

# Broward County Board of Rules & Appeals Meeting Agenda

March 12, 2020

Broward County Governmental Center  
115 S. Andrews Avenue, Room 422, Fort Lauderdale, FL.  
Time: 7:00 P.M.

Call Meeting to Order

Roll Call

Approval of Minutes – February 13, 2020

## CONSENT AGENDA

### 1. Certifications - Staff Recommended.

#### UNINCORPORATED BROWARD COUNTY

CHIWARA, ANDREW, STRUCTURAL PLANS EXAMINER (PROVISIONAL EXPIRES JUN 17, 2020)

#### TOWN OF DAVIE

MAXFIELD, CHARLES, CHIEF ELECTRICAL INSPECTOR

#### CITY OF HOLLYWOOD

MARTINEZ, MICHAEL, FIRE INSPECTOR

#### TOWN OF LAUDERDALE-BY-THE-SEA

ADACH, EDWARD E., BUILDING OFFICIAL

#### VILLAGE OF LAZY LAKE

ATTAH, ADAM, BUILDING OFFICIAL

#### CITY OF MIRAMAR

DALEY, ANTOINE, FIRE INSPECTOR

SCHLEICHER, CHARLES, FIRE INSPECTOR

#### CITY OF PEMBROKE PINES

COVENEY, BRIAN, FIRE INSPECTOR

#### COUNTYWIDE

GARCIA, ERIC, MECHANICAL INSPECTOR

PICOTTE, ARTHUR J., JR., STRUCTURAL PLANS EXAMINER – LIMITED

REICHENBACH, RICHARD, ELECTRICAL PLANS EXAMINER

THOMAS, JAMES, STRUCTURAL INSPECTOR

VEGA, MANUEL A., STRUCTURAL INSPECTOR

VEGA, MANUEL A., STRUCTURAL PLANS EXAMINER

WANSOR, DOUGLAS, ELECTRICAL PLANS EXAMINER

## REGULAR AGENDA

### 2. Request to approve the two-way communication enhancement services (RCES) Guidelines

- a. Recommendation of the Committee to Address Uniform Procedures for Installation of Bi-Directional Amplifiers (BDA).
- b. Public comment
- c. Board action

### 3. Request of Mr. Michael McCarthy for an extension of time with respect to the Board of Rules and Appeals Policy 18-02 relating to closing out of open and ongoing projects.

- a. Staff Report
- b. Request of Michael McCarthy
- c. Board Action

4. **Pay adjustment for Don Perdue for administering the BORA Fire Examination per code section F-103.5.3.2. amendment to Policy 07-01 effective April 1, 2020.**
  - a. Staff Report
  - b. Board Action
5. **Board of Rules and Appeals' Policy 07-01 authorizing testing payment for the first attempt of an individual taking the BORA Fire Examination, per Code Section F 103.5.3.2.**
  - a. Staff Report
  - b. Board Action
6. **Director's Report.**
7. **Attorney's Report.**
8. **Committee Report.**
9. **General Board Members Discussion.**
10. **Public Comment (3-minute limit per person) and written communications.**
11. **Adjournment.**

*If a person desires to appeal any decision with respect to any matter considered at this meeting, such person will need record of the proceedings and, for this reason, such person may need to ensure that a verbatim record of the proceeding is made, which includes the testimony and evidence upon which the appeal is to be based (Sec. 286. 0105.FS). (Members: If you cannot attend the meeting, please contact Mr. DiPietro @ (954) 931-2393, between 6:00 p.m. & 7:00 p.m.)*



**BROWARD COUNTY BOARD OF RULES & APPEALS**  
**FEBRUARY 13, 2020**  
**MEETING MINUTES**

**Call to Order**

Chairman Daniel Lavrich called a published meeting of the Broward County Board of Rules and Appeals to order at 7:00 p.m. The meeting was held in Room 422 of the Broward County Governmental Center East, 115 S. Andrews Avenue, Fort Lauderdale, Florida.

**Present:**

Daniel Lavrich, Chair  
Stephen E. Bailey, Vice Chair  
Ron Burr  
Gregg D'Attile  
Shalanda Giles-Nelson  
Robert A. Kamm  
David Rice  
Daniel Rourke  
Robert Taylor  
Dennis Ulmer  
Abbas H. Zackria

**Approval of Minutes – February 13, 2020**

A motion was made by Mr. Zackria and seconded by Mr. D'Attile to approve the minutes as submitted. The motion carried by unanimous vote of 11-0.

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**CONSENT AGENDA**

**1. Certifications - Staff Recommended.**

**CITY OF COCONUT CREEK**

JEAN-LOUIS-, STEVENSON, FIRE PLANS EXAMINER

**CITY OF CORAL SPRINGS**

MENDOZA, PAMELA – STRUCTURAL INSPECTOR – LIMITED – RESIDENTIAL (TEMPORARY 120-DAY)

**CITY OF HOLLYWOOD**

BESU, JOHN, CHIEF MECHANICAL INSPECTOR

COLLIE, STEVEN F., STRUCTURAL INSPECTOR – LIMITED (TEMPORARY 120-DAY)

PAGAN, FREDDIE, FIRE INSPECTOR

REMENDIOS, JONATHAN, FIRE INSPECTOR

**CITY OF MIRAMAR**

DALEY, ANTOINE BRUCE, FIRE INSPECTOR  
PETERS, MIKE, STRUCTURAL INSPECTOR – LIMITED (TEMPORARY 120-DAY)

**CITY OF NORTH LAUDERDALE**

ATTAH, ADAM, BUILDING OFFICIAL  
PUENTES, RONALD, ASSISTANT BUILDING OFFICIAL

**CITY OF PEMBROKE PINES**

BARTHELEMY, RUBEN, FIRE INSPECTOR  
FERNANDEZ, GIOMAR, FIRE INSPECTOR  
KUEBLER, MICHAEL J., FIRE INSPECTOR  
MOLINA, DAVID, FIRE INSPECTOR  
NEAL, TROY, FIRE INSPECTOR

**CITY OF WESTON**

**RABINOWITZ, FRANK B., CHIEF STRUCTURAL INSPECTOR**

**COUNTYWIDE**

FERNANDEZ, PATRICIA D., STRUCTURAL PLANS EXAMINER – LIMITED – RESIDENTIAL  
FRANKLIN, ROBERT G., STRUCTURAL PLANS EXAMINER  
GONZALEZ, YANET, STRUCTURAL PLANS EXAMINER  
GUERRERO, CARLOS, ELECTRICAL PLANS EXAMINER  
HURLBUT, CARMEN BELEN, STRUCTURAL PLANS EXAMINER  
RANCEL, MARIELA G., STRUCTURAL INSPECTOR  
RANCEL, MARIELA G., STRUCTURAL PLANS EXAMINER  
RODRIGUEZ, JORGE, ELECTRICAL INSPECTOR  
RODRIGUEZ, JORGE, ELECTRICAL PLANS EXAMINER  
TELLEZ, CESAR A., STRUCTURAL PLANS EXAMINER  
TEPPER, RICK C., STRUCTURAL PLANS EXAMINER – LIMITED  
VARGAS, JOSSE R., STRUCTURAL PLANS EXAMINER  
YOUNG, MARC-STUART AMEER, STRUCTURAL PLANS EXAMINER

A motion was made by Mr. D’Attile and seconded by Mr. Taylor to approve all submitted certifications. The motion carried by unanimous vote of 11-0.

**REGULAR AGENDA**

**Code Amendment for 2nd Reading and Public Hearing**

**The Board to consider adopting Section 104.16.3.5 “Unit Masonry Certification Requirement” of the Broward County Administrative Provisions for the FBC 6<sup>th</sup> Edition (2017) code.**

a. Staff Report

Mr. Michael Guerasio, Chief Structural Code Compliance Officer, explained this would equate to requiring individuals certified in the structural discipline obtain a unit masonry certification within two years from being certified by the Board. It would be limited to R-3 occupancies. Mr. Ted Fowler, Chief Structural Code Compliance Officer, added that this would make it possible to use a city or county inspector instead of having to hire an engineer. It is a cost-saving feature. He went on to advise that it will be at the building official’s discretion. If an individual is unable to obtain a unit masonry certification, he or she does not lose their overall certification. This requirement would apply to newly hired individuals on or after July 1<sup>st</sup>.

b. Public Hearing

Mr. Steve Pizzillo, president of Building Officials and Inspectors Educational Association, supported this item.

There being no one else wishing to speak, Chairman Lavrich closed the public hearing.

c. Board Action

A motion was made by Mr. Zackria and seconded by Ms. Giles-Nelson to pass this item on second and final reading. The motion passed by unanimous vote of 11-0.

3. **Request of Mr. Noel A. Zamora for an extension of time with respect to the Board of Rules and Appeals Policy 18-02 relating to closing out of open and ongoing projects**

a. Staff Report

Ms. Giles-Nelson abstained from discussion and voting on this item. She filed a Memorandum of Voting Conflict that is attached to these minutes.

Mr. Noel Zamora was sworn in.

Mr. James DiPietro, Administrative Director, explained that in order to become an inspector Mr. Zamora needs to close out his existing jobs. The current code allows for a six-month period to do so. This period can be extended by a vote of the Board.

Mr. Zamora explained once his drawings are submitted for permit, it could take one or two years for the permit to be closed. There are two permits still open in Miramar and Hollywood. He requested a one-year extension. In response to Mr. Zackria, Mr. Zamora advised that he is the structural engineer of record on both of these projects.

Mr. Rice pointed out if a six-month extension is granted and more time is needed, Mr. Zamora could come back to the Board for another extension.

b. Board Action

A motion was made by Mr. D'Attila and seconded by Mr. Zackria to grant a 180-day extension from February 14<sup>th</sup>. The motion passed by a vote of 10-0. Ms. Giles-Nelson abstained.

During discussion of the motion, Mr. Burr asked that in the event another extension is needed Mr. Zamora be prepared to provide more specific information on the status of the project(s).

4. **Request of the Building Officials and Inspectors Association (BOIEA) for training instructors to be provided by the Board of Rules and Appeals for the educational conference to be held in March 2020**

b. Staff Report

Mr. James DiPietro, Administrative Director, explained that historically the Board staff assisted in securing instructors. Last year the relationship changed wherein by vote of the Board some funding was provided to the extent of \$1,750. He drew attention to more information on the programs and one of the instructors contained in his memorandum to the Board. In response to Chairman Lavrich, Mr. DiPietro advised that the expense is estimated at \$14,400.

a. Letter of Request

Mr. Steve Pizzillo, president of the Building Officials and Inspectors Educational Association (BOIEA), elaborated upon the role and activities of BOIEA as well as the credentials of some of the instructors.

c. Board Action

Mr. Bailey noted last year's authorization of \$20,000 and recommended the same amount for this year.

Mr. DiPietro responded to Mr. Rice's question, noting that approximately \$240,000-\$250,000 is budgeted annually (educational programming).

Mr. Bailey made a motion and Mr. D'Attile seconded the motion to approve a budget of \$15,000 for the programs. The motion passed by unanimous vote of 11-0.

5. **Director's Report** - none

6. **Attorney's Report**

**Advisory Opinion to Administrative Staff Request Regarding Requirement of Additional Documents for Permit Application and Binding Authority of the Board of Rules and Appeals**

Mr. Charles Kramer, Board Attorney, indicated that on October 31, 2019 he prepared an advisory opinion that determined that signature requirements for uniform building permit applications be one signature. A number of cities have objected. He was asked to prepare a second opinion (included in agenda backup information). This opinion indicates that in the case of building permits, the law will not allow variations or modifications in a process which is statutorily controlled. Municipalities do not have the authority to create their own amendments to the Building Code and cannot do so indirectly through the use of supplemental application requirements. The Board of Rules and Appeals is the governing body for this matter. The duties of monitoring and oversight include ensuring that municipalities and enforcement agencies comport with interpretations of the Code as mandated by statute and the Florida legislature. Mr. James DiPietro, Administrative Director, advised that almost every city is in compliance.

7. **Committee Reports**

**Committee to Address Uniform Procedures for Installation of Bi-Directional Amplifiers (BDA)**

Mr. Rice advised that the BDA Committee has been developing guidelines and a meeting is scheduled for February 24<sup>th</sup> for the Committee to approve the guidelines. With that approval the guidelines will be presented to this board for approval. He invited the Board to attend. The draft will be distributed next week. In their development the draft has been reviewed by the electrical chiefs and fire marshals of Broward County. It was provided to the Safer Building Coalition on a national level.

In response to Mr. Kamm, Mr. Rice elaborated upon what would be required for existing residential and office buildings. Mr. Kamm noted that permits for tenant improvements are being held up. Mr. Rice advised that it is the responsibility of the building owner. The primary intent is to provide safety for first responders. It is an educational and training process. There are no code changes; only enforcement of existing codes.

8. **General Board Member Discussion**

Mr. James DiPietro, Administrative Director, responded to Mr. Kamm's question about the status of the Fire Code amendments from the January meeting. Staff was directed to provide a report including legal comments which would then go forward to the Fire Code Committee. The recommendations of the Committee will be presented to the Board for its consideration.

9. **Public Comment (3-minute limit per person) and written communications** - none

10. **Adjournment.**

Having no further business to go before the Board, the meeting adjourned at 7:47 p.m.

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Daniel Lavrich, P.E. - Chair

# FORM 8B MEMORANDUM OF VOTING CONFLICT FOR COUNTY, MUNICIPAL, AND OTHER LOCAL PUBLIC OFFICERS

LAST NAME—FIRST NAME—MIDDLE NAME <i>Nelson Shalanda Giles</i>	NAME OF BOARD, COUNCIL, COMMISSION, AUTHORITY, OR COMMITTEE Broward County Board of Rules & Appeals
MAILING ADDRESS <i>2250 NW 28 St. Broward</i>	THE BOARD, COUNCIL, COMMISSION, AUTHORITY OR COMMITTEE ON WHICH I SERVE IS A UNIT OF: <input type="checkbox"/> CITY <input type="checkbox"/> COUNTY <input type="checkbox"/> OTHER LOCAL AGENCY
CITY      COUNTY <i>Oakland Park</i>	NAME OF POLITICAL SUBDIVISION:
DATE ON WHICH VOTE OCCURRED <i>2/13/2020</i>	MY POSITION IS: <input type="checkbox"/> ELECTIVE <input checked="" type="checkbox"/> APPOINTIVE

## WHO MUST FILE FORM 8B

This form is for use by any person serving at the county, city, or other local level of government on an appointed or elected board, council, commission, authority, or committee. It applies to members of advisory and non-advisory bodies who are presented with a voting conflict of interest under Section 112.3143, Florida Statutes.

Your responsibilities under the law when faced with voting on a measure in which you have a conflict of interest will vary greatly depending on whether you hold an elective or appointive position. For this reason, please pay close attention to the instructions on this form before completing and filing the form.

## INSTRUCTIONS FOR COMPLIANCE WITH SECTION 112.3143, FLORIDA STATUTES

A person holding elective or appointive county, municipal, or other local public office **MUST ABSTAIN** from voting on a measure which would inure to his or her special private gain or loss. Each elected or appointed local officer also **MUST ABSTAIN** from knowingly voting on a measure which would inure to the special gain or loss of a principal (other than a government agency) by whom he or she is retained (including the parent, subsidiary, or sibling organization of a principal by which he or she is retained); to the special private gain or loss of a relative; or to the special private gain or loss of a business associate. Commissioners of community redevelopment agencies (CRAs) under Sec. 163.356 or 163.357, F.S., and officers of independent special tax districts elected on a one-acre, one-vote basis are not prohibited from voting in that capacity.

For purposes of this law, a "relative" includes only the officer's father, mother, son, daughter, husband, wife, brother, sister, father-in-law, mother-in-law, son-in-law, and daughter-in-law. A "business associate" means any person or entity engaged in or carrying on a business enterprise with the officer as a partner, joint venturer, coowner of property, or corporate shareholder (where the shares of the corporation are not listed on any national or regional stock exchange).

\* \* \* \* \*

### ELECTED OFFICERS:

In addition to abstaining from voting in the situations described above, you must disclose the conflict:

PRIOR TO THE VOTE BEING TAKEN by publicly stating to the assembly the nature of your interest in the measure on which you are abstaining from voting; *and*

WITHIN 15 DAYS AFTER THE VOTE OCCURS by completing and filing this form with the person responsible for recording the minutes of the meeting, who should incorporate the form in the minutes.

\* \* \* \* \*

### APPOINTED OFFICERS:

Although you must abstain from voting in the situations described above, you are not prohibited by Section 112.3143 from otherwise participating in these matters. However, you must disclose the nature of the conflict before making any attempt to influence the decision, whether orally or in writing and whether made by you or at your direction.

IF YOU INTEND TO MAKE ANY ATTEMPT TO INFLUENCE THE DECISION PRIOR TO THE MEETING AT WHICH THE VOTE WILL BE TAKEN:

- You must complete and file this form (before making any attempt to influence the decision) with the person responsible for recording the minutes of the meeting, who will incorporate the form in the minutes. (Continued on page 2)



### APPOINTED OFFICERS (continued)

- A copy of the form must be provided immediately to the other members of the agency.
- The form must be read publicly at the next meeting after the form is filed.

IF YOU MAKE NO ATTEMPT TO INFLUENCE THE DECISION EXCEPT BY DISCUSSION AT THE MEETING:

- You must disclose orally the nature of your conflict in the measure before participating.
- You must complete the form and file it within 15 days after the vote occurs with the person responsible for recording the minutes of the meeting, who must incorporate the form in the minutes. A copy of the form must be provided immediately to the other members of the agency, and the form must be read publicly at the next meeting after the form is filed.

### DISCLOSURE OF LOCAL OFFICER'S INTEREST

I, Shalanda Giles Nelson, hereby disclose that on February 13, 20 20 :

(a) A measure came or will come before my agency which (check one or more)

inured to my special private gain or loss;

inured to the special gain or loss of my business associate, Noel A. Zamora ;

inured to the special gain or loss of my relative, \_\_\_\_\_ ;

inured to the special gain or loss of \_\_\_\_\_, by whom I am retained; or

inured to the special gain or loss of \_\_\_\_\_, which is the parent subsidiary, or sibling organization or subsidiary of a principal which has retained me.

(b) The measure before my agency and the nature of my conflicting interest in the measure is as follows:

The Above named person is A co-worker.

If disclosure of specific information would violate confidentiality or privilege pursuant to law or rules governing attorneys, a public officer, who is also an attorney, may comply with the disclosure requirements of this section by disclosing the nature of the interest in such a way as to provide the public with notice of the conflict.

2/13/2020  
Date Filed

Shalanda G. Nelson  
Signature

NOTICE: UNDER PROVISIONS OF FLORIDA STATUTES §112.317, A FAILURE TO MAKE ANY REQUIRED DISCLOSURE CONSTITUTES GROUNDS FOR AND MAY BE PUNISHED BY ONE OR MORE OF THE FOLLOWING: IMPEACHMENT, REMOVAL OR SUSPENSION FROM OFFICE OR EMPLOYMENT, DEMOTION, REDUCTION IN SALARY, REPRIMAND, OR A CIVIL PENALTY NOT TO EXCEED \$10,000.

# Section 1

MARCH 12, 2020 BOARD MEETING  
CERTIFICATIONS

**UNINCORPORATED BROWARD COUNTY**

CHIWARA, ANDREW, STRUCTURAL PLANS EXAMINER (PROVISIONAL EXPIRES JUN 17, 2020)

**TOWN OF DAVIE**

MAXFIELD, CHARLES, CHIEF ELECTRICAL INSPECTOR

**CITY OF HOLLYWOOD**

MARTINEZ, MICHAEL, FIRE INSPECTOR

**TOWN OF LAUDERDALE-BY-THE-SEA**

ADACH, EDWARD E., BUILDING OFFICIAL

**VILLAGE OF LAZY LAKE**

ATTAH, ADAM, BUILDING OFFICIAL

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SCHLEICHER, CHARLES, FIRE INSPECTOR

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VEGA, MANUEL A., STRUCTURAL INSPECTOR

VEGA, MANUEL A., STRUCTURAL PLANS EXAMINER

WANSOR, DOUGLAS, ELECTRICAL PLANS EXAMINER

# Section 2



**BROWARD COUNTY**

# Board of Rules & Appeals

ONE NORTH UNIVERSITY DRIVE, SUITE 3500-B, PLANTATION, FLORIDA 33324

PHONE (954) 765-4500 FAX: (954) 765-4504

<http://www.broward.org/codeappeals>

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**TO:** Members of the Board of Rules and Appeals

**FROM:** Chair of the Committee to Address Uniform Procedures for Installation of Bi-Directional Amplifiers (BDA)

**DATE:** 3/12 /2020

**SUBJECT:** Request to approve the two-way communication enhancement services (RCES) Guidelines.

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## **RECOMMENDATION**

It is recommended that the Board of Rules and Appeals approve by motion the above referenced guidelines document, also enclosed, which provides comprehensive guidelines for issuing permits for 2-way radio communication enhanced systems.

## **REASONS**

Although requirements for 2-way radio communications enhancement systems (RECES) are explained in the Fire and Building codes, it is the judgement of the Committee to Address Uniform Procedures for Installation of Bi-Directional Amplifiers (BDA) that these codes are not being properly enforced and that the creation of a handbook on how to implement the requirements will be a great public service.

Since the guidelines were introduced at the July 29, 2019 BDA Committee Meeting, an average of 75 people were in attendance at the July 2019, September 2019 and February 2020 meetings including representatives throughout the State of Florida. We believe that the attendance and the discussion that occurred supports the idea of the need for producing these guidelines.

## **ADDITIONAL INFORMATION**

The development of this handbook started in July 2019, this draft has been presented to the BDA committee on several occasions and has finally been approved at the February 24, 2020 committee meeting by a unanimous vote.

The use of the guidelines represents a voluntary document for individuals to follow.

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read "Dave Rice".

Dave Rice, P.E.

# BORA RCES Guidelines

## **Broward County Board of Rules and Appeals**

### **Two-Way Radio Communications Enhancement Systems**

For Review and Approval by the  
Broward County Board of Rules and Appeals



2020-03-12

**Broward County Board of Rules and Appeals**  
**Two-Way Radio Communications Enhancement Systems**  
**BORA RCES Guidelines**

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Part 2. Recommended Check Lists for AHJ's:

A. Recommended Checklists for NFPA 72 (2013)

B. Recommended Checklists for  
NFPA 72 (2016), NFPA 1221 (2016)

C. Recommended Checklists for  
NFPA 72 (2019), NFPA 1221 (2019)

Part 3. Additional Information Attachments

**Broward County Board of Rules and Appeals**  
**Two-Way Radio Communications Enhancement Systems**  
**BORA RCES Guidelines**

**Part 1. Overview**



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### 1.1 Purpose

A “Two-Way Radio Communications Enhancement System” (RCES) gives fire departments and law enforcement a reliable in-building communication system without detrimentally impacting the surrounding community’s Public Radio Communication Systems.

The purpose of these guidelines is to provide the designers, manufacturers, installers, inspectors, and FCC License Holders the tools to properly design, permit, install, and inspect a fully functional in-building communication enhancement system that meets the state and local codes for Broward County, Florida.

These are guidelines only and are not intended to be code items.

#### Team Effort

#### RF Requirements

##### Standards

FCC  
TIA/ANSI  
Motorola R56  
IEEE

##### Design

RF Engineer  
(May or may not be a PE)

##### Installation

System Integrator  
(May or may not be a contractor)

##### Inspection

FCC AHJ

#### Building Code and Life Safety Requirements

##### Standards and Codes

FFPC, FBC  
NFPA 70, NFPA 72, NFPA 780

##### Design

Registered Architect, Professional Engineer  
Electric

##### Installation

Electrician and other contractors

##### Inspection

Fire AHJ  
Electric AHJ  
Elevator AHJ  
Building/Structural AHJ

#### Communication System Operation

#### System meets Safety Codes and Standards

#### Final Result

##### Public System

Two-Way Radio Communication Enhancement System  
Operates reliably

## 1.2 Background

Each municipality has a public emergency Two-Way Radio Communications System for use by the fire department and law enforcement. These two-way radio systems generally work in open spaces without problems. However, these two-way radio systems do not always work inside buildings. Most buildings now require a signal repeater system located in the building to amplify the radio signal to allow the two-way radio system to work. These systems are known as “Two-Way Radio Communications Enhancement Systems (RCES)” or “Bi-Directional Amplifier Systems” (BDA).

When these systems are not properly designed, installed, inspected, and maintained, then major communication problems can occur inside and outside of the building. One faulty system may take down the Public Safety Radio Communication System in a large part of a municipality. This faulty system would prohibit the fire department and law enforcement from communicating through their two-way radio system.

In 2015, BDA Systems installed in high rise buildings in the cities of Aventura and Hallandale Beach caused significant interference with the Broward County’s Public Safety Radio System. The Hallandale Beach System was improperly adjusted after the inspections were completed. Once the problems were identified, the building systems were immediately taken off-line, repaired, and re-inspected. Broward County then asked Broward County Board of Rules and Appeals (BORA) to investigate the problems associated with the faulty installation and to review the existing codes and procedures to attempt to prevent this problem from occurring again.

BORA started up a temporary committee to address these problems. The committee found the following:

1. The state and local codes, Florida Building Codes (FBC), Florida Fire Prevention Code (FFPC), and NFPA 72, if followed, were sufficient and did not require any changes.
2. The problem was a procedural one. All three (3) codes required that the installation shall be permitted and the AHJ’s be notified. A new code section was added to the Florida Building Code (FBC), Broward County Edition, Chapter 1. This new section 118 set forth procedures requiring AHJ notification, among other requirements.

The temporary committee was made a permanent committee in 2018 to address ongoing Two-Way Radio Communications Enhancement Systems problems. The technology is moving at a faster pace than the codes are able to address.

### 1.3 Codes and Requirements for Broward County

As of January 1, 2018, the following codes have been in effect:

**Florida Statute (FS)633.202(1)**

Adopts the FFPC

**Florida Statute (FS)633.202(18)**

This statute pertains to high-rise buildings.

**Florida Building Code (FBC), Broward County Edition, Chapter 1, Sixth Edition (2017)**

Section 118 Two-Way Radio Communication Enhanced Public Safety Signal  
Booster Systems

**Florida Fire Prevention Code (FFPC) Sixth Edition (2017)**

NFPA 1 Fire Code (2015)

Section 1.4 Equivalencies

Section 2.2 Referenced Publications

NFPA 70, NFPA 72, NFPA 780, (NFPA 1221 Not enforceable)

Section 11.10 Two-Way Radio Communications Enhancement System  
when required by AHJ

**NFPA 70 (NEC) (2014)**

Section 90.7

Article 100 Definitions

Section 110.2 Approval (UL, etc.)

Section 100.2(B) Approval (UL, etc.)

**NFPA 72 (Fire Alarm) (2013)**

Chapter 10 Fundamentals

Section 12.4 Pathway Survivability

Section 14.4.10 In-Building Emergency Radio Communication System

Section 24.3.6 Pathway Survivability

Section 24.5.2 Two-Way Radio Communications Enhancement Systems

Annex A14.4.10.3 DAQ

Annex A14.4.10.5 DAQ

**1.3 Codes and Requirements for Broward County (cont.)**

**Codes and Standards Available:**

NO.	Description	Issue Date								
		2013	2014	2015	2016	2017	2018	2019	2020	2021
NFPA 70	Electric		FL			*				
NFPA 72	Fire Alarm	FL			*			*		
NFPA 780	Lightning Protection Systems		#			*				
NFPA 1221	Em Service Comm System				*			*		
UL 2524	2-way EM Comm						*			
FL – Adopted by Florida # - Adopted by Florida for hospitals, nursing homes, schools only * - Code Now Available, but not adopted by Florida										
State of Florida is up to six (6) years behind in adopting codes.										

**Other Codes and Standards Available, but not adopted by Florida:**

NO.	Description	Issue Date								
		2013	2014	2015	2016	2017	2018	2019	2020	2021
IFC	International Fire Code IFC/ICC			*			*			
IEEE 1692	Institute of Electric and Electronic Engineers	Guide for the Protection of Communication Installations from Lightning Effects 2011								
Motorola R56	Standards and Guidelines 2015 For Communications Sites Chapter 4 Exterior Grounding Chapter 5 Interior Grounding Chapter 7 Surge Protection Devices Chapter 9 Equipment Installation 9.9.8 RF Cabling									
ANSI/TIA	569, 607 Pathways, Grounding									

**Other Guidelines:**

City of Fort Lauderdale	Communications Systems	BDA Guidelines 2020-02-07
Broward County	RESC	BDA Guidelines 2019

### **1.3 Codes and Requirements for Broward County (cont.)**

#### **Optional Codes and Dates**

The State of Florida, through the FFPC (2017), Chapter 1, Section 1.4, allows the Two-Way Radio Communications Enhancement System Engineer of Record to design the system with present or newer codes, if acceptable by the AHJ, as shown below:

The design engineer shall select one and use only one of the following three options:

NFPA 72 (2013)

NFPA 72 (2016) and NFPA 1221 (2016)

NFPA 72 (2019) and NFPA 1221 (2019)

**1.3 Codes and Requirements for Broward County (cont.)  
Code Comparison**

The State of Florida has adopted NFPA (2013). The Engineer of Record (EOR) may select to design the system using NFPA 72 (2016), NFPA 1221 (2016), or NFPA 72 (2019), NFPA 1221 (2019).

Main differences between codes and dates:

	NFPA 72 (2013)
1	Feeder and riser cables shall be plenum-rated and have a Pathway Survivability- Level 1, 2, Or 3. Riser Cables shall be routed through a two-hour-rated enclosure (NFPA 72-24.3.6.8).
2	BDA Systems shall be protected by a Lightning Protection System only if a Lightning Protection System is existing. The Lightning Protection System shall comply with NFPA 780.

	NFPA 72 (2016), NFPA 1221 (2016)
1	Feeder and riser cables shall be plenum-rated and have a Pathway Survivability- Level 1, 2, Or 3. Riser Cables shall be routed through an enclosure that matches the building's fire rating (NFPA 1221-9.6.2).
2	BDA Systems shall be protected by a Lightning Protection System that complies with NFPA 780. A new Lightning Protection System shall be installed if one does not exist and the system shall comply with NFPA 780. (NFPA 1221-9.6.3)

	NFPA 72 (2019), NFPA 1221 (2019)
1	Pathway Survivability has been removed from NFPA 1221. Backbone cables are the only cables to be in an enclosure that matches the building's fire rating. (NFPA 1221-9.6.2.3) See the definition of "Backbone" in NFPA 1221-3.3.10
2	BDA Systems shall be protected by a Lightning Protection System that complies with NFPA 780. A new Lightning Protection System shall be installed if one does not exist and the system shall comply with NFPA 780. (NFPA 1221-9.6.3)

### 1.4 Authorities Having Jurisdiction (AHJ)

The AHJ is defined as: “An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation or a procedure”.

In Broward County, Florida, the AHJ’s are as follows for the installation of Two-Way Radio Communications Enhancing Systems:

#### Local Municipalities (City or County)

1. Chief Electrical Inspector  
NFPA 70
2. Fire Official  
NFPA 72 (NFPA 1221 Option)
3. Broward County Elevator Inspection  
FBC-30, FS 399, FAC 61C-5, ASME A17-1
4. FCC License Holder
  - A. Broward County Regional Emergency Services and Communication (RESC)
  - B. Fort Lauderdale
  - C. Coral Springs
  - D. Plantation
  - E. Hollywood
5. Building Inspector

Note: Work shall not start on any project until a permit has been issued and signed by each of the five (5) AHJ’s:

Electrical, Fire, Elevator, FCC License Holder, Building

Note: The Elevator AHJ may not be involved in all projects.

The system shall not be energized (including testing) until written authorization is obtained by the:

FCC License Holder

A building certificate of completion, or occupancy shall not be issued until the permit work is completed and signed off by each of the four (4) AHJ’s:

Electrical, Fire, FCC License Holder, Building



## **1.5 Design**

The Two-Way Radio Communications Enhancement System shall be designed by a Professional Engineer, licensed in the State of Florida. The Professional Engineer shall follow the Florida Statutes and the Florida Administrative code requirements for the system engineering process.

The FBC, Broward County Edition, Section 118 requires that the Professional Engineer have training and experience in Electrical Engineering.

Heat map drawings shall be prepared by the Professional Engineer or a Radio Frequency System Designer under the direct supervision of the Professional Engineer in accordance with FS and FAC requirements. Heat map drawings shall be prepared by a designer certified by the heat map software company. The drawings shall include the designer's name, certification level, the name of the heat map software company, software app name, and software app version.

The professional Engineer shall show on the drawings all applicable codes with corresponding dates:

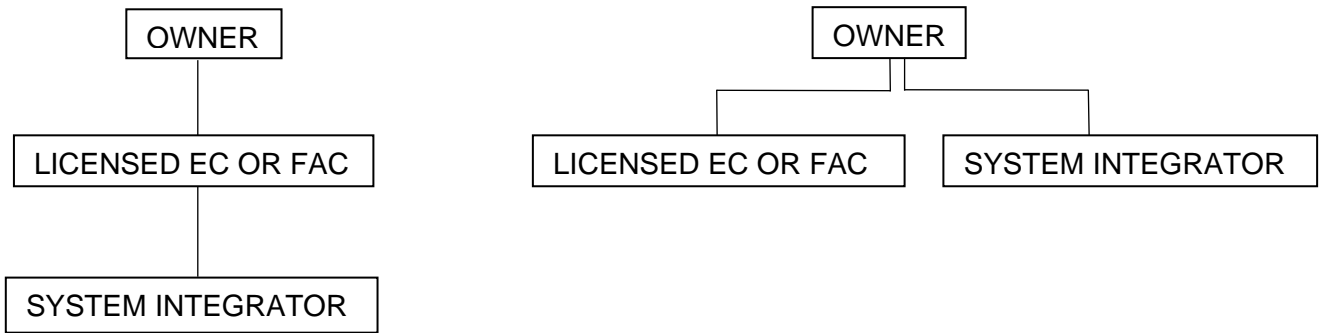
The Professional Engineer shall be available for plan review and inspections if requested by the AHJ.

### 1.6 Installation

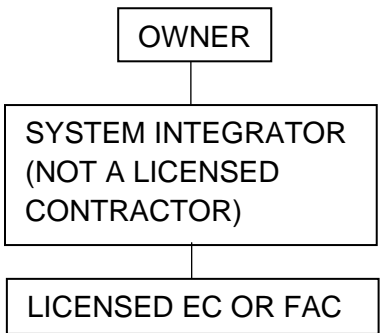
The installation shall be completed by a qualified Electrical Contractor or Fire Alarm Contractor. Contracting shall be in compliance with the State of Florida Electrical Contractor’s Licensing Board (ECLB). This board is presently considering a code change. Contact the ECLB for the latest requirements.

Only a licensed Electrical Contractor, Fire Alarm Contractor, or RCESS Contractor (pending) can contract to install a system. A systems integrator, which is not a licensed contractor, cannot contract for the installation. (FAC 61G6)

#### Allowed



#### Not Allowed



Note: Never energize the system for any reason without first passing the FCC AHJ’s Initial Inspection.

### **1.7 Permitting**

Record drawings, signed and sealed by a qualified Professional Engineer, shall be submitted to each AHJ for plan review and approval. The FCC AHJ (License Holder) shall provide a written acceptance prior to the review by the other AHJ's. The drawings shall be approved by all AHJ's prior to the start of any work.

Refer to the applicable Code Compliance Plan Review Checklist for the requirements of each AHJ.

### **1.8 Inspections**

The contractor shall coordinate all inspections as required by the AHJ's.

Note: Never energize the system for any reason without first passing the FCC AHJ initial inspection.

Refer to the applicable Code Compliance Inspection Checklist for the requirements of each AHJ.

### **1.9 Final Acceptance**

A Certificate of Occupancy or a Certificate of Completion for a building shall not be given until the Two-Way Radio Communications Enhancement System is approved by the Authority Having Jurisdiction. (Electric, Fire, Elevator (where applicable), FCC License Holder, and Building)

**Broward County Board of Rules and Appeals**  
**Two-Way Radio Communications Enhancement Systems**  
**BORA RCES Guidelines**

**Part 2A. Recommended Checklists for NFPA 72 (2013)**

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**2A.1.1 NFPA 72 (2013) Plan Review - Fire**

Plans shall include the following information:

- 1. Building owner and address
- 2. Scope of Work
- 3. Signature and seal of the Engineer of Record with experience and training in electrical engineering. The name, PE number, business name, CA number, address, and contact information shall be shown on the plans. The AHJ may require that the Engineer of Record provide evidence of experience and training in Electrical Engineering. (NFPA 72-10.5)
- 4. Applicable codes and edition dates
- 5. Building description showing building construction, building occupancy, total square footage, number of floors, total height of building (NFPA 1-1.7.12) (NFPA 72-7.4)
- 6. Floor plans showing device locations, fire-rated enclosures, conduit runs, and propagation modeling, etc. (NFPA 1) (NFPA 1-1.7.12) (NFPA 72-7.4)
- 7. Riser plans for systems (NFPA 1-1.7.12) (NFPA 72-7.4)
- 8. Specifications with manufacturer's parts numbers (NFPA 1-1.7.12) (NFPA 72-7.4)
- 9. Firewall penetration details, etc. (NFPA 1-12) (NFPA 1-1.7.12) (NFPA 72-7.4)
- 10. Identify the panel and circuit breaker; show panel location on plan (NFPA 1-1.7.12) (NFPA 72-7.4)
- 11. Show circuit breaker lock (NFPA 1-1.7.12) (NFPA 72-10.6.5.4)
- 12. Provide an information binder stored next to the BDA. Information shall include (NFPA 72-7.5):
  - (1) As-built drawings
  - (2) Manufacturer's data sheets and specs
  - (3) Heat maps with the final measured signal strength readings
  - (4) Final signal strength measurements (dB)
  - (5) Maintenance contract
  - (6) Broward County RESC, FCC AHJ (License Holders), all other approvals, and elevator variance letter, if applicable.
  - (7) Maintenance Repair Log
- 13. Pathway survivability level shall be 1, 2, or 3. For Level 1, all coaxial cables shall be in metal raceways. (NFPA 72-12.4)
- 14. The feeder and riser coaxial cables shall be rated as plenum cable. (NFPA 72-24.3.6.8.1.1)
- 15. Riser coaxial cables shall be routed through a 2-hour-rated enclosure. (NFPA 72-24.3.6.8.3)
- 16. Radio coverage shall be a minimum of 99% in critical areas, such as the fire command center(s), the fire pump room(s), exit stairs, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical by the AHJ and 90% in general building areas. (NFPA 72-24.5.2.2)
- 17. Signal strength inbound shall be a minimum of -95 dBm. (NFPA 72-24.5.2.3.1)  
Signal strength outbound shall be a minimum of -95 dBm. (NFPA 72-24.5.2.3.2)  
Note: a signal strength of less than -90 dBm as shown on the plans has a high probability of failing the final inspection of DAQ 3.0 minimum.  
See NFPA 72-14.4.10.3 Test Procedures; Recommend -90 dBm.
- 18. Isolation shall be a minimum of 15 dB above the signal booster gain under all operating conditions. (NFPA 72-24.5.2.3.3)  
Note: NFPA 1221 (2016) requires a minimum of 20 dB. Any lower value may result in the probability of failing the final inspection.

**2A.1.1 NFPA 72 (2013) Plan Review - Fire (cont.)**

- 19. System radio frequencies; system shall be capable of transmitting all public safety radio frequencies assigned to the FCC AHJ (License Holder) and be capable of using any modulation technology. (NFPA 72-24.5.2.4)
- 20. Frequency changes. System shall be capable of upgrading. (NFPA 72-24.5.2.4.2)
- 21. System Components: Components shall be approved and compatible with the local Public Safety Radio System. (NFPA 72-24.5.2.5.1) (NFPA-1.1.4)
- 22. All repeaters, transmitter receptacles, signal booster components and battery system components shall be in a NEMA 4, 4X enclosure. (NFPA 72-24.5.2.5.2) (NFPA 1-1.4)
- 23. Power supplies shall have at least two independent sources. (NFPA 72-24.5.5)
- 24. The primary power source shall be supplied from a dedicated circuit and shall comply with NFPA 72-10.6.5. (NFPA 72-24.5.5.1)
- 25. The secondary power source shall consist of one of the following (NFPA 72-24.5.2.5.5.2):
  - (1) Battery with at least 12 hours of operation at 100% per NFPA 72-24.5.2.5.5.2.1
  - (2) Battery with at least 24 hours of operation at 100% per NFPA 72-10.6.7.2.1  
Legally required generator with at least 12 hours of operation at 100%
- 26. System Monitoring: The fire alarm system shall monitor the following items as a minimum (NFPA 72-24.5.2.6.1):
  - (1) Integrity of the circuit monitoring signal booster(s) and power supply(ies) shall comply with NFPA 72-24.10.6.9 and NFPA 72-12.6.
  - (2) System and signal booster supervisory signals shall include the following:
    - (a) Antenna malfunction
    - (b) Signal booster failure
    - (c) Low-battery capacity indication when 70 percent of the 12-hour operating capacity has been depleted.
  - (3) Power supply signals shall include the following for each signal booster:
    - (a) Loss of normal AC power
    - (b) Failure of battery charger
- 27. Dedicated Panel (annunciator panel) shall show (NFPA 72-24.5.2.6.2):
  - (1) Normal AC power
  - (2) Signal booster trouble
  - (3) Loss of normal AC power
  - (4) Failure of battery charger
  - (5) Low battery capacity
- 28. Technical Criteria (NFPA 72-24.5.2.7)
  - (1) Frequencies required
  - (2) Location and effective radiated power (ERP) of the FCC AHJ radio site
  - (3) Maximum propagation delay less than 30 micro-seconds
  - (4) List of specifically approved system components
  - (5) Other support technical information (Battery calculations)(NFPA 72-10.6.7.2.1)
- 29. When an elevator(s) is(are) present in the building, an antenna is typically required to be mounted in the elevator shaft(s) to get coverage inside the elevator car(s). A note on the plan shall be provided: "Contractor shall obtain written approval from the elevator inspector prior to any work inside an elevator shaft or machine room." (NFPA 72-24.5.4) (ASME A17.1)

**Note:** This checklist is a minimum checklist. Coordinate with the local Fire AHJ for additional checklist items.

### 2A.1.2 NFPA 72 (2013) Plan Review - Electrical

Plans shall include the following information:

- 1. Building owner and address
- 2. Copy of the contract with the owner or GC (FAC 61G15)
- 3. Signature and seal of the Engineer of Record with experience and training in electrical engineering. The name, PE number, business name, CA number, address, and contact information shall be shown on the plans. (FBC BC 118.1.4) (61G15-30.003(2))
- 4. Applicable codes and edition dates (61G15-30.003(1b))
- 5. Building description showing building construction, building occupancy, total square footage, number of floors, total height of building (FAC 61G15)
- 6. Floor plans showing device locations, fire-rated enclosures, conduit runs, etc. (FBC BC 118.2.1.4)
- 7. Riser plans for systems (FAC 61G15-33)
- 8. Specifications with manufacturer's parts numbers (FAC 61G15)
- 9. Details, including firewall penetration, etc. (FAC 61G15) (NFPA 70-820-26)
- 10. Grounding and mounting details for antenna, mast, surge protection, BDA, power supply, battery enclosure, etc. (FAC 61G15)( NFPA 70)
- 11. Antenna NFPA 780 protection (if existing). (FAC 61G15) (NFPA 780)
- 12. The BDA enclosure shall be painted red and a sign shall show permit number, vendor name, and telephone number. (FBC BC 118.2.1.8)
- 13. Show how the system components are wired to power (120V). (NFPA 70-110.2(B))
- 14. Circuit shall have an isolated ground, if required by the manufacturer. (NFPA 70)
- 15. Listing and labeling requirements (NFPA 70-110.2)
- 16. Identify minimum conduit sizes and minimum conduit 90-degree bend radiuses. (NFPA 70-110.3)
- 17. System equipment shall be installed in an air-conditioned and mechanically ventilated room where the manufacturer's installation document requires a temperature limitation and/or ventilation. (NFPA 70-110.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local Electrical AHJ for additional checklist items.



**2A.1.3 NFPA 72 (2013) Plan Review - Elevator**

Plans shall include the following information:

A variance shall be obtained from the Broward County Elevator Inspection Services Section at Permitting prior to any work inside an elevator shaft or elevator machine room. The variance shall be to install one or more antenna(s) in the elevator shaft(s). (ASME A17.1)

**Note:** The elevator code does not allow the elevator shaft to be used for coaxial cable risers.  
(ASME A17.1.2.8.1)

**Note:** This checklist is a minimum checklist. Coordinate with the local Elevator AHJ for additional checklist items.

**2A.1.4 NFPA 72 (2013) Plan Review – Building (Structural)**

- 1. Structural design calculations for antenna mast (if applicable, FBC BC 107.3.5)
- 2. Attachment and roof penetration details on plan for antenna mast (if applicable, FBC BC 107.3.5)
- 3. Floor plans showing fire-rated enclosures for cables and BDA room, including fire-rated UL designs (if applicable, FBC BC 107.3.5)
- 4. Riser plans showing fire-rated enclosure for cable, including fire-rated UL designs (if applicable, FBC BC 107.3.5)
- 5. Firewall penetrations, including UL designs (if applicable, FBC BC 107.3.5)

**Note:** This checklist is a minimum checklist. Coordinate with the local AHJ for additional checklist items.

**2A.1.5 NFPA 72 (2013) Plan Review – FCC AHJ (License Holder)**

Plans shall include the following information:

- 1. Building owner and address
- 2. Building description showing building construction, building occupancy, total square footage, number of floors, total height of building
- 3. Applicable codes and edition dates
- 4. Floor plans showing device locations, fire-rated enclosures, conduit runs, and propagation modeling, etc. Propagation (heat) map drawings shall include the following (FBC BC 118.2.1.4):
  - Indoor Prediction Legend
  - Pictogram Legend
  - Calculations Legend
  - Number of Channels
  - Predictive propagation shown on floor plans
  - Name of certified designer and company
  - Materials Legend
  - Cables Legend
  - Frequencies or frequency bands for the Public Radio System(s)
- 5. Riser plans for systems
- 6. Specifications with manufacturer's parts numbers
- 7. Manufacturer's specifications for equipment; include equipment temperature limits.
- 8. Grounding and mounting details for antenna, mast, surge protector, BDA, power supply, battery enclosure. (IEEE 1692, TIA 569, TIA 607)
- 9. Notes on plans shall state:

"The system shall never be energized for testing or operation until written, or on site, approval is obtained from all applicable FCC License Holders."
- 10. The BDA enclosure shall be painted red and a sign shall show permit number, vendor name and telephone number.
- 11. Signal strength inbound shall be a minimum of -95 dBm.  
Signal strength outbound shall be a minimum of -95 dBm.  
Note: a signal strength of less than -90 dBm shown on the plans has a high probability of failing the final inspection of -95 dBm minimum.
- 12. Isolation shall be a minimum of 15 dB above the (maximum) signal booster gain under all operating conditions.
- 13. System radio frequencies: system shall be capable of transmitting (transporting) all public safety radio frequencies used by the FCC AHJ (License Holder) and be capable of using any modulation technology.
- 14. Frequency changes. System shall be capable of upgrading.
- 15. System Components: Components shall be approved and compatible with the Public Safety Radio System.  
Show the propagation delay.  
Signal Boosters shall have FCC Certification. Power supplies shall have at least two independent supplies. Battery shall provide twelve (12) hour minimum operational run time. (Provide a battery calculation at 100%)
- 16. Technical Criteria
  - (1) Frequencies or frequency bands required
  - (2) Location and effective radiated power (ERP) of the FCC AHJ radio site
  - (3) Maximum propagation delay (30 microseconds)
  - (4) List of specifically approved system components
  - (5) Other supporting technical information

**2A.1.5 NFPA 72 (2013) Plan Review - FCC AHJ (License Holder) (cont.)**

- 17. When an elevator(s) is(are) present in the building, an antenna is typically required to be mounted in the elevator shaft(s) to get coverage inside the elevator car(s). A note on the plan shall be provided: "Contractor shall obtain written approval from the elevator inspector prior to any work inside an elevator shaft or machine room.
- 18. Other industry standards include IEEE 1692, TIA 569, and TIA 607.

**Note:** This checklist is a minimum checklist. Coordinate with the local FCC AHJ (License Holder) for additional checklist items.

See Part 3. Additional Information attachments:

3.2 FCC AHJ (License Holder) Additional Requirements

**2A.2.1 NFPA 72 (2013) Inspection - Fire**

**Final Inspection**

Property Information

Property Name: \_\_\_\_\_ Permit #: \_\_\_\_\_ Inspection Date: \_\_\_\_\_  
Property Address: \_\_\_\_\_

Contact Information:

BDA Equipment Provider: \_\_\_\_\_  
BDA Licensed Contractor: \_\_\_\_\_  
Fire Alarm Licensed Contractor: \_\_\_\_\_  
Fire Alarm Monitoring Company: \_\_\_\_\_  
Engineer of Record: \_\_\_\_\_

- 1. The latest approved record drawings, operation manuals, and maintenance manuals are on the site.
- 2. The following representatives are on the site for the inspection:
  - Fire Inspector
  - Broward County RESL (ORCAT)
  - Ft. Lauderdale TeleCom
  - Electrical Inspector
  - BDA equipment provider (systems integrator)
  - BDA Licensed Contractor
  - Fire Alarm Licensed Contractor
  - Engineer of Record, only for re-inspections
  - Building Owner Representative
- 3. Fire Rated Enclosure openings and penetrations are properly sealed. (NFPA 1-12.7.5.1)
- 4. The installation complies with the pathway of survivability level as shown on the approved record drawings.
- 5. The system components match the approved record drawings for manufacturer and part numbers. (NFPA 72-24.5.2.5.1) (NFPA-1.1.4)
- 6. The BDA enclosure shall be painted red and a sign shall show permit number, vendor name and telephone number. (FBC BC 118.2.1.8)
- 7. Provide an information binder stored next to the BDA. Information shall include (NFPA 72-14.6.1.1) (FBC BC 118):
  - (1) As-built drawings
  - (2) Manufacturer's data sheets and specs
  - (3) Heat map, final measured readings after commissioning
  - (4) Final signal strength measurement (dB)
  - (5) Maintenance contract
  - (6) Broward County RESC, FCC AHJ (License Holders), all other approvals, and elevator variance letter, if applicable.
  - (7) Maintenance Repair Log
- 8. Pathway survivability level shall be 1, 2, or 3. For Level 1, all coaxial cables shall be in metal raceways. (NFPA 72-12.4)
- 9. The feeder and riser coaxial cables shall be rated as plenum cables. (NFPA 72-24.3.6.8.1.1)
- 10. Riser coaxial cables shall be routed through a 2-hour-rated enclosure. (NFPA 72-24.3.6.8.3)

**2A.2.1 NFPA 72 (2013) Inspection - Fire (cont.)**

- 11. Radio coverage shall be a minimum of 99% in critical areas, such as the fire command center(s), the fire pump room(s), exit stairs, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical by the AHJ and 90% in general building areas. (NFPA 72-24.5.2.2)
- 12. Signal strength inbound shall be a minimum of -95 dBm. (NFPA 72-24.5.2.3.1)  
Signal strength outbound shall be a minimum of -95 dBm. (NFPA 72-24.5.2.3.2)
- 13. Isolation shall be a minimum of 15 dB above the signal booster gain under all operating conditions. (NFPA 72-24.5.2.3.3)
- 14. System radio frequencies; system shall be capable of transmitting all public safety radio frequencies assigned to the FCC AHJ (License Holder). (NFPA 72-24.5.2.4)
- 15. Frequency changes. System shall be capable of upgrading. (NFPA 72-24.5.2.4.2)
- 16. System Components: Components shall be approved and compatible with the Public Safety Radio System. (NFPA 72-24.5.2.5.1) (NFPA-1.1.4)
- 17. All repeaters, transmitter receptacles, signal booster components and battery system components shall be in a NEMA 4, 4X enclosure. (NFPA 72-24.5.2.5.2) (NFPA 1-1.4)
- 18. Power supplies shall have at least two independent sources. (NFPA 72-24.5.5)
- 19. The primary power source shall be supplied from a dedicated circuit and shall comply with NFPA 72-10.6.5. (NFPA 72-24.5.5.1)
- 20. The secondary power source shall consist of one of the following (NFPA 72-24.5.5.2):
  - (1) Battery with at least 12 hours of operation at 100% per NFPA 72-24.5.2.5.5.2.1
  - (2) Battery with at least 24 hours of operation at 100% per NFPA 72-10.6.7.2.1  
Legally required generator with at least 12 hours of operation at 100%
- 21. System Monitoring: The fire alarm system shall monitor the following items as a minimum (NFPA 72-24.5.2.6.1):
  - (1) Integrity of the circuit monitoring signal booster(s) and power supply(ies) shall comply with NFPA 72-24.10.6.9 and NFPA 72-12.6 (Auto-notification within 3 minutes 20 seconds).
  - (2) System and signal booster supervisory signals shall include the following:
    - (a) Antenna malfunction
    - (b) Signal booster failure
    - (c) Low-battery capacity indication when 70 percent of the 12-hour operating capacity has been depleted.
  - (3) Power supply signals shall include the following for each signal booster:
    - (a) Loss of normal AC power
    - (b) Failure of battery charge
- 22. Dedicated Panel (annunciator panel) shall show (Auto-notification within 3 minutes, 20 seconds) (NFPA 72-24.5.2.6.2):
  - (1) Normal AC power
  - (2) Signal booster trouble
  - (3) Loss of normal AC power
  - (4) Failure of battery charger
  - (5) Low battery capacity

**2A.2.1 NFPA 72 (2013) Inspection - Fire (cont.)**

- 23. Signage is provided to locate the BDA.  
Fire Department signal booster permit number, service provider, and contact telephone numbers are shown. (NFPA 72-10.18.3.2)
- 24. Completed NFPA documentation specific to this system is provided. [NFPA 72-7.8.2; figure 7.8.2(a) and (b)]
- 25. Documentation is provided showing that a maintenance and service agreement has been entered into between the property owner and the provider of the BDA System.  
(NFPA 72-14.4.10.1) (NFPA 72-14.4.10.6) (NFPA 72-14.6.1.1)
- 26. DAQ, Delivered Audio Quality, for the system is a minimum of DAQ 3.0. Include all floors, critical areas, elevator cabs, and general building areas.

**Note:** This checklist is a minimum checklist. Coordinate with the local Fire AHJ for additional checklist items.

**2A.2.2 NFPA 72 (2013) Inspection - Electrical**

- 1. Rough Electrical Inspection** (FBC BC (2017)-1.110.8.5)
  - Installation of conduits
  - Installation of coaxial cables
  - Panels, BDA, and BBU shall be grounded.
  - Antenna and mast
    - Grounding, Lightning Protection System (if installed)
    - Lead-in surge protection
  - Power connection to the BDA
  - Installation of conduits and equipment in fire-rated enclosures or rooms
  
- 2. Final Inspection**
  - All electrical components are in place.
  - Label "BDA" circuit breakers.

**Note:** This checklist is a minimum checklist. Coordinate with the local Electrical AHJ for additional checklist items.



**2A.2.3 NFPA 72 (2013) Inspection - Elevator**

**1. Rough System Inspection**

- Conduit and cable installed in elevator shafts.

**2. Final Inspection**

- Antenna(s) installed in the elevator shaft.

**Note:** This checklist is a minimum checklist. Coordinate with the local Elevator AHJ for additional checklist items.

**2A.2.4 NFPA 72 (2013) Inspection – Building (Structural)**

**Rough Inspections:**

- 1. Inspection for all fire-rated enclosures/penetrations for cables and BDA room (FBC BC 110.3)
  - a. Framing inspection, if applicable
  - b. Drywall inspection, if applicable
- 2. In progress roof penetrations (if applicable, FBC BC 110.3)

**Final Inspections:**

- 1. Antenna mast installation (FBC BC 110.3)
- 2. Inspection for all fire-rated enclosures/penetrations for cables and BDA room (FBC BC 110.3)
- 3. Roof final (if applicable, FBC BC 110.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local AHJ for additional checklist items.

**2A.2.5 NFPA 72 (2013) Inspection - FCC AHJ (License Holder)**

**1. Initial Inspection**

- 1. The system shall never be energized for testing or operation until written, or onsite approval is obtained from the FCC License Holders.
- 2. Prior to the initial inspection, a letter from the Engineer of Record stating that the installation is complete and ready to be energized for testing shall be received by the FCC License Holders. The system settings and pictures of the installed major components shall also be provided to the FCC License Holders.

The following equipment and components shall be included in the letter and pictures:

- (1) BDA with information  
Permit Number; Serviced by \_\_\_\_\_; Telephone \_\_\_\_\_
  - (2) Enclosures with battery charger and batteries installed, wired with a label showing the battery installation date.
  - (3) The Dedicated annunciator shall be wired. The system shall be constructed and programmed to the FACP and the annunciator.
  - (4) All equipment shall be properly grounded per TIA 607.
  - (5) Antenna mast shall be grounded.
  - (6) Antenna shall have surge protection installed and wired.
  - (7) Antenna(s), if installed in the elevator shaft, shall have the approval of the Elevator Inspector. Provide a copy of the variance.
  - (8) Junction boxes connected to the riser coaxial cables to the horizontal cables shall be installed and wired.
  - (9) All electrical rough inspections shall be completed.
- 3. The contractor shall coordinate the inspection with all responsible parties.  
The following shall be present at a minimum:
    - Owners representative
    - Electrical Contractor
    - Fire Alarm Contractor
    - BDA Vendor representative with analyzer and computer to gain access to the BDA program to check levels and settings.
    - FCC AHJ(s) (License Holders)(There may be more than one).
  - 4. The Initial Inspection shall include the following:
    - (1) The System shall be energized for the first time.
    - (2) Items (1) through (10) in Section 2 above shall be inspected for compliance.
    - (3) Acceptable dB levels shall be spot checked. Include stairwells and elevator cab.
    - (4) Check the noise floor of the BDA transmitter. The noise floor shall not rise more than 1.5 dB at the donor antenna.
    - (5) System Engineer of Record shall attend all inspections, if required by the AHJ.

**Note:** This checklist is a minimum checklist. Coordinate with the local FCC AHJ (License Holder) for additional checklist items.

See Part 3. Additional Information attachments:

3.2 FCC AHJ (License Holder) Additional Requirements

**2A.2.5 NFPA 72 (2013) Inspection - FCC AHJ (License Holder) (cont.)**

**Final Inspection**

This Inspection is a joint effort between the Fire Official and the FCC AHJ (License Holders). Prior to the final inspection, the contractor shall provide to the Fire Official and to the FCC AHJ (License Holders) the following documentation showing that the building is ready for the final inspection.

After passing the initial inspection, the contractor shall submit to the FCC AHJ (License Holder) a Post Heat Map Study, with the actual measured signal strengths, to show that all areas are covered per the code. A letter from the Engineer of Record shall state that the System is completed, fully operational, and ready for the final inspection.

The contractor shall coordinate the inspection with all responsible parties. The following shall be present at a minimum:

- Owners representative
- Electrical Contractor
- Fire Alarm Contractor
- BDA Vendor representative with analyzer and computer to gain access to the BDA program to check levels and settings.
- System Engineer of Record, if required by the AHJ.
- Electrical AHJ
- Fire Official AHJ
- FCC AHJ(s) (License Holder(s))(City and County) (There may be more than one.)

Final Inspection:

- (1) Building Radio Coverage Inspection
  - 99% in critical areas
  - 90% in general building
  - DAQ 3.0 or better
- (2) All dB levels are acceptable

**Note:** This checklist is a minimum checklist. Coordinate with the local FCC License Holder AHJ for additional checklist items.

See Part 3. Additional Information attachments:

3.2 FCC AHJ (License Holder) Additional Requirements

**Broward County Board of Rules and Appeals**  
**Two-Way Radio Communications Enhancement Systems**  
**BORA RCES Guidelines**

**Part 2B. Recommended Checklists for NFPA 72 (2016), NFPA 1221 (2016)**

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**2B.1.1 NFPA 72 (2016), NFPA 1221 (2016) Plan Review - Fire**

Plans shall include the following information:

- 1. Building owner and address
- 2. Written sequence of operation
- 3. Signature and seal of the Engineer of Record with experience and training in electrical engineering. The name, PE number, business name, CA number, address, and contact information shall be shown on the plans. The AHJ may require that the Engineer of Record provide evidence of experience and training in Electrical Engineering. (NFPA 72-10.5)
- 4. Applicable codes and edition dates
- 5. Building description showing building construction, building occupancy, total square footage, number of floors, total height of building (NFPA 1-1.7.12) (NFPA 72-7.4)
- 6. Floor plans showing device locations, fire-rated enclosures, conduit runs, and propagation modeling, etc. (NFPA 1) (NFPA 1-1.7.12) (NFPA 72-7.4)
- 7. Riser plans for systems (NFPA 1-1.7.12) (NFPA 72-7.4)
- 8. Specifications with manufacturer's parts numbers (NFPA 1-1.7.12) (NFPA 72-7.4)
- 9. Firewall penetration details, etc. (NFPA 1-12.7.5.1, NFPA 1-1.7.12) (NFPA 72-7.4)
- 10. Identify the panel and circuit breaker; show panel location on plan. (NFPA 1-1.7.12) (NFPA 72-7.4)
- 11. Show circuit breaker lock. (NFPA 1-1.7.12) (NFPA 72-10.6.5.4)
- 12. Provide an information binder stored next to the BDA. Information shall include (NFPA 72-7.5):
  - (1) As-built drawings
  - (2) Manufacturer's data sheets and specs
  - (3) Heat maps with the final signal strength readings
  - (4) Final signal strength measurements (dB)
  - (5) Maintenance contract
  - (6) Broward County RESC, FCC AHJ (License Holder), all other approvals, and elevator variance letter, if applicable.
  - (7) Maintenance Repair Log
- 13. Pathway survivability level shall be 1, 2, or 3. For Level 1, all coaxial cables shall be in metal raceways. (NFPA 1221-5.10)
- 14. The feeder and riser coaxial cables shall be rated as plenum cable. (NFPA 1221-9.6.2.1.1)
- 15. Riser coaxial cables shall be routed through a 2-hour-rated enclosure. (Performance alternatives, as shown on the drawings, shall be approved by the AHJ.) (NFPA 1221-9.6.2.1.3)
- 16. Radio coverage shall be a minimum of 99% in critical areas, such as the fire command center(s), the fire pump room(s), exit stairs, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical by the AHJ and 90% in general building areas. (NFPA 1221-9.6.7)
- 17. Signal strength inbound shall be a minimum of DAQ 3.0. (NFPA 1221-9.6.8.1)  
Signal strength outbound shall be a minimum of DAQ 3.0. (NFPA 1221-9.6.8.2)
- 18. Donor antenna isolation shall be a minimum of 20 dB above the inside antennas. (NFPA 1221-9.6.9)
- 19. System radio frequencies; system shall be capable of transmitting all public safety radio frequencies assigned to the FCC AHJ and be capable of using any modulation technology. (NFPA 1221-9.6.10.1)
- 20. Frequency changes. System shall be capable of upgrading. (NFPA 1221-9.6.10.2)

**2B.1.1 NFPA 72 (2016), NFPA 1221 (2016) Plan Review - Fire (cont.)**

- 21. System Components: Components shall be approved and compatible with the Public Safety Radio System. (NFPA 1221-9.6.11) (NFPA-1.1.4)
- 22. All repeaters, transmitter receptacles, signal booster components and battery system components shall be in a NEMA 4, 4X enclosure. (NFPA 1221-9.6.11.2) (NFPA 1-1.4)
- 23. Power supplies shall have at least two independent sources. (NFPA 1221-9.6.12)
- 24. The primary power source shall be supplied from a dedicated circuit and shall comply with NFPA 72. (NFPA 1221-9.6.12.1)
- 25. The secondary power source shall consist of one of the following (NFPA 1221-9.6.12.2):
  - (1) Battery with at least 12 hours of operation at 100%
  - (2) Battery with at least 24 hours of operation at 100%
  - Legally required generator with at least 12 hours of operation at 100%
- 26. System Monitoring: The fire alarm system shall monitor the following items as a minimum (NFPA 1221-9.6.13.1):
  - (1) Monitoring for integrity of the system shall comply with NFPA 72-10
  - (2a) Donor antenna malfunction
  - (2b) Active RF emitting device failure (70%)
  - (2c) Low battery capacity indicator
  - (2d) System component failure
  - (3a) Loss of normal AC power
  - (3b) Failure of battery charger
  - (4) Communication link between the Dedicated Monitoring Panel and the BDA shall be monitored for integrity.
- 27. Dedicated Panel (annunciator panel) shall show (NFPA 1221-9.6.13.2):
  - (1a) Normal AC power
  - (1b) Loss of normal power
  - (1c) Battery charger failure
  - (1d) Low battery capacity
  - (1e) Donor antenna malfunction
  - (1f) Active RF emitting device malfunction
  - (1g) System component malfunction
  - (2) Communication link between the Dedicated Monitoring Panel and the BDA shall be monitored for integrity.
- 28. Technical Criteria (NFPA 1221-9.6.14)
  - (1) Frequencies required
  - (2) Location and effective radiated power (ERP) of the FCC AHJ radio site
  - (3) Maximum propagation delay less than 30 micro-seconds
  - (4) List of specifically approved system components
  - (5) Other support technical information (Battery calculations)(NFPA 72-10.6.7.2.1)
- 29. When an elevator(s) is(are) present in the building, an antenna is typically required to be mounted in the elevator shaft(s) to get coverage inside the elevator car(s). A note on the plan shall be provided: "Contractor shall obtain written approval from the elevator inspector prior to any work inside an elevator shaft or machine room. (ASME A17.1)
- 30. Systems shall have a Lightning Protection System that complies with NFPA 780. (NFPA 1221-9.6.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local Fire AHJ for additional checklist items.



**2B.1.2 NFPA 72 (2016), NFPA 1221 (2016) Plan Review - Electrical**

Plans shall include the following information:

- 1. Building owner and address
- 2. Copy of the contract with the owner or GC (FAC 61G6)
- 3. Signature and seal of the Engineer of Record with experience and training in electrical engineering. The name, PE number, business name, CA number, address, and contact information shall be shown on the plans. (FBC BC 118.1.4) (61G15-30.003(2))
- 4. Applicable codes and edition dates (61G15-30.003(1b))
- 5. Building description showing building construction, building occupancy, total square footage, number of floors, total height of building (FAC 61G15)
- 6. Floor plans showing device locations, fire-rated enclosures, conduit runs, and propagation modeling, etc. (FBC BC 118.2.1.4)
- 7. Riser plans for systems (FAC 61G15)
- 8. Specifications with manufacturer's parts numbers (FAC 61G15-33)
- 9. Details, including firewall penetration, etc. (FAC 61G15) (NFPA 70 820-26)
- 10. Grounding and mounting details for antenna, mast, surge protection, BDA, power supply, battery enclosure, etc. (FAC 61G15) (NFPA 70)
- 11. Antenna NFPA 780 protection, if existing. If not existing, add system. (FAC 61G15) (NFPA 780)
- 12. The BDA enclosure shall be painted red and a sign shall show permit number, vendor name, and telephone number. (FBC BC 118.2.1.8)
- 13. Show how the system components are wired to power (120V). (NFPA 70-110.2(B))
- 14. Circuit shall have an isolated ground, if required by the manufacturer. (NFPA 70)
- 15. Listing and labeling requirements (NFPA 70-110.2)
- 16. Identify minimum conduit sizes and minimum conduit 90-degree bend radiuses. (NFPA 70-110.3)
- 17. System equipment shall be installed in an air-conditioned and mechanically ventilated room where the manufacturer's installation document requires a temperature limitation and/or ventilation. (NFPA 70-110.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local Electrical AHJ for additional checklist items.

**2B.1.3 NFPA 72 (2016), NFPA 1221 (2016) Plan Review - Elevator**

Plans shall include the following information:

A variance shall be obtained from the Broward County Elevator Inspection Services Section at Permitting prior to any work inside an elevator shaft or elevator machine room. The variance shall be to install an antenna in the elevator shaft(s) (ASME A17.1).

**Note:** The elevator code does not allow the elevator shaft to be used for coaxial cable risers.  
(ASME A17.1.2.8.1)

**Note:** This checklist is a minimum checklist. Coordinate with the local Elevator AHJ for additional checklist items.

**2B.1.4 NFPA 72 (2016), NFPA 1221 (2016) Plan Review – Building (Structural)**

- 1. Structural design calculations for antenna mast (if applicable, FBC BC 107.3.5)
- 2. Attachment and roof penetration details on plan for antenna mast (if applicable, FBC BC 107.3.5)
- 3. Floor plans showing fire-rated enclosures for cables and BDA room, including fire-rated UL designs (if applicable, FBC BC 107.3.5)
- 4. Riser plans showing fire-rated enclosure for cable, including fire-rated UL designs (if applicable, FBC BC 107.3.5)
- 5. Firewall penetrations, including UL designs (if applicable, FBC BC 107.3.5)

**Note:** This checklist is a minimum checklist. Coordinate with the local AHJ for additional checklist items.

**2B.1.5 NFPA 72 (2016), NFPA 1221 (2016) Plan Review – FCC AHJ (License Holder)**

Plans shall include the following information:

- 1. Building owner and address
- 2. Building description showing building construction, building occupancy, total square footage, number of floors, total height of building
- 3. Applicable codes and edition dates
- 4. Floor plans showing device locations, fire-rated enclosures, conduit runs, and propagation modeling, etc. Propagation (heat) map drawings shall include the following (FBC BC 118.2.1.4):
  - Indoor Prediction Legend
  - Pictogram Legend
  - Calculations Legend
  - Number of Channels
  - Predictive propagation shown on floor plans
  - Name of certified designer and company
  - Materials Legend
  - Cables Legend
  - Frequencies or frequency bands for the Public Radio System(s)
- 5. Riser plans for systems
- 6. Specifications with manufacturer's parts numbers
- 7. Manufacturer's specifications for equipment; include equipment temperature limits.
- 8. Grounding and mounting details for antenna, mast, surge protector, BDA, power supply, battery enclosure. (IEEE 1692, TIA 569, TIA 607)
- 9. Notes on plans shall state:
  - "The system shall never be energized for testing or operation until written, or on site, approval is obtained from all applicable FCC License Holders."
- 10. The BDA enclosure shall be painted red and a sign shall show permit number, vendor name and telephone number.
- 11. Signal strength inbound shall be a minimum of -95 dBm. Signal strength outbound shall be a minimum of -95 dBm.
- 12. Isolation shall be a minimum of 20 dB above the (maximum) signal booster gain under all operating conditions.
- 13. System radio frequencies: system shall be capable of transmitting (transporting) all public safety radio frequencies used by the FCC AHJ (License Holder) and be capable of using any modulation technology.
- 14. Frequency changes. System shall be capable of upgrading.
- 15. System Components: Components shall be approved and compatible with the Public Safety Radio System. Show the propagation delay. Signal Boosters shall have FCC Certification. Power supplies shall have at least two independent supplies. Battery shall provide twelve (12) hour minimum operational run time. (Provide a battery calculation at 100%)
- 16. Technical Criteria
  - (1) Frequencies or frequency bands required
  - (2) Location and effective radiated power (ERP) of the FCC AHJ radio site
  - (3) Maximum propagation delay (30 microseconds)
  - (4) List of specifically approved system components
  - (5) Other supporting technical information

**2B.1.5 NFPA 72 (2016), NFPA 1221 (2016) Plan Review - FCC AHJ (License Holder) (cont.)**

- 17. When an elevator(s) is(are) present in the building, an antenna is typically required to be mounted in the elevator shaft(s) to get coverage inside the elevator car(s). A note on the plan shall be provided: "Contractor shall obtain written approval from the elevator inspector prior to any work inside an elevator shaft or machine room.
- 18. Other industry standards include IEEE 1692, TIA 569, and TIA 607.

**Note:** This checklist is a minimum checklist. Coordinate with the local FCC AHJ (License Holder) for additional checklist items.

See Part 3. Additional Information attachments:

3.2 FCC AHJ (License Holder) Additional Requirements

**2B.2.1 NFPA 72 (2016), NFPA 1221 (2016) Inspection - Fire**

**Final Inspection**

Property Information

Property Name: \_\_\_\_\_ Permit #: \_\_\_\_\_ Inspection Date: \_\_\_\_\_

Property Address: \_\_\_\_\_

Contact Information:

BDA Equipment Provider: \_\_\_\_\_

BDA Licensed Contractor: \_\_\_\_\_

Fire Alarm Licensed Contractor: \_\_\_\_\_

Fire Alarm Monitoring Company: \_\_\_\_\_

Engineer of Record: \_\_\_\_\_

- 1. The latest approved record drawings, operation manuals, and maintenance manuals are on the site.
- 2. The following representatives are on the site for the inspection:
  - Fire Inspector
  - Broward County RESL(ORCAT)
  - Ft. Lauderdale TeleCom
  - Electrical Inspector
  - BDA equipment provider (systems integrator)
  - BDA Licensed Contractor
  - Fire Alarm Licensed Contractor
  - Engineer of Record, only for re-inspections, if required by the AHJ
  - Building Owner Representative
- 3. Fire Rated Enclosure openings and penetrations are properly sealed. (NFPA-1-12.7.5.1)
- 4. The installation complies with the pathway of survivability as shown on the approved record drawings.  
Note: A level 1 pathway requires coaxial cables installed in metal raceways. (NFPA 1221-5.10)
- 5. The system components match the approved record drawings for manufacturer and part numbers.  
(NFPA 1221-9.6.11.1) (NFPA-1.1.4)
- 6. The BDA enclosure shall be painted red and a sign shall show permit number, vendor name and telephone number. (FBC BC 118.2.1.8)
- 7. Provide an information binder stored next to the BDA. Information shall include:  
(NFPA 72-14.6.1.1) (FBC BC 118)
  - (1) As-built drawings
  - (2) Manufacturer's data sheets and specs
  - (3) Heat map
  - (4) Final signal strength measurement (dB)
  - (5) Maintenance contract
  - (6) Broward County RESC, FCC AHJ (License Holders), all other approvals and elevator variance letter, if applicable.
  - (7) Maintenance Repair Log
- 8. Pathway survivability level shall be 1, 2, or 3. For Level 1, all coaxial cables shall be in metal raceways.  
(NFPA 1221-5.10)
- 9. The feeder and riser coaxial cables shall be rated as plenum cables. (NFPA 1221-9.6.2.1.1.1)
- 10. Riser coaxial cables shall be through an enclosure matching the building's fire rating.  
(NFPA 1221-9.6.2.1.3)

**2B.2.1 NFPA 72 (2016), NFPA 1221 (2016) Inspection - Fire (cont.)**

- 11. Radio coverage shall be a minimum of 99% in critical areas, such as the fire command center(s), the fire pump room(s), exit stairs, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical by the AHJ and 95% in general building areas. (NFPA 1221-9.3.1.2.1)
- 12. Signal strength inbound shall be a minimum of DAQ 3.0. (NFPA 1221-9.6.8.1)  
Signal strength outbound shall be a minimum of DAQ 3.0. (NFPA 1221-9.6.8.2)
- 13. Isolation shall be a minimum of 20 dB above the signal booster gain under all operating conditions. (NFPA 1221-9.6.9)
- 14. System radio frequencies: system shall be capable of transmitting all public safety radio frequencies assigned to the FCC AHJ (License Holder). (NFPA 1221-9.6.10.1)
- 15. Frequency changes: System shall be capable of upgrading. (NFPA 1221-9.6.10.2)
- 16. System Components: Components shall be approved and compatible with the Public Safety Radio System. (NFPA 1221-9.6.11)
- 17. All repeaters, transmitter receptacles, signal booster components and battery system components shall be in a NEMA 4, 4X enclosure. (NFPA 1221-9.6.11.2) (NFPA 1-1.4)
- 18. Power supplies shall have at least two independent sources. (NFPA 1221-9.6.12)
- 19. The primary power source shall be supplied from a dedicated circuit and shall comply with NFPA 72. (NFPA 1221-9.6.12.1)
- 20. The secondary power source shall consist of one of the following (NFPA 1221-9.6.12.2):
  - (1) Battery with at least 12 hours of operation at 100%
  - (2) Battery with at least 24 hours of operation at 100%
  - Legally required generator with at least 12 hours of operation at 100%
- 21. System Monitoring: The fire alarm system shall monitor the following items as a minimum (NFPA 1221-9.6.13.1):
  - (1) Monitoring for integrity of the system shall comply with NFPA 72-10
  - (2a) Donor antenna malfunction
  - (2b) Active RF emitting device failure
  - (2c) Low battery capacity indicator
  - (2d) System component failure
  - (3a) Loss of normal AC power
  - (3b) Failure of battery charger
  - (4) Communication link between the FACP and the BDA shall be monitored for integrity.
- 22. Dedicated Panel (annunciator panel) shall show (Auto-notification within 3 minutes, 20 seconds) (NFPA 1221-9.6.13.2):
  - (1a) Normal AC power
  - (1b) Loss of normal power
  - (1c) Battery charger failure
  - (1d) Low battery capacity
  - (1e) Donor antenna malfunction
  - (1f) Active RF emitting device malfunction
  - (1g) System component malfunction
  - (2) Communication link between the FACP and the BDA shall be monitored for integrity.

**2B.2.1 NFPA 72 (2016), NFPA 1221 (2016) Inspection - Fire (cont.)**

- 23. Signage is provided to locate the BDA.  
Fire Department signal booster permit number, service provider, and contact telephone numbers are shown. (FBC 118.2.1.8) (NFPA 72-10.18.3.2)
- 24. Completed NFPA documentation specific to this system is provided. [NFPA 72-7.8.2; figure 7.8.2(a) and (b)]
- 25. Documentation is provided showing that a maintenance and service agreement has been entered into between the property owner and the provider of the BDA System.  
(NFPA 72-14.4.10.1) (NFPA 72-14.4.10.6) (NFPA 72-14.6.1.1)
- 26. DAQ, Delivered Audio Quality, for the system is a minimum of DAQ 3.0. Include all floors, critical areas, elevator cabs, and general building areas. (NFPA 1221-9.6.7.3)
- 27. Where required by the manufacturer, the power receptacle shall be an isolated ground type receptacle and shall be connected to an isolated ground. (NFPA 1221-5.8.2)
- 28. Systems shall have a Lightning Protection System that complies with NFPA 780. (NFPA 1221-9.6.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local Fire AHJ for additional checklist items.



**2B.2.2 NFPA 72 (2016), NFPA 1221 (2016) Inspection - Electrical**

- 1. Rough Electrical Inspection** (FBC BC (2017)-1.110.8.5)
  - Installation of conduits
  - Installation of coaxial cables
  - Panels, BDA, and BBU shall be grounded.
  - Antenna and mast
    - Grounding, Lightning Protection System (if installed)
    - Lead-in surge protection
  - Power connection to the BDA
  - Installation of conduits and equipment in fire-rated enclosures or rooms
  
- 2. Final Inspection**
  - All electrical components are in place.
  - Label "BDA" circuit breakers.

**Note:** This checklist is a minimum checklist. Coordinate with the local Electrical AHJ for additional checklist items.

**2B.2.3 NFPA 72 (2016), NFPA 1221 (2016) Inspection - Elevator**

**1. Rough System Inspection**

- Conduit and cable installed in elevator shafts.

**2. Final Inspection**

- Antenna(s) installed in the elevator shaft.

**Note:** This checklist is a minimum checklist. Coordinate with the local Elevator AHJ for additional checklist items.

**2B.2.4 NFPA 72 (2016), NFPA 1221 (2016) Inspection-Building (Structural)**

**Rough Inspections:**

- 1. Inspection for all fire-rated enclosures/penetrations for cables and BDA room (FBC BC 110.3)
  - a. Framing inspection, if applicable
  - b. Drywall inspection, if applicable
- 2. In progress roof penetrations (if applicable, FBC BC 110.3)

**Final Inspections:**

- 1. Antenna mast installation (FBC BC 110.3)
- 2. Inspection for all fire-rated enclosures/penetrations for cables and BDA room (FBC BC 110.3)
- 3. Roof final (if applicable, FBC BC 110.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local AHJ for additional checklist items.

**2B.2.5 NFPA 72 (2016), NFPA 1221 (2016) Inspection - FCC AHJ (License Holder)**

**1. Initial Inspection**

- 1. The system shall never be energized for testing or operation until written, or onsite approval is obtained from the FCC AHJ (License Holders).  
(FBC BC 1.118.4.2.2)
- 2. Prior to the initial inspection, a letter from the Engineer of Record stating that the installation is complete and ready to be energized for testing shall be received by the FCC AHJ (License Holders). The system settings and pictures of the installed major components shall also be provided to the FCC AHJ (License Holders). (FBC BC – 1.118.4.2.1)

The following components shall be included in the letter and pictures:

- (1) BDA with information  
Permit Number; Serviced by \_\_\_\_\_; Telephone \_\_\_\_\_
  - (2) Enclosures with battery charger and batteries installed, wired with a label showing the battery installation date.
  - (3) The Dedicated annunciator shall be wired. The system shall be constructed and programmed to the FACP and the annunciator.
  - (4) BDA and FACP rooms shall be fire rated. Doors shall also be fire rated.
  - (5) All equipment shall be properly grounded per TIA 607 and Motorola R56 Standards.
  - (6) Antenna mast shall be grounded and connected to the NFPA 780 Lightning Protection System (if installed).
  - (7) Antenna shall have surge protection installed and wired.
  - (8) Antenna(s), if installed in the elevator shaft, shall have the approval of the Elevator Inspector.
  - (9) Junction boxes connected to the riser coaxial cables to the horizontal cables shall be installed and wired.
  - (10) All electrical rough inspections shall be completed.
- 3. The contractor shall coordinate the inspection with all responsible parties.  
The following shall be present at a minimum:
    - Owners representative
    - Electrical Contractor
    - Fire Alarm Contractor
    - BDA Vendor representative with analyzer and computer to gain access to the BDA program to check levels and settings.
    - System Engineer of Record, if requested by the AHJ.
    - Electrical AHJ
    - Fire Official AHJ
    - FCC AHJ(s) (License Holders) (There may be more than one.)
- 4. The Initial Inspection shall include the following:
    - (1) The System shall be energized for the first time.
    - (2) Items (1) through (10) in Section 2 above shall be inspected for compliance.
    - (3) Acceptable dB levels shall be spot checked. Include stairwells and elevator cab.
    - (4) Check the noise floor of the BDA transmitter. The noise floor shall not rise more than 1.5 dB at the donor antenna.
    - (5) System Engineer of Record shall attend all inspections, if requested by the AHJ.

**2B.2.5 NFPA 72 (2016), NFPA 1221 (2016) Inspection - FCC AHJ (License Holder) (cont.)**

**2. Final Inspection**

This Inspection is a joint effort between the Fire Official and the FCC AHJ (License Holders). Prior to the final inspection, the contractor shall provide to the Fire Official and to the FCC AHJ (License Holders) the following documentation showing that the building is ready for the final inspection.

After passing the initial inspection, the contractor shall submit to the FCC AHJ (License Holder) a Post Heat Map Study to show that all areas are covered per the code. A letter from the Engineer of Record shall state that the System is completed, fully operational, and ready for the final inspection.

The contractor shall coordinate the inspection with all responsible parties. The following shall be present at a minimum:

- Owners representative
- Electrical Contractor
- Fire Alarm Contractor
- BDA Vendor representative with analyzer and computer to gain access to the BDA program to check levels and settings.
- System Engineer of Record, if requested by the AHJ
- Electrical AHJ
- Fire Official AHJ
- FCC AHJ(s) (License Holders) (There may be more than one.)

Final Inspection:

- (1) Building Radio Coverage Inspection
  - 99% in critical areas
  - 90% in general building areas
  - DAQ 3.0 or better
- (2) All dB levels are acceptable.
- (3) Remote annunciator shall be functional.
- (4) Connection to the fire alarm shall be functional.
- (5) Owner shall provide proof of a signed service agreement with the BDA vendor.

**Note:** This checklist is a minimum checklist. Coordinate with the local FCC License Holder AHJ for additional checklist items.

**Broward County Board of Rules and Appeals**  
**Two-Way Radio Communications Enhancement Systems**  
**BORA RCES Guidelines**

**Part 2C. Recommended Checklists for NFPA 72 (2019), NFPA 1221 (2019)**

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**2C.1.1 NFPA 72 (2019), NFPA 1221 (2019) Plan Review - Fire**

Plans shall include the following information:

- 1. Building owner and address
- 2. Written sequence of operation
- 3. Signature and seal of the Engineer of Record with experience and training in electrical engineering. The name, PE number, business name, CA number, address, and contact information shall be shown on the plans. The AHJ may require that the Engineer of Record provide evidence of experience and training in Electrical Engineering. (NFPA 72-10.5)
- 4. Applicable codes and edition dates
- 5. Building description showing building construction, building occupancy, total square footage, number of floors, total height of building (NFPA 1-1.7.1) (NFPA 72-7.4)
- 6. Floor plans showing device locations, fire-rated enclosures, conduit runs, and propagation modeling, etc. (NFPA 1) (NFPA 1-1.7.12) (NFPA 72-7.4)
- 7. Riser plans for systems (NFPA 1-1.7.12) (NFPA 72-7.4)
- 8. Specifications with manufacturer's parts numbers (NFPA 1-1.7.12) (NFPA 72-7.4)
- 9. Firewall penetration details, etc. (NFPA 1-12.7.5.1, NFPA 1-1.7.12) (NFPA 72-7.4)
- 10. Identify the panel and circuit breaker; show panel location on plan. (NFPA 1-1.7.12) (NFPA 72-7.4)
- 11. Show circuit breaker lock. (NFPA 1-1.7.12) (NFPA 72-10.6.5.4)
- 12. Provide an information binder stored next to the BDA. Information shall include (NFPA 72-7.5):
  - (1) As-built drawings
  - (2) Manufacturer's data sheets and specs
  - (3) Heat maps with the final signal strength readings
  - (4) Final signal strength measurements (dB)
  - (5) Maintenance contract
  - (6) Broward County RESC, FCC AHJ (License Holders), all other approvals, and elevator variance letter, if applicable.
  - (7) Maintenance Repair Log
- 13. The backbone, antenna distribution, radiating, or any fiber optical cables shall be rated as plenum cable. (NFPA 1221-9.6.2.1)
- 14. Backbone cables shall be routed through an enclosure matching the building's fire rating. (NFPA 1221-9.6.2.3)
- 15. Radio coverage shall be a minimum of 99% in critical areas, such as the fire command center(s), the fire pump room(s), exit stairs, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical by the AHJ and 90% in general building areas. (NFPA 1221-9.6.7)
- 16. Signal strength inbound shall be a minimum of DAQ 3.0. (NFPA 1221-9.6.8.1)  
Signal strength outbound shall be a minimum of DAQ 3.0. (NFPA 1221-9.6.8.2)
- 17. Donor antenna isolation shall be a minimum of 20 dB above the inside antennas. (NFPA 1221-9.6.9)
- 18. System radio frequencies; system shall be capable of transmitting all public safety radio frequencies assigned to the FCC AHJ and be capable of using any modulation technology. (NFPA 1221-9.6.10.1)
- 19. Frequency changes. System shall be capable of upgrading. (NFPA 1221-9.6.10.2)
- 20. System Components: Components shall be approved and compatible with the Public Safety Radio System. (NFPA 1221-9.6.11) (NFPA-1.1.4)



**2C.1.1 NFPA 72 (2019), NFPA 1221 (2019) Plan Review - Fire (cont.)**

- 21. All repeaters, transmitter receptacles, signal booster components and battery system components shall be in a NEMA 4, 4X enclosure. (NFPA 1221-9.6.11.2.1) (NFPA 1-1.7.12) (NFPA 1-1.4)
- 22. Batteries that require ventilation shall be stored in NEMA 3R-type enclosures. (NFPA 1221-9.6.11.2.2) (NFPA 1-1.4)
- 23. Power supplies shall have at least two independent sources. (NFPA 1221-9.6.12)
- 24. The primary power source shall be supplied from a dedicated circuit and shall comply with NFPA 72. (NFPA 1221-9.6.12.1)
- 25. The secondary power source shall consist of one of the following (NFPA 1221-9.6.12.2):
  - (1) Battery with at least 12 hours of operation at 100%
  - (2) Battery with at least 24 hours of operation at 100%
  - Legally required generator with at least 12 hours of operation at 100%
- 26. System Monitoring: The fire alarm system shall monitor the following items as a minimum (NFPA 1221-9.6.13.1):
  - (1) Monitoring for integrity of the system shall comply with NFPA 72-10
  - (2a) Donor antenna malfunction
  - (2b) Active RF emitting device failure
  - (2c) Low battery capacity indicator
  - (2d) Active system component failure
  - (3a) Loss of normal AC power
  - (3b) Failure of battery charger
  - (4) Communication link between the FACP and the BDA shall be monitored for integrity.
- 27. Dedicated Panel (annunciator panel) shall show (NFPA 1221-9.6.13.2):
  - (1) Normal AC power
  - (2) Loss of normal power
  - (3) Battery charger failure
  - (4) Low battery capacity (70%)
  - (5) Donor antenna malfunction
  - (6) Active RF emitting device malfunction
  - (7) System component malfunction
  - (8) Communication link between the Dedicated Monitoring Panel and the BDA shall be monitored for integrity.
- 28. Technical Criteria (NFPA 1221-9.6.14)
  - (1) Frequencies required
  - (2) Location and effective radiated power (ERP) of the FCC AHJ radio site
  - (3) Maximum propagation delay less than 30 micro-seconds
  - (4) List of specifically approved system components
  - (5) Other support technical information (Battery calculations) (NFPA 72-10.6.7.2.1)
- 29. When an elevator(s) is(are) present in the building, an antenna is typically required to be mounted in the elevator shaft(s) to get coverage inside the elevator car(s). A note on the plan shall be provided: "Contractor shall obtain written approval from the elevator inspector prior to any work inside an elevator shaft or machine room. (ASME A17.1)
- 30. Systems shall have a Lightning Protection System that complies with NFPA 780. (NFPA 1221-9.6.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local Fire AHJ for additional checklist items.

**2C.1.2 NFPA 72 (2019), NFPA 1221 (2019) Plan Review - Electrical**

Plans shall include the following information:

- 1. Building owner and address
- 2. Copy of the contract with the owner or GC (FAC 61G6)
- 3. Signature and seal of the Engineer of Record with experience and training in electrical engineering. The name, PE number, business name, CA number, address, and contact information shall be shown on the plans. (FBC BC 118.1.4) (61G15-30.003(2))
- 4. Applicable codes and edition dates (61G15-30.003(1b))
- 5. Building description showing building construction, building occupancy, total square footage, number of floors, total height of building (FAC 61G15)
- 6. Floor plans showing device locations, fire-rated enclosures, conduit runs, and propagation modeling, etc. (FBC BC 118.2.1.4)
- 7. Riser plans for systems (FAC 61G15)
- 8. Specifications with manufacturer's parts numbers (FAC 61G15-33)
- 9. Details, including firewall penetration, etc. (FAC 61G15) (NFPA 70 820-26)
- 10. Grounding and mounting details for antenna, mast, surge protection, BDA, power supply, battery enclosure, etc. (FAC 61G15) (NFPA 70)
- 11. Antenna NFPA 780 protection, if existing. If not existing, add system. (FAC 61G15) (NFPA 780)
- 12. The BDA enclosure shall be painted red and a sign shall show permit number, vendor name, and telephone number. (FBC BC 118.2.1.8)
- 13. Show how the system components are wired to power (120V). (NFPA 70-110.2(B))
- 14. Circuit shall have an isolated ground, if required by the manufacturer. (NFPA 70)
- 15. Listing and labeling requirements (NFPA 70-110.2)
- 16. Identify minimum conduit sizes and minimum conduit 90-degree bend radiuses. (NFPA 70-110.3)
- 17. System equipment shall be installed in an air-conditioned and mechanically ventilated room where the manufacturer's installation document requires a temperature limitation and/or ventilation. (NFPA 70-110.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local Electrical AHJ for additional checklist items.

**2C.1.3 NFPA 72 (2019), NFPA 1221 (2019) Plan Review - Elevator**

Plans shall include the following information:

A variance shall be obtained from the Broward County Elevator Inspection Services Section at Permitting prior to any work inside an elevator shaft or elevator machine room. The variance shall be to install an antenna in the elevator shaft(s) (ASME A17.1).

**Note:** The elevator code does not allow the elevator shaft to be used for coaxial cable risers.  
(ASME A17.1.2.8.1)

**Note:** This checklist is a minimum checklist. Coordinate with the local Elevator AHJ for additional checklist items.

**2C.1.4 NFPA 72 (2019) Plan Review – Building (Structural)**

- 1. Structural design calculations for antenna mast (if applicable, FBC BC 107.3.5)
- 2. Attachment and roof penetration details on plan for antenna mast (if applicable, FBC BC 107.3.5)
- 3. Floor plans showing fire-rated enclosures for cables and BDA room, including fire-rated UL designs (if applicable, FBC BC 107.3.5)
- 4. Riser plans showing fire-rated enclosure for cable, including fire-rated UL designs (if applicable, FBC BC 107.3.5)
- 5. Firewall penetrations, including UL designs (if applicable, FBC BC 107.3.5)

**Note:** This checklist is a minimum checklist. Coordinate with the local AHJ for additional checklist items.

**2C.1.5 NFPA 72 (2019), NFPA 1221 (2019) Plan Review – FCC AHJ (License Holder)**

Plans shall include the following information:

- 1. Building owner and address
- 2. Building description showing building construction, building occupancy, total square footage, number of floors, total height of building
- 3. Applicable codes and edition dates
- 4. Floor plans showing device locations, fire-rated enclosures, conduit runs, and propagation modeling, etc. Propagation (heat) map drawings shall include the following (FBC BC 118.2.1.4):
  - Indoor Prediction Legend
  - Pictogram Legend
  - Calculations Legend
  - Number of Channels
  - Predictive propagation shown on floor plans
  - Name of certified designer and company
  - Materials Legend
  - Cables Legend
  - Frequencies or frequency bands for the Public Radio System(s)
- 5. Riser plans for systems
- 6. Specifications with manufacturer's parts numbers
- 7. Manufacturer's specifications for equipment; include equipment temperature limits.
- 8. Grounding and mounting details for antenna, mast, surge protector, BDA, power supply, battery enclosure. (IEEE 1692, TIA 569, TIA 607)
- 9. Notes on plans shall state:
  - "The system shall never be energized for testing or operation until written, or on site, approval is obtained from all applicable FCC License Holders."
- 10. The BDA enclosure shall be painted red and a sign shall show permit number, vendor name and telephone number.
- 11. Signal strength inbound shall be a minimum of -95 dBm. Signal strength outbound shall be a minimum of -95 dBm.
- 12. Isolation shall be a minimum of 20 dB above the (maximum) signal booster gain under all operating conditions.
- 13. System radio frequencies: system shall be capable of transmitting (transporting) all public safety radio frequencies used by the FCC AHJ (License Holder) and be capable of using any modulation technology.
- 14. Frequency changes. System shall be capable of upgrading.
- 15. System Components: Components shall be approved and compatible with the Public Safety Radio System. Show the propagation delay. Signal Boosters shall have FCC Certification. Power supplies shall have at least two independent supplies. Battery shall provide twelve (12) hour minimum operational run time. (Provide a battery calculation at 100%)
- 16. Technical Criteria
  - (1) Frequencies or frequency bands required
  - (2) Location and effective radiated power (ERP) of the FCC AHJ radio site
  - (3) Maximum propagation delay (30 microseconds)
  - (4) List of specifically approved system components
  - (5) Other supporting technical information

**2C.1.5 NFPA 72 (2019), NFPA 1221 (2019) Plan Review – FCC AHJ (License Holder) (cont.)**

- 17. When an elevator(s) is(are) present in the building, an antenna is typically required to be mounted in the elevator shaft(s) to get coverage inside the elevator car(s). A note on the plan shall be provided:  
“Contractor shall obtain written approval from the elevator inspector prior to any work inside an elevator shaft or machine room.
- 18. Other industry standards include IEEE 1692, TIA 569, and TIA 607.

**Note:** This checklist is a minimum checklist. Coordinate with the local FCC AHJ (License Holder) for additional checklist items.

See Part 3. Additional Information attachments:

3.2 FCC AHJ (License Holder) Additional Requirements

**2C.2.1 NFPA 72 (2019), NFPA 1221 (2019) Inspection - Fire**

**Final Inspection**

Property Information

Property Name: \_\_\_\_\_ Permit #: \_\_\_\_\_ Inspection Date: \_\_\_\_\_  
Property Address: \_\_\_\_\_

Contact Information:

BDA Equipment Provider: \_\_\_\_\_  
BDA Licensed Contractor: \_\_\_\_\_  
Fire Alarm Licensed Contractor: \_\_\_\_\_  
Fire Alarm Monitoring Company: \_\_\_\_\_  
Engineer of Record: \_\_\_\_\_

- 1. The latest approved record drawings, operation manuals, and maintenance manuals are on the site.
- 2. The following representatives are on the site for the inspection:
  - Fire Inspector
  - Broward County RESL (ORCAT)
  - Ft. Lauderdale TeleCom
  - Electrical Inspector
  - BDA equipment provider (systems integrator)
  - BDA Licensed Contractor
  - Fire Alarm Licensed Contractor
  - Engineer of Record, only for re-inspection, If required by the AHJ
  - Building Owner Representative
- 3. Fire Rated Enclosure openings and penetrations are properly sealed (NFPA 1-12.7.5.1).
- 4. The installation complies with the pathway of survivability as shown on the approved record drawings.  
Note: A level 1 pathway requires coaxial cables installed in metal raceways. (NFPA 1221-5.10)
- 5. The system components match the approved record drawings for manufacturer and part numbers.  
(NFPA 1221-9.6.11.1) (NFPA-1.1.4)
- 6. The BDA enclosure shall be painted red and a sign shall show permit number, vendor name and telephone number. (FBC 118.2.1.8)
- 7. Provide an information binder stored next to the BDA. Information shall include:  
(NFPA 72-14.6.1.1) (FBC 118)
  - (1) As-built drawings
  - (2) Manufacturer's data sheets and specs
  - (3) Heat map
  - (4) Final signal strength measurement (dB)
  - (5) Maintenance contract
  - (6) Broward County RESC, FCC AHJ (License Holders), all other approvals and elevator variance letter, if applicable.
  - (7) Maintenance Repair Log
- 8. Pathway survivability level has been removed.
- 9. The backbone and antenna distribution cables shall be rated as plenum cables. (NFPA 1221-9.6.2.1.)
- 10. Backbone cables shall be routed through an enclosure matching the building's fire rating.  
(NFPA 1221-9.6.2.3)

**2C.2.1 NFPA 72 (2019), NFPA 1221 (2019) Inspection - Fire (cont.)**

- 11. Radio coverage shall be a minimum of 99% in critical areas, such as the fire command center(s), the fire pump room(s), exit stairs, exit passageways, elevator lobbies, standpipe cabinets, sprinkler sectional valve locations, and other areas deemed critical by the AHJ and 95% in general building areas. (NFPA 1221-9.3.1.2.1)
- 12. Signal strength inbound shall be a minimum of DAQ 3.0. (NFPA 1221-9.6.8.1)  
Signal strength outbound shall be a minimum of DAQ 3.0. (NFPA 1221-9.6.8.2)
- 13. Isolation shall be a minimum of 20 dB above the signal booster gain under all operating conditions. (NFPA 1221-9.6.9)
- 14. System radio frequencies: system shall be capable of transmitting all public safety radio frequencies assigned to the FCC AHJ (License Holder) (NFPA 1221-9.6.10.1)
- 15. Frequency changes: System shall be capable of upgrading. (NFPA 1221-9.6.10.2)
- 16. System Components: Components shall be approved and compatible with the Public Safety Radio System. (NFPA 1221-9.6.11)
- 17. All repeaters, transmitter receptacles, signal booster components and battery system components shall be in a NEMA 4, 4X enclosure. (NFPA 1221-9.6.11.2.1) Where the battery system components are listed to the UL 2524 Standard, a NEMA 3R enclosure is permitted. (NFPA 1221-9.6.11.2.2)
- 18. Power supplies shall have at least two independent sources. (NFPA 1221-9.6.12)
- 19. The primary power source shall be supplied from a dedicated circuit and shall comply with NFPA 72. (NFPA 1221-9.6.12.1)
- 20. The secondary power source shall consist of one of the following (NFPA 1221-9.6.12.2):
  - (1) Battery with at least 12 hours of operation at 100%
  - (2) Battery with at least 24 hours of operation at 100%
  - Legally required generator with at least 12 hours of operation at 100%
- 21. System Monitoring: The fire alarm system shall monitor the following items as a minimum (NFPA 1221-9.6.13.1):
  - (1) Monitoring for integrity of the system shall comply with NFPA 72-10
  - (2a) Donor antenna malfunction
  - (2b) Active RF emitting device failure
  - (2c) Low battery capacity indicator
  - (2d) System component failure
  - (3a) Loss of normal AC power
  - (3b) Failure of battery charger
  - (4) Communication link between the FACP and the BDA shall be monitored for integrity.
- 22. Dedicated Panel (annunciator panel) shall show (Auto-notification within 3 minutes, 20 seconds) (NFPA 1221-9.6.13.2):
  - (1) Normal AC power
  - (2) Loss of normal power
  - (3) Battery charger failure
  - (4) Low battery capacity
  - (5) Donor antenna malfunction
  - (6) Active RF emitting device malfunction
  - (7) System component malfunction
  - (8) Communication link between the FACP and the BDA shall be monitored for integrity.



**2C.2.1 NFPA 72 (2019), NFPA 1221 (2019) Inspection - Fire (cont.)**

- 23. Signage is provided to locate the BDA.  
Fire Department signal booster permit number, service provider, and contact telephone numbers are shown. (FBC 118.2.1.8) (NFPA 72-10.18.3.2)
- 24. Completed NFPA documentation specific to this system is provided. [NFPA 72-7.8.2; figure 7.8.2(a) and (b)]
- 25. Documentation is provided showing that a maintenance and service agreement has been entered into between the property owner and the provider of the BDA System. (NFPA 72-14.4.10.1) (NFPA 72-14.4.10.6) (NFPA 72-14.6.1.1)
- 26. DAQ, Delivered Audio Quality, for the system is a minimum of DAQ 3.0. Include all floors, critical areas, elevator cabs, and general building areas. (NFPA 1221-9.6.7.3)
- 27. Where required by the manufacturer, the power receptacle shall be an isolated ground type receptacle and shall be connected to an isolated ground. (NFPA 1221-5.8.2)
- 28. Systems shall have a Lightning Protection System that complies with NFPA 780. (NFPA 1221-9.6.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local Fire AHJ for additional checklist items.

**2C.2.2 NFPA 72 (2019), NFPA 1221 (2019) Inspection - Electrical**

- 1. Rough Electrical Inspection** (FBC BC (2017)-1.110.8.5)
  - Installation of conduits
  - Installation of coaxial cables
  - Panels, BDA, and BBU shall be grounded.
  - Antenna and mast
    - Grounding, Lightning Protection System (if installed)
    - Lead-in surge protection
  - Power connection to the BDA
  - Installation of conduits and equipment in fire-rated enclosures or rooms
  
- 2. Final Inspection**
  - All electrical components are in place.
  - Label "BDA" circuit breakers.

**Note:** This checklist is a minimum checklist. Coordinate with the local Electrical AHJ for additional checklist items.

**2C.2.3 NFPA 72 (2019), NFPA 1221 (2019) Inspection - Elevator**

**1. Rough System Inspection**

- Conduit and cable installed in elevator shafts.

**2. Final Inspection**

- Antenna(s) installed in the elevator shaft.

**Note:** This checklist is a minimum checklist. Coordinate with the local Elevator AHJ for additional checklist items.

**2C.2.4 NFPA 72 (2019), NFPA 1221 (2019) Inspection-Building (Structural)**

**Rough Inspections:**

- 1. Inspection for all fire-rated enclosures/penetrations for cables and BDA room (FBC BC 110.3)
  - a. Framing inspection, if applicable
  - b. Drywall inspection, if applicable
- 2. In progress roof penetrations (if applicable, FBC BC 110.3)

**Final Inspections:**

- 1. Antenna mast installation (FBC BC 110.3)
- 2. Inspection for all fire-rated enclosures/penetrations for cables and BDA room (FBC BC 110.3)
- 3. Roof final (if applicable, FBC BC 110.3)

**Note:** This checklist is a minimum checklist. Coordinate with the local AHJ for additional checklist items.

**2C.2.5 NFPA 72 (2019), NFPA 1221 (2019) Inspection - FCC AHJ (License Holder)**

**1. Initial Inspection**

- 1. The system shall never be energized for testing or operation until written, or onsite approval is obtained from the FCC AHJ (License Holders).  
(FBC BC 1.118.4.2.2)
- 2. Prior to the initial inspection, a letter from the Engineer of Record stating that the installation is complete and ready to be energized for testing shall be received by the FCC AHJ (License Holders). The system settings and pictures of the installed major components shall also be provided to the FCC AHJ (License Holders). (FBC BC – 1.118.4.2.1)

The following components shall be included in the letter and pictures:

- (1) BDA with information  
Permit Number; Serviced by \_\_\_\_\_; Telephone \_\_\_\_\_
  - (2) Enclosures with battery charger and batteries installed, wired with a label showing the battery installation date.
  - (3) The Dedicated annunciator shall be wired. The system shall be constructed and programmed to the FACP and the annunciator.
  - (4) BDA and FACP rooms shall be fire rated. Doors shall also be fire rated.
  - (5) All equipment shall be properly grounded per TIA 607 and Motorola R56 Standards.
  - (6) Antenna mast shall be grounded and connected to the NFPA 780 Lightning Protection System (if installed).
  - (7) Antenna shall have surge protection installed and wired.
  - (8) Antenna(s), if installed in the elevator shaft, shall have the approval of the Elevator Inspector.
  - (9) Junction boxes connected to the riser coaxial cables to the horizontal cables shall be installed and wired.
  - (10) All electrical rough inspections shall be completed.
- 3. The contractor shall coordinate the inspection with all responsible parties.  
The following shall be present at a minimum:
    - Owners representative
    - Electrical Contractor
    - Fire Alarm Contractor
    - BDA Vendor representative with analyzer and computer to gain access to the BDA program to check levels and settings.
    - System Engineer of Record, if requested by the AHJ.
    - Electrical AHJ
    - Fire Official AHJ
    - FCC AHJ(s) (License Holders) (There may be more than one.)
  - 4. The Initial Inspection shall include the following:
    - (1) The System shall be energized for the first time.
    - (2) Items (1) through (10) in Section 2 above shall be inspected for compliance.
    - (3) Acceptable dB levels shall be spot checked. Include stairwells and elevator cab.
    - (4) Check the noise floor of the BDA transmitter. The noise floor shall not rise more than 1.5 dB at the donor antenna.
    - (5) System Engineer of Record shall attend all inspections, if requested by the AHJ.

**2B.2.5 NFPA 72 (2019), NFPA 1221 (2019) Inspection - FCC AHJ (License Holder) (cont.)**

**2. Final Inspection**

This Inspection is a joint effort between the Fire Official and the FCC AHJ (License Holders). Prior to the final inspection, the contractor shall provide to the Fire Official and to the FCC AHJ (License Holders) the following documentation showing that the building is ready for the final inspection.

After passing the initial inspection, the contractor shall submit to the FCC AHJ (License Holder) a Post Heat Map Study to show that all areas are covered per the code. A letter from the Engineer of Record shall state that the System is completed, fully operational, and ready for the final inspection.

The contractor shall coordinate the inspection with all responsible parties. The following shall be present at a minimum:

- Owners representative
- Electrical Contractor
- Fire Alarm Contractor
- BDA Vendor representative with analyzer and computer to gain access to the BDA program to check levels and settings.
- System Engineer of Record, if requested by the AHJ
- Electrical AHJ
- Fire Official AHJ
- FCC AHJ(s) (License Holders) (There may be more than one.)

Final Inspection:

- (1) Building Radio Coverage Inspection
  - 99% in critical areas
  - 90% in general building areas
  - DAQ 3.0 or better
- (2) All dB levels are acceptable.
- (3) Remote annunciator shall be functional.
- (4) Connection to the fire alarm shall be functional.
- (5) Owner shall provide proof of a signed service agreement with the BDA vendor.

**Note:** This checklist is a minimum checklist. Coordinate with the local FCC License Holder AHJ for additional checklist items.

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**Part 3. Additional Information Attachments**

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3.19 Reserved	3.26
3.20 Reserved	3.27
3.21 Reserved	3.28



### **Additional Information Attachments**

These attachments are for informational, explanation, and guidance purposes only.

These attachments are not code requirements.

These attachments shall be updated and expanded in the future to reflect current technologies and standards.

The interpretation of any code item shall be completed by the specific Authority Having Jurisdiction (AHJ).

### **Additional Information Attachments (cont.)**

#### **3.1 Applicable Codes and Edition Dates**

- A) The Florida Fire Prevention Code had adopted NFPA 72, 2013.
- B) The Florida Fire Prevention Code does allow the Florida Engineer of Record to select a later NFPA code for a specific project (FPPC (2017) 1, 4 Equivalencies...).
- C) The Florida Engineer of Record may select one of the following sets of codes:
  - NFPA 72 (2013)
  - or
  - NFPA 72 (2016) and NFPA 1221 (2016)
  - or
  - NFPA 72 (2019) and NFPA 1221 (2019)
- D) This selection shall be identified on the system drawings for permit and shall be approved by the Fire AHJ.

### **Additional Information Attachments (cont.)**

#### **3.2 FCC AHJ (License Holder) Additional Requirements**

1. The FCC AHJ (License Holder) does not fall under the direction of the Broward County Board of Rules and Appeals. Each FCC AHJ (License Holder) has specific requirements and guidelines that shall be followed.

2. Refer to the following FCC License Holder requirements:

Broward County RESC Communications Requirements dated 2019

City of Fort Lauderdale Communications Requirements dated 2020-02-07

3. The following industry standards are part of the FCC AHJ's (License Holder's) requirements:

IEEE 1692 (2011) Guide for the Protection of Communication Installations from Lightning Effects

TIA/ANSI/EIA 569-C (2012) Telecommunications Pathways and Spaces

TIA/ANSI/EIA 607-B (2011) Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises

### Additional Information Attachments (cont.)

#### 3.3 OSHA Standards and NRTL's

A) All products shall be approved by the AHJ.

1) Fire AHJ (Applicable Codes)

a) NFPA 72 (2013, 2016, 2019)

3. Definitions

3.2.1 Approvals

3.2.1 AHJ

3.2.4 Labeled

3.2.5 Listed

10.3.1 ...Equipment...shall be listed

b) NFPA 1221 (2016 ,2019)

3. Definitions

3.2.1 Approvals

3.2.2 AHJ

3.2.3 Labeled

3.2.4 Listed

9.6.11.1 ...Component Approval

...shall be approved by AHJ

2) Electrical AHJ Applicable Code 100. Definitions Approval, AHJ, Labeled, Listed  
110.2 Approval 110.3 Examination, Identification

B) OSHA Standards:

OSHA maintains a list of Test Standards Two of these Test Standards include  
UL 60950 and UL 2524

C) OSHA NRTL's:

OSHA maintains a list of approved "Nationally Recognized Testing Laboratories"  
(NRTL's). These laboratories test products to the OSHA Test Standards and provide  
the listing and labeling.

D) Role of UL (Underwriter's Laboratories):

UL has two (2) companies as follows:

1) UL Inc. (UL.org)

Writes the Test Standards for OSHA and is accredited by ANSI

UL 60950 Standards

UL 2524 Standards

2) UL LLC. (UL.com)

a) Provides testing, listing, and labeling for products in accordance with OSHA  
Standards

b) One of the eighteen (18) OSHA NRTL's in the USA

E) Listed versus Non-Listed Products:

1) Listed products:

a) Products that have been tested, listed, and labeled by an OSHA NRTL to a  
specific OSHA Standard

b) Product name plate shall include the following: NRTL Mark, NRTL Test ID,  
"Listed", OSHA Standard

2) Non-Listed Products:

The following marks on a product are not equivalent to the "Listed" mark:  
Recognized, or Classified.

The following terms shown on a product do not indicate that the product is listed:  
Approved, Tested, Certified, Conforms, Complies, etc.

## **Additional Information Attachments (cont.)**

### **3.4 Product Compatibility**

Equipment without UL Standards:

There are many components of an RCES that do not fall into a category having a UL Standard. In these cases, the AHJ should use NFPA 1-1.4 Equivalencies, Alternatives, and Modifications to enable the usage of these components in an RCES.

See the attached product compatibility forms.

<b>3.4 Two-Way Radio Communications Enhancement Systems</b> <b>Product Compatibility</b> <b>Draft Edition 2019-06-14</b>					
Item	Manufacturer	Product Name	Part Number	UL Standard	NRTL Listing
BDA/Repeater				60950 2524	
Power Supply					
Charger					
Battery/Enclosure					
Remote Annunciator					
Surge Protection					
Donor Antenna				N/A	-
In-Building Antenna				N/A	-
Couplers				N/A	-
Connectors				N/A	-
Splitters				N/A	-
Ground Kit				NA	-
Mast				NA	-
Outside Cable					
Plenum Cable					
The above items are compatible for use with the BDA. This form shall be filled out by the BDA manufacturer.					
BDA Mfgr. _____ Address _____ City/State _____ Rep Name _____ Title _____ Date _____			Florida Engineer of Record: _____ Name _____ PE # _____ Company _____ CA # _____ Date		



## **Additional Information Attachments (cont.)**

### **3.5 Battery Enclosures**

The battery enclosure type is determined by the NFPA code and issue date. The following codes apply:

1. NFPA 72.24.5.2.5.2 (2013)  
The battery enclosure shall be a NEMA 4, 4X type.
2. NFPA 1221-9.6.11.2 (2016)  
The battery shall be stored in a NEMA 4, 4X type enclosure.
3. NFPA 1221-9.6.11.2.2 (2019)  
The battery shall be stored in a NEMA 4, 4X type enclosure.  
NFPA 1221-9.6.11.2.2  
“Batteries that require ventilation shall be stored in a NEMA 3R type enclosure.”

All rechargeable batteries manufactured today, including “sealed” batteries, require ventilation. The 2019 Code and the UL 2524 Standard addresses this issue and requires a NEMA 3R type enclosure for batteries requiring ventilation.

When a project is permitted under NFPA 72 (2013) or NFPA 1221 (2016), approval from the Fire AHJ is required to use the NEMA 3R type enclosure. The Fire AHJ may approve the NEMA 3R type enclosure when the BDA equipment is listed per UL 2524 and batteries requiring ventilation are used, based on NFPA 1-1.4, Equivalencies, Alternatives, and Modifications.



### Additional Information Attachments (cont.)

#### 3.6 Drawing Set Numbering Option

Drawing numbers for plans should be set up in a logical sequence. Care should be taken to select the first and second letters to minimize confusion in reviewing drawings.

The following are typical drawing letters:

A:	Architectural
C:	Civil
E:	Electrical
F, FP:	Fire Protection
FA:	Fire Alarm
I:	Interior
M:	Mechanical
P:	Plumbing
Q:	Equipment
T:	Telecommunications

FC should be used for Fire RCES Drawings.

<b>Drawing Number</b>	<b>Description</b>
FC	Fire Communication Drawing Set
FC-1.XX	Title Sheet, Drawing Index, Property Information, Project Team, Applicable Codes with Edition Dates, Scope of Work, Specific Requirements, Legend, Notes, Specifications
FC-2.XX	Floor Plans with Fire Rating of Walls, Equipment Locations, Conduit Runs
FC-3.XX	Conduit Riser, Details
FC-4.XX	Propagation Plan, System Riser Diagrams, Equipment Lists, Link Budgets, Etc.
FC-5.XX	Product Compatibility List Manufacturer's Specs for Equipment

## **Additional Information Attachments (cont.)**

### **3.7 Conditioned Space for Equipment**

Equipment shall be installed in a space that does not exceed the temperature limitations as indicated in the manufacturer's specifications and requirements (NFPA 70-110.3(B)).

The system also has a battery backup system. These systems require mechanical ventilation for operation.

Most, if not all, RCES systems are installed in an air-conditioned space to meet the temperature requirements in the State of Florida.

## **Additional Information Attachments (cont.)**

### **3.8 Lightning Protection**

NFPA 72 (2013); NFPA 1221.9.6.3 (2016, 2019)

A) Systems, with the exception of hospitals, nursing homes, or schools (as required by the FBC 449, 450, 453), installed under NFPA 72 (2013) are not required to have a lightning protection system that complies with NFPA 780. NFPA 72 (2013).

However, if the building has a Lightning Protection System that complies with NFPA 780, then the new BDA System shall be protected by the Lightning Protection System and shall comply with NFPA 780.

B) Systems installed under NFPA 1221 (2016, 2019) shall have lightning protection that complies with NFPA 780. (NFPA 1221.9.6.3)

- 1) This section of NFPA 1221 clearly states that the Two-Way Radio Communications Enhancement shall be protected by an NFPA 780 compliant Lightning Protection System.
- 2) In buildings where there is an NFPA 780 compliant Lightning Protection System, the BDA System shall be protected by the NFPA 780 compliant Lightning Protection System and the Lightning Protection System shall be re-certified by the Lightning Protection System installer to meet the requirements of NFPA 780.
- 3) In buildings where there is no NFPA 780 compliant Lightning Protection System, a new NFPA 780 Lightning Protection System shall be installed to protect the BDA System. The Lightning Protection System installer shall certify that the installation is per NFPA 780. Coordinate with the AHJ and the installer for the system requirements prior to any work. (The cost of a new NFPA 780 compliant Lightning Protection System could be in excess of \$10,000.00 for a 10,000 SF building.)

C) Lightning Protection Systems are NOT grounding systems.

A Lightning Protection System protects the building structure from a lightning strike. Typically, 3/0 wire is used. A grounding system with surge protection protects the communication system electronics from a lightning strike. Typically, a small #8-#6 awg wire is used.

**Additional Information Attachments (cont.)**

**3.9 Cables, Raceways, and Pull Boxes**

The Manufacturer’s minimum bend radius for repeated bends shall be used for all cables installed in conduits (NFPA 70-110.3B).

The drawing shall specify the conduit sizes and the minimum bend radius of all cables.

Coaxial cables can be easily damaged during the installation. It is recommended that oversized conduits with large radius bends be used to protect the cables during the installation process.

A standard 90-degree elbow for a 2” EMT has a bend radius of 9-1/2”. Some cable spec sheet requires a 10” radius for 1/2” cable with repeated bends. A bend radius of 9-1/2” does not meet the manufacturer’s requirements.

Notes:

1. Riser and donor antenna conduits are recommended to be a minimum of 2” with large 24” radius bends for all riser and donor antenna coaxial cables.
2. Conduits are recommended to be a minimum of 1-1/2” with large 24” radius bends for all feeder coaxial cables (metal raceways).
3. Junction or pull boxes are recommended to be a minimum of 16” x 16” x 4”.
4. The AHJ may require sweep testing at any time. Small conduits, long runs, small junction boxes, or multiple bends could be strong indicators that there might be problems with the installation. Resolutions of these problems are an expensive process and may cause delays on the project.

	90° Elbow	90° Large Elbow
EMT	Bend Radius	Bend Radius
1-1/4”	7.25”	24”
1-1/2”	8.25”	24”
2”	9.5”	24”
Coaxial Cable Plenum Rated 1/2”	Minimum Bend Radius, Repeated Bends	Tensile Strength
RFS 1CA 12-50 JPL	10”	250 lbs.
Trilogy APC 012 J50-RD	5”	275 lbs.
Comscope AL4 RPV-50	5”	175 lbs.

## **Additional Information Attachments (cont.)**

### **3.9 Cables, Raceways, and Pull Boxes (cont.)**

The Telecommunications Industry Association Standard, TIA/ANSI-569-C, recommends the following guidelines:

#### 9.8.2.1 Length

No section of conduit shall be longer than 100ft. between pull points.

#### 9.8.2.1 Bends

No section of conduit shall contain more than two 90° bends, or equivalent, between pull points.

#### 9.8.2.3 Pull Tension

The pull tension of the cable being installed shall not be exceeded.

#### 9.8.2.4 Pull Boxes

#### 9.8.3.2 Pull Strings

Pull strings shall be placed in installed conduit.

#### 9.9.4 Pathway Fill Factor (Conduits)

For future pathways, the maximum pathway fill shall be 40%.

#### Required Raceways:

Coaxial cables shall be in metal raceways when required by the pathway survivability.

Coaxial cables shall be in raceways when subjected to possible damage. Coaxial cables are easily damaged when installed exposed or installed above a dropped ceiling. All coaxial cables should be installed in raceways.

### **Additional Information Attachments (cont.)**

#### **3.10 Coaxial Cables, Plenum Rated**

All coaxial cables inside the building shall be plenum rated.

(NFPA 72-24.3.6.8.1.1) (2013)

(NFPA 1221-9.6.2.1.1.1) (2016)

(NFPA 1221-9.6.2.1) (2019)

To understand this requirement, the NFPA 72 Handbook shall be referenced.

#### 24.5 Two-Way, In-Building Emergency Communications Systems

Two-Way communications service within a building provides a reliable method for fire-fighters and other emergency response personnel to communicate with each other during the course of an emergency. The code recognizes two means: two-way telephones and two-way, in-building radio communications enhancement systems.

#### 24.3.6.8

Two-way radio communications enhancement systems shall comply with 24.3.6.8.1 through 24.3.6.8.4

#### 24.3.6.8.1

Where a two-way radio communications enhancement system is used in lieu of a two-way in-building wired emergency communications system, it shall have a pathway survivability of Level 1, Level 2, or Level 3.

#### 24.3.6.8.1.1

The feeder and riser coaxial cables shall be rated as plenum cables

### **Additional Information Attachments (cont.)**

#### **3.11 Cables, Pathway Survivability**

NFPA 72 (2013)

Riser cables: Installed in a two-hour fire-rated enclosure

Feeder Cables: Pathway Survivability Level 1, 2, or 3

NFPA 72 (2016), NFPA 1221 (2016)

Riser cables: Installed in a fire-rated enclosure

Feeder Cables: Pathway Survivability Level 1, 2, or 3

NFPA 72 (2019), NFPA 1221 (2019)

Backbone Cables: Installed in a fire-rated enclosure to match building

Antenna Distribution Cables: Not in conduit; Not in a fire-rated enclosure

## Additional Information Attachments (cont.)

### 3.11 Cables, Pathway Survivability (cont.)

#### Definitions:

#### Riser Cable:

There is no definition of a “Riser Cable” found in the NFPA (2013, 2016) Codes. The industry standard is that a “Riser Cable” is a “Backbone Cable”, as defined below:

#### Examples:

Cable from the donor antenna to the BDA

Cable from the BDA to the distribution antenna cables that are important to the entire building.

#### Feeder Cable:

There is no definition of a “Feeder Cable” found in the NFPA (2013, 2016) Codes. The industry standard is that a “Feeder Cable” is a “Distribution Antenna Cable”, as defined below.

#### Examples:

Cable from the BDA to the DAS antennas that are not “Riser Cables”

Cable from the “Riser Cable” to the DAS antennas

#### NFPA 1221, 2019:

#### Backbone Cable:

Similar to a “Riser Cable”

**NFPA 1221-3.3.10 Backbone.** A communication cable in an in-building radio enhancement system that carries wideband signals important to the entire building, from the donor antenna, through the amplifiers, and to distribution antenna lines.

**NFPA 1221-a.3.3.10 Backbone.** Damage to a backbone cable will disable the radio enhancement system through much or all of the building, and as a result it should be identified and protected. The backbone could be fiber-optic, copper, or coaxial cable, but it does not radiate RF energy along its path.

#### Distribution Antenna Cable:

Similar to a “Feeder Cable”

**NFPA 1221-3.3.46 Distribution Antenna Cable.** A communication cable that carries RF energy in both directions along its length to distribution antennas in one or more places in the building.

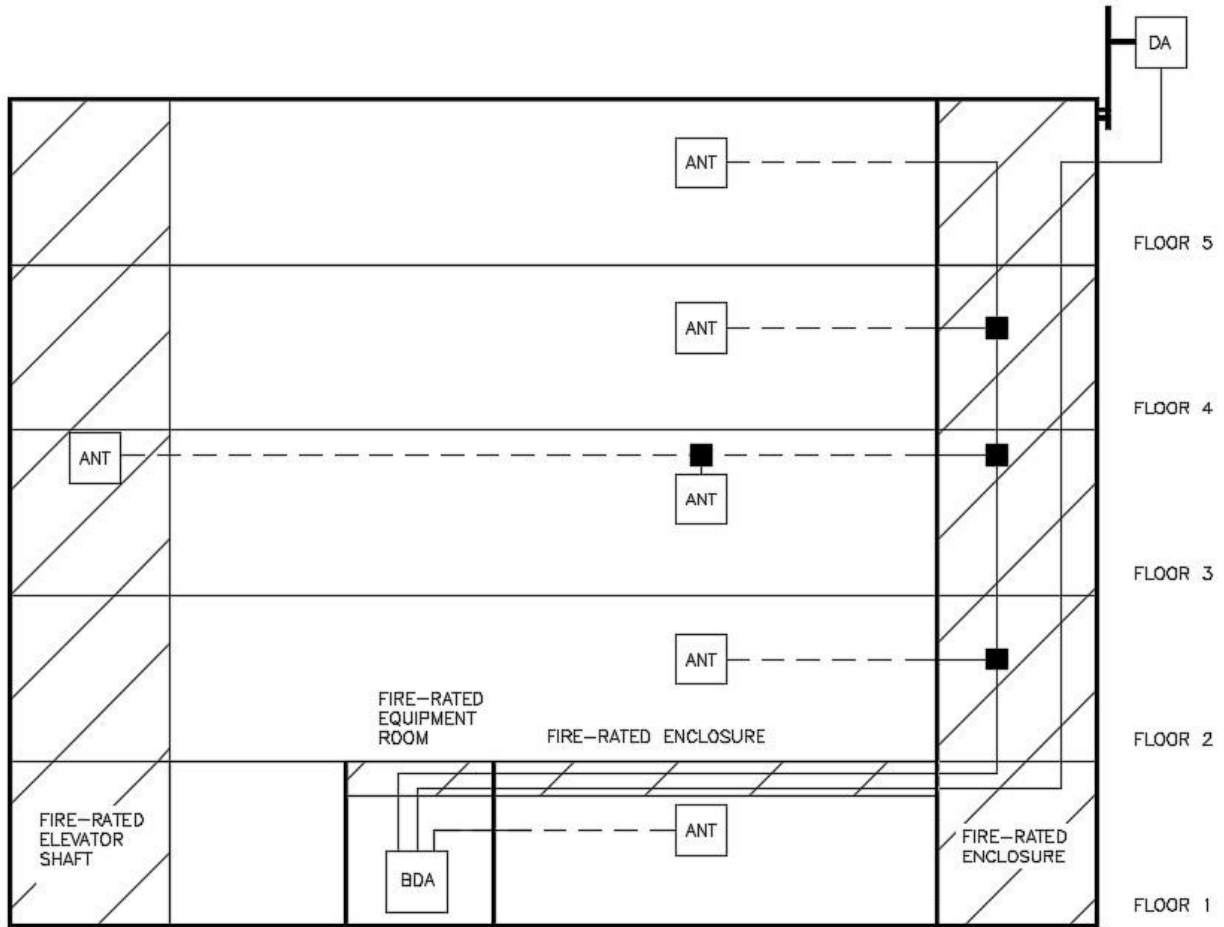
**NFPA 1221-A.3.3.46 Distribution Antenna Cable.** It is typically a coax cable or radiating cable, and it is outside of the heat and fire protection provided by any firewalls or other means.



**Additional Information Attachments (cont.)**

**3.12 Cables, Typical Details**

**NFPA 72 (2013)**



**Notes and Legend**

Fire-rated enclosures shall have a 2-hour fire-rating

Pathway survivability Levels 1, 2, or 3

All cables shall be plenum rated.

Riser cables (solid):

In a fire-rated enclosure

Feeder cables (dashed)

Level 1: In a fire-rated enclosure or in metal raceways

Level 2,3: In a fire-rated enclosure

Provide fire stop where cables penetrate fire-rated walls or floors.



Donor Antenna



Distribution Antenna

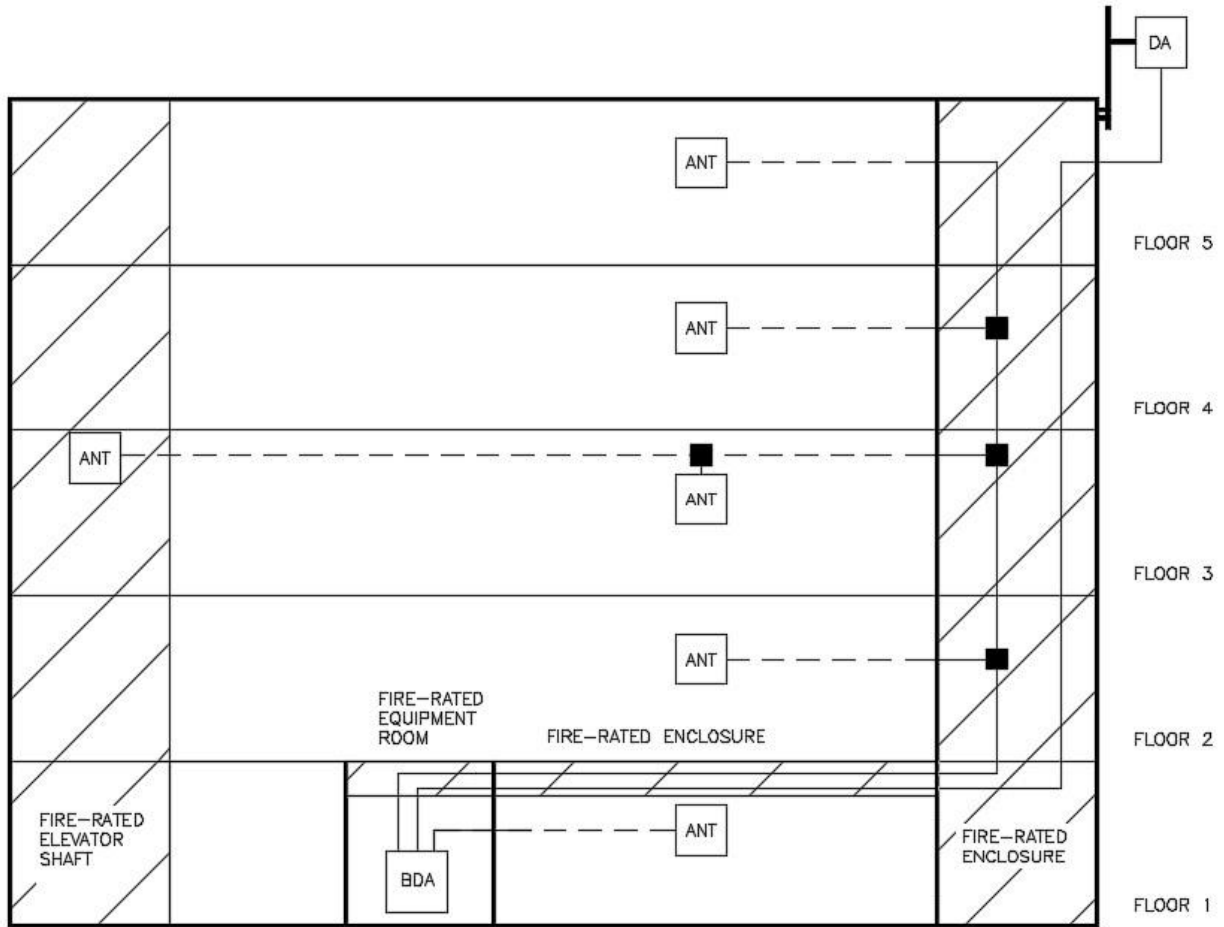


Bi-directional amplifier, Public Safety repeater

**Additional Information Attachments (cont.)**

**3.13 Cables, Typical Details**

**NFPA 72 (2016), NFPA 1221 (2016)**



**Notes and Legend**

Fire-rated enclosures shall match the building's fire-rating.

Pathway survivability Levels 1, 2, or 3

All cables shall be plenum rated.

Riser cables (solid):

In a 2-hour-rated enclosure

Feeder cables (dashed)

Level 1: In a fire-rated enclosure or in metal raceways

Level 2,3: In a fire-rated enclosure

Provide fire stop where cables penetrate fire-rated walls or floors.



Donor Antenna



Distribution Antenna

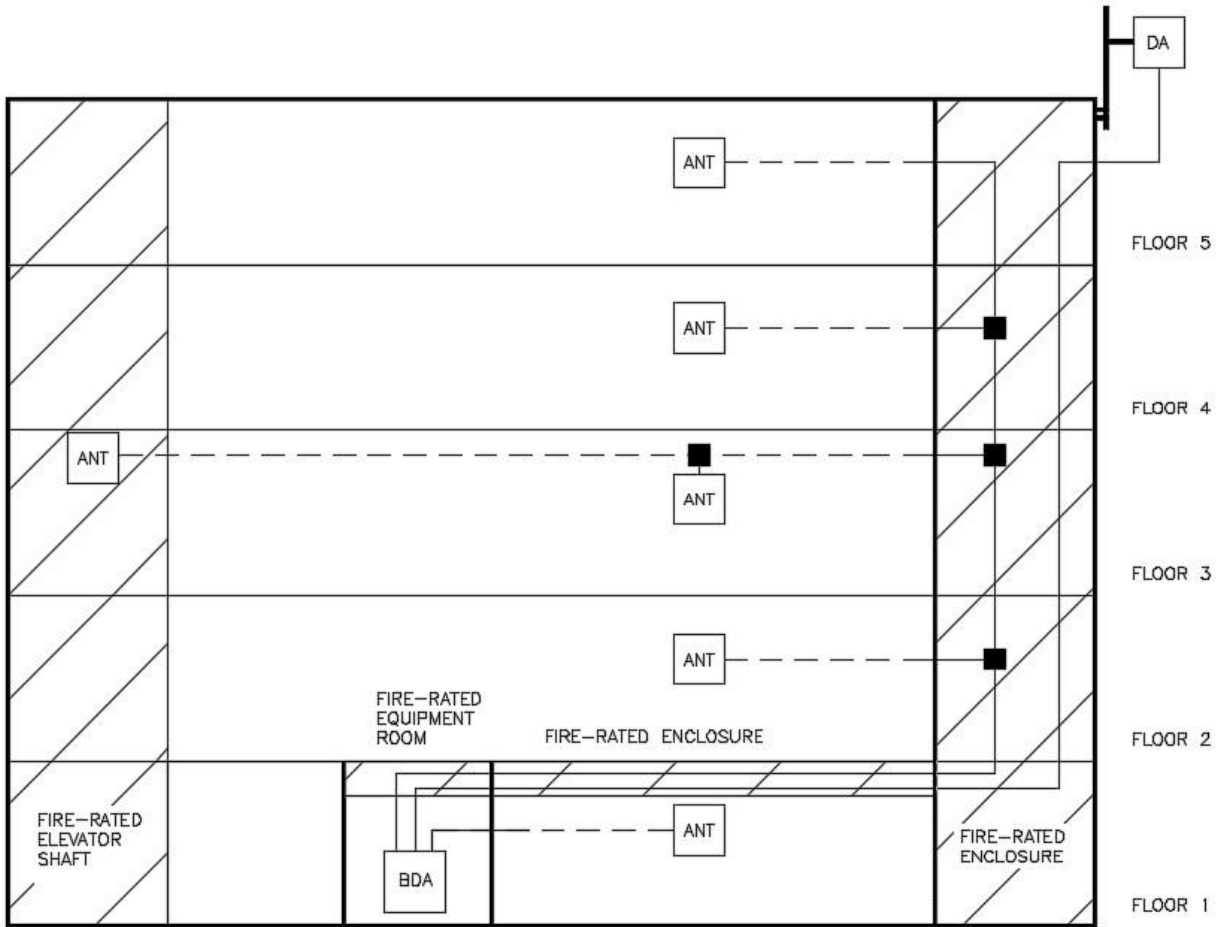


Bi-directional amplifier, Public Safety repeater

**Additional Information Attachments (cont.)**

**3.14 Cables, Typical Details**

**NFPA 72 (2019), NFPA 1221 (2019)**



**Notes and Legend**

Fire-rated enclosures shall match the building's fire-rating

There is no pathway survivability.

All cables shall be plenum rated.

Backbone cables (solid):	In a fire-rated enclosure
Antenna Distribution Cables (dashed):	A fire-rated enclosure is not required. Metal raceways are not required.

Provide fire stop where cables penetrate fire-rated walls or floors.



Donor Antenna



Distribution Antenna



Bi-directional amplifier, Public Safety repeater

## **Additional Information Attachments (cont.)**

### **3.15 Engineer of Record**

#### **1) State of Florida**

Florida Statute FS 471 Engineering  
Florida Administrative Code FAC 61G15  
Degree in Engineering from an accredited university  
Pass the Fundamentals of Engineering Exam  
Pass the Professional Engineering Exam  
5 years' experience as an engineer under a PE

#### **PE designates Professional Engineer:**

Florida does not designate a specific discipline. For example: A civil engineer may design roads, bridges, nuclear power plants, and BDA systems. The State of Florida only states that the engineer shall be qualified. The engineer is qualified until proven differently.

#### **FAC Chapter 61G15-30(4) states:**

“Engineering Documents: Engineering documents are designs, plans, specifications, drawings, prints, reports, or similar instruments of service in connection with engineering services or creative work that have been prepared and issued by the professional engineer or under his responsible supervision, direction, or control.”

The engineer cannot sign work designed by others unless the engineer was involved during the design process. The engineer cannot sign and seal plans prepared by others with only a quick review. The engineer shall fully understand the signed and sealed drawings.

Engineers typically sign and seal drawings prepared by designers, CADD operators, software specialists, and others who are under the Engineer's responsible supervision.

#### **2) Florida Building Code (FBC)(2017), Broward County Edition, Section 118.1.4 Design**

A sealed submittal from an engineer, with training and experience in Electrical Engineering, shall also be required.

As a minimum, this requires a BSEE (Bachelor's Degree in Electrical Engineering). Additional training is also required as Continuing Education. Experience should include at least five (5) years direct experience in Electrical Engineering.

#### **3) NFPA 72 (2013)**

Section 10.5.1.4: The system designer shall provide evidence of their qualifications and/or certifications when required by the Authority Having Jurisdiction (AHJ).

### **Additional Information Attachments (cont.)**

#### **3.16 Elevator Cabs**

Elevator cabs are used by first responders on a daily basis. NFPA 72-25.5.2.2.1 does not include the elevator cab as a critical area. The elevator cab is included in the general building area. General building areas shall be provided with 90% floor area radio coverage.

This is interpreted as follows:

Each elevator cab shall have a minimum of 90% floor area radio coverage. Sufficient DAS antennas shall be provided in the elevator lobbies and/or in the elevator shafts. Antennas installed in the elevator shafts require a variance from the AHJ.

### **Additional Information Attachments (cont.)**

#### **3.17 Signal Strength (Design vs. Code)**

NFPA 1221-9.3.1.2.2 (2016) requires a minimum DAQ of 3.0. However, the annex A9.3.1.2.2 recommends that the system be designed for DAQ of 3.4.

The design value shall always be more stringent than the code value.

**Additional Information Attachments (cont.)**

**3.18 FCC Signal Booster Registration**

<b>Year</b>	<b>Broward</b>	<b>Miami-Dade</b>	<b>Palm Beach</b>	<b>Totals</b>
2015	6	9	1	16
2016	22	48	2	72
2017	46	61	2	109
2018	93	65	6	164
2019	77	78	8	163
<b>Total</b>	<b>244</b>	<b>261</b>	<b>19</b>	<b>524</b>

**Additional Information Attachments (cont.)**

**3.19 Reserved**



**Additional Information Attachments (cont.)**

**3.20 Reserved**

**Additional Information Attachments (cont.)**

**3.21 Reserved**

# Section 3

**From:** [Boselli, Ruth](#)  
**To:** ["mmccarty@fortlauderdale.gov"](#)  
**Cc:** [RULES; DiPietro, James; John Travers; Luis Hernandez \(LHernandez@FortLauderdale.gov\);](#)  
["VBlanco@fortlauderdale.gov"; Fowler, Theodore](#)  
**Subject:** RE: Open Permits Policy 18-02  
**Date:** Tuesday, March 3, 2020 11:57:52 AM  
**Attachments:** [MccarthyOpenPermits.pdf](#)

---

Good morning Mr. McCarthy, in reference to the email sent yesterday (below) at the request of the BORA Director Mr. DiPietro please be prepare at the meeting to provide more information on the time needed for your request related to the ongoing projects (attached) . Thank you .

Thank you .

**Ruth Boselli**

Administrative Coordinator

---

## Boselli, Ruth

---

**From:** Boselli, Ruth  
**Sent:** Monday, March 2, 2020 10:42 AM  
**To:** 'mmccarty@fortlauderdale.gov'  
**Cc:** RULES; Dipietro, James; John Travers; Luis Hernandez (LHernandez@FortLauderdale.gov); 'VBlanco@fortlauderdale.gov'; Fowler, Theodore  
**Subject:** RE: Open Permits Policy 18-02

Good morning Mr. McCarthy, please be advised that we anticipate a Board of Rules and Appeals meeting to be held on Thursday March 12 , 2020 . We request your attendance at such meeting to review your request of extension . please let us know if you have a conflict of schedule or have any questions .

This meeting will be held in the County Commission Chambers, starting at 7 PM , 115 S Andrews Avenue - Room 422

Thank you .

### Ruth Boselli

Administrative Coordinator  
**Board of Rules and Appeals**  
1 N University DR. Ste. 3500B  
Plantation FL 33324

954-765-4500 x 9889

[www.broward.org/codeappeals](http://www.broward.org/codeappeals)



---

**From:** Fowler, Theodore <TFOWLER@broward.org>  
**Sent:** Wednesday, January 8, 2020 10:28 AM  
**To:** 'mmccarty@fortlauderdale.gov' <mmccarty@fortlauderdale.gov>  
**Cc:** RULES <RULES2@broward.org>; Dipietro, James <JDIPIETRO@broward.org>; John Travers <JTravers@fortlauderdale.gov>; Luis Hernandez (LHernandez@FortLauderdale.gov) <LHernandez@FortLauderdale.gov>; 'VBlanco@fortlauderdale.gov' <VBlanco@fortlauderdale.gov>  
**Subject:** Open Permits Policy 18-02

Good Morning Mr. McCarty,

Please be aware that you are approaching the 150 day mark and have until February 14, 2020 to request an extension from the BORA Director to close any open permits in accordance with policy 18-02. (see attachment)

If the open permits indicated in the affidavit you provided ( see attachment) are closed, please submit a signed and notarized affidavit indicating you have no open permits.

## Boselli, Ruth

---

**From:** Fowler, Theodore  
**Sent:** Wednesday, January 8, 2020 10:28 AM  
**To:** 'mmccarty@fortlauderdale.gov'  
**Cc:** RULES; Dipietro, James; John Travers; Luis Hernandez (LHernandez@FortLauderdale.gov); 'VBlanco@fortlauderdale.gov'  
**Subject:** Open Permits Policy 18-02  
**Attachments:** policy 18-02 (003).pdf; Open Permit Affidavit McCarty.pdf

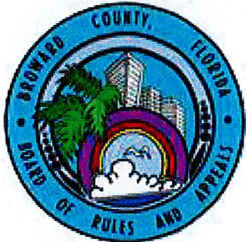
Good Morning Mr. McCarty,

Please be aware that you are approaching the 150 day mark and have until February 14, 2020 to request an extension from the BORA Director to close any open permits in accordance with policy 18-02. (see attachment)

If the open permits indicated in the affidavit you provided ( see attachment) are closed, please submit a signed and notarized affidavit indicating you have no open permits.

*Respectfully,*

**Ted Fowler**  
**Chief Code Compliance Officer, Structural**  
Board of Rules and Appeals  
1 N University Dr., Suite 3500B  
Plantation, Florida 33324  
954-765-4500 X 9887  
[broward.org/codeappeals](http://broward.org/codeappeals)



High End Impact Windows and Doors, LLC  
1472 South Dixie Highway  
Pompano Beach, FL 33060

02/07/2020

FEB 07 2020

Broward County Board of Rules and Appeals  
1 N University Dr, Suite 3500B  
Plantation, FL 33324

Re: High End Impact Windows and Doors, LLC. (License #CGC 1523874) open permits.

To whom it may concern,  
Pursuant to Florida Statute 71-575 (4)b, the following window permits currently remain open with High End Impact Windows and Doors, LLC (Please see attached list). I respectfully request an extension to close out the remaining permits.

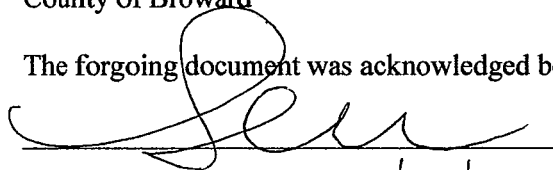
Thank you in advance for your assistance in this matter.

Sincerely,


Michael McCarty

State of Florida  
County of Broward

The forgoing document was acknowledged before me this 7<sup>th</sup> day of February, 2020

 , Notary Public

My Commission Expires: 10/25/2020

 SEMINTA DULCIO  
MY COMMISSION # GG 042010  
EXPIRES: October 25, 2020  
Bonded Thru Budget Notary Services

JOB NAME	CITY	permit #
Becker, Lana & Irwin	pompano beach	19-7334
Bessonov, Vladimir	hallandale	PL-OMNI-19-00570
Brown, Randall	delray beach	19-185246
Burke, Joe & Rachel	coral springs	BP19-006864
Central Broward Animal Hospital (Jonathon Wald)	plantation	19-3096
Charles, Keith	davie	19-7991
Chhetri John, Abigail	fort lauderdale	19050455
Chiavetta, Cheryl	coral springs	BP-19-007495
Country Club Towers LLC	FORT LAUDERDALE	19061028
Curtin, Chris	fort lauderdale	19082368
Delucca, Garrett & Anne	Davie	19-6271
Ehrich, Joan	aventura	BL19-1285
Gebensleben, Belkis & Rick	weston	B19-2274
Geist, Andre & Jenny 2	coconut creek	19002450
Goldstein, Ronald	Light House Point	19-0571
Goldstein, Stephen	Ft Lauderdale	19072714
Ham, Laura & John	coral springs	bp19-003979
Keys, Kimberly	dania beach	19-449
Kharchenko, Igor	Plantation	B19-2648
Landon, Lou Ann	boca raton	19-6583
Langendorf, Tom	lauderdale by the sea	LBS-19-008890
Marin, Hector	west palm	PR-2019-023041-0000
Mchale, Michael	deerfield beach	19-5739
Musibay, Ariel	Plantation	B19-2649
Musil, Scott	coral springs	BP19-007813
Rinaudo Properties LLC	Oakland park	2019080001
Vougiouklakis, Theodore	hallandale	PL-OMNI-19-01738
Wald, Jonathon	plantation	19-3097
Wendoff, Ira	west palm	PR-2019-010575-0000
Williams, Carenthia	boca raton	19-3821



## **Fowler, Theodore**

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**From:** Fowler, Theodore  
**Sent:** Wednesday, January 8, 2020 10:28 AM  
**To:** 'mmccarty@fortlauderdale.gov'  
**Cc:** RULES; Dipietro, James; John Travers; Luis Hernandez (LHernandez@FortLauderdale.gov); 'VBlanco@fortlauderdale.gov'  
**Subject:** Open Permits Policy 18-02  
**Attachments:** policy 18-02 (003).pdf; Open Permit Affidavit McCarty.pdf

Good Morning Mr. McCarty,

Please be aware that you are approaching the 150 day mark and have until February 14, 2020 to request an extension from the BORA Director to close any open permits in accordance with policy 18-02. (see attachment)

If the open permits indicated in the affidavit you provided ( see attachment) are closed, please submit a signed and notarized affidavit indicating you have no open permits.

*Respectfully,*

**Ted Fowler**  
**Chief Code Compliance Officer, Structural**

Board of Rules and Appeals  
1 N University Dr., Suite 3500B  
Plantation, Florida 33324  
954-765-4500 X 9887  
[broward.org/codeappeals](http://broward.org/codeappeals)



**SUBJECT:** Board Policy #18-02 - Design Professional and Contractor requirements to become a certified inspector, as it relates to the closing out of open and ongoing projects.

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**POLICY:**

This policy applies to all individuals that seek certification through Broward County Board of Rules and Appeals ("BORA") to be certified as a building code professional. Any code professional (such as but not limited to engineers, architects or structural, plumbing, mechanical, or electrical contractors) who are required to hold or who otherwise holds a Certificate of Competency ("Certificate") or Professional License ("License") in any area of construction shall not use that Certificate or License to engage in free enterprise thereby competing against persons or firms whose work he may also inspect, nor may this individual allow their Certificate or License to be used by another person or firm.

Per Florida Statute 71-575 (4)b, commencing with the time of application submission, an applicant is prohibited from engaging in free enterprise including but not limited to bids, proposals, contracts, permits, etc. The applicant shall be required to provide a detailed list of all open and ongoing projects currently under construction which will include information such as the municipality they are located within, the existing permit number and the time frame in which the project will be completed. This time frame shall not exceed a 180 days period from the time the application for certification was submitted to BORA.

If this 180 days' time frame is required to be extended, a written request shall be submitted to the Director of the BORA no later than 30 days prior to the expiration of the 180 days period. This request for extension will be reviewed by the Board of Rules and Appeals ("Board") for approval at the next, upcoming meeting. An extension, if granted will be set by the Board depending on circumstances, unless the Board does not meet that month in which case the Administrative Director may extend the time frame until the next scheduled meeting. All extensions beyond this point shall follow the same notification rule as mentioned previously and shall be reviewed and voted on by the Board on a case by case basis.

***Florida Statute 71-575 (4)b***

*Any Inspector (such as and including but not limited to structural, engineering, plumbing, mechanical, or electrical) or other building official charged with enforcing or otherwise supervising or inspecting any work covered under any section of the South Florida Building Code as applicable to Broward County pursuant to Chapter 71-575, Laws of Florida, and who is required to hold or who otherwise holds a Certificate of Competency in any area of construction shall not use that Certificate of Competency to engage in free enterprise thereby competing against persons or firms whose work he may also inspect, nor may he allow his Certificate of Competency to be used by another person or firm.*

# Section 4



**BROWARD COUNTY**

# Board of Rules & Appeals

ONE NORTH UNIVERSITY DRIVE, SUITE 3500-B, PLANTATION, FLORIDA 33324

PHONE (954) 765-4500 FAX: (954) 765-4504

<http://www.broward.org/codeappeals>

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**TO: Board of Rules and Appeals**

**FROM: Bryan Parks, Chief Fire Code Official**

**DATE: March 12, 2020**

**SUBJECT: Pay Adjustment for Don Perdue for Administrating the BORA Fire Examination per code section F-103.5.3.2**

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Recommendation:

Staff would like to recommend that the Board approve a per test increase of 15.00 dollars, from the current 45.00 dollars as set in 2015 to 60.00 dollars a test to be provided to Mr. Perdue for administrating the exam.

Reasons:

In early 2015 the Board approved Mr. Don Perdue to administer the Board exam by preparation, issuing and grading two required exams (May and November). The Board's Fire Exams are mandated by the Broward Local Fire Code in section F-103.5.3.2 as provided below.

***F-103.5.3.2 Pass a written competency examination approved by BORA, to be given in May and November (one (1) required) of each year, or the test may be given when requested by at least (3) applicants.***

In 2015 the cost of the exam was established at 45.00 dollars per exam taker and was approved by the Board.

Starting in 2015 and for the last 5 years Mr. Perdue has offered to provide the Fire Exam, five (5) times a year and has also given additional exams as needed. In 2019 Mr. Perdue provided over 40 exams, graded those exams and provided data to this office for notification to the test takers. He has excelled in his duties to the Board.

In recent months Mr. Perdue has also been called upon to go above the duties set forth above by conducting analyst as requested by this office, including spread sheets involving exam takers and answers to questions as part of an overview of how our tests were being utilized by future fire inspectors and their knowledge base.

It was also noted that individuals wanting to take the High velocity Hurricane Zone test pay a testing facility 65.00 dollars each for the exam.

This increase being requested for Mr. Perdue is less than the cost of living for the last 5 years.

Additional Information:

Attached is a revised policy showing the change being made to the testing procedures and he has agreed to undertake added workload to ensure that the exam is properly given.

A handwritten signature in black ink that reads "Bryan Parks".

Bryan Parks

**James DiPietro**  
**Administrative Director**

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## Fire Certification Procedures

Objective: In order to provide a clear and effective procedure for the certification process related to individuals wanting to be certified by the Broward County Board of Rules and Appeals (BORA) as a Chief Fire Code Official, Fire Plans Examiner or an Inspector, the following procedure is implemented as per Broward County Chapter 1 and Broward County Local Amendments to the Florida Fire Prevention Codes as adopted.

Reference Guide, Administrative Policy 95-8

## Form Submittal and Process

- 1) Individuals wanting to be certified for the first time by the BORA must first request to be scheduled to take the Broward County exam as follows.
  - a) Contact the BORA Office or web site and obtain an application to sit for the exam.
  - b) Exam application containing all information necessary to meet the requirements to sit for the exam will be mailed or emailed to the home address or business address as provided. Completed exam request form (FC 1) along with a money order payable to the current testing agency shall be provided to BORA or a Credit Card or Debit Card payments will be made at the test location on the date of the test.
  - c) BORA shall notify testing agency of individuals meeting the requirements to sit for the exam.
  - d) Testing agency shall notify BORA of the test results and the number attending.
  - e) BORA shall notify the individual of the outcome of the test by a pass / fail letter. (FC-2 or 3)
  - f) Instructions contained in the letter outline the next step to be taken. Where an individual has passed the exam, an application for certification is provided (FC-4A, ~~4B or 4C~~) and the fees if any as indicated in form FC-2.
  
- 2) The application for certification completed in full along with required documentation shall be provided in compliance with the Local Fire Amendments to the Florida Fire Prevention Code. Form "FC - 4A, ~~4B or 4C~~.
  - a) A review by the administrative staff and Chief Fire Code Official of qualifications provided and funds if required submitted shall be conducted.
  - b) If requirements as set forth in Broward Local Fire Amendments sections F-103.1, F-103.4.1 and F-103.5.1 are met, staff will consider recommending individual to the Board for approval.
  - c) At the BORA staff's discretion and if in compliance with current codes, the staff may issue a provisional staff approval pending the Board's approval to certify.
  - d) Upon ratification of the Board, the administrative staff shall furnish to the Fire Code Official of the Department employing the individual a county fire certification card indicating the Department, the position held, and expiration date.

- 3) Recertification (Renewals/Upgrade/Downgrade/Change of City Form.) Form "FC 6." A certification issued by BORA shall only remain in effect for a four-year period.
  - a) The certification expiration date shall be set to coincide with the expiration date on the State inspector's license.
  - b) Recertification; forms (form FC-6) submittals shall be completed in full and have attached 60 hours of fire CEU education in the form of fire college print out or certifications. Upon evaluation and approval by staff, BORA administrative staff shall issue a recertification card for an additional four-year.
  - c) Upgrade/Downgrade; forms shall be submitted at the time of a job change (form FC-6) and have attached the necessary documentation to meet the requirements as presented in F-103 per classification. Upgrades shall be submitted to BORA for approval (reference 2-c and 2-d).
  - d) Change of City; Provided the previously held certificate is in compliance with existing codes, a Change of City form (form FC-6) shall be processed by BORA staff and a new certification card issued reflecting the new information.
  - e) Removal of certification; with a department shall be initiated by the Chief or Fire Code Official of the department or by administrative process. The department requests must be in writing and indicate that a certification is to be withdrawn. The request shall be accompanied by the return of the individual's current certification card.
- 4) All communications related to the BORA certification process shall be with the Chief of the department or FCO/FM of the city unless directed by the Chief or the FCO/FM to do otherwise.
- 5) All BORA certifications shall be maintained electronically with a hard copy as back up.



# BROWARD COUNTY BOARD OF RULES AND APPEALS APPLICATION FOR FIRE INSPECTOR EXAM (2020)

Admin. Policy #07-01  
Effective: 03-20-2007  
Amended: 02-13-2015  
Amended: 02-13-2020  
Effective 04/01/2020

**CHOOSE A TEST DATE:**

JANUARY 10    MARCH 20    MAY 15    SEPTEMBER 18    NOVEMBER 20

Plantation Fire Station #56, 550 NW 65<sup>th</sup> Avenue, Plantation, FL 33313 (9:00AM)

*Print or type all information. Answer all questions. Incomplete forms shall be returned.*

NAME \_\_\_\_\_ DATE \_\_\_\_\_

ADDRESS \_\_\_\_\_ COUNTY \_\_\_\_\_ CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_ PHONE \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_

EMPLOYED BY \_\_\_\_\_ NO. YRS. \_\_\_\_\_

EMAIL ADDRESS \_\_\_\_\_

**PLEASE SELECT WHICH POSITION YOU WILL BE APPLYING FOR:**

INSPECTOR    CODE OFFICIAL/FIRE MARSHAL    PLANS EXAMINER

(Only those who meet the provisions in F-103.3, F-103.4, F-103.5 in the local fire amendments will be accepted for the position indicated above.)

- **THIS EXAM IS OPEN BOOK. TEST REFERENCE MATERIALS WILL BE PROVIDED AT THE TIME OF THE EXAM AND WILL BE COMPRISED FROM THE MATERIALS:**
  - Florida Fire Prevention Code Sixth Edition
  - Based on HFPA I, NFPA 101, FS 633 & FAC 69A-Rules  
(NOTE: FS 633 & FAC 69A can be obtained at State of Florida, Florida Department of State website <https://www.flrules.org/> for the latest version.)
  - Broward County Amendments  
(Broward Local Fire Code <http://www.broward.org/codeappeals/pages/default.aspx>)
- **NO ELECTRONIC DEVICES WILL BE ALLOWED IN THE TEST ROOM.**
- A driver's license will be required as proof of identification for admission to testing room.

**MAIL RESULTS TO:**

\_\_\_\_\_

\_\_\_\_\_

To qualify for the exam, submit the completed and signed application and policy statement along with a \$60.00 (money order), Payable to: Donald P. Perdue.

**MUST BE SUBMITTED TO:**

Broward County Board of Rules and Appeals, 1 N. University Drive, Suite 3500B, Plantation, FL 33324

**\$60.00** money order presented at BORA office **OR** credit card\*/debit card\* at the test location only.

**\*( \$1.75 added to CC/DC transactions) ALL OTHER FORMS OF PAYMENT WILL BE RETURNED.**

# Section 5





**BROWARD COUNTY**

# Board of Rules & Appeals

ONE NORTH UNIVERSITY DRIVE, SUITE 3500-B, PLANTATION, FLORIDA 33324

PHONE (954) 765-4500 FAX: (954) 765-4504

<http://www.broward.org/codeappeals>

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**TO:** Members of the Board of Rules and Appeals  
**FROM:** Administrative Director  
**DATE:** March 12, 2020  
**SUBJECT:** Board of Rules and Appeals' policy authorizing testing payment for the first attempt by an individual taking the BORA Fire Examination, per Code Section F-103.5.3.2.

---

## **RECOMMENDATION**

It is recommended that the Board of Rules and Appeals adopt the above references Policy that would have the Board pay for the initial testing costs for individuals seeking to take the BORA Fire examination. The exam is provided for by the local fire code amendments section F103.5.3.2

## **REASONS**

Any reasonable action that we at the Board of Rules and Appeals can take to make it easier for an individual to become an inspector is desirable. Frequently an individual must pay for his/her own test expense rather than the City or County Government, and it would encourage applications if he/she did not have to cover that cost.

## **ADDITIONAL INFORMATION**

Currently the Broward County Board of Rules and Appeals pays \$65 for the first-time attempt by an applicant to take the High Velocity Hurricane Zone exam. The cost of the Fire examination is proposed is \$60 and to be paid by BORA. In the past the fee was \$45 and always funded by the applicants.

Section F103.5.3.2 reads as follows:

"F-103.5.3.2 Pass a written competency examination approved by BORA, to be given in May and November (only one (1) required) of each year, or the test may be given when requested by at least three (3) applicants."

Respectfully submitted

James DiPietro

**SUBJECT:** Board of Rules and Appeals' policy authorizing testing payment for the first attempt by an individual taking the BORA Fire Examination, per Code Section F-103.5.3.2.

---

**POLICY**

It is the Board of Rules and Appeals' policy that our agency sponsors the first-time cost for an individual to take the above referenced examinations. Should an individual not pass the exam(s) on the first attempt he/she may retake the exam at their own expense.

**GUIDELINES:**

There are no restrictions as to the number of times an applicant may take the exam, except that the Board of Rules and Appeals will only pay for one (1) attempt.

The cost of the exam shall be the amount authorized by the Board of Rules and Appeals with an outside vendor.