

Sachse Fire Rescue

Fire Protection Submittal Guidelines



Sachse Fire Rescue desires to assist its customers in the understanding of our submittal policy, procedure, and application process to achieve first-submittal approvals.

A fee is required for all plan reviews and NO permits will be issued prior to a completed plan review.

These guidelines:

- Assist in the preparation and submittal of Automatic Fire Sprinkler and Fire Alarm System plans for installation in the City of Sachse.
- Contain pertinent information relating to the City of Sachse adopted codes.
- Do not contain all data required for proper system design and/or approval.
- The Submitting Contractor is responsible for complying with all locally adopted codes including the International Codes with local amendments.

These Guideline sections contain information related to:

General

- Permit Application and Fees
- Policies
- Codes, and Local Amendments
- Fire Sprinkler Systems Plan Review Application Requirements
- Automatic Sprinkler System Requirements
- Minimum Sprinkler Drawing Requirements
- Submittal Packet Requirements
- Codes

Fire-Sprinkler Systems are to be installed in accordance with the adopted Codes and Local Amendments of the City of Sachse

To provide a smooth and seamless process for plan review and acceptance testing, all fire- protection plans must be submitted prior to the general contractor receiving a framing inspection.

The Fire Department's goal is to provide a complete and accurate review in the shortest possible time.

We will strive to accommodate plan review requests within 10 working days for the first submittals, and 5 working days for interior finishes (less than 20 sprinklers), re-submittals, and undergrounds.

Plans shall not be submitted until the contractor has a confirmed contract to install a system.

General

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Fire Sprinkler Systems

A Permit and Fee are required for hydrant flow testing.

Plan Review Submittal

- This section facilitates application for plan review.
- Included are the most frequently found code problems, questions and the Fire Department's standard policies for plan review and system acceptance.
- Plans shall be submitted only to the Fire Department.
- Submittals require the completion of the Fire Department's "Permit/Inspection Application", Form FM404a.
- Plans will not be received without a completed form and payment of fees, no exceptions!
 - (NOTE: When using a courier or mail service, make sure the completed form is attached.)
- The permit number issued by the Building department must be included on the form.
 - This allows the Fire Department to communicate with Building Inspection Department via computer and achieve a short turnaround time for your plans and inspection scheduling needs.
- A minimum of three drawings and one set of hydraulic calculations and hardware specification sheets shall be submitted for review and one electronic submission in PDF format.
- Plans shall be submitted as blue- or black-line drawings.
- Plans are to be submitted in their entirety, showing the complete scope of the permit.

Underground plans:

- Provide scope of work statement.
- Example: "Fire sprinkler underground to be designed and installed by XYZ Company from tap to 1 foot above slab" or "Fire sprinkler underground to be designed by XYZ Company and installed by ABC Company from tap to 1 foot above slab."
- Shall contain a title block and appropriate signatures of the general RME (RME) and the underground fire main RME (RME – U)
- This may require two title blocks.
- One plan may contain two submitting companies.
- Inspections above ceilings:
 - All inspections shall be completed before the ceiling is closed.
 - Hydrostatic test can be conducted as a partial inspection.
- The Building Inspection Department will issue a release to close the ceiling when all above ceiling inspections are complete.

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- The completion of a hydro or visual does not automatically give approval to cover the ceiling.
- High pile storage under 12,000 square feet:
 - Show commodity, storage height, etc. used to design the system.
 - Rack storage plan required prior to sprinkler plan approval.
- High pile storage over 12,000 square feet:
 - Show commodity, storage height, etc. used to design the system.
 - Rack storage plan required prior to sprinkler plan approval.
- Smoke and heat vents shall be shown as an overlay to the sprinkler plans. This insures that sprinklers are not located in the vent cavity.

Fire Protection Backflow Prevention

- All fire sprinkler systems installed will require backflow prevention.
- Fire protection systems utilizing chemicals or additives (New Installations only), to be provided with a Reduced Pressure backflow prevention assembly (RP).
- That all other fire protection systems be classified as Non-health hazards.
- These systems will require a double check valve assembly (DC).
- The Public Works Department must approve this assembly.
- The assembly must have resilient-seated shut off valves and be properly fitted with resilient-seated test cocks.
- All backflow assemblies may be located inside of the building.
- Adequate room shall be accounted for and shown on the approved plans.
- All backflow assemblies must be capable of being monitored electronically or locked in the full and open position.
- Backflow assemblies must also be listed for use with fire protection systems.
- Manufactures specification sheets must be attached to all sprinkler submittals.
- For additional information, contact the Fire Marshal's office

Protection of Fire Sprinkler Piping From Inclement Weather

- This section defines the Sachse Fire Department's role in the protection of fire sprinkler systems from freezing conditions.
- The Sachse Fire Department will follow and enforce the rules of the NFPA for the proper protection of sprinklered buildings.
- Protection from freezing conditions shall be the responsibility of the property owner.
- Responsibility:
 - The owner shall be responsible for maintaining adequate heat as required by the NFPA.
 - The designer shall provide a note stating that adequate heat is being provided in all areas required by NFPA.
 - The Sachse Fire Department under the direction of the NFPA will monitor the building for compliance per the NFPA code.

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- Conditions requiring the use of this policy involve wet pipe sprinkler systems and are as follows:
 - Shell building- buildings built without a tenant. The building does not have a permanent heat source.
 - The heat source will be provided at tenant finish out.
 - Until the first tenant is in place, the sprinkler system may be drained and placed out of service.
 - Tenant Finish-when the first tenant is in place and prior to freezing conditions (temperatures below 40 degrees Fahrenheit), the tenant and all remaining spaces must be provided with heat.
 - The heat shall be sufficient to maintain the fire sprinkler pipe above 40 degrees.
 - Should the system freeze due to inadequate heat, the building will be closed until the sprinkler system is repaired and adequate heat is provided
- Vacated existing buildings- If an existing building is vacated and the heat is not maintained to the structure, all combustibles shall be removed and the sprinkler system drained prior to heat being removed or disconnected from the structure.
- It is the owner's responsibility to maintain the fire sprinkler system as designed and installed.
- The fire department will inspect for proper installation of the sprinkler system.
- The presence or absence of heat is not part of the inspection required or conducted by the fire department. Proper installation of heat shall be the responsibility of the owner and the mechanical design team.

Minimum Sprinkler System Plan Requirements

Title block including the following:

- Permit Number
- Project Name
- Project Address
- Contractor Name, Address and License Number
- Drawn By
- Scale
- Date

The following notes shall be included on all drawings:

- Authority Having Jurisdiction
- Designed in-accordance-with code and code date
- All wet piping and heads shall be kept above 40 Degrees F
- Plans drawn to an indicated scale
- RME or PE WET signature and stamp on each sheet
- Occupancy classification of each area or room
- Site plan showing water supply and applicable hydraulic references

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- Sprinkler schedule with make, type, model, orifice size, and temperature rating
- Area of coverage provided by each head
- Total area protected by floor and system
- Capacity of dry pipe system or anti-freeze systems
- Pipe and fittings type and schedule
- Hanger schedule
- Location of alarm bells
- Size and location of hose valves
- Hydraulic data symbols and reference points
- Graphical representation of scale
- Design area information
- Relative elevations and junction points
- Underground spigot detail
- Embedment detail

Submittal Packet Requirements:

- Brief scope of work description
- Hydraulic calculations
- Hardware specifications and cut sheets
- Copy of RME license
- Note: NFPA 13 Chapter 6 details specific requirements for working plans.
- Provide all applicable details and/or notes.

Automatic Sprinkler System Requirements:

- A minimum of 4-feet of pipe between the check valve and the inside wall of the Fire department connection.
- The FDC shall be within 100 feet of a fire hydrant.
- The FDC shall be free standing at least one times the height of the building away from the building.
- A single point for the Fire Department Connection (FDC) shall be provided for buildings with multiple risers.
- Fire department connections shall be two 2-1/2 inch connections with locking KNOX caps.
- All inspectors' test, ball-drips, and main-drains shall be piped directly to the outside of the building.
- At least one inspection test valve shall be located at the remote system area.
- Reduced Pressure Zone valves shall be used on antifreeze systems.
- Risers shall be located in heated areas. Riser-room electrical heaters shall be hard wired.
- The riser-room shall be large enough to facilitate maintenance and testing of the sprinkler system.
- The fire riser will be accessible from the exterior of the building
- Elevator shaft tops shall not be sprinklered.

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- Porches and balconies shall be sprinklered on all Group R-1 occupancies requiring sprinkler protection, however, the small exterior storage closets adjacent to porches and balconies in apartment buildings are not required to be sprinklered.
- Drip drums shall be in heated areas.
- Dry-system air compressors shall be hard wired.
- A high- and low-air-pressure alarm is required for all dry systems.
- Pre-action system solenoids shall be wired for alarm activation upon current loss.
- Provide a 1-inch (minimum) water meter for single family residential
- Hose valves shall be 2 ½-inch with a 1½-inch reducer with cap and chain.
- Atriums shall have water curtains.
- Pressure-reducing valves shall be used on systems exceeding 175 psi. These valves shall reduce static and residual pressure. (These are not to be “pressure-restricting valves”)
- Systems with pressure-reducing valves shall have a 3-inch pipe to drain directly to the outside.
- Fire pumps shall be equipped with a properly sized test header.
- Anti-frost and/or chemical additive systems shall meet the City of Sachse Building Inspection requirements.
- Back-flow protection shall meet the City requirements for back-flow information
- Pump controllers shall be manual shutdown only (no timers)

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Fire Alarm and Central Monitoring

The submitting contractor is responsible for complying with all locally adopted codes including the International Codes with local amendments.

- Plans shall be submitted only to the Fire Department.
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- Plans will not be received without a completed form and fee payment, no exceptions!
 - (NOTE: When using a courier or mail service, make sure the completed form is attached.)
- The permit number issued by the Building department must be included on the form.
 - This allows the Fire Department to communicate with Building Inspection Department via computer and achieve a short turnaround time for your plans and inspection scheduling needs.

These Guideline sections contain information related to:

- General
- Fees
- Policies,
- Codes, and
- Fire Alarm Systems Plan Review Submittal
- Central Monitoring Systems Plan Review Submittal

Drawings shall include as a minimum:

- Title block located in the drawing lower right-hand corner or across the right-hand border that contains
- North Arrow.
- Legend.
- Floor plans drawn to a common scale.
- At least one reference dimension for scale verification (this is necessary for measuring circuit-run lengths on drawing on reproduced drawings).

Place the following applicable notes on plans to identify:

- Authority having jurisdiction,
- Designed-in-accordance-with code and code date,
- "Initiating circuit wiring shall be Class A using physical conductors installed with the outgoing and return conductors separated by a minimum of 6 feet,"
- "Duct detectors to sound supervisory signal only -- not general alarm,"
- "Primary power to be 110-volt dedicated circuit", and

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Local-Alarm Pull-station and Remote Annunciator signs (where required) shall have a 4-inch minimum dimension. Sign letters shall be at least 1-inch high and of a color that contrasts with the sign background.

These signs shall contain:

- Local Alarm only. Inform Sachse Fire Department at 911.
- Protected Property Address: .
- Local Alarm Signage
- Fire-Alarm Panel Location: .

Remote Annunciator Signage

- Provide a separate sheet or drawing showing circuit wiring (not conduit) diagrams for both the initiation and the annunciation circuits.
- Multiple circuit paths on the same wire run are not acceptable.
- Additional drawings may be required for systems such as some control, fire-fighter phones, or speakers for evacuation.
- Simple site map inset showing building site in relation to relevant street(s) and indicates the main entrance (A MAPSCO reproduction is unacceptable.)
- Provide sequence of operations on drawing
- System Designer shall hand-sign each sheet in ink.
- Drawing size shall be no more than 36-inches high without any width restrictions.
- Plans shall be drawn to scale on clean and clear floor plans that identify the use of each room.
- Electrical or other busy architectural plans shall not be submitted.
- Circuit wiring from device-to-device shall be drawn on the plans including end-of-line resistors where required.
- Addressable or analog system, show device address numbers on the plans.
- If conventional system, provide zoning legend.

Specification submittals shall include:

- A brief description of the system design, operation, and reset functions.
- Wire specifications;
- Type of primary and secondary power;
- When indicating the equipment used in the specification book, use arrow to identify the model or part, (do not use highlighters, as they will not microfilm).
- List of Materials and quantities
- Manufacturer's Product Information Sheets (technical bulletins) that include design parameters and power requirements
- Riser Diagram
- Battery size calculations and battery discharge
- Voltage drop calculations (
- Addressable Device List with detailed message (e.g., Corridor Smoke outside Room 305; Water Flow 2nd floor)

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Fire-Alarm System requirements include:

- Systems consisting of 50 or more devices shall be addressable.
- Systems containing 75 smoke detectors or more than 200 total alarm devices shall be analog addressable systems
- Addressable and analog systems shall contain alarm histories for the past 100 events.
- Initiating device circuits (IDC) shall be wired Class "A", Style "D" and signaling line circuits (SLC) Class "A" Style "6", with a minimum six 6-foot separation between the supply and the return loop. Notification appliance circuits (NAC) may be Class "B", Style "X" with end-of-line resistors.
- Hard-wired systems shall be zoned by device type (e.g., water flow, smoke, heat, manual pull, or fixed extinguishing system) per floor with a maximum of 10,000 square feet per zone.
- Addressable or analog systems shall show address numbers on the plans and provide a detail list of address verbiage for approval.
- The main power shall be from a dedicated circuit.
- All systems shall be supervised.
- Battery and voltage-drop calculations, in formats that include all input values for verification.
- Where the fire-alarm control panel is not visible from the front (main) entry, a remote annunciator shall be located at the entry and a sign provided to identify the Main Panel location.
- Systems shall be restorable without the use of a code or any special knowledge.
- This can be accomplished through the use of buttons or switches located at the remote annunciator main control panel.
- Horns and/or speakers are not to be located in stairwells or horns in restrooms.
- Speakers only, however, are allowable in rest rooms.
- All manual fire-alarm pull-boxes shall be of the double-action type.
- Fire Alarm Systems that monitor fire sprinkler systems shall be monitored by a U.L. -approved central station.
- Local Fire-Alarm Systems (no outside-agency system monitoring) shall have warning signs above each pull station.
- Fire sprinkler systems containing 20 or more heads, fire pumps, and associated detection/extinguishing systems shall be monitored and supervised by a Fire Alarm or Central-Station Monitoring System.
- Fire pumps shall be monitored at the Fire-Alarm or Central Station Monitor Panel for "Pump Running", "Phase Reversal", and "Power Available" status.
- Elevator Recall and Shunt Trip
- State and local codes regulate elevator installations. Codes that effect fire safety are summarized in this section.
- Fire sprinklers shall not be installed in top of elevator shafts.
- Detectors shall not be located in the top of elevator shafts.

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Elevator recall:

- Elevator recall shall be from a smoke detector activation in the elevator lobby, or machine room.
- Detectors in elevator lobby and machine rooms shall be smoke in conditioned spaces and heat in unconditioned spaces.
- Elevator machine rooms without fire sprinklers shall contain a smoke detector for recall only.
- Where the rooms are unconditioned, heat detectors shall be provided (135° to 165°).
- Elevator machine rooms with fire sprinklers shall have smoke detectors for recall.
- Where the rooms are unconditioned, 135°- to 165° heat detectors shall be installed for recall.

Elevator shunt trip:

- Shunt tripping shall be initiated (only) from the elevator machine room.
- The shunt shall be tripped by the activation of a 180°- to 200° heat detector located within 2 feet of each fire sprinkler. Electrical machine room sprinklers shall have a 212°- to 286° operating range.
- If hydraulic elevators are used and sprinklers are required in the bottom of the pit, a 135-165 heat detectors shall be required within 2' of each sprinkler.
- Elevator car recall and fire fighter control shall be in accordance with Chapters 4, and 30 of the International Building Code.
- The Fire Department shall be notified and must witness acceptance testing of all elevators requiring fire department recall or elevator shunt.
- Elevator cars shall be provided with a 2-way communication system.
- The communication system must be connected to either a constantly attended (24 hour) location or to an UL listed monitoring station.