

# TRAVIS COUNTY EMERGENCY SERVICES DISTRICT 2

## Risk Reduction Division

203 East Pecan Pflugerville, Texas 78660  
Phone: (512) 251-2801 Website: [www.Pflugervillefire.org](http://www.Pflugervillefire.org)

### Emergency Responder Radio Systems - Plan Submittal Information

This document is designed to provide guidance for the installation of an emergency responder radio system within our jurisdiction. An emergency responder radio system will consist of Distributed Antenna Systems (DAS) and/or Bi-Directional Amplifiers (BDAs or repeaters).

The project will be advised when an emergency responder radio system will be required.

This information is not all-inclusive but is intended to inform contractors of local requirements and assist in developing a successful plan submittal. This is a working document and will be updated on a periodic basis. When developing bids, and submitting plans, contractors are advised to verify they are viewing the most recent edition of this document.

#### I. Permit Fees and Electronic Submittal Requirements

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- *Electronic Plan Submittal.* An electronic plan submittal is required. Plans must be submitted in accordance with TCESD2 electronic plan submittal guidelines. Plan sheets which are not properly bookmarked and labeled will not be reviewed.
- *Review and Inspection Fees.* A permit is required to install a system and a plan review fee is required with each permit application. Plan review fees are all-inclusive and include field inspections and acceptance testing of all systems. Please contact Sequina, our permit administrator, for information regarding the plan submittal process and payment of fees. Her phone number is at (512) 251-2801 and her email address is [sallen@pflugervillefire.org](mailto:sallen@pflugervillefire.org).
- *Code of Record.* The code of record for the project will be the 2015 IFC, the 2013 edition of NFPA 72, and the 2019 edition of NFPA 1221. (More recent editions of these documents can be referenced at the discretion of the project). Include this information on the cover sheet of the plan submittal.

#### II. City of Austin Wireless Communication Services Division

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Contact the city of Austin Wireless Communication Services Division for information regarding the signal frequencies utilized in our jurisdiction. WCSD can also assist with identifying the donor towers for the project. COA contact information is provided below.

David Farries  
Technician Services Mgr. – Field Operations,  
Wireless Communication Services Division,  
Communications and Technology Management,  
City of Austin.  
(512) 972-3237  
[David.Farries@austintexas.gov](mailto:David.Farries@austintexas.gov)

#### III. Minimum Qualifications for Designers and Installers

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Provide documentation of qualifications for the designer and lead installer. Ensure qualifications comply with Section 510.5.2 of the fire code. The minimum qualifications of the system designer and lead installation personnel shall include both of the following:

- A valid FCC-issued general radio operator's license. (GROL)
- Certification of in-building system training issued by a nationally recognized organization, school, or a certificate issued by the manufacturer of the equipment being installed.

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#### IV. Class A Systems and System Registration

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- Class A signal boosters will be required. (Class B systems may be installed when approved by the fire code official. Installation of a Class B system will only be approved when installation of a Class A system is deemed impractical).
- All systems, whether Class A or B, shall be registered with the City of Austin Wireless Communication Services Division.

#### V. Dedicated System

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The emergency responder radio system cannot be combined with other systems including:

- Cellular telephone enhancement systems
- Wi-Fi systems
- Pager systems
- Medical telemetry systems

#### VI. System Requirements

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- *UL Certification.* Equipment and systems shall be listed in accordance with UL standard 2524 or 60950. UL 2524 is the preferred standard but, due to the relatively small number of systems currently listed to this standard, UL 60950 listing will be acceptable.
- *Signal Strength.* A minimum of -95dbm required in 95% of noncritical areas. A minimum of -95dbm is required in 99% of critical areas, as defined in NFPA standards 72 and 1221.
- *Dedicated Panel.* A dedicated ERRS monitoring/annunciating panel shall be provided. This panel shall be installed in an approved location.
- *Fire Alarm Control Panel.* The signal booster system and battery system shall be supervised and monitored by the building's fire alarm control panel.
- *Cable Protection.* Horizontal cabling shall be plenum rated (at a minimum). Two-hour protection shall be provided for vertical risers.
- *Standby Power.* Standby power shall be provided for the system. Standby power shall be capable of operating the system for a minimum of 24 hours.
- *NEMA 4 Enclosure.* All signal booster components and the battery system shall be contained within listed NEMA 4 enclosures.
- *Lightning and Surge Protection.* Lightning and surge protection is required for emergency responder radio systems. Protection will be required for the entire system including panels, battery systems, and donor antennas.
- *Donor Antennas.* Isolation shall be provided for donor antennas and donor antennas shall be monitored by the system panel.

#### VII. Plan Submittal

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Obtain signal frequencies for our area. Conduct a signal strength reading at the site and select the channel with the strongest signal. Provide the following information in the submittal:

- Project narrative (include applicable codes)
- Initial Survey Results.
- Equipment Listing and product data sheets for all equipment.
- Address all items listed in Section VI (system requirements)
- Design Plan

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- Link Budget
- Heat Maps/Projections (A minimum of -95dBm required in 95% of noncritical areas. This signal strength is required in 99% of critical areas)
- Battery Backup Systems (Include Calculations)

#### VIII. Field Inspection

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- *Interference Testing.* Before power up of the signal booster, the project shall contact the City of Austin Wireless Communication Services Division to schedule interference testing. It's our understanding this will include near/far testing at distributed antenna locations, and interference monitoring at the Donor Site. Documentation of test results will be required prior to final approval of the system.
- *System Registration.* Prior to scheduling a final acceptance test, the project shall provide documentation the system has been registered with the City of Austin Wireless Communication Services Division.
- *Grid Test.* Prior to scheduling a final acceptance test, the project shall perform a grid test of the facility. The grid test shall be performed in accordance with Section 510.5.3 the fire code. A minimum of 20 grids shall be established for each floor and a calibrated spectrum analyzer shall be used to verify signal strength. A minimum of -95dbm is required in 95% of noncritical areas. A minimum of -95dbm is required in 99% of critical areas. A failed test will result if two or more adjacent grids do not meet the required signal level. The installing contractor shall provide our office with documentation of the test results.
- *Function Test.* After completion of the above, the project will contact our office to schedule a function test of the ERRCS. The function test will be performed by members of our department utilizing handheld radios. To schedule a field inspection, send an inspection request to: [inspections@pflugervillefire.org](mailto:inspections@pflugervillefire.org).
- *Delivered Audio Quality.* The function test shall be based upon the Delivered Audio Quality (DAQ) system. A DAQ level below 3.4 shall be considered a failed test for any given grid cell. DAQ level 3.4 is defined as: *Speech understandable with repetition only occasionally required.*