



In-Building Public Safety Communications Systems

What is it?

A Public Safety Communications System is a communications system used by first responder and emergency services personnel such as police, fire, emergency medical, homeland security, and disaster response agencies to prevent or respond to incidents or situations that pose a threat to people or property. Such systems typically rely on radio communications between dispatch/incident command and responders on scene. Fire codes typically make allowances for wired communications between critical locations and command, such as at elevator bays, places of refuge, or radio-blocked spaces. Radio communication with responders is generally the preferred method because it supports their mobility on scene.



An In-Building Public Safety Communication System enhances radio signals so they are available throughout the building, including areas that are especially difficult for RF to penetrate such as stairwells, elevators, basements, and thick-walled or shielded areas.

Key Considerations for Building Owners, Enterprise and related Construction Trades

- **Know your local Building and Fire Codes and Local Ordinances.** Code requirements are mandated by the state or local jurisdiction. The International Code Council publishes the International Fire Code (IFC), which contains recommended specifications for the design, installation and testing of in-building radio coverage in its Section 510. Many jurisdictions adopt or refer to IFC 510 or to National Fire Protection Association standards NFPA 72 and NFPA 1221 for guidance on issuing local codes for public-safety radio coverage in buildings. Be sure to understand the local code requirements and permitting process during the design and budgeting phase of your project.
- **Risk of Non-Compliance.** For new construction or remodeling, failure to meet code could mean that a Certificate of Occupancy will not be issued. Code violations might have to be corrected in existing buildings.
- **Engage the Code Officials and Building and Inspections Departments Early.** Build the appropriate timelines into your project plan. Ideally the required infrastructure such as pathways and conduits should be planned and installed before the walls and ceilings are closed up. Waiting until too late can significantly drive up costs.
- **Responsibilities.** The cost and continuing maintenance of an In-Building Public Safety Communication System is borne by the building owner nearly 100% of the time. The rare exception is for public mega-venues where third-party operators may deploy a public-safety system in conjunction with a commercial cellular system.
- **Engage Professional Assistance.** Work with experienced professional services firms and Integrators who have done recent In-Building Public Safety Communication System work, preferably with references in the target jurisdiction. Systems should be engineered based on measurements and testing or computer modeling within the building. There is a risk that an improperly designed system will feed back on itself and cause interference to the public-safety radio network, so it is critical that the system be designed, installed and tested by qualified professionals.
- **Addressing Commercial Cellular Service.** Today, more than 70 percent of 911 calls are made from mobile phones, and an estimated 64 percent of those calls are made indoors. Having robust cellular service is imperative to connecting those calls. This is particularly critical in common areas, stairways, parking garages, and basement areas. In campus environments like Education, Healthcare, or Corporate campuses, text-alert systems are common for crises and emergency management. Without adequate cellular coverage, these outbound contacts fail. Commercial cellular systems use the same technologies and supply ecosystem as In-Building Public Safety Communication Systems. In most cases, there can be significant cost savings realized by designing and installing these systems at the same time, potentially sharing common infrastructure such as pathways (penetrations, conduits, raceways), power, space, cooling, cabling, antennas, and even active components.

To learn more about the Public Safety Working Group, contact Tracy Ford at Tracy.Ford@wia.org.

