



ORDINANCE # 2019-01

AN ORDINANCE:

Amending Chapter 130 of the Code of Ordinances
Fire Prevention

WHEREAS, the Bedford Town Council has authority over the Town of Bedford Fire Prevention Ordinances; and

WHEREAS, the safety of emergency personnel and the general public within buildings may be impacted due to poor or non-existent emergency radio communications; and

WHEREAS, good radio communications is essential to health, safety, and welfare of the public and emergency personnel;

NOW, THEREFORE, THE TOWN OF BEDFORD ORDAINS that the Bedford Town Council has voted to amend the Town of Bedford Fire Prevention Ordinance as follows:

Adding new Article VI - Emergency First Responder Radio Coverage Standards in Building(s)

Adding new §130-21. Applicability.

All new construction and renovations (excluding one and two-family dwellings) shall comply with all sections/parts of Bedford Police Department Standard Operating Procedure (SOP) Section 50.1.7 Land Mobile Radio Network Radio Coverage in Buildings that requires approved radio coverage for First Responders within the building based upon the existing signal levels as per Section 50.1.7. Nothing in this ordinance shall require improvement of the existing public safety communication systems operated by the Town of Bedford.

Adding new §130-22. Waivers.

Buildings having sufficient levels of radio coverage to satisfy the requirements of SOP Section 50.1.7 may request a waiver as per SOP 50.1.7 if a radio survey as described in Section 50.1.7 was submitted and signed by a qualified and or licensed communications/radio vendor. (*Building must be substantially completed with all walls, windows, roof, interior partitions completed prior to the survey*). Buildings and structures that cannot support the required level of Bedford Public Safety Communications radio coverage as per SOP Section 50.1.7 shall be equipped with a distributed antenna system and FCC-certified signal boosters, or systems

otherwise approved by the Town of Bedford in order to achieve the required adequate radio coverage.

Adding new §130-23. Violations and Penalties.

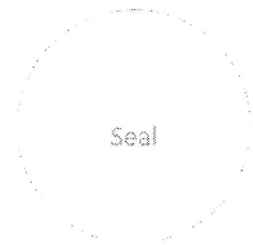
Failure to comply with any section of this ordinance, including interruption or degradation to Bedford Public Safety Communications shall result in immediate decommissioning of the BDA and the permit for said site shall be rescinded by the Town and notice provided in writing to the owner or representative within five (5) business days of the order. In the event a BDA permit is rescinded, the BDA site is decommissioned or an order is issued by the Town to cease operation, the owner shall have 30-days from the date of the order issued by the Town to comply with all sections of this ordinance. Failure to return to compliance within 30-days of the date of the order shall result in action by the Town such as but not limited to revocation of the certificate of occupancy for the building.

Renumbering existing Articles VI through X and existing Sections 130-21 through 39 to be Articles VII through XI and Sections 130-24 through 42.

ADOPTED: 12th June 2019
Date

APPROVED: [Signature]
Bill Duschatko, Town Council Chairman

ATTEST: [Signature]
Sally Kellar, Town Clerk



SECTION 50.1.7

LAND MOBILE RADIO NETWORK

RADIO COVERAGE IN BUILDINGS

MODIFIED APRIL 22, 2019

This Standard Operating Procedure (SOP) supersedes all previous SOPs, General Orders, Special Orders, Memorandum(s) or directives pertaining to Land Mobile Radio BDAs, which are now obsolete.

I. PURPOSE

To develop specifications and requirements to ensure emergency first responder communications in buildings for citizen and first responder life safety in compliance with all applicable Town of Bedford Ordinance(s).

II. POLICY

It shall be the policy of the Town of Bedford Police Department (hereinafter "Department"), which is responsible for the operation and maintenance of the Town of Bedford Public Safety Communications Land Mobile Radio Network (LMR) hereinafter referred to as "Bedford Public Safety Communications" to develop specifications in conjunction with the Bedford Fire Department to comply with standards put forth by NPFA 1 (Fire Code) and NFPA 101 (Life Safety Code) which specifically requires NFPA 1221 compliance and requirements for first responder radio coverage. It shall also be the policy of the Bedford Police Department that the installation and operation of radio based emergency responder (Police, Fire, EMS) communication systems operated by the Bedford Police Department in and for the Bedford Fire Department and Police Department must comply with all requirements set forth in this document.

III. PROCEDURES

A. PROPERTY OWNER REQUIREMENTS: Property owners who maintain compliance with this specification are granted permission to operate bi-directional amplifier (BDA) and or signal boosters on the specified frequencies licensed to the Town of Bedford by the Federal Communications Commission (FCC).

1. Failure to maintain compliance with this specification will result in the automatic withdrawal of said permissions.
2. The voluntary adoption of the specifications attached hereto must comply with all the requirements contained herein.
3. Prior to the construction of an Emergency Responder Communication System, a permit must be applied for and submitted to:

Bedford Fire Department
Attention: Fire Prevention
55 Constitution Drive
Bedford, NH 03110
Phone # (603) 472-3219
Fax # (603) 472-4565

- B. GENERAL SPECIFICATIONS: All new buildings, excluding single family dwellings as well as all existing buildings excluding single family dwellings undergoing substantial renovation, (Substantial renovation will be considered 50% or greater accumulative renovation of the building) a change of occupancy, or the installation of a new fire alarm system shall have approved radio coverage for First Responders within the building based upon the existing signal levels of Bedford Public Safety Communications at the exterior of the building. This section shall not require improvement of the existing public safety communication systems.
1. New Construction: For new construction, installation of the BDA must be completed and inspected before the certificate of occupancy (C.O.) is issued.
 2. Existing Structures: For existing structures, the BDA must be completed and inspected within six (6) months after construction complete.
 - a. Existing buildings undergoing substantial renovation, a change of occupancy, or the installation of a new fire alarm system are required to provide radio coverage as per this specification for Bedford Public Safety Communications.
 3. Exceptions: Buildings that have sufficient levels of radio coverage to satisfy the requirements of this specification may request a waiver with the following constraints:
 - a. A radio survey as described in this specification must be submitted and signed by a qualified and or licensed communications/radio vendor. (*Building must be substantially completed with all walls, windows, roof, interior partitions completed prior to the survey*)
 - b. The survey shall be submitted with the waiver request.
 - c. If approved, the waiver will only be valid for a 5-year period from the date of acceptance by the Town of Bedford at which time a new radio survey must be submitted.
 - d. If at any time the Town of Bedford determines its public safety communications radio coverage does not meet this specification, the waiver will be withdrawn and the property owner shall be required to provide Bedford Public Safety Communications radio coverage as required by this specification.
 4. Buildings Do Not Meet Specifications: Buildings and structures that cannot support the required level of Bedford Public Safety Communications radio coverage as per this Standard Operating Procedure (SOP) shall be equipped with a distributed antenna system and FCC-certified signal boosters, or systems otherwise approved by the Town of Bedford in order to achieve the required adequate radio coverage.
 5. Signal Strength: The in-building radio system is an integral component of the life safety equipment of a building or structure. The primary function is to provide reliable first-responder (police, firefighter, EMS) communications at the required signal strength within the specified areas.
 - a. Critical Areas: Critical areas such as emergency command center, fire pump room, exit stairs, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations and similar critical areas shall be provided with 100% floor area radio coverage.
 - b. General building areas shall be provided with 95% radio coverage.
 - c. In-building radio systems required by this ordinance must provide the following signal strengths:
 - c1. Downlink - Minimum signal strength of -95 dBm throughout the coverage area.
 - c2. Uplink - Minimum signal strength of -95 dBm received at the Public Safety Communication System.
- C. RADIO SURVEY: The owner of any building not exempt from this SOP shall have the building tested by a qualified/licensed communications/radio vendor to ensure that two-way radio coverage on each floor of the building meets or exceeds the required levels.

1. Floor Grid: Each floor of the building shall be divided into a grid of approximately twenty (20) equal areas. A maximum of one (1) area will be allowed to fail the test per floor. A spot located approximately in the center of a grid area will be selected for the test. Once the spot has been selected, prospecting for a better spot within the grid area will not be permitted. Field strength testing instruments are to be recently calibrated (within 1 year of the date of the test) and the frequency selective type incorporating a flexible antenna similar to the ones used on hand held transceivers.
 2. RF plots indicating enhanced coverage shall be submitted at the time of acceptance testing.
 3. The Lieutenant/Operations Support Division, Bedford Police Department (BPD) is to be notified prior to any testing (603-472-5113).
 4. Unattended operation of the in-building radio system is not permitted until the completion of acceptance testing and acceptance by the Town of Bedford Police Department, Operations Support Division/Communications Section.
- D. TECHNICAL SPECIFICATIONS & COMPONENT INSTALLATION: Assembly and installation of all components of the first responder emergency in-building signal booster radio system shall comply with all applicable sections of the National Electrical Code and as follows:
1. Survivability from attack by fire shall meet NFPA 72, National Fire Alarm Code, 2010 edition.
 2. The system must comply with all applicable sections of FCC rules. Signal booster shall have FCC certification prior to installation.
 3. External filters or attachments or aftermarket modifications of the original equipment are not permitted.
 4. All signal booster components shall be contained in a NEMA4-type waterproof cabinet. All enclosures shall be painted (fire engine red) with a locking mechanism.
 5. The signal booster system shall include built-in automatic alarming of malfunctions of the signal booster and battery system as per NFPA 72, 2010 Edition, 24.5.2.6.1-24.5.2.6.2. Aftermarket equipment add-ons and modifications to comply with this specification will not be accepted.
 6. Maximum Propagation delay of the signal booster system is 14us (microseconds).
 7. Antenna isolation shall be maintained between the donor antenna and all inside antennas (D.A.S.) to a minimum of 60dB under all operating conditions.
 8. Frequencies: The Bedford Public Safety Communications transmits and receives on the following frequencies:
 - a. Uplink (MHz): 159.4350, 159.7650
 - b. Downlink (MHz): 155.310, 156.1800
 9. To reduce the possibility of unwanted interference affecting the operation of the system, signal boosters shall be band or channel selective type. Wide-band signal boosters shall not be accepted.
 10. Signal Boosters shall have oscillation prevention circuitry to protect the public safety radio system in case of signal booster malfunction.
 11. The cabinet shall be labeled (in bright yellow) as follows:

Town of Bedford – Bedford Public Safety Communications
BDA Permit # *permit number provided by Town*
Serviced by: *vendor name and telephone number*

12. Bedford Public Safety Communications reserves the right for a third party plan review at the expense of the permittee.
- E. **SYSTEM MONITORING:** The In-Building Radio system shall include automatic supervisory and trouble signals for malfunctions of the signal booster(s) and power supplies that are annunciated by the fire alarm system. Trouble signals must be immediately reported to the radio service provider.
1. The integrity of the circuit monitoring the signal boosters and power supplies shall comply with NFPA 72, National Fire Alarm Code, 2010 edition.
 2. System and Signal booster supervisory signals shall include Antenna Malfunction and Signal booster failure.
 3. Power supply supervisory signals shall include loss of normal AC power, failure of battery charger, and low battery capacity (alarming at 70% of battery capacity and 30% of charge remaining).
 4. A dedicated monitoring panel shall be provided within the emergency command center to annunciate the status of all signal booster locations. The monitoring panel shall provide visual and labeled indication of the following for each signal booster as follows:
 - Normal AC power
 - Signal booster trouble
 - Loss of normal AC power
 - Failure of battery charger
 - Low battery capacity
 5. A sign will be located at the dedicated monitoring panel with the name and telephone number of the service provider indicating they should be notified of any alarm.
- F. **DISTRIBUTED ANTENNA SYSTEM:** The distributed antenna system may utilize a radiating cable, conventional cable, fixed antennas or a combination of all three.
1. A secondary user of the distributed antenna system (DAS) must comply with all requirements of Bedford Public Safety Communications so as not to degrade the operational standards of the system. Notice will be made to the Town of Bedford Police Department, LT/Operations Support Division, as part of the permit application if the DAS will have non-public safety related frequencies included.
- G. **POWER SUPPLY:** At least 2 independent and reliable power supplies shall be provided.
1. **Primary:** The primary power source shall be supplied from a dedicated twenty (20) ampere branch circuit and comply with NFPA 72, National Fire Alarm Code, 2010 edition.
 2. **Secondary:** The in-building radio signal booster emergency responder radio coverage system shall be equipped with a secondary source of power.
 - a. The secondary source of power shall be a battery system with a dedicated battery charger powered by a separate, dedicated and independent electrical circuit of sufficient size.
 - b. The secondary power supply shall provide power automatically when the primary power source is lost.

- c. The secondary source of power shall be capable of operating the emergency responder radio coverage system for a period of at least 24 hours.
 - d. The battery system shall automatically charge in the presence of external power input. Battery charger and all other electronic components must be fully enclosed in a non-vented NEMA4 enclosure. Batteries shall be enclosed in a separate, vented NEMA rated enclosure.
- H. ACCEPTANCE TESTING: Delivered audio quality (DAQ) testing will be conducted by Town of Bedford authorized communications/radio service vendor personnel to ensure two-way radio coverage on each floor of the building meets the minimum coverage requirements above.
- 1. Prior Notice: At least five (5) business days prior notice to the Bedford Police Department, LT/Operations Support Division (603-472-5113) is required to schedule and conduct acceptance testing.
 - 2. Acceptance testing shall be conducted by a third party with professional knowledge of Bi-Directional Amplification Systems, (BDA's) at the expense of the permittee.
 - 3. Verification: The radio service vendor shall certify the in-building radio system was installed, tested and complies with and is in accordance with the requirements of the current First Responder In-Building Radio Specification.
 - 4. Owner Responsibility: The owner shall provide to the Town of Bedford proof of coverage by way of an executed contract with a qualified radio service company that a maintenance contract for all required equipment pursuant to the above is in effect that provides 24-hour by 7-day response within 2 hours of notification of a problem. This contract must be valid for a period of at least 1 year from on or about the date of acceptance by the Town of Bedford.
 - 5. RF plotting (grid tests) results, gain values of all amplifiers, as built drawings including BDA Manufacturer, Model #, Serial #, and FCC Certification #.
- I. ANNUAL TEST REQUIRED: The owner shall certify all active components of the in-building radio system, including but not limited to amplifier, power supplies, and back-up batteries, were inspected by a qualified communications/radio vendor on a minimum of once every twelve (12) months commencing on or about the date of acceptance by the Town of Bedford and continuing thereafter until the system is decommissioned by the Town of Bedford.
- 1. Record of Inspection: A record of said inspection shall be displayed inside the approved communications equipment cabinet and signed by the approved vendor with name, name of company and contact information legibly displayed for inspection by the Town of Bedford.
 - 2. Amplifiers shall be tested to ensure that the gain is the same as it was upon initial installation and acceptance. The original gain shall be noted and any change in gain shall be documented as per above.
 - 3. Back-up batteries and power supplies shall be tested under load for a period of one (1) hour to verify that they will operate during an actual power outage as per Section 9.1, above.
 - 4. Active components shall be checked to determine all active/required components are operational and within the manufacturer's specifications for their intended purpose; documented as per Section 9.1, above.
 - 5. Documentation of the test shall be maintained on site and a copy forwarded by the radio service company to the Bedford Police Department, ATTN: LT/Operations Support Division, 55 Constitution Drive, Bedford, NH 03110 not later than five (5) business days upon completion of the test.

- J. FIVE YEAR TEST: In addition to the annual test as provided above, a radio coverage test shall be conducted a minimum of once every five (5) years from on or about the date of acceptance to ensure the radio system continues to meet the requirements of this ordinance. The procedure set forth in Section 3 shall apply to all such tests.
- K. RADIO SERVICE PROVIDER: All tests shall be conducted, documented, and signed by a qualified land mobile radio technician.
 - 1. All testing personnel shall be certified and authorized by the BDA manufacturer in the installation and operation of their equipment.
 - 2. The owner shall submit all test reports of all annual and 5-year tests within five (5) business days upon receipt of the reports to the Bedford Police Department, ATTN: LT/Operations Support Division, 55 Constitution Drive, Bedford, NH 03110.
 - 3. Cancellation of Service Contract: The Town of Bedford Police Department, LT/Operations Support Division, shall be notified in writing by the owner not less than thirty (30) days prior to cancellation of a maintenance contract. Such notice shall contain the date and time such cancellation is to take effect, BDA location and BDA Permit #.
 - 4. The Town of Bedford Police Department shall be notified in writing (ATTN: LT/Operations Support Division, 55 Constitution Drive, Bedford, NH 03110), upon the procurement of contractual agreements relating to in-building radios covered by this specification.
- L. MODIFICATIONS: Any modification of an existing BDA System will require a written request to the Town of Bedford (ATTN: LT/Operations Support Division, 55 Constitution Drive, Bedford, NH 03110).
 - 1. After completion of any modification to a BDA, the owner shall ensure a full acceptance test as required in this specification, be conducted within five (5) business days of said modification and submitted to the Town of Bedford (ATTN: LT/Operations Support Division, 55 Constitution Drive, Bedford, NH 03110), for review within five (5) business days after receipt of the test reports.

IV. INSPECTIONS

- A. RIGHT TO INSPECT: The Town of Bedford, including any Town of Bedford authorized land mobile radio communications personnel shall, after providing reasonable notice (24-hours) to the owner or their representative, have the right to enter onto the property to conduct any/all required testing to certify compliance with all provisions of this ordinance.

V. PROPERTY OWNER RESPONSIBILITIES

- A. Maintenance/Improvement/Repair: The owner shall be responsible for maintaining and improving/upgrade(s) and repair(s) to this system as directed by the Town of Bedford in order to remain within compliance with this ordinance.
- B. Maintenance Contract: The owner shall be responsible for the required maintenance contract as set forth above with a qualified radio service contractor, who will provide a 24 hour by 7-day emergency response within two (2) hours after notification.


VI. COMPLIANCE AND PENALTIES

- A. Failure to Comply: Failure to comply with any section of this SOP including interruption or degradation to Bedford Public Safety Communications shall result in immediate decommissioning

of the BDA and the permit for said site shall be rescinded by the Town and notice provided in writing to the owner or representative within five (5) business days of the order.

- B. BDA Rescinded: In the event a BDA permit is rescinded; the BDA site is decommissioned or an order is issued by the Town to cease operation, the owner shall have 30-days from the date of the order issued by the Town to comply with all sections of this ordinance.
 - 1. Failure to return to compliance within 30-days of the date of the order shall result in action by the Town such as but not limited to removal of the official certificate of occupancy for the building.
- C. PENALTY: Failure to comply with any part, section, sub-section or sub-part of this ordinance may result in revocation of the affected building's certificate of occupancy by the Town of Bedford.

This standard operating procedure shall be effective upon signature by the Chief of Police and shall remain in effect until superseded by order of the Chief of Police.



John J. Bryfonski, Chief of Police 22APRIL2019