Manchester Fire Department

Bureau of Fire Prevention
100 Merrimack Street, Manchester, NH 03101
Phone: 603-669-2256 Fax: 603-625-6802

James A. Burkush
Chief of Department

Fire Protection System Installation Permit

To be completed by fire department personnel

Permit type: ☐ **Sprinkler system** ☐ **Clean Agent system**

☐ **Suppression system** ☐ **Other: _____**

Permit #: _____

Project Address: _____

_____

_____

Installation Company: _____

Contact #: _____

Permit holder is responsible for compliance with all codes and ordinances of the City of Manchester and State of New Hampshire

Construction permits shall automatically become invalid unless the work authorized by such permit is commenced within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. Before such work recommences, a new permit shall be first obtained and the fee, if any, shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded one year. Permits are not transferable and any change in occupancy, operation, tenancy or ownership shall require that a new permit be issued.

Issued by: _____ **Date: _____**

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AUTOMATIC SPRINKLER SYSTEM

DESIGN AFFIDAVIT

Date: _____

Address of Installation: _____
Name

_____
Street

_____
City, State, Zip

Installing Contractor:

_____
Co. Name

_____
Street

_____
City, State, Zip

_____
Tel Fax

Designer: (if different)

_____
Co. Name

_____
Street

_____
City, State, Zip

_____
Tel Fax

NICET III or FPE License #_____

The undersigned certifies that the system as designed conforms to the _____ edition of NFPA_____ and all applicable Manchester Fire Department Rules and Regulations.

If not, areas of non-conformance for which we are applying for a variance are: _____

_____

_____

_____

I have appropriate design certification/expertise and authority to make this certification.

Attached is a list / copies of relevant training and certification in the field.

Signed: _____ Date: _____

Firm: _____ Telephone: _____

Fax: _____

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AUTOMATIC SPRINKLER SYSTEM

DESIGN AFFIDAVIT cont.

Building Type: _____

Occupancy Type: _____

Number of Stories above grade: _____ below grade: _____

Total Protected Floor Area: _____

Manufacturer of Equipment: _____

# of valves: _____ # of flow alarms: _____ PIV / WPIV: _____

# of tamper switches: _____ # of low pressure switches_____

Temperature and # of heads: _____

Name of Fire Alarm Installer: _____

Type of alarm connection of MFD: _____

Narrative description of work to be conducted:

_____

_____

_____

_____

_____

_____

(Fire Department use only)

Date received

Application #

Date Reviewed

Date Approved

Check # and Amount

Equipment must be installed in accordance with NFPA and Manchester Fire Department Rules and Regulations governing sprinkler systems and manufactures installation instructions. Permits and inspections shall be required for all new installations and to any work or modification to an existing sprinkler system

An application is hereby made for approval for the installation or modification of a sprinkler system.

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Automatic Sprinkler System

Owner's Information Certificate

Name/Address of property to be protected with sprinkler protection:

_____

_____

Name of owner: _____

Existing or planned construction is

- ❑ Fire resistive or noncombustible
- ❑ Wood frame or ordinary (masonry walls with wood beams)
- ❑ Unknown

Is the system installation intended for one of the following special occupancies:

Aircraft hangar	❑ Yes	❑ No
Fixed guideway transit system	❑ Yes	❑ No
Race track stable	❑ Yes	❑ No
Marine Terminal, pier, or wharf	❑ Yes	❑ No
Airport Terminal	❑ Yes	❑ No
Aircraft engine test facility	❑ Yes	❑ No
Power plant	❑ Yes	❑ No
Water-cooling tower	❑ Yes	❑ No

If the answer to any of the above is "yes", the appropriate NFPA standard should be referenced for sprinkler density/area criteria.

Indicate whether any of the following special materials are intended to be present:

Flammable or combustible liquids	❑ Yes	❑ No
Aerosol products	❑ Yes	❑ No
Nitrate film	❑ Yes	❑ No
Pyroxylin plastic	❑ Yes	❑ No
Compressed or liquefied gas cylinders	❑ Yes	❑ No
Liquid or solid oxidizers	❑ Yes	❑ No
Organic peroxide formulations	❑ Yes	❑ No
Idle Pallets	❑ Yes	❑ No

If the answer to of the above is "yes", describe type, location, arrangement, and intended maximum quantities.
_____

_____

Indicate whether the protection is intended for one of the following specialized occupancies or areas:

Spray area or mixing room	❑ Yes	❑ No
Solvent extraction	❑ Yes	❑ No
Laboratory using chemicals	❑ Yes	❑ No
Oxygen-fuel gas system for welding or cutting	❑ Yes	❑ No
Acetylene cylinder charging	❑ Yes	❑ No
Production or use of compressed or liquefied gases	❑ Yes	❑ No
Commercial cooking operation	❑ Yes	❑ No
Class A hyperbaric system	❑ Yes	❑ No
Clean room	❑ Yes	❑ No
Incinerator or waste handling system	❑ Yes	❑ No
Linen handling system	❑ Yes	❑ No
Industrial furnace	❑ Yes	❑ No
Water-cooling tower	❑ Yes	❑ No

If the answer to of the above is "yes", describe type, location, arrangement, and intended maximum quantities.
_____

_____

Will there be any storage of products over 12 ft (3.6m) in height?
❑ Yes ❑ No
If the answer is "yes", describe product, intended storage arrangement, and height. _____
_____

_____

_____

Will there be any storage of plastic, rubber, or similar products over 5 ft (1.5m) high except as described above? ❑ Yes ❑ No

If the answer is "yes", describe product, intended storage arrangement, and height. _____
_____

_____

_____

I certify that I have knowledge of the intended use of the property and that the above information is correct.

Signature of owner's representative or agent: _____
Date: _____

Name of owner's representative or agent completing certificate (print): _____
Relationship and firm of agent (print): _____

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PLAN REQUIREMENTS
FIRE SPRINKLER SYSTEM

Project Name: _____
Project Address: _____
File Number: _____ Date: _____
Code Edition: _____

All supporting documentation, showing items listed below are required for review. The checklist is based on 2002 Edition of NFPA 13.

General (All submissions shall include the following):

- ☐ One copy of dimensioned shop drawing, and submittal data shall be provided with the permit application permitting evaluation of the system PRIOR to installation.
- ☐ Name and address of project or tenant space where system will be installed or modified.
- ☐ Name, address, and telephone number for the designer of the system.
- ☐ Owners Information Certificate Form. (13:14.1)
- ☐ Drawings are to be uniform in size, dimensioned, and drawn to a recognized scale. (13:14.1.3)
- ☐ Plans and calculations shall clearly indicate the design standard(s) and edition (ex: NFPA 13, 2002 Edition) used to prepare the submission.
- ☐ Plans shall include a schematic drawing of the fire protection underground showing point of entry into building, size and length of pipe, point of connection to water main and location of referenced water flow test. Schematic drawing shall also include the location and type of all valves, meters and backflow prevention devices. (13:14.1.3)
- ☐ Plans and calculations shall clearly show a floor plan of each story, indicating the location of all walls, partitions, and fire rated assemblies; and the intended use of each area, room or void space. (13:14.1.3)
- ☐ A dimensioned reflective ceiling plan complete with shadow gram of all walls and obstructions shall be submitted indicating the placement of all sprinkler heads shall be provided.

☐ Plans shall indicate the location and pipe size of the device, located downstream of all backflow prevention valves, used to verify the full flow system demand in accordance with NFPA – 13, Article 5-15.4.6.1.

☐ Plans shall clearly indicate total area protected by each system riser on each floor. (13:14.1.3(14))

☐ Plans shall include full height cross-section elevation details indicating construction and vertical/horizontal distances of sprinklers relative to underside of roof/ceiling and structural members. (obstructed or unobstructed) (13:14.1.3)

☐ Plans shall clearly indicate the type and location of all control valves, drain valves, test connections, hose outlets, and related equipment and piping. (13:14.1.3(23))

☐ Plans shall clearly indicate the location and type of audible and/or visual alarm devices located inside and outside of the building. (13:14.1.3(26), IBC 2006 Edition, Section 903.4.2)

☐ Plans shall clearly indicate the make, model, temperature rating, nominal hydraulic K-factor, sprinkler identification number, and quantity of each type of sprinkler to be installed. (13:14.1.3(12))

☐ Plans shall clearly indicate the location of special sprinklers (Examples: extended coverage, sidewall, intermediate/high temperature sprinklers). (13:14.1.3(13))

☐ Plans shall clearly indicate pipe types and wall thickness, type of fittings and joints, and the type and locations of hangers, sleeves, braces, and methods to support sprinkler components. (13:14.1.3(21)(22))

☐ Plans shall clearly indicate nominal pipe size and cutting lengths of pipe (center to center), including riser nipples, drop nipples, and armovers. (13:14.1.3(19)(20))

☐ Plans shall clearly indicate method of protection for non-metallic piping as required by pipe manufacturer. (nailer plates and/or thermal insulation) (13:14.1.3(4))

☐ Plans shall clearly indicate method of maintaining minimum temperature of 40ºF for sprinkler system piping installed in unconditioned spaces. (13:7.2.5.1)
(Special note: tenting method requires properly secured, minimum R-30 unfaced batt insulation.)

☐ Hydraulically designed systems:

1. Hydraulic data nameplate information. (13:14.1.3(31))
    a. The minimum rate of water application (density).
    b. The location and size of the design area.
    c. Inside and outside hose stream allowances as actually provided.
    d. Required flow and residual pressure at base of riser.
    e. Occupancy classification.
2. Hydraulic reference points shall be indicated on the plan corresponding with hydraulic calculation sheets. (13:14.1.3(34))
3. Protection areas per sprinkler head. (13:8.5.2)
4. Provide a copy of the Manchester Water Works water flow test results (dated within 12 months of plan submission date).

☐ Graph sheet. A graphic representation of the hydraulic demand shall be plotted on graph paper (Q1·85) or computer generated hydraulic program based upon: (13:14.3.4) Manchester Water Works flow data

1. Water supply curve
2. Total sprinkler system hydraulic demand
3. Hose streams demand.
4. In-Rack sprinkler demand (where applicable)

Tenant Fit-up

☐ Where existing systems are to be modified, sufficient details of the existing system shall be shown on the plans to determine effect of proposed modification on total system. (13:14.1.3(30))

☐ Provide shopping center key plan or building complete floor plan indicating the location of tenant space.

☐ Plans shall clearly indicate location and floor level of the hydraulic remote area and its design criteria.

☐ Work being performed in the hydraulic remote area shall include hydraulic calculations and Manchester Water Works water flow test results (dated within 12 months of plan submission date).

Limited area sprinkler system:

☐ NOT ALLOWED IN THE CITY OF MANCHESTER

Storage Occupancy:

Miscellaneous Storage ≤ twelve feet in height:

☐ Plans shall clearly indicate commodity classification, maximum storage height, proposed storage arrangement, widths and locations of all aisles. (7-2.3.2.2)

☐ Plans shall clearly indicate roof/ceiling height within storage area.

Storage Commodities

☐ Plans shall clearly indicate fire control approach for storage commodities, such as: (13:12.1; 13:13.1)

☐ Plans shall clearly indicate commodity classification, maximum storage height, proposed storage arrangement, widths and locations of all aisles.

☐ Plans shall clearly indicate minimum and maximum distance between the sprinkler deflector and the top of storage.

☐ Plans shall clearly indicate rack configuration (width and height) and flue spaces: (Single row, Double row, Multiple rows).

☐ Plans shall clearly indicate the method of storage, i.e.; wood pallets on racks, expanded plastic pallets on racks, solid shelving, open shelving; or encapsulated wrapping materials.

☐ Plans shall clearly indicate interior small hose stations or approved alternative.

Manufacturers Data Sheet:
All submissions shall include the appropriate Manufacturers Data Sheets for the following:

☐ Pipe
☐ Fittings (Threaded, Grooved, Etc.)
☐ Valves (O.S. & Y., Butterfly, Etc.)
☐ Hangers / Rod / Fasteners / Clamps
☐ Alarm Check Valve / Retard Chamber / Water Motor Alarm
☐ Swing Check Valves
☐ Fire Department Connections
☐ Sprinkler Heads/Spray Nozzles
☐ Inspectors Test Connections / Drain Assemblies
☐ Riser Manifolds
☐ Backflow Preventers / RPZ's Valves
☐ Pressure Regulating Valves
☐ Dry Valves / Preaction Valves / Actuation Devices and Systems / Trim
☐ Valve Supervisory Switches
☐ Water flow Vane Switches
☐ Pressure Switches
☐ Fire Pumps / Accessories
☐ Fire Pump Drivers / Accessories
☐ Fire Pump Controllers
☐ Jockey Pumps
☐ Jockey Pump Controllers
☐ Relief Valves
☐ Fire Hose Valves, Fire Hose and Nozzles
☐ Special System Components (Foam, Antifreeze, Water Mist, Etc.)
☐ Other _____
☐ Other _____

Where multiple contractors are involved in the system design / installation, plan approval requires concurrent submittals and review of the fire suppression and detection systems.

Special Notes

- ☐ A low-pressure switch is required to be installed each riser on the system side of main control valve. In zoned systems, this will be required on the system side of each zone. (Local Requirement)
- ☐ Sprinkler systems are required to be monitored off-site by an approved fire alarm system
- ☐ Piping between the sprinkler system and a pressure actuated water flow alarm-initiating device shall be galvanized, nonferrous metal, or other approved corrosion resistant material. (1999 Revised NFPA-73:2-6.3)
- ☐ Plans shall clearly indicate the make, type, model, and size of dry pipe, pre-action, or deluge valves. (13:14.1.3(24); 13.14.1.3(25))
- ☐ Plans shall clearly indicate the water capacity in gallons of each dry pipe system. (13:7.2.3)
- ☐ Plans shall clearly indicate air pressure settings for valves and supervisory air functions at normal and abnormal conditions. (13:7.2.6.7)
- ☐ Information about antifreeze used (type and amount). (13:14.1.3(42))
- ☐ Calculation of loads for sizing and details of sway bracing (13:14.1.3(39))
- ☐ An approved reduced pressure principle backflow prevention device (RPZ-listed assembly) including approved indicating control valves shall be provided on all antifreeze systems. (2006 ICC International Plumbing, 3-5.31).
- ☐ An approved listed expansion chamber shall be provided on all antifreeze systems (13:7.5.3.3).
- ☐ Fire pump and booster fire pump installations shall comply with the current edition of NFPA 20.

Hydraulic Calculation Forms

Hydraulic calculations shall be prepared on form sheets that include a summary sheet, detailed work sheets, and a graph sheet. (13:14.3.1)

- ☐ When multiple designs are required to protect various hazards with a common system area, separate calculations shall be provided for each hazard area.
- ☐ All code credits/exceptions utilized in the design must be clearly marked on the plan complete with the calculation and code cite referenced.
- ☐ Calculation summary sheet shall include: (13:14.3.2)
  1. Date
  2. Location
  3. Description of Hazard
  4. System Design Requirements

a. Total design area (ft^2)
b. Minimum rate of water application (density), gpm/ft^2.
c. Area of coverage per sprinkler.

5. Total system demand at base of riser. Water for inside and outside hose streams shall be represented as actually provided.
6. Allowance for in-rack sprinklers, gpm.
7. Limitation (dimension, flow, and pressure) on extended coverage or other listed special sprinklers.

☐ Graph sheet. A graphic representation of the hydraulic demand shall be plotted on graph paper (Q) or computer generated hydraulic program based upon: (13:14.3.4)

1. Manchester Water Works flow data.
2. Total sprinkler system hydraulic demand including hose streams.

☐ Detailed Worksheets (13:14.3.3)

1. Sheet number
2. Sprinkler description and discharge constant (K)
3. Hydraulic reference points
4. Flow in GPM
5. Pipe Size
6. Pipe Lengths, center-to-center of fittings
7. Equivalent pipe lengths for fittings and devices
8. Friction loss in psi of pipe
9. Total friction loss between reference points
10. In-rack sprinkler demand balanced on ceiling demand
11. Elevation head in psi between reference points
12. Required pressure in psi at each reference point
13. Velocity pressure and normal pressure if included in calculations
14. Notes to indicate starting points or reference to other sheets or to clarify data shown
15. Diagram to accompany gridded system calculations to indicate flow quantities and directions for lines with sprinklers operating in the remote area.
16. Combine K-factor calculations for sprinklers on drops, armovers, or sprigs where calculations do not begin at the sprinkler.

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AUTOMATIC SPRINKLER SYSTEM

FINAL ACCEPTANCE CERTIFICATION

1) Date Installation Placed in Service: _____

2) Address of Installation: _____

_____

3) Installing Company: _____

_____

4) Required attachments to this certification statement are:

- ❑ Completed Contractor's Material and Test Certificate for the Underground Piping.
- ❑ Completed Contractor's Material and Test Certificate for the Aboveground Piping
- ❑ As-built drawings of the sprinkler system installed, Preferably in Electronic PDF format.

5) The undersigned certifies that the automatic sprinkler system is installed in total conformance with the 2002 edition of NFPA 13 and Manchester Fire Department Rules and Regulations. (If not, the areas of non- conformance are):

Installer Signature: _____ Date: _____

Firm: _____ Phone No.: _____