

Checklist - Fire Protection Systems Submittal

The fire department reviews plans for the installation of fire protection systems and other fire and life safety features. In order to expedite the review process and avoid issues during inspection and testing, the fire department has developed the following plan submittal checklist.

The goal of plan review is twofold.

1. To provide contractors with a complete set of plans, which clearly reflect the fire department's expectations.
2. To provide field inspectors with the information they need to conduct a thorough inspection.

Applicants are asked to address all items under the General Section (Section 1). Applicants who are submitting plans for the following disciplines are also asked to complete the appropriate section for their discipline.

- Fire Sprinklers (Section 2)
- Underground Fire Mains (Section 3)
- Fire Alarm Systems (Section 4)

Applicants submitting plans for other fire and life safety features such as clean-agent systems, in-building radio enhancement systems, flammable liquid storage tanks are advised to contact the fire department at 615-791-3270 to discuss plans prior to submitting.

Although some items may not be relevant to your specific project, applicants are asked to acknowledge each item in order to continue with the plan review application process. If applicants have questions or concerns about these items, please contact the Fire Prevention Division by email fireprevention@franklintn.gov or by phone, 615-791-3270.

Construction documents approved by the fire department are approved with the intent that such construction documents comply in all respects with fire and life safety codes and standards. Review and approval by the fire department does not relieve the applicant of the responsibility of compliance with applicable codes and standards.

Section 1. GENERAL INFORMATION

Installation or modification of fire protection systems and fire and life safety features requires plans to be submitted to the fire department for review.

1. Plans are reviewed in accordance with the 2018 editions of the International Fire Code and the Life Safety Code and appropriate standards.

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2. All plans must be submitted through the city's electronic plan review site, (IDT) <https://franklin.idtplans.com/secure/>
- All plans must be submitted in the proper landscape orientation.
 - Plan sheets / drawings must be submitted in a single, multi-page **.pdf file**. Additional information, separate from the plan sheets, must be submitted as separate .pdf files, e.g., equipment cut-sheets and calculations.
 - Multi-page plan sets should start with a cover sheet with an index of drawings.
 - In each review cycle, the applicant shall respond to each issue generated by staff that remains open. Please give specific responses to the open issues, not generic responses such as "see plans" or "corrected". Applicants are permitted to submit a revision letter, but all responses must be entered in IDT.
 - Any resubmittal requires the submission of the COMPLETE set of plans, not only the affected sheets.

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3. Drawings must be prepared in accordance with the International Fire Code. In addition, the following information is required.
- The project name, complete address (including street address and suite number), and CITY OF FRANKLIN PERMIT NUMBER must appear in the title block of the plan or on the plan sheet in a conspicuous location.
 - **The name, phone number and e-mail address of the individual preparing the plans must appear on the drawings.**
 - A graphic representation of the scale.
 - **For revised plans, all changes must be clouded with a delta note.**

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4. Fire and life safety inspections must be scheduled and coordinated through the general contractor / project superintendent. Unless approved by the GC / superintendent, fire protection contractors should not request an inspection directly to the Franklin Fire Department. Inspection requests can be made directly to the fire inspector assigned to the project. Inspections can also be scheduled by calling the fire department at 615-791-3270.

Section 2. ABOVEGROUND FIRE SPRINKLER SYSTEMS

- Any new fire sprinkler system or modification of a fire sprinkler system requires plans to be submitted to the fire department for review.

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1. Plans are reviewed in accordance with the 2016 editions of NFPA 13, NFPA 13-R or NFPA 13-D; NFPA 14; and NFPA 20.
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2. Fire Sprinkler Standard of Care Plan—Design Intent Plan is required before a building permit is issued and must be sealed by an engineer licensed to practice in the State of Tennessee and experienced in the design of fire sprinkler systems.

3. **A second copy of the shop drawings must be submitted in an Auto-Cad or other .dwg format.**

4. Drawings must be prepared in accordance with NFPA 13, Chapter 23; NFPA 14, Chapter 8; and NFPA 20, Chapter 4. Information required includes, but is not limited to, the following:

- The project name, complete address (including street address and suite number), and CITY OF FRANKLIN PERMIT NUMBER must appear in the title block of the plan or on the plan sheet in a conspicuous location.
- Tennessee Licensed Sprinkler Installer's number.
- **The name, phone number and e-mail address of the Responsible Managing Employee in the fire protection firm must appear on the drawings.** A seal is preferred.
- Drawings shall have a scope of work.
- Drawings for new sprinkler systems must be stamped as reviewed by the engineer preparing the Standard of Care / Design Intent.
- A graphic representation of the scale.
- For projects requiring new hydraulic calculations, the drawings must show the underground fire line. The drawing may either be scaled or dimensioned.
- Knox locking caps are required on the FDC
- Pipe diameters and cut-lengths of new piping must be shown on the drawings
- Drawings must have a sprinkler legend with the make, type model, K-Factor, sprinkler identification number, and temperature of each sprinkler. The legend shall also show the number of each type of sprinkler
- For revamped systems, where two sprinklers are taken from a single outlet, provide a detail showing the outlet is a minimum 1-inch.
- Drawings shall show all node points referenced in the hydraulic calculations.
- Drawings shall show the remote area.
- For dry systems, the capacity of the system in gallons must be shown on the plans.
- For wet systems, the location of the air-venting valve must be shown on the drawing.
- Installations requiring seismic bracing drawings showing the location of all bracing and flexible couplings along with supporting calculations are required.
- For revised plans, all changes must be clouded and noted.

5. Information related to products and materials used (i.e. spec book, manufacturer's cut-sheets, etc.) must be uploaded in a single Adobe Reader (.pdf) file.

6. Hydraulic calculations for new construction and systems with significant modifications must be submitted. Hydraulic calculations must be calculated from the test hydrant. Water flow information must be from within the past 6-months. The files must be in Adobe Reader (.pdf) format.

7. Verify that calculations include fixed losses for meters and backflow preventers.

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8. Calculations must include a summary, graph sheet, supply analysis, node analysis and detailed worksheet in accordance with NFPA 13, 23.3.
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9. A copy of the Owner's Certificate (NFPA 13: 4.3) is required for all new systems for mercantile, storage, industrial occupancies, or occupancies with unusual contents. The Owner's Certificate may be requested/required when there is a change of use in the tenant space or building to an occupancy with a higher fire load.
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10. Aboveground fire protection systems inspections must be scheduled and coordinated through the general contractor / project superintendent. Unless approved by the GC / superintendent, fire protection contractors should not request an inspection directly to the Franklin Fire Department. Inspection requests can be made directly to the fire inspector assigned to the project. Inspections may also be scheduled by calling the fire department, 615-791-3270.
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11. A full forward flow test of the backflow preventer is required. Drawings must have a detail showing how the test will be conducted.
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12. It is strongly recommended and preferred that the fire sprinkler system main drain and auxiliary drains be plumbed to discharge directly to the exterior of the building. Floor drains, if used, must be sized properly for the large volume of water. The MEP engineer shall verify that the drain is sufficient to accommodate the flow.
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13. All control valves on fire protection equipment shall be provided with electronic supervision in accordance with IFC requirements.
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14. Flow switches should be set to activate the building's fire alarm from between 45 seconds and 60 seconds after initial water flow to prevent false alarms from water surge.
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15. Only wall-mounted fire department connections are acceptable. Pedestal FDC's are not permitted.
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16. 13-D systems require an outdoor-rated horn-strobe on the exterior of the building and visible from the street.
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17. 13-R and 13 systems require an outdoor-rated horn-strobe above the FDC.
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18. The following COF notes must be added to the drawing:
- Call for rough inspection before closing / covering ceilings / walls
 - Information on the hydraulic placard must be etched into the sign.
 - Sprinkler installer must provide a Contractor's Material and Testing Certificate for Aboveground piping at the completion of the job.
 - A nominal 12-inch by 24-inch sign with white letters on a red background spelling FDC must be installed above the FDC.

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19. For concealed sprinklers
- Provide a detail on the drawing showing how far the deflector must drop below the ceiling
 - Add the following note to the drawing: Concealed sprinklers must be inspected after the ceiling is installed and the construction caps are removed but before the trim plates are installed. The purpose of the inspection is to check that the distance the deflector drops below the ceiling meets the manufacturer's specification. Coordinate this inspection with the fire inspector for your project.

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20. Where flexible sprinkler piping is used, there must be a detail showing the minimum bend radius and the maximum number of bends.

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21. Where dry pendent or HSW sprinklers are used, there must be a detail on the drawing showing how much of the barrel must be in conditioned space.

Section 3. UNDERGROUND FIRE MAINS

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- Any new underground fire main or modification of an underground fire main required plans to be submitted to the fire department for review.

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1. Plans are reviewed in accordance with the 2016 editions of NFPA 13, NFPA 13-R or NFPA 13-D; NFPA 14; NFPA 20, and NFPA 24.

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2. Fire Sprinkler Standard of Care Plan—Design Intent Plan is required before a building permit is issued and must be sealed by an engineer licensed to practice in the State of Tennessee and experienced in the design of fire protection systems.

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3. **A second copy of the shop drawings must be submitted in an Auto-Cad or other .dwg format.**

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4. Drawings must be prepared in accordance with NFPA 13, Chapter 23 and NFPA 24, 4.1. In addition, the following information is required.
- The project name, complete address (including street address and suite number), and CITY OF FRANKLIN PERMIT NUMBER must appear in the title block of the plan or on the plan sheet in a conspicuous location.
 - Tennessee Licensed Fire Protection Contractor license information.
 - **The name, phone number and e-mail address of the Responsible Managing Employee in the fire protection firm must appear on the drawings.** A seal is preferred.
 - Drawings for new fire service mains must be stamped as reviewed by the engineer responsible for the Standard of Care –Design Intent.
 - A graphic representation of the scale.
 - The pipe material.
 - The size and length of pipe.
 - Location of kickers (Thrust Blocks)
 - Depth of cover. Minimum depth is 36-inches.
 - Location and description of all valves.
 - Location of the FDC
 - The following drawing details are required.
 - Meter box / vault
 - Backflow box / vault
 - Kicker size
 - Hydrant detail (if needed)
 - Bedding detail
 - The following COF notes must appear on the drawing:
 - Pipe must be hydrostatically tested to 200-psi for 2-hours. The test must be witnessed by the fire department.
 - Pipe must be flushed before connecting to the aboveground pipe. The flush must be witnessed by the fire department. Minimum flush is 10-feet / second or 15-feet / second for a fire pump.
 - Control valves in pits and hotboxes must be electrically monitored.
 - A forward flow test is required on the backflow preventer.
 - All bolted joint accessories on private water services shall be cleaned and thoroughly coated with asphalt or other corrosion retarding material after installation. Equipment owned by the water utility shall not be coated.
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5. Information related to products and materials used (i.e. spec book, manufacturer's cut-sheets, etc.) must be uploaded in a single Adobe Reader (.pdf) file.

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- 6. Underground fire protection systems inspections must be scheduled and coordinated through the general contractor / project superintendent. Unless approved by the GC / superintendent, fire protection contractors should not request an inspection directly to the Franklin Fire Department. Inspection requests can be made directly to the fire inspector assigned to the project. Inspections can also be scheduled by calling the fire department at 615-791-3270

 - 7. A copy of the Underground Material and Testing Certificate should be available at the time of the scheduled inspection but shall be provided no later than the final Fire & Life Safety Inspection.

 - 8. Only wall-mounted fire department connections are acceptable. Pedestal FDC's are not permitted.

Section 4. FIRE ALARM SYSTEMS

- Any new fire alarm system or modification of a fire alarm system requires plans to be submitted to the fire department for review.

- 1. Plans are reviewed in accordance with the 2016 edition of NFPA 72, the 2017 Edition of NFPA 70, and other codes and standards as appropriate.

- 2. Plans shall be submitted by a TN licensed fire alarm contractor or TN licensed electrical contractor (CE)

- 3. A set of equipment data sheets must be submitted in Adobe Reader (.pdf) format. Where the data sheets have specifications for more than one device, the model number shall be highlighted or otherwise indicated.

- 4. Battery calculations for all panels and remote power supplies are required.

- 5. A voltage drop calculation for all new NAC circuits is required.

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6. Drawings shall show / contain the following (reference, NFPA 72, 7.4)
- Name of the protected premises and address
 - Name of installing contractor with TN license information and contact information
 - COF permit number
 - Date of issue / revision
 - Project scope
 - System matrix / sequence of operation
 - Riser diagram
 - Floor plan with a description of all rooms
 - Compass point
 - Graphical scale
 - All walls and doors
 - Equipment legend. The equipment legend shall specify the manufacturer and model number of the equipment
 - System devices and components
 - Strobe intensity must be shown on the drawings. Strobe spacing must be in accordance with NFPA 72, Table 18 .5.5.4.1 a or b
 - Wiring diagram including size and type of wire
 - Zoned fire alarm panels must have a description of each zone
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7. The name of the fire alarm monitoring company along with their UL File Number
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8. Monitoring method. Note: The City of Franklin encourages the use of cellular communications.

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9. Drawings shall contain the following COF notes:
- Dedicated circuits shall be provided for all FACP and associated panels
 - Power limited wiring shall be separated from non-power limited electric light and Class I circuits by a minimum of 2-inches.
 - The circuit disconnecting means shall be accessible only to authorized persons, shall include a breaker lock, and labeled FIRE ALARM.
 - All wiring and cabling methods shall comply with NFPA 70 Article 760. All wiring within 7-feet of the floor shall be in conduit. Wiring not in conduit must be concealed and protected by building elements.
 - Bushings are required where cable enters a box or conduit.
 - All connections must be in junction boxes or devices.
 - Junction boxes must be labeled or marked to show they are part of the fire alarm system.
 - All wiring passing through metal studs must be protected by grommets or bushings.
 - Wiring above a drop ceiling must be supported every 54-inches at the top of the building structure. Wire cannot be supported by grid support wires.
 - **Installing contractor shall conduct a pre-inspection and testing prior to scheduling an acceptance test with the fire department.**
 - The following information must appear in or on the panel
 - Battery installation date
 - Location of A/C breaker
 - Monitoring company information
 - Contact information for building representative
 - Monitoring company password
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10. Fire alarm systems inspections must be scheduled and coordinated through the general contractor / project superintendent. Unless approved by the GC / superintendent, fire alarm contractors should not request an inspection directly to the Franklin Fire Department.
- Make inspection requests directly to the fire inspector assigned to the project. Inspections can also be requested by calling the fire department at 615-791-3270
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11. A copy of the Record of Completion should be available at the time of the scheduled inspection but shall be provided no later than the final Fire & Life Safety Inspection.

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- 12 For modifications to existing fire alarm systems where calculations cannot be provided, add the following note to the drawings:

Since the scope of this project is to add devices to an existing fire alarm system, and battery calculations / voltage drop calculations for the entire system were not provided, the following procedure is required at acceptance testing.

- Shut off AC power to the panel
- Note: The inspector has the option of requiring a 24-hours standby test
- Activate the horn / strobes for a minimum of 5-minutes
- Locate the EOL on the NAC
- Re-activate the horn / strobes and check the voltage across the EOL Voltage cannot drop below the minimum voltage shown in the cut-sheet

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13. Be aware of the following COF requirements

- An exterior horn / strobe is required above the fire department connection. The horn / strobe is to activate on waterflow only.
- Full-function annunciators are required at the fire department access point. Annunciators must be key-activated. Annunciators requiring a code for activation are not acceptable.
- Fire pump running must activate a full fire alarm signal
- COF defers to the State of Tennessee elevator inspector for elevator fire alarm requirements.
- Remote indicators for duct smoke detectors, when used, shall be installed as close to the duct detector as possible.
- When a fire alarm is silenced, strobes are to remain flashing until the system is reset.