



Fire Alarm Plan Review Requirements

Department of Planning & Development Review, Bureau of Permits and Inspections
 900 East Broad Street, Room 108
 Richmond, Virginia 23219
Office: (804) 646-4169

<https://www.rva.gov/planning-development-review/permits-and-inspections>

2018/2021 Code Cycle

May 09, 2024*

Low voltage security (access or egress control systems or delayed locking or latching systems) and electrical shall be completed under separate permits. Plans are not required for low voltage security permits.

All project documents under a commercial fire alarm permit application shall be in PDF format and are required to be submitted through the City's OneDrive. For walk-in (you will need to schedule an appointment) or mailed in permit applications or resubmissions, make sure to have a printed copy of either the permit application, for new submissions, or plan intake sheet for post-permit revisions.

<https://www.rva.gov/planning-development-review/one-drive>

Resubmissions due to plan review comments shall follow the City's requirements in Section D-6 of this document.

The requirements herein may not be required for all submissions. Please contact the Bureau of Permits and Inspections if you are unsure of which requirements are necessary for your project.

The following set of requirements are based on the 2018 version of the Virginia Uniform Statewide Building Code (VUSBC). **As of January 18, 2024, the current code for fire alarm plan review are listed below (Codes associated with the 2021 VUSBC are noted in italic RED with double underline such as 2021). There is a one-year grace period, ending January 17, 2025, where either the 2018 or the 2021 VUSBC can be used:**

Virginia Construction Code (VCC)-2018/ <u>2021</u>	International Code Council (ICC) A117.1-2009/ <u>2017</u>
Virginia Fire Code (VFC)-2018/ <u>2021</u>	National Fire Protection Association (NFPA) 13-2016/ <u>2019</u>
Virginia Mechanical Code (VMC)-2018/ <u>2021</u>	National Electrical Code (NEC)/(NFPA 70) - 2017/ <u>2020</u>
NFPA 20-2016/ <u>2021</u>	NFPA 72-2016/ <u>2019</u>
Virginia Existing Building Code (VEBC)-2018/ <u>2021</u>	

Items in Section D-6 are required for all documents submitted after the permit has been issued.

*Changes to this document will occur on June 1st and December 1st (or when there is a code cycle change).
 Make sure to check the webpage on these dates for any revisions:

<https://www.rva.gov/planning-development-review/forms>

Section A: General Requirements for Projects

(All codes below are from NFPA 72 unless noted)

01	<p>The following items are required for plans submitted in PDF format:</p> <ul style="list-style-type: none"> • All plans shall be bound into one PDF file. For post-permit revisions, submit only the modified plans along with a clarification letter. The file shall be named based on Section D-5. • Plans shall be either 1/4" or 1/8" scale. • All plans to be "to scale", the same size and be neat and legible. Provide graphical scales on each plan that has scaled floorplan(s). • All plans will be signed by the proper individual based on Section D-7. • All plans shall have a blank space (no boxes, just a blank area please) that is 3.5" x 2" located near the bottom-right corner of each plan, for the City of Richmond's approval stamp. • The plans will contain the scope of work for that is required for this permit only. • Graphical scale(s) are required on all plans showing scaled floorplans. • Within the scope of work, all rooms/areas shall be labeled with their use (include dwelling unit number as well). • For projects with more than one plan, a plan legend shall be shown on the first fire alarm plan sheet. • The project information stated in Sections D-1 and D-2 shall be shown on the first fire alarm plan sheet. • Provide a legend for all symbols and abbreviations/acronyms, preferably on the first fire alarm plan sheet. • All text on the plans shall be at least 0.125" in height. • Plans shall follow the requirements of NFPA 72 Section 7.4.
02	All submissions shall include the following contact information for the engineer of record and contractor: Name of contact, address of contact, phone number of contact, and email address of contact.
03	Plans shall be signed by the proper individual. See Annex A for a list of all Use Groups and whom can sign these plans. List is based on the Code of Virginia §54.1-402.
04	Provide a completed checklist, see Annex A , with all applicable items checked.
05	For multi-level buildings, there shall be a floor plan for each and every level, do not show a "typical" floor plan for multiple levels. The fire alarm inspector will use this for their inspections.
06	New work shall be differentiated from that which exists. The plans shall make it clear what is new and what is existing.
07	<p>The following shall be shown on the plans: [Chapter 7]</p> <ul style="list-style-type: none"> • Unless ceiling is smooth, provide cross-sectional views of areas with non-smooth ceilings. • Show location of all detectors/devices. • Indicate mounting heights of all devices on the plans. • Location of the Fire Alarm Control Unit (FACU) and any remote annunciator panels. • Sequence of operation (operation matrix) for all interface or fire safety control functions. • State whether building is sprinklered. Show sprinkler type on plans (i.e. NFPA 13, 13R, 13D, etc.) • Indicate Candela (cd) rating for next to all visual devices. • Indicate decibel (dB) ratings next to all horns, horn/strobes, speakers, speaker/strobes, etc. • Battery and voltage drop calculations. • Wiring methods including conductor/cable type and size, along with insulation type on the plans. • Riser diagram specifying number of devices on each circuit, conductor/cable sizes, end of line locations, identification of fire zones (if the system is not addressable), and primary and secondary power sources. • On the riser diagram, show all existing equipment on the supply and load side of all new devices.
08	For all new devices/equipment, provide equipment technical/manufacturer's data sheets. [7.2.1.5]
09	The primary power supply shall be a minimum of 120 Volts alternating current branch circuit labeled "Fire Alarm Circuit" whose access is limited to authorized personnel and noted on the plans.
10	For hazardous areas, circuits and equipment shall comply with NEC Article 760.3 (C). For projects with hazardous areas, show this on the plan(s) stating the Class and Division as well. Show an outline of each hazardous area on the plans.

Section B: Fire Alarm Plan Requirements

(All codes below are from NFPA 72 unless noted)

Alarm Indicating Circuit Voltage Drop Calculation

01	Alarm power consumption of all current drawing devices multiplied by the minutes required by NFPA (5 minutes for fire alarms or 15 minutes for emergency voice/alarm communication service). [Chapter 7]
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Detection Devices

02	For all detection devices on the plans, make sure they follow the codes listed below: <ul style="list-style-type: none">• Heat detectors [17.6]• Smoke detectors [17.7]• Sprinkler waterflow alarm device is shown on the plan as part of an initiation device [17.12/17.13]
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Fire Safety Control Functions

03	Positive Alarm Sequence if used is approved by Authority Having Jurisdiction (AHJ) and must comply with 23.8.1.2.
04	Fire safety control functions: door release smoke detector locations are detailed and in compliance with 17.7.5.6 and 21.9.
05	Fire safety control functions: exit door unlocking devices are connected to the fire alarm system and release on alarm activation. [21.9]
06	Fan controls or door controls are interconnected with fire alarm system and detailed; any listed relays that initiate control are within 3 ft. of the control circuit or appliance and the relay data sheet is provided, and wiring is monitored for integrity. [21.2]
07	Fire safety control functions: fire pump is supervised by fire alarm system. [23.8.5.9]

Manual Pull Boxes

08	The operable part of each manual fire alarm box shall be not less than 42 in. and not more than 48 in. above floor level. [17.14.5/ 17.15.6]
09	Manual fire alarm boxes shall be located within 5 ft. of the exit doorway at each exit on each floor. [17.14.8.4/ 17.15.9.4]
10	Additional fire alarm boxes shall be provided so that the travel distance to the nearest fire alarm box will not be in excess of 200 ft. measured horizontally on the same floor. [17.14.8.5/ 17.15.9.5]
11	Manual fire alarm boxes shall be mounted on both sides of grouped openings over 40 ft. in width, and within 5 ft. of each side of the opening. [17.14.8.6/ 17.15.9.6]

Audible Devices

12	Sleeping areas shall provide at least a minimum sound pressure level of 15 dBA above the average ambient sound pressure level or 5 dBA above maximum sound pressure level that lasts for 60 seconds or a sound pressure level of at least 75 dBA, whichever is greater, at the pillow. [18.4.5.1/ 18.14.6]
13	Devices are not less than 90 in. above the floor and are greater than 6 in. from the ceiling unless listed for ceiling mount, 18.4.8.1/18.4.9.1 . Use mounting height criteria from 18.5.5 for audible/visible appliances. [18.4.8.1/ 18.4.9.1]
14	Where audible appliances are provided to produce signals for sleeping areas, they shall produce a low frequency alarm signal that complies with the following: [18.4.6.3] <ol style="list-style-type: none">1) The alarm signal shall be a square wave or provide equivalent awakening ability.2) The wave shall have a fundamental frequency of 520 Hz \pm10 percent.

Visual Devices

15	Visual alarm notification appliances: details are provided that show wall mounting is between 80 in. and 96 in. above the floor level (18.5.5.1), and ceiling mounting is in accordance with 18.5.5.2. [18.5.5]
16	Visual alarm notification appliances: device spacing and effective intensity (cd) for an area are in compliance with Figure 18.5.5.4.1/ 18.5.5.5.1 , Tables 18.5.5.4.1 (a, b) / 18.5.5.5.1 (a, b) . [18.5.5.4.1/ 18.5.5.5.1 , 18.5.5.4.2/ 18.5.5.5.2]
17	Visual alarm notification appliances: devices in corridors are within 15 ft. of the ends of corridor and do not exceed 100 ft. separation. [18.5.5.5.5/ 18.5.5.6.5]
18	Visual alarm notification appliances: sleeping area pillows are within 16 ft. of a device and devices mounted less than 24 in. from ceiling is 177 cd or for devices mounted greater than 24 in. from the ceiling are 117 cd, see Table 18.5.5.7.2/ 18.5.5.8.3 . [18.5.5.7.3/ 18.5.5.8.4]
19	Visual alarm notification appliances: in rooms with ceilings exceeding 30 ft. in height, ceiling visual devices will be suspended below 30 ft. or wall mounting and spacing shall be per Table 18.5.5.4.1(a). Center of room ceiling mounted visual device complies with Table 18.5.5.4.1(b) / 18.5.5.5.1(b) . [18.5.5.4.6/ 18.5.5.5.6 , 18.5.5.4.7/ 18.5.5.5.7]

General Miscellaneous Requirements

20	Telephone communications: equipment is listed for two-way communication. [10.3.1]
21	Telephone communications: the design is in compliance with 24.8.1 through 24.8.19. Manufacturing data sheets are provided to verify the design and operational features.
22	Telephone communications: fire alarm fire emergency phone jack locations are shown on the plans. [VUSBC 109.3]
23	Elevator recall for firefighters is designed in accordance with 21.3.1 through 21.3.13/ <u>21.3.14</u> .
24	Where only one communications technology is used, any failure of the communications path shall be annunciated at the supervising station within 60 minutes of the failure. [26.6.3.3]
25	Provide primary and secondary communication methods for DACT. [26.6.4]
26	Building without a fire alarm system: Smoke detectors in elevator lobbies, machine rooms, and shafts are provided a dedicated FACU, which is identified as the elevator recall control and supervisory control unit. [21.3.2]
27	Smoke detectors in elevator lobbies, machine rooms, and shafts initiate elevator recall unless otherwise permitted by the AHJ. [21.3.3/ <u>21.3.3.1</u>]
28	Smoke detectors in elevator lobbies, machine rooms, and shafts shall annunciate at the FACU and annunciator. [21.3.10/ <u>21.3.11</u>]

Section C: Virginia Construction Code Requirements:

(All codes refer to the 2018/2021 VCC unless noted)

01	If there are no rated assemblies or no rated assemblies being penetrated, state this on the plans. Clearly label all fire rated assemblies, firewalls, fire separation walls as to their rating in hours on all fire alarm plans. [714.4.2]
02	Provide, on the drawing(s), UL listed fire stopping detail as found in the latest edition of the UL Fire Resistance Directory for the type of through penetration used. [714.4.1.1]
03	For new buildings and structures, a minimum of one manual fire alarm box shall be provided in an approved location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. [907.2]
04	Provide proper fire alarm system based on Use Group. [907.2.1 - 907.2.10]
05	Provide proper fire alarm system based on building/area. [907.2.11 - 907.2.23]
06	Where delayed egress locks are installed on means of egress doors in accordance with Section 1010.1.9.8, an automatic smoke or heat detection system shall be installed as required by that section. [907.3.2]
07	Automatic fire detectors installed for elevator emergency operation shall be installed in accordance with the provisions of ASME A17.1 and NFPA 72. [907.3.3]
08	In areas that are not continuously occupied, a single smoke detector shall be provided at the location of each fire alarm control unit, notification appliance circuit power extender, and supervising station transmitting equipment. [907.4.1]
09	Use Group I-1 and R-1 dwelling units or sleeping units in accordance with table 907.5.2.3.2 shall be provided with a visible alarm notification appliance, activated by both the in-room smoke alarm and the building fire alarm system. [907.5.2.3.2]
10	In Use Group R-2 occupancies required by Section 907 to have a fire alarm system, all dwelling units and sleeping units shall be provided with the capability to support visible alarm notification appliances in accordance with Chapter 10 of ICC A117.1. Such capability shall be permitted to include the potential for future interconnection of the building fire alarm system with the unit smoke alarms, replacement of audible appliances with combination audible/visible appliances, or future extension of the existing wiring from the unit smoke alarm locations for visible appliances. [907.5.2.3.3]

Section D: General Information

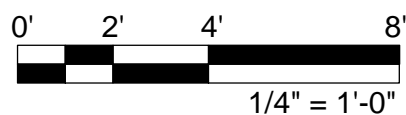
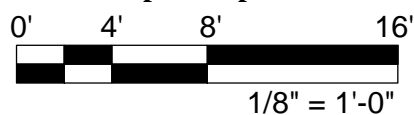
D-1: Example Title Block

Project Name:	Project Address:
Engineer/Designer's Name:	Engineer/Designer's License or Master Number:
Telephone Number:	
Email Address:	Scale:
Description of Plan:	Plan Number:

D-2: Project Information

Building Code Year:	NFPA 72 Code Year:	Construction Type:
Use Group:	Change of Use? Yes No	Occupancy Load:
Alteration Level: (Required for renovation projects using the VEBC)		

D-3: Example Graphical Scale



D-4: External Links

Example Fire Alarm Plans:

<https://www.rva.gov/sites/default/files/2021-06/Example-FireAlarm-Plans.pdf>

Department of Planning and Development Review—Forms and Applications:

<https://www.rva.gov/planning-development-review/forms>

City of Richmond GIS Flood Plain Map:

<http://cor.maps.arcgis.com/home/webmap/viewer.html?webmap=d039492bec5346c8a75de1b6340da1c8>

City of Richmond GIS Parcel Mapper:

<http://cor.maps.arcgis.com/apps/webappviewer/index.html?id=c3ed34c0fb38441fb95cd2d2d6a22d48/>

Virginia Construction Codes (2018/2021 Edition – Virginia amendments only):

<https://www.dhcd.virginia.gov/building-and-fire-regulations-archives>

Permit/Plan/Inspection Status:

https://energov.richmondgov.com/energov_prod/selfservice#/home

City of Richmond's OneDrive:

<https://www.rva.gov/planning-development-review/one-drive>

Permit and Inspection Forms:

<https://www.rva.gov/planning-development-review/forms>

D-5: File Naming Convention

New Plan Construction Documents:

(see below for a list of file descriptions that the City accepts):

<file description>-<Street Address>.pdf

Example file names:

Plans-6112 Three Chopt Road.pdf
Checklist-6112 Three Chopt Road.pdf

Resubmission based on City Comments (pre-permit):

[For documents being re-submitted due to comments for “post-permit” revisions, please see the “Post-Permit Revised Construction Documents” below] (see below for a list of file descriptions that the City accepts):

<file description>-<Street Address> - <plan number>.pdf

Example file names:

Plans-6112 Three Chopt Road - FIRE-016566-2020.pdf
Response Letter-6112 Three Chopt Road - FIRE-016566-2020.pdf

Post-Permit Revised Construction Documents:

[The “revision date” should be based on the revision date located on the plan(s). All plans in the set shall have the same revision date]. For Post-Permit documents, do not use the “Plan Number” in the file name, only the “Permit Number” (see below for a list of file descriptions that the City accepts):

<file description>-<Street Address> - <permit number>-Rev <revision date>.pdf

Example file names:

Plans-6112 Three Chopt Road - FIRC-021780-2017-Rev 6-1-2020.pdf
Clarification Letter-6112 Three Chopt Road - FIRC-021780-2017-Rev 6-1-2020.pdf

City accepted “file descriptions”.

- Application
- Checklist
- Clarification Letter (Note: This letter is to clarify any modification to plans that the City did not comment on)
- Engineer Letter
- Permit Application
- Plan Intake Sheet
- Plans
- Response Letter (Note: This letter shall contain responses to all City comments)
- Specifications
- Submittal Data

D-6: Resubmission Requirements

The following items are required for resubmission of plans.

Revised Plans - Due to Plan Review Comments	
01	<p>Provide a complete set of electronic (PDF) Fire Alarm Construction Documents. Plans shall be in one PDF file and shall not have any City stamps from any discipline within the City of Richmond or any other markings that are not original to the plans. Unless required by the plan reviewer, a checklist is not be required for re-submission. All submitted documents shall follow the naming convention in Section D-5.</p> <p>For plans being resubmitted due to comments for a “post-permit” revision, provide all plans that were submitted for that post-permit revision (for example if only three plans were submitted in the post-permit revision, then resubmit those three plans). All documents required for resubmission based on plan review comments shall be submitted through the City’s online portal (the documents shall be uploaded under the plan number on the plan review comments. Make sure email your plan reviewer once you have uploaded ANY document on the portal):</p> <p>https://energov.richmondgov.com/energov_prod/selfservice#/home</p>
02	Revised plans are required to be the same size as original plans.
03	Provide a response letter, in PDF format with a file name based on Section D-5 , stating the resolution for each comment item. All comments shall be addressed in the response letter. Failure to provide this information will delay the permit being issued. Provide a detail response for each comment item. Responses of “Will Comply”, “Okay”, “Noted”, “Will Verify”, “This has been complied with”, and other responses that do not provide a detailed response will not be acceptable responses. Responses such as those noted, will be sent back for proper responses.
04	Provide clouds around response letter modifications only (do not cloud an entire area, since the modification might not affect that entire area, unless it’s a new plan, in that case cloud the plan number) with numbered revision triangles and remove clouds from previously issued revision(s).
05	Provide revision triangles with number, description and date.
06	All documents not listed above that are required for resubmission shall be in PDF format.

Revised Plans - For Revisions After Permit is Approved (Post-Permit Revision)	
07	<p>Provide a complete set (revised plans/documents only) of electronic (PDF) Fire Alarm Construction Documents for each dated revision. Plans shall be in one PDF file and not have any City stamps from any discipline within the City of Richmond or any other markings that are not original to the plans. Complete set of the fire alarm plans is not required for changes after the permit has been issued. Submit only the plans that were modified based on the clarification letter. For re-submitting post-permit plans based on plan review comments, see items in the “Revised Plans – Due to Plan Review Comments” above. Unless required by the plan reviewer, a checklist is not be required for resubmission. All submitted documents shall follow the naming convention in Section D-5. All documents shall be submitted through the City’s OneDrive.</p> <p>https://www.rva.gov/planning-development-review/one-drive</p>
08	Revised plans are required to be the same size as original plans, do not submit sketches.
09	Provide a clarification letter for each dated revision, in PDF format with a file name based on Section D-5 , stating all modifications per each plan. The clarification letter shall include the plan number and a detailed description of each modifications. Cloud each modification separately. Failure to provide this information will delay the permit being issued.
10	Provide clouds around modifications only (do not cloud an entire area, since the modification might not affect that entire area, unless it’s a new plan, in that case cloud the plan number) with numbered revision triangles and remove clouds from previously approved revision(s).
11	When a plan reviewer submits comments based on the post-permit plans, make sure NOT to add a new revision number and date. Keep all clouds and triangles based on the original post-permit number and date. If required to add a new revision number, KEEP the same date of the original post-permit submission.
12	Do not skip revisions, submit all revisions for review that affect the permit when they are issued; do not wait until 2 or 3 revisions have been made to submit for review.
13	There is a fee for revisions after the permit has been issued. For projects that are greater than \$500,000, there will be a one-time fee at the first revision. No other fees will be required for other revisions. For projects under \$500,000, a revision fee of 10% of the original permit application fee will be charged for all revisions after permit has been approved.
14	All documents not listed above that are required for resubmission shall be in PDF format.

D-7: Individual Responsible for Signing Plans (Code of Virginia §54.1-402)

Use Group	Description	0 to 50 Volts
A1A	Theater With Stage	(1)(2)
A1B	Theater - No Stage	(1)(2)
A2A	Night Club	(1)(2)
A2B	Restaurant	(1)(2)
A3B	Museum/Art Gallery	(1)(2)
A3C	Library, Exhibits	(1)(2)
A3D	Passenger Terminal	(1)(2)
A3E	Recreation Center	(1)(2)
A3F	Lecture Hall	(1)(2)
A3G	Restaurant Fast Food	(1)(2)
A3H	Church	(1)(2)
A3M	Misc. Assembly	(1)(2)
A4A	Recreation Center	Seal
A5	Grandstand, Stadium	(1)(2)
B1	Business: Auto Dealership	(1)(2)
B2	Business: Doctor's Office	(1)(2)
B3	Business: Bank	(1)(2)
B4	Business: Car Wash	(1)(2)
B5	Business: Fire Station	(1)(2)
B6	Business: Funeral home	(1)(2)
B7	Business: Laundry	(1)(2)
B8	Business: Medical offices	(1)(2)
B9	Business: Offices	(1)(2)
B10	Business: Miscellaneous	(1)(2)
E1	Education: School 1 to 12	Seal
E2	Daycare over 2 ½ years	Seal
F1	Factory Moderate Hazard	(1)(2)
F2	Factory Low Hazard	(1)(2)
H1,2,3,4,5	High Hazard	Seal
I1	Group Home 6 or More	Seal
I2A	Institutional Incapacitated	Seal
I2B	Day Nursery	Seal
I3	Institutional Restrained	Seal
I4B	Child Care 5 or More Under 2.5 Years	(1)(2)
M1	Retail: Convenience Store	(1)(2)
M2	Retail: Department Store	(1)(2)
M3	Retail: Supermarket	(1)(2)
M4	Retail: Store	(1)(2)
M5	Retail: Service Station	(1)(2)
R1H	Hotel	(1)(2)
R1M	Motel	(1)(2)
R2A	Dormitories	(1)(2)
R2B	Multi-family - 3 or more units	(1)(2)
R3A	1 or 2 Family over 3 stories	(3)
R4A	Assisted Living	(1)(2)
R5	1 or 2 Family dwelling	(3)
S1	Storage Moderate Hazard	(1)(2)
S2	Storage - Low Hazard	(1)(2)
U	Temporary, Miscellaneous	(1)(2)

Seal - Professional Engineer's Seal Required.

- (1) Master Electrician or Contractor's qualified individual on state license can do plans if of same quality as a professional engineer would normally submit. Contractor shall be Class A. This is only applicable when both the design and installation are under the Master Electrician or Contractor's direction or control.
- (2) Renovations where a Master Electrician or Class A Contractor's qualified individual shall be able to sign the plans.
- (3) NO PLANS REQUIRED.



Annex A: Fire Alarm Plan Checklist

Department of Planning & Development Review, Bureau of Permits and Inspections
 900 East Broad Street, Room 108
 Richmond, Virginia 23219
 Office: (804) 646-4169

<https://www.rva.gov/planning-development-review/permits-and-inspections>

Project Address: _____

Make sure to check “✓” each box for all applicable items below that relate(s) to the above project. This checklist is required for all projects that require a plan review. Submit either on the plans or as a separate PDF document.

Section A: General Requirements for Projects

01 ____	02 ____	03 ____	04 ____	05 ____	06 ____	07 ____	08 ____	09 ____	10 ____
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Section B: Code Requirements

01 ____	02 ____	03 ____	04 ____	05 ____	06 ____	07 ____	08 ____	09 ____	10 ____
11 ____	12 ____	13 ____	14 ____	15 ____	16 ____	17 ____	18 ____	19 ____	20 ____
21 ____	22 ____	23 ____	24 ____	25 ____	26 ____	27 ____	28 ____		

Section C: Virginia Construction Code Requirements

01 ____	02 ____	03 ____	04 ____	05 ____	06 ____	07 ____	08 ____	09 ____	10 ____
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