



**SUBMITTAL REQUIREMENTS: Emergency Responder Communications Systems**  
*with updates effective as of January 1, 2022*  
**SIGNIFICANT CHANGES ARE SHOWN IN RED TEXT.**

***Codes and Standards Used in the Review Process:***

- North Carolina Fire Code (2018 edition) – Section 510
- Applicable NFPA standards, **including NFPA 1221 (2019 edition)**
- **UL 2524 (2019 edition)**

***Submitting Plans:***

1. Visit <http://winston-salem.idtplans.com>. If you have never used the IDT system before, you will need to create an account by clicking the **Sign Up** button.
2. Sign in using your email address and the password you created.
3. Click on the **Submit a Project for Review** button.
4. Select the correct application type, then follow the steps to complete the online permit application, upload your files, pay your fees, and confirm your submission.

***Submittal Requirements:***

- Prior to compiling the required documents, the applicant is **highly encouraged** to review both the applicable sections of the North Carolina Fire Code and the technical design criteria for the local radio system (as found on the WSFD website).
- BUILDING PERMIT NUMBER – If the project is associated with a building permit number, that permit number must be provided in the online application.
- DESIGNER/INSTALLER QUALIFICATIONS – Submitted plans shall include copies of documentation indicating the required qualifications of **both the system designer and the lead installer**. Acceptable documentation may include both of the following:
  - o A valid FCC-issued general radio operator's license; and
  - o Certification of in-building system training issued by an approved organization or approved school, or a certificate issued by the manufacturer(s) of the equipment being installed.

- SCOPE OF WORK – Provide a written description of the scope of work on the designer’s letterhead that includes the following:
  - Itemized listings of the existing radio coverage system equipment to remain, if applicable
  - Itemized listings of the radio coverage system equipment to be removed or replaced, if applicable
  - Itemized listings of the radio coverage system equipment to be installed.
- STATEMENT OF CERTIFICATION – Provide a written certification statement on the designer’s letterhead, signed by the system designer, indicating that the radio coverage system and its installation will comply with all applicable federal regulations including but not limited to FCC 47 CFR Part 90.219.
- SYSTEM PLANS – Provide draftsman-quality plans that include the following:
  - A clear and complete legend identifying all symbols and abbreviations in use
  - Name of the system designer (and FCC license number, if applicable)
  - Address of the location where the system is being installed
  - Name and address of the building owner/occupant responsible for the system's ongoing operation
  - Floor plans and other drawings indicating the layout of radio coverage system equipment (existing and new)
  - Clear indicators on the floor plans of those areas deemed critical areas
  - Locations and fire-resistance ratings of enclosures through which backbone cables will pass, and locations where the antenna distribution cables connected to those backbone cables will pass through the rated enclosures (per NFPA 1221)
  - Clear and specific identification of the mounting scheme used for installing each donor antenna; when these antennas are not permanently affixed to the building, plans shall also indicate where required signage will be installed and how that signage will read
  - Locations and FCC classifications of signal boosters
  - Location of a single switch at or adjacent to the radio coverage system enclosure that enables the radio coverage system to be deactivated if needed (this switch does not have to be a Knox-keyed switch, but use of a Knox-keyed switch is allowed)
  - If the radio coverage system enclosure is not co-located with the fire alarm system panel, plans shall show the location of a remote Knox-keyed switch in the fire alarm panel room that can deactivate the radio coverage system
  - If the building is equipped with a fire command center, and if the radio coverage system enclosure is not located within the fire command center, plans shall show the location of a remote Knox-keyed switch in the fire command center that can deactivate the radio coverage system
  - Locations of standby power components and systems supporting the radio coverage system

- o Information regarding the specific configuration of amplification systems
  - o Shop drawings that include detailed system design parameters from a computer-generated model that predicts RF propagation within the facility, and that specify how the requirements of NCFC 510.4.2.8 are being addressed to minimize near-far effect and reduced gain conditions
  - o Information documenting a lightning protection arrangement for the system that complies with NFPA 780
  - o Information describing how the system monitoring requirements of NCFC 510.4.2.5 will be met [NOTE: installation or modification of fire alarm systems requires a separate permit and plan submittal; do not include fire alarm plans or components in this plan set]
  - o Calculations indicating the standby power capacity required to ensure radio coverage system operation for 12 hours without external power
- COVERAGE REQUIREMENTS – The plans shall clearly indicate how the proposed design will provide compliant communications signals in 95 percent of all areas on each floor, and in 99 percent of all floor areas deemed critical areas by the fire code. The AHJ may, at its discretion, require certain areas other than those specified by codes and standards to be deemed critical areas.
  - STANDBY POWER REQUIREMENTS – Provide calculations and other specific information indicating how the radio coverage system is provided with standby power capabilities that fulfill the fire code’s requirements and that provide the radio coverage system with 100-percent system capacity for a period of not less than 12 hours.
  - GRID LAYOUTS FOR ACCEPTANCE TESTING – Provide a draftsman-quality floor plan that illustrates how the building will be divided into test areas for the purposes of acceptance testing. This shall be a **separate floor plan** from those provided to illustrate system configurations and equipment locations. Test grid layouts must comply with NCFC 510.5.4 and must cover all affected areas of the building. Test grid layouts must also specify which areas are deemed critical areas; these delineations shall match the critical areas shown on the floor plans.
  - SYSTEM COMPONENT INFORMATION – Provide manufacturer-supplied informational documents (“cut sheets”) for all system components being installed. These documents shall clearly indicate that the equipment is listed in accordance with UL 2524, as well as any other required equipment certifications, listings, or design standards. All equipment must be deemed suitable for public safety use. Documents shall also address the following requirements from NFPA 1221:
    - o The use of plenum-rated cables for any backbone cabling, antenna distribution cabling, radiating cabling, or fiber-optic cabling
    - o The use of hybrid coupler devices that are appropriate for certain backbone cable connections as required by Sections 9.6.2.6 and 9.6.2.4 of NFPA 1221
    - o The use of NEMA 4-type waterproof cabinets for all signal booster components
    - o The use of NEMA 3R or higher-rated cabinets for battery systems serving as emergency power sources
  - This is not an all-inclusive list; additional information may be required prior to approval.

### ***Once your radio coverage system project is approved...***

- Follow all instructions provided in plan review comments at <http://winston-salem.idtplans.com>. This includes obtaining a Letter of Authorization to Retransmit as required by the FCC. This letter may only be obtained after plans have been reviewed and approved.
- Access the approved, stamped plans at <http://winston-salem.idtplans.com> and utilize only these plans for your project. If revisions are required, submit revisions for approval. A copy of approved, stamped plans shall be maintained on site.
- An installation acceptance test shall be conducted prior to placing the system in service. This acceptance testing shall be witnessed by fire code officials and must be scheduled in advance. Coordinate acceptance testing activities with fire alarm installers, building owners/occupants, and other stakeholders as well.
- If the project is associated with a building permit, coordinate with the general contractor regarding the scheduling of acceptance testing by fire code officials.
- If this project includes a Class B signal booster as defined by the FCC, the FCC Registration Number (FRN) and Booster ID shall be displayed in a prominent location on the radio coverage system enclosure. This information shall also be provided to the fire inspector at the time of acceptance testing.
- System enclosures and switches (including remote switches) shall be clearly marked with permanent signage indicating their purpose. This signage shall be installed prior to acceptance testing.
- **A set of as-built drawings documenting the system's configuration shall be stored on site in the room where the communications system enclosure is located. These drawings shall be present at the time of acceptance testing, and these drawings shall be maintained for inspection at any time by fire code officials once the system is placed into service.**