Watertown Fire Rescue
Fire Prevention Division
Standpipe System Permit Application

Permit No. _____ App. Date: _____
Receipt No. _____ Issue Date: _____
Fee: $_____ Approved By: _____

PLEASE PRINT NEATLY

Installation Location
Owner/Business: _____
Address: _____
Watertown, SD 57201
Phone No.: _____

Installer
Name:_____
Address: _____
City: _____ State:_____ Zip_____
Phone No.: _____

Sprinkler System Type
☐NFPA 13 ☐NFPA 13R
☐Other_____

Standpipe System
☐NFPA 14
☐Automatic
☐Combined
☐Automatic Dry ☐Manual Dry
☐Manual
☐Semiautomatic ☐Wet
☐Other, Specify _____

System Type
☐Class I No. of each _____
☐Class II No. of each _____
☐Class III No. of each _____

Equipment
Number of standpipe risers being installed _____

Number of Fire Rescue connections being installed _____

Length of hose when installed (100 ft required) _____

Auxiliary Equipment
☐Antifreeze
☐Foam
☐Fire Pump
☐Other, Specify _____

Building Use
☐Assembly:_____ ☐Warehouse: _____
☐Office (B) ☐Educational (E)
☐Residential:_____ ☐Institutional: _____
☐Others:_____ specify ☐High-rise

Description of Work
(Detailed explanation of area and extent of work to be performed)
Design and installation shall be in accordance with current edition of NFPA.

Standpipe systems shall be provided in new buildings and structures in accordance with IFC Section 905.

Fire hose threads used in connection with standpipe systems shall be approved and shall be compatible with fire department hose threads.

Two sets of drawings, one digital, one paper and submittal book shall be submitted with each permit application for review. The applicant will receive permit after plan review.

Water Supply
☐From an independent main, Size _____
☐From a domestic feed, Size _____

Applicant
I, the undersigned, do hereby affirm that the statements contained on this form are true and correct. I further agree to comply with the provisions of applicable ordinances of the City of Watertown and the approved plans and specifications submitted with this application.

In addition, it is understood that the installation of systems shall be made only by persons properly trained and qualified to install the specific system being provided. The installer certifies to this authority that the installation is in complete agreement with the terms of the listing and manufacturer's instructions and/or approved design plan.

NO WORK SHALL COMMENCE WITHOUT AN APPROVED PERMIT ISSUED BY THE FIRE PREVENTION DIVISION AND PAYMENT TO WATERTOWN FIRE RESCUE

Signature: _____

Name (print): _____

Submit by Email

Fee Calculation Schedule

Standpipe System

Description	Number of Items	Unit Fee	Subtotal
1. Standpipe Riser		$ 75.00	$0.00
2. Sales Tax (6.5%)			$0.00
3. Grand Total			$0.00

Fire Prevention Division
Watertown Fire Rescue
129 1st Ave NW
Watertown, SD 57201

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Watertown Fire Rescue Issue date: **1/1/2016**
Fire Prevention Division

Standpipe System Design Guideline

A minimum of one set of drawings, one digital, and one hydraulics calculation shall be submitted with each permit application for review. The applicant will receive a signed permit when the plans have been approved.

NO WORK SHALL COMMENCE WITHOUT AN APPROVED VALID PERMIT ISSUED BY FIRE PREVENTION DIVISION.

Required Standpipes During Construction At least one standpipe shall be provided for use during construction. Such standpipes shall be installed when the progress of construction is not more than 40 feet in height above the lowest level of fire department vehicle access. Such standpipe shall be provided with fire department hose connections at accessible locations adjacent to usable stairs. Such standpipes shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or flooring.

Depending on the work load and complexity of the project, Fire Protection Engineer may take up to 10 working days for review of each permit submittal. Plan review may be expedited when additional fees set by the revised fee schedule are paid at the time of permit submittal. Expedited plan review may take up to three business days.

Standpipe system working plans shall be prepared in accordance with Chapter 7 and 8 (Design and Plans & Calculations) of the current edition of NFPA 14. Additional information shall be provided as follows (Separate plan submittal will not be required when standpipe system, as required herein, is submitted as part of an automatic fire sprinkler system):

A. GENERAL

The following applies to all sheets:

1. All sheets shall be 24”X36” minimum (all sheets to be the same size) – all plan sets shall be stapled and folded to an approximate size of 8”x10”
2. Required scale is 1/8” = 1 foot – Include a bar scale
3. Show compass points on all sheets
4. NFPA 170 Symbol legend
5. For large facilities provide a key plan to show all building sections
6. Location of Standpipe risers.
7. **Site Plan**. The site plan shall include all of the following:
    a) North Arrow
    b) Engineering Scale (1”=10’, 1”=20’, 1”=30’, 1”=50’, etc.)
    c) Street names – street address
    d) Buildings dimensions, No. of stories, square footage of the building footprint, building setbacks
    e) Location of approaches, driveway (length, width, grade, turnarounds, surface material), hardscape/landscape, parking lots, and signs
    f) Location of all offsite and onsite fire hydrants including those used for water flow test data
    g) Location of fire department connection (FDC) and post indicator (PIV) valve
    h) Location of key boxes containing building access keys.
8. Show drawing number, revisions and date
9. Provide a 3” x 3” space at the bottom right corner of every sheet for Fire Prevention Division’s approval stamp.

B. Design, Hydraulics Calculation, and Installation Requirements.

1. Provide a standpipe system schematic as it enters the building to the top most outlet of each standpipe. Include the FDC, all isolation valves, tamper switches, gauges, drains, and outlets. Provide the elevation of each standpipe outlet.
2. The design of the standpipe system is governed by building height, area per floor, occupancy classification, egress system design, required flow rate and residual pressure, and the distance of the hose connection from the source of the water supply. [NFPA 14 7.1] Show this information on the plans and diagram.
3. Identify on plans the class and type of the proposed standpipe system (Class I, II, or III; automatic, semi-automatic, manual, wet, dry). [NFPA 14 5.3]

    A. Class I standpipe systems in non-high rise buildings may be automatic dry, automatic wet, manual wet, semi-automatic dry, manual dry, or manual wet. [NFPA 14 5.4.1.1]
    B. Class I standpipe systems in high-rise buildings must be automatic or semiautomatic (manual systems are not permitted). [NFPA 14 5.4.1.2]
    C. Class I standpipe systems must be wet systems except where the piping is subject to freezing. [NFPA 14 5.4.1.4]
    D. Class II or Class III standpipes must be automatic-wet or semi-automatic wet systems unless it is subject to freezing. [NFPA 14 5.4.2]

4. Automatic or semi-automatic systems must have listed waterflow and supervisory alarms. [NFPA 14 5.7.1]
5. Circuits for remote control devices on automatic and semi-automatic standpipe systems must be supervised in accordance with current edition of NFPA 72, National Fire Alarm Code. [NFPA 14 5.6]
6. Provide hydraulic calculations with the minimum flow rates required by NFPA 14 7.10 (pressure requirements are listed separately):

    A. *Class I and III:* 500 gpm for the first standpipe and 250 gpm for each additional with a total not to exceed 1,250 gpm for un-sprinklered buildings and 1,000 gpm for sprinklered buildings. [NFPA 14 7.10.1.1.1 and 7.10.1.1.5]

7. Provide hydraulic calculations with the minimum and maximum pressure limits:

    A. A minimum residual pressure of 100 psi for the hydraulically most remote 2 ½" hose connection (at 500 gpm). And 65 psi residual pressure is required for the hydraulically most remote 1 ½" hose connection (at 100 gpm). [NFPA 14 7.8.1]
    B. Where a horizontal standpipe on a Class I or Class III system supplies three or more hose connections on any floor, the minimum flow rate for the hydraulically most demanding horizontal standpipe shall be 750 gpm (2840 L/min), and the calculation procedure shall be in accordance with 7.10.1.2.2. [NFPA 14 7.10.1.1.2]
    C. Where the static pressure at the hose connection exceeds 175 psi, an approved pressure regulating device must be provided to limit the static and residual pressures to 100 psi for 1 ½" hose connections and 175 psi for other hoses. [NFPA 14 7.2.3.2]
    D. The pressure on the inlet side of the pressure regulating device must not exceed the devices rated working pressure. [NFPA 14 7.2.3.3]
    E. The maximum pressure at any point in the system at any time shall not exceed 350 psi. [NFPA 14 7.2.1]

8. The calculations for the maximum flow rate for individual connections are:

    A. For 2 ½" hose connections - 250 gpm. [NFPA 14 7.10.3.1 and NFPA 14 7.10.1.2]

B. For 1 ½" hose – 100 gpm. [NFPA 14 7.10.3.2]

9. The minimum size for standpipes is:

    A. Class I and III – 4" minimum. [NFPA 14 7.6.1]
    B. Combined system – 6" minimum. [NFPA 14 7.6.2] For fully sprinklered buildings - 4" minimum if the system is hydraulically calculated per NFPA 14 7.8. [NFPA 14 7.6.3]
    C. C. Branch lines must be sized hydraulically but may be no less than 2 ½ inches. [NFPA 14 7.6.4]

10. The fire department connection (FDC) must be installed as follows [NFPA 14 6.4.3 and 6.4.5]:

    A. The FDC must be on the street side of the building and have a designated sign. [NFPA 14 6.4.5.1]
    B. A*utomatic-Wet and Manual-wet Standpipe Systems:* On the system side of system control valve, check valve or any pump, but on the supply side of any isolated valves required in 6.3 2.
    C. *Automatic-Dry Standpipe Systems:* On the system side of the control valve and check valve and or supply side of the dry pipe valve.
    D. *Semiautomatic-Dry standpipe systems:* On the system side of the deluge valve.
    E. *Manual-Dry Standpipe Systems:* Directly connected to system piping.
    F. High-rise buildings must have two remotely located FDCs. [NFPA 14 7.12.2]

11. Fire department connections shall be located not more than 100 feet from the nearest fire hydrant connected to an approved water supply. [NFPA 14 6.4.5.4, A 6.4.5.4]
12. The location and protection of piping must be as follows (connections from fire pumps and sources outside the building should be made at the base of the standpipe) (NFPA 14 Section 6.1 and A.6.1):

    A. Dry standpipes must not be concealed unless the piping integrity is monitored with supervisory air pressure. [NFPA 14 6.1.1]
    B. Standpipes and lateral piping supplied by standpipes must be located in enclosed exit stairs or protected to the same degree as stairs. [NFPA 14 6.1.2.2]
    C. Protection of lateral piping to 2 ½" hose connections in sprinklered buildings can be omitted, and piping connecting standpipes to 1 ½" hose lines can be omitted. [NFPA 14 6.1.2.2 and 6.1.2.2.2.]
    D. Where it's absolutely necessary to run pipe under buildings, special precautions must be taken that include arching the foundation walls over the pipe, running in covered trenches, etc. Underground piping shall be in accordance with NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances.* [NFPA 14 6.2]

13. Where two or more standpipes are installed in the same building, they must be interconnected. [NFPA 14 7.5.1] The FDC should be arranged to supply all interconnected standpipes. [NFPA 14 A.7.5, Figure A.7.1(a), A.7.1(b) and A.7.1(c)]
14. Installation requirements for valves are as follows (NFPA 14 Chapter 6):

    A. An approved indicating gate valve and check valve must be installed at each water supply. [NFPA 14 6.3.1]
    B. Provide an isolation valve for each standpipe. [NFPA 14 6.3.2]
    C. Combined sprinkler/standpipe systems must have an individual control valve *and check valve* at each sprinkler connection. [NFPA 14 6.3.5.1]
    D. A Post Indicator Valve must be installed for the water supply and be at least 40 ft from the building. [NFPA 14 6.3.6]

E. Valves must be supervised by one of the methods in NFPA 14 6.3.7.

15. Locations for hose connections must be as follows:

A. Hose connections and hose stations must be unobstructed and located between 3 ft and 5 ft from the floor. [NFPA 14 7.3.1.1]
B. Class I systems must be located (NFPA 14 7.3.2):
   I. At each intermediate landing between floor levels in every required exit stair;
   II. On each side of the wall adjacent to the exit opening of 2-hour fire rated horizontal exits;
   III. At the highest landing of stair which accesses roof and on the roof where the stairwell does not have access to the roof;
   IV. In buildings other than covered mall buildings, in each exit passageway at the entrance from the building areas into the passageway;
   V. In covered mall buildings, at the entrance to each exit passageway or exit corridor and at the interior side of the public entrance from the exterior to the mall.
C. Class II systems must be provided with 1 Ìò hose connections within 130 feet measured along the path of travel of every floor. [NFPA 14 7.3.3.1]
D. Class III hose stations must be provided as for Class I and II systems. Hose stations may be equipped with a 2 Ìò x 1 Ìò reducer and a cup attached with a chain in fully sprinklered buildings and the 130 feet travel distance limitation shall not apply. [NFPA 14 7.3.4.1]

17. Where a zoned system is used, see NFPA 14 7.9. Each zone requiring pumps must be provided with a separate pump. [NFPA 14 7.9.1]
18. Specify the method of support for the standpipes. [NFPA 14 6.5.1]
19. For the location, type, and draining arrangements of gauges, see NFPA 14 5.5. [NFPA 14 5.5.1, 5.5.1.1, 5.5.1.2, 5.5.1.3, and 5.5.2]
20. Provide a main drain test connection. [NFPA 14 7.11.3] It must be sized in accordance with Table 7.11.2.3.
21. Provide a method to drain all low points of the system. Drains must be located downstream of the isolation valves. The drain must discharge to an approved location. [NFPA 14 7.11.2.2]
22. A drain riser must be installed adjacent to each standpipe equipped with pressure regulating devices. [NFPA 14 7.11.1]
23. Where an existing standpipe system having standpipes with a minimum diameter of 4 in. (100 mm) is to be utilized to supply a new retrofit sprinkler system, the water supply required by Section 7.10 shall not be required to be provided by automatic or semiautomatic means, provided that the water supply is adequate to supply the hydraulic demand of the sprinkler system in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*. [NFPA 14 5.4.1.3]

C. AS BUILT:

Within 10 days after the fire sprinkler system has been tested and accepted by the Fire Preventionôs Inspector - a complete and accurate ñas builtò of the system shall be submitted for Fire Prevention review and records. The ñas builtò shall be submitted in digital form showing final locations of all components.