

# CITY OF BOULDER FIRE RESCUE FIRE ALARM PLAN SUBMITTAL REQUIREMENTS

These guidelines have been developed by a consensus process of interested parties made up of AHJ's, design engineers, and industry representatives. The guidelines are designed to provide a uniform standard of minimum requirements for plan submittals.

By providing the necessary information to the reviewing authority, it is the intent of this document to provide an efficient and appropriate turnaround of the plans submitted. It is understood that all fire alarm systems will not require all the information listed below. However, plans may not be accepted, or the review may be delayed, if items specific to the plans being submitted are not included.

**Please check 12.0 below and check with the jurisdiction that you are submitting to for any local requirements.**

## 1.0 Qualifications and Responsibilities

- 1.1. Shop drawings must be prepared and signed by a minimum of a NICET Fire Alarm Level III certified individual.
- 1.2. Shop drawings must be reviewed by the Engineer of Record (Colorado Registered Professional Engineer) as defined by CRS 12 -25-102 and approved for conformance with the design concept and all applicable codes and standards. The submittal shall provide evidence of such review (e.g.. review stamp or review letter).

## 2.0 Shop Drawings: All Sheets

- 2.1. Must be clear, legible and bound.
- 2.2. Must be the same size. Sheets are to be a maximum size of 30" x 42" (ARCH E1).
- 2.3. Must conform to a consistent scale (minimum acceptable scale is 1/8" = 1'-0") except site plan.
- 2.4. Sheet number, revision and date must be indicated in the title block.
- 2.5. Name and address of the project must be indicated in the title block.
- 2.6. Name and address of the installing contractor must be indicated in the title block.
- 2.7. The Prepared by section must include designer's name, NICET certification sub-field, level, number and expiration date and must be indicated in the title block. Designer may be required to provide evidence of certification upon request of the AHJ.
- 2.8. The Reviewed by section must include Engineer of Record's name and associated Colorado professional engineering license number and must be indicated in the title block. Engineer of Record may be required to provide credentials upon request of the AHJ.
- 2.9. Verified compass points.

- 2.10. Title (i.e First Floor Plan).
- 2.11. Key plan for building sections that identifies the area of work. Match lines are to be used when a single floor plan is shown on multiple sheets.
- 2.12. Legend for plan symbols used. Legend must be specific to system and only include applicable devices. (NFPA 170 symbols are preferred)

### 3.0 Title Sheet

**The following items must be clearly indicated on the Title Sheet**

- 3.1. Name and address of the building Owner
- 3.2. Name and telephone number of the installation Contractor
- 3.3. Name, address and telephone number of the General Contractor (if applicable)
- 3.4. Name, address and telephone number of the Electrical Contractor (if applicable)
- 3.5. Name, address and telephone number of the Designer of Record
- 3.6. Name, address and telephone number of the Engineer of Record
- 3.7. Square footage for each building and total square footage for the project
- 3.8. Building occupancy type(s)
- 3.9. Scope of work is to be indicated in narrative format.
- 3.10. Type of system is to be indicated, i.e.: conventional hardwired, wireless, addressable, analog addressable; circuit Class and Styles are to be provided for each circuit (i.e. SLC: Class A, Style 6, etc.)
- 3.11. Provide a list of all applicable codes and standards, with Editions, used in the system design (Building Code, Fire Code, Mechanical Code, Elevator Code, NFPA 72, NFPA 70, Local Amendments, etc.). Note: This information should be obtained from the Engineer of Record.
- 3.12. Provide a list of all other approving agencies (i.e. UL, FM, etc.) applicable to the project.
- 3.13. Provide a sequence of operation (input/output matrix) in compliance with the NFPA 72 Annex material. The information provided in the sequence of operation must be specific to the project. Generic sequence of operations will not be accepted.
- 3.14. Identify the type of system, i.e. Central, Remote, Proprietary, etc.
- 3.15. Identify the type of audible notification: temporal, steady, coded, voice, etc.
- 3.16. Identify the type of visual notification: public or private mode.
- 3.17. Provide a wiring legend specific to types used for the project. Identify if wiring is enclosed in conduit, open wiring, plenum wiring, power limited or non-power limited
- 3.18. Provide an equipment list with manufacturer, part number, back box and symbol used to identify the component. If there is insufficient space for wiring legend, equipment list and symbol legend on the title sheet, than insert an additional sheet.

### 4.0 Site Plan (may be included on Title Sheet)



- 7.1. Circuit wiring diagram.
- 7.2. Device/appliance mounting height profile.
- 7.3. Typical device and ancillary device wiring.
- 7.4. The interface of fire safety control functions.

**8.0 Voltage Drop Calculations:**

- 8.1. Provide Voltage drop calculations for each circuit showing wire size, circuit load and voltage drop.
- 8.2. Provide audio circuit power loss calculations
- 8.3. Voltage drop calculations must be performed using the output circuit voltage when the input voltage to the control panel is 85% of its name plate voltage. (NFPA 72, 2002 Ed., Section 4.4.4.1(1))
- 8.4. Provide resistance values with supporting data sheets or provide NEC values and reference.
- 8.5. Indicate method used and show all formulas/equations.

**9.0 Stand-by Battery Calculation:**

- 9.1. Provide Stand-by battery calculations for each control panel, sub panel, monitoring station transmitter, power supply or any component requiring secondary power.

**10.0 Specification Package**

- 10.1. Table of Contents. Provide tabs for each section. Sections are to be as follows:
  - 10.1.1. Control panels, power supplies and annunciators.
  - 10.1.2. Initiating devices.
  - 10.1.3. Notification appliances.
  - 10.1.4. Other system components, modules and relays.
  - 10.1.5. Wire type with resistance values
  - 10.1.6. Compatibility listings (matrix, table, or information showing device compatibility).
  - 10.1.7. Fire department operating instructions for entire system (this includes a copy of the instructions that will be posted adjacent to the control panel).
  - 10.1.8. Manufacturer approved testing instructions.

**11.0 Cabinet for Permanent Fire Alarm Records:**

A cabinet for permanent fire alarm records is required to be installed in every new building with a fire alarm system and in existing buildings when a new fire alarm system is installed. The cabinet for permanent fire alarm records is to be located adjacent to the fire alarm control panel, or as approved by the Authority Having Jurisdiction.

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- 11.1. The cabinet is required to meet the following specifications:
  - 11.1.1. Be of durable construction.
  - 11.1.2. Lockable and keyed the same as the control panel.
  - 11.1.3. Marked in contrasting letters, "Permanent Fire Alarm System Records Do Not Remove".

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- 11.2. The cabinet is required to contain the following:
  - 11.2.1. Complete set of as-built drawings, as well as system modification drawings.
  - 11.2.2. A copy of all permits.
  - 11.2.3. A copy of the NFPA Record of Completion.
  - 11.2.4. A copy of the original test printout.
  - 11.2.5. A hard copy print out of the system configuration, if the system is software driven.
  - 11.2.6. A complete copy of the operating instructions for the entire system.
  - 11.2.7. A copy of all equipment submittals/specifications.
  - 11.2.8. A copy of the voltage drop calculations for all circuits.
  - 11.2.9. A copy of the system stand-by battery calculations for all panels.
  - 11.2.10. A copy of all testing and inspection forms.

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## 12.0 Local Submittal Requirements

The City of Boulder has adopted the 2003 International Fire Code with amendments. Section 903.4.2 was amended as follows:

*Section 903.4.2 is repealed and reenacted to read:*

*903.4.2 Alarms. Approved audible and visual devices shall be connected to every automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Alarm devices shall be provided in the interior of the building in accordance with NFPA 72 and on the exterior of the building in an approved location. Where a fire alarm system is installed, actuation of the automatic sprinkler shall actuate the building fire alarm system.*

## Short Format Submittal Criteria for Existing Systems

**13.0 Short Format is for the addition, modification or relocation of up to a maximum of 10% of the total number of initiating devices or notification appliances, not to exceed five devices. The following items must be clearly indicated in the Short Form Submittal Package.**

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- 13.1. Minimum drawing sheet size to be 8 ½" by 11".
- 13.2. Minimum acceptable scale is 1/8" = 1'-0".
- 13.3. Minimum acceptable text height is 1/8"
- 13.4. Project name
- 13.5. Location (address, suite, etc.) .

- 13.6. Contractor name, address and phone number.
- 13.7. Provide narrative scope of work.
- 13.8. Provide square footage of the project area.
- 13.9. Provide a graphical scope of work (i.e. cloud the area(s) of work).
- 13.10. Provide a key map showing the location of the respective project within the building/site (not required to be to scale).
- 13.11. Show location of all fire alarm initiating devices and notification appliances with temperature and candela ratings, when applicable.
- 13.12. For tenant improvements, show all adjacent devices and rooms.
- 13.13. Provide symbol legend specific to devices used. (NFPA 170 symbols are preferred)
- 13.14. Wire/cable specifications (size, type, etc.)
- 13.15. Statement of compatibility and supporting documentation for new and existing devices.
- 13.16. End of line voltage readings for existing notification circuits being modified.
- 13.17. Installation/data sheets.
  - [If data sheets for existing equipment are not available, provide the following:
    - Voltage limits of existing and new devices on circuits affected.
    - Amperage readings for each circuit from their respective power supplies.
    - Ampacity limits for power supplies (per circuit and total).
- 13.18. Wiring Class and Style of circuits.

**ALL OF THE ABOVE INFORMATION MUST BE SUBMITTED AS A COMPLETE DOCUMENT SET FOR APPROVAL. DOCUMENT SUBMITTALS THAT DO NOT MEET THESE MINIMUM STANDARDS MAY NOT BE ACCEPTED OR MAY BE RETURNED FOR CORRECTION. APPROVED DOCUMENTS MUST BE KEPT ON SITE DURING CONSTRUCTION.**