cooling requirements
- Fire Rating and Survivability Requirements
 - Primary power
 - Secondary power
 - Battery backup power
- Pathway Survivability
 - Cable pathway fire rating
 - Physical cable protection
 - Main risers
 - Horizontal feeders
 - Horizontal antenna feed cables
- Technical performance requirements
 - Frequencies supported/required
 - Minimum signal levels
 - Delivered Audio Quality (DAQ)
 - Benchmarking
 - Testing – Acceptance test procedures
 - Recertification
 - Annual
 - 5 Year

How can building owners improve their chances of meeting code requirements and specifications? Enlist the services of qualified consulting engineers.

The ERRCS is a highly specialized application that requires skilled, knowledgeable and experienced professionals to ensure successful design, installation, testing and system approval. ERRCS expert specialists will ensure the building owner has the highest probability of procuring a system which meets all requirements, at a fair market value, while enabling the building owner to avoid costly mistakes and delays.

HetNet Magazine published an article on February 29, 2016 titled *"Don't Wait Until It's Too Late: Pre-Wire for Cellular and Public-Safety In-Building Wireless (IBW) Coverage."* This article recommends retention of an expert: *"Retain an experienced in-building wireless expert-consultant and/or DAS integrator at the beginning of the design cycle in the same way that you involve your electrical, plumbing, and lighting contractors..."*³

"Radio Communications for the Fire Service: A Planning Guide for Obtaining the Communications System You Need for Enhanced Safety and Emergency Preparedness" also outlines the benefit of hiring a consultant for these system; *"Even if you have some degree of technical capability in-house, the use of an outside consultant brings the benefit of experience. The consultant has (or should have) more experience than you in dealing with communications challenges and providing communications project oversight. The consultant also provides a fresh outsider's viewpoint, which can be valuable."*⁴

In summary, Emergency Responder Radio Coverage Systems must meet or exceed many complex requirements. Mistakes can be costly and time consuming for building owners. Be informed and Be prepared!

How The Clariant Group (TCG) Can Help You

Employing professionals with over 100 years of combined RF engineering experience, TCG can effectively guide the client through the ERRCS process, saving time and money, while increasing probability of system acceptance.

How we can help:

- Research, review and interpret current and future code requirements
- Work one-on-one with AHJ engineers and technicians to ensure code compliance
- Provide Consulting Engineering Services for:
 - Design
 - Specifications
 - Building coordination
 - Act as the technical representative for building owner

TCG Areas of Expertise include:

- RF engineering
- Budget analysis
- System design
- Specifications
- RFP development
- Code compliance
- Building coordination
- Project management / Project implementation
- Benchmarking
- Testing and acceptance
- Certification / Recertification

ABOUT THE AUTHORS

Richard Fann has over 35 years of experience with RF systems engineering and wireless technology. For the past sixteen years, he has been involved in all aspect of public safety/first responder systems, including design, engineering, optimization, deployment, performance specifications and consulting. For the past twelve years, he has led a team instrumental in aiding first responders with the development of updated in-building radio specification to ensure operation and survivability of radio communications during emergency events. Mr. Fann is a Certified In-Building Engineering Technologist (CIBET) - Advanced RF.

Michael Caponi III brings over thirty years of experience with RF communications from the component level circuits to extensive networked radio systems and DAS. For the past fifteen years, he has been involved with system design, deployment, optimization and performance systems development, and has become one of the industry's leading DAS experts. Mr. Caponi is a PCIA - Certified Mobile Communication Technician. He has served as engineer-of-record or design consultant on many major projects including One World Trade Center, Hudson Yards platform and Buildings A & C, the new Yankee Stadium, Hearst Tower, and MetLife Stadium in the Meadowlands.

ABOUT THE CLARIANT GROUP

The Clariant Group is a full service technology consulting and design services providing services from the technology master planning and technology systems integration to the planning and design of major building technology systems. The firm's focus is on developing technology solutions that improve building operations, reduce capital costs, generate revenue and enhance user experiences. Some of the firm's projects includes The Time Warner Center, One World Trade Center, One Bryant Park (Bank of America Building), Columbia University's Manhattanville campus, American Dream Meadowlands, and the new Coach USA headquarters at 10 Hudson Yards. For more information, visit www.theclarientgroup.com.

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¹ International Code Council, [2009 International Fire Code](#), p. 49

² [FDNY Technology Management Bulletin #01/2011](#)

³ HetNet Magazine, [Don't Wait Until It's Too Late: Pre-Wire for Cellular and Public-Safety In-Building Wireless \(IBW\) Coverage](#), February 29, 2016.

⁴ The International Association of Fire Chiefs; National Volunteer Fire Council; Congressional Fire Services Institute; Line of Duty Death Life Safety Initiatives, [Radio Communications for the Fire Service: A Planning Guide for Obtaining the Communications System You Need for Enhanced Safety and Emergency Preparedness](#), p.10, 2005