



Rutherford County Fire-Rescue Department
Division of Fire Prevention - Fire Marshal's Office
2785 Barfield Road
Murfreesboro, Tennessee 37128
(615) 907-3600 Ext. 1



CONSTRUCTION PERMITS

105.7.6- Emergency Responder Radio Coverage

Permit Fee- \$100

Permit Period- 1 Year

Where Required

In accordance with Rutherford County's enacted permitting requirements. A construction permit is required for Permit required for the installation of or modification to emergency responder radio coverage systems and related equipment. Maintenance performed in accordance with this code is not considered to be an alteration and does not require a permit.

Permit Application

- Must be submitted online at <https://cityworks.rutherfordcountyttn.gov/PublicAccess>
- No work may be performed until plans have been reviewed and approved.
- Inspections are required for all permits.

Plan Review Submittal Requirements

1. Completed permit application signed by licensed sprinkler contractor
2. Scope of work to be performed
3. Type and quantity of equipment to be installed
4. Detailed system plans (signed and sealed) to be submitted electronically.
 - a. Location of signal booster shall be installed in a NEMA 4 waterproof cabinet.
 - b. Location of battery back-up.
 - c. Location of antennas.

***Installation/Inspection Records are required to be submitted to The Compliance Engine**

- d. Floor diagrams with current signal strengths.
- e. Letter of design certification indicating that the system design as submitted meet all local requirements and standards set forth by NFPA.

Installation Requirements

- General Requirements
 - The radio coverage system shall be installed in accordance with sections 510.4 and 510.5 of the 2018 International Fire Code and with the provisions of NFPA 1221.
 - Acceptance testing for emergency responder radio systems is required upon completion of installation. It is the building owner's responsibility to have the radio system tested by qualified personnel to ensure a minimum of 95% two-way coverage on each floor of the building.
 - A report shall be submitted to the Fire Marshal's Office through The Compliance Engine at the conclusion of acceptance testing. It shall contain a site plan, signal strengths at each location tested, and other relevant information.
 - A representative of the Fire Marshal's Office may oversee the acceptance test. Acceptance testing is also required whenever changes occur to the building that would materially change the original field performance test. This floor plan shall be laminated and posted near the NEMA 4 cabinet.
 - Minimum signal strength of -95 dBm shall be available in 95% of all areas of the building and 99% in elevators (measured at the primary recall floor), stair shafts, and fire command centers when transmitted from the closest 800 MHz radio system.
 - The building shall be considered to have acceptable emergency responder communications enhancement system coverage when signal strength measurements in 95 percent of all areas on each floor of the building meet the signal strength requirements in IFC Sections 510.4.1.1 through 510.4.1.3.
- Standby Power

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- Emergency responder radio coverage systems shall be provided with dedicated standby batteries or provided with 2-hour standby batteries and connected to the facility generator power system in accordance with Section 1203. The standby power supply shall be capable of operating the emergency responder radio coverage system at 100-percent system capacity for a duration of not less than 12 hours.
- Cabinet Signal Booster Requirements
 - If used, signal boosters shall meet the following requirements:
 1. All signal booster components shall be contained in a National Electrical Manufacturer's Association (NEMA) 4 IP66-type waterproof cabinet or equivalent. Exception: Listed battery systems that are contained in integrated battery cabinets.
 2. Battery systems used for the emergency power source shall be contained in a NEMA 3R or higher-rated cabinet, IP65-type waterproof cabinet or equivalent.
 3. Equipment shall have FCC or other radio licensing authority certification and be suitable for public safety use prior to installation.
 4. Where a donor antenna exists, isolation shall be maintained between the donor antenna and all inside antennas to not less than 20 dB greater than the system gain under all operating conditions.
 5. Bidirectional amplifiers (BDAs) used in emergency responder radio coverage systems shall be fitted with anti-oscillation circuitry and per-channel AGC.
 6. The installation of amplification systems or systems that operate on or provide the means to cause interference on any emergency responder radio coverage networks shall be coordinated and approved by the public safety radio system operator.
 7. Unless otherwise approved by the public safety radio system operator, only channelized signal boosters shall be permitted. Exception: Broadband BDAs may be utilized when specifically authorized in writing by the public safety radio system operator.

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8. A low voltage electrical permit is required, and shall be signed off by an electrical inspector, prior to requesting a fire department fire alarm final inspection.
- Identification
 - Doors into rooms or buildings containing emergency responder radio systems shall be provided with approved signs stating, “Emergency Responder Radio System”.
 - Buildings equipped with emergency responder radio systems shall have signage at fire alarm panel that states, “This building is equipped with an emergency responder radio coverage system”.
 - Fire Alarm Monitoring
 - The system shall be supervised by the building fire alarm system in accordance with NFPA 72 to provide automatic alarming for the following supervisory conditions:
 1. Loss of normal AC power supply.
 2. System battery charger(s) failure.
 3. Malfunction of the donor antenna(s).
 4. Failure of active RF-emitting device(s).
 5. Low-battery capacity at 70-percent reduction of operating capacity.
 6. Active system component malfunction.
 7. Malfunction of the communications link between the fire alarm system and the emergency responder radio enhancement system.
 - These conditions can all be grouped into one supervisory signal that is annunciated at the fire alarm panel and at central station. The signal shall be identified as an "emergency responder radio" supervisory signal. They will be tested by an RCFR Fire Marshal’s Office inspector at the time of final inspection of this permit.

Required Inspections

1. Final inspection and acceptance test

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