

 <p style="text-align: center;"><i>CRFD</i></p>	Castle Rock Fire and Rescue Department
	<i>LIFE SAFETY DIVISION GUIDELINE</i>
	Subject: BDA – Public Safety Radio Amplification Systems GUIDELINE Date initiated: July 2020 Date revised: 11-2021
	Approved: Brian Dimock, Division Chief of Life Safety Division

APPLICABLE CODES AND STANDARDS:

- National Fire Protection Association (NFPA).
- 2018 International Fire Code.

INTENT:

The intent of this document is to provide the basic information pertaining to the proper method of designing an installing the required Public Safety Radio Amplification System also known as BDA’s or DAS Systems..

SCOPE:

The scope of this document is to provide the current guidelines and requirements as of NOVEMBER 2021.

RADIO AMPLIFICATION SYSTEMS:

Plan Submittal Checklist:

Castle Rock Fire and Rescue Department (CRFD) encourages you to use this checklist for your radio amplification system plan submittal. Items on this checklist will aid you in providing us with a complete submittal. Incomplete submittals will not be accepted and returned until all necessary information is provided. **No work will be allowed** until CRFD has issued a permit for your project. If you have any questions, please feel free to contact us.

SYSTEM REQUIREMENTS BY DOUGLAS COUNTY:

Before the Fire Department can complete a review of the BDA / DAS System the following must occur:

In accordance with FCC 90.219, when DAS and BDA systems are installed, Installers are required to get written consent from the licensee of the frequencies the system is rebroadcasting. This is due to the fact that we as license holders are liable for any issues caused by these systems and if not properly designed or configured can completely take down the public safety radio systems. In Douglas County the DTRS should include sign off by the County as the POC for licenses for Douglas County.

The attached DRAFT letter of acknowledgement provides confirmation by Douglas County for the system installation at the proposed buildings.

-Send the design plans and specifications on the system to:

Jeff Vaughn, CETma, DAS, R56, NST, LAS, ITS, WCM, FOI, BSBA/CIS
Radio Systems Administrator - Douglas County Sheriff's Office - 4000 Justice
Way
Castle Rock, CO 80109
Direct Office : (303) 660-7506 <tel:(303)%20660-7506>
Radio Shop : (303) 814-7013 <tel:(303)%20814-7013>
Email : jvaughn@dcsheriff.net <mailto:jvaughn@dcsheriff.net>
Radio Shop Group Email: radioshop@dcsheriff.net
<mailto:radioshop@dcsheriff.net>

-Return the signed letter from Douglas County to Castle Rock Fire, along with the system requirements and plans for review and permit to:

FPO@CRGOV.COM

-- DRAFT LETTER OF APPROVAL TEMPLATE FROM DOUGLAS COUNTY --

Castle Rock Fire and Rescue Department
300 Perry Street
Castle Rock, CO 80104

Date RE: Confirmation Memo of BDA and DAS System Signoff

To CRFD Life Safety Division;

Please accept the following confirmation required for the BDA & DAS System Installation as required in the adopted 2018 International Fire Code, and the following requirements:

In accordance with FCC 90.219, when DAS and BDA systems are installed, Installers are required to get written consent from the licensee of the frequencies the system is rebroadcasting. This is due to the fact that we as license holders are liable for any issues caused by these systems and if not properly designed or configured can completely take down the public safety radio systems. In Douglas County the DTRS should include sign off by the County as the POC for licenses for Douglas County.

This letter of acknowledgement provides confirmation for the following proposed buildings.

Building Name
Building Address

Design Engineers Signature: _____ Date: _____

Douglas County DTRS Approval: _____ Date: _____

FIRE DEPARTMENT INSPECTION REQUIREMENTS:

Inspections are to be scheduled using the following procedure:

- ❑ Send an email **FPO@crgov.com**; **TWO** days prior to your preferred day of inspection;
- ❑ Provide the following information:

<u>Project Name</u>	<u>Address</u>
<u>Permit Number</u>	<u>Contact Person</u>
<u>Phone Number</u>	<u>Requested inspection date</u> and AM or PM time

request.

NOTE: Only one request per inspection, an inspector will email to **CONFIRM** the inspection.

Re-inspection and fees

If a re-inspection is required due to either contractor no-show, work not completed as required per code, or poor workmanship, re-inspection fees may be assessed. This is a **\$65.00** fee and is required to be paid prior to any other inspection for the project is completed.

GENERAL DESIGN REQUIREMENTS:

BASIC FIRE CODE SYSTEM REQUIREMENTS:

The system installed is intended to accept and amplify the radio frequencies used by emergency services within the building and not conflict with external signal strengths. Installation and full integration of Public Safety Radio Amplification System (DAS) in the building. This will ensure adequate RF Signal levels for the Fire Department to use their radio inside the building.

1) The system must be field tested by the contractor and witnessed by the Fire Department - please call and schedule an inspection as noted on the FIRE permit card, the contractor shall utilize an appropriate signal strength meter inside the building to test signal strength as noted in the adopted guidelines for installation and attached to this permit. This signal strength testing shall be witnessed by the Fire Department in accordance with the attached Fire Department POLICY / Code requirements.

2) A sketch indicating the location of the signal booster was attached, but it was unclear of the exact location of the unit. The Fire Department typically requires that the booster be installed at or near the main Fire Alarm Control Panel or in the Fire Sprinkler Riser Room, and be clearly marked with signage indicating "EMERGENCY RADIO AMPLIFICATION SYSTEM BOOSTER CONTROL UNIT". The Fire Department will accept most locations so long as the following requirements are met:

a) Since the power unit is located remote of the main Fire Alarm Control Panel and may not be immediately accessible during a fire condition the Fire Department will require a MASTER shut down switch installed at the MAIN Fire Alarm Control Panel located in the fire sprinkler riser room. The other option is to relocate the booster to the riser room so it can be shut down by responders if necessary.

The control unit must have an ability to be shut down by emergency responders in the event it interferes with radio communications during an emergency. This power control shall be either located at the Booster or if the booster is NOT in close proximity to the Fire Alarm Control Panel there must be a remote shut down at the FACP.

3) The Fire Department also requires testing and frequency ranges of -95 dB - 700/800 - High-Power RF Repeater.

Once Douglas County has completed a review and provided confirmation of approval for the BDA / DAS System, forward a copy of this confirmation and approval back to the Castle Rock Fire and Rescue with the plans and application for permit. Send all copies to: FPO@CRGOV.COM

Scope of work: The system installed is intended to accept and amplify the radio frequencies used by emergency services within the building and not conflict with external signal strengths. Installation and full integration of Public Safety Radio Amplification System (DAS) in the building. This will ensure adequate RF Signal levels for the Fire Department to use their radio inside the building.

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3) The Fire Department also requires testing and frequency ranges of -95 dB - 700/800 - High-Power RF Repeater.

4) Please schedule a FINAL inspection of the system when corrections are made.

SUBMITTAL REQUIREMENTS:

- 2 complete sets of plans must be submitted
- Name, address and phone numbers of installing contractor and designer
- FCC Radiotelephone Operator License Number (PG) for designer and tester
- Name of owner and occupant
- Location of project, including street address
- Location of critical areas, including: Fire Command Centers, Elevators & Elevator Lobbies, Stairways, Protect-in- place Areas, Areas of Refuge, Fire Equipment Rooms, High-hazard Areas, Basements, Underground Parking Areas and other areas deemed critical by CRFD
- Indication of what type of system is being installed i.e. radiating cable system and/or a distributed antenna system (DAS) with FCC-certified signal boosters, or system otherwise approved by CRFD in order to achieve the required adequate radio coverage
- Spec sheets (cut sheets) on components and equipment to be installed

PERFORMANCE TESTING:

Radio amplification system design must be coordinated between the property owner, vendor, CRFD, and the Douglas Regional 911 Communication's Center (DRCC).

The frequency range which must be supported shall be current public safety frequencies of 764-776, 773-797, 803-806, 806-824, 851-870 MHz. System shall be capable of upgrade to allow for instances where the jurisdiction changes or adds system frequencies in order to maintain radio system coverage as originally designed. It shall be the responsibility of CRFD and DRCC to ensure adequate radio signal strength to and from the building. That signal must be brought into the building and sent back out in accordance with the following:

- A minimum average in-building field strength of 5 μ V (-95 dBm) throughout 90% of the area of each floor of the building when transmitted from DRCC.
- As used in this Checklist, 90% coverage or reliability means CRFD portable radios will transmit 100% of the time at the field strength and levels defined in this Checklist within 90% of the specified area.
- The following critical areas must be 99% covered: Fire Command Centers, Elevators & Elevator Lobbies, Stairways, Protect-in-place Areas, Areas of Refuge, Fire Equipment Rooms, High-hazard Areas, Basements, Underground Parking Areas and other areas deemed critical by CRFD