

UNIT 8 STANDPIPE & HOSE SYSTEMS

PURPOSE

USE

3 CLASSES



5 OPERATING
METHODS

INSPECTION,
TESTING &
MAINTENANCE

LOCATION

RECORDS



Welcome to Unit 8 Standpipe and Hose Systems. In this Unit we will discuss:

- The purpose of standpipe and hose systems
- Who should use standpipe and hose systems?
- Three classes of standpipe systems
- Five different operating methods for standpipes including automatic and manual wet systems, automatic and semi-automatic dry systems and manual dry systems
- The Inspection, Testing and Maintenance of standpipe systems in conformance with NFPA 25
- The proper location of standpipes
- And of course the need for the owner to provide accurate records of inspections and testing performed on the system

STANDPIPE & HOSE SYSTEMS



Standpipe and hose systems are designed to deliver water for manual firefighting through a series of fixed pipes that will reduce the need for hose lays and decrease the time to deliver water to the fire.

Standpipe and hose systems are required by building and fire codes for certain occupancies based on the size, use and height of the building. They are a series of pipes and valves strategically located that provide suppression water for use by trained occupants or the fire department. Some older buildings only have standpipe systems while many newer buildings will have a combination system, which supplies the fire sprinkler system and the standpipe system.

Standpipe systems are used in large buildings or multi-story buildings to prevent long lengths of hose in stairwells and floor areas. Firefighters can bring their own hose to the fire and connect to a standpipe system and, with not more than 100 to 200 feet of hose, fight a fire anywhere on a given floor.



Standpipes are intended to be used by trained building occupants when the fire is in the incipient stage and there is no need for protective clothing or breathing apparatus. At the incipient stage the fire is very small or just started and is still localized. If the fire has grown to the size of a person every effort should be made to evacuate the building closing all doors and windows so the firefighting can be left to firefighters who have the experience and equipment to safely extinguish the fire.

Occupants should only attempt to fight the fire if it is small, there is very little smoke and the room temperature is normal. The fire department must be notified before any attempt is made to fight the fire by the occupants.

THREE TYPES OF STANDPIPES

CLASS 1



64 MM OR 2 ½" CONNECTION

FIRE DEPT. USE

NO HOSE ATTACHED

USUALLY LOCATED IN
STAIRWELL



There are three classes of standpipe systems:

Class I – A Class I Heavy Stream standpipe system provides a 64 mm or 2 1/2 inch hose connection for use by the fire department during initial response. This class has no hose attached. The fire department will usually carry hose packs to the floor level, typically a stairwell, where they will start their operations and connect to the standpipe system. These connections must match the hose thread utilized by the fire department.

THREE TYPES OF STANDPIPES



CLASS 2

38 MM OR 1 ½" HOSE STATION

USED BY **TRAINED** OCCUPANTS
OR FIREFIGHTERS

TRAINED OCCUPANTS

FD POLICY



Class II –A Class II First Aid standpipe system provides 38mm or 1 ½ inch hose stations to supply water for use by trained building occupants or by the fire department during initial response. These are typically found in cabinets with 100' of hose. Previously Class II standpipe and hose systems were intended for use by building occupants and firefighters. Changes to NFPA 14, the Standard for the Installation of Standpipe and Hose Systems, now restricts this type of system to use by **trained** personnel or the fire department. Retroactivity of this standard to require occupants to be trained in the use of the standpipe is determined by the local authority having jurisdiction. Your fire department may have a policy clarifying their position on this.

THREE TYPES OF STANDPIPES



CLASS 3

1 1/2" OR 38 MM FOR USE BY **TRAINED** OCCUPANTS

2 1/2" or 64 MM FOR USE BY FD



Class III - Class III Combination standpipes provide a 1 1/2 " or 38 mm hose connection to supply water for use by trained building occupants and a 2 1/2 " or 64 mm hose connection to supply a larger volume of water for use by the fire department and those trained in heavy water streams. Many times these connections will provide a 2 1/2 "to 1 1/2" reducer so either size hose can be attached.

WET & DRY SYSTEMS

WET SYSTEMS

FILLED WITH WATER



DRY SYSTEMS

NO WATER

FREEZING POTENTIAL

WATER MUST BE
TURNED ON

**AUTOMATIC DRY
SYSTEM COMPRESSED
AIR**



Standpipe systems are either wet systems or dry systems.

A "wet" standpipe is always filled with water which can be used by firefighters or trained building occupants. Wet standpipes usually come with a 100' hose so that trained building occupants may fight fires quickly.

Dry standpipe systems have no water in them and are used where the water has the potential of freezing. Manually activated dry systems require the water to be turned on so it floods the system or water is pumped in by the fire department.

Automatic dry systems are filled with compressed air so when the control valve and hose nozzle are opened the air pressure drops which allows a flapper valve to open and water to flow into the piping system.

FIVE OPERATING SYSTEMS

AUTOMATIC WET SYSTEMS

FILLED WITH WATER
CONNECTED TO ADEQUATE WATER SUPPLY

MANUAL WET SYSTEMS

HAVE CONSTANT WATER BUT REQUIRE FIRE
APPARATUS TO BOOST VOLUME – NOT APPROVED
IN ALL JURISDICTIONS



There are 5 ways in which standpipe and hose systems work. They are:

Automatic-Wet standpipe systems which are filled with water at all times and are connected to a permanent water supply that is capable of providing water flow and pressure requirements.

Manual-Wet standpipes are filled with water at all times and are connected to a water supply but the water supply is not capable of meeting flow and pressure requirements for firefighting. The purpose of the water supply is to maintain water within the system which reduces the time it takes to get water to the hose station outlets. Manual-wet standpipe systems need water from a fire department pumper or another source to be pumped into the system in order to meet flow and pressure requirements.

FIVE OPERATING SYSTEMS

AUTOMATIC DRY SYSTEMS

PRESSURIZED WITH AIR
CONNECTED TO WATER SUPPLY
WATER FLOWS WHEN VALVE OPENS

SEMI-AUTOMATIC DRY SYSTEM

PERMANENTLY CONNECTED TO WATER
REMOTE CONTROL DEVICE AT EACH HOSE STATION



Automatic-Dry standpipe systems are filled with pressurized air and connected to a permanent water supply that is capable of meeting flow and pressure requirements. It uses a dry pipe valve, to admit water into the system piping automatically upon the opening of a hose valve.

Semi-automatic-Dry standpipe, with empty pipe, is connected to a permanent water supply that is capable of meeting flow and pressure requirements. It uses a device, such as a deluge valve, to admit water into the system piping upon activation of a remote control device located at a hose connection. A remote control activation device shall be provided at each hose connection.

FIVE OPERATING SYSTEMS

MANUAL DRY STANDPIPE

NO WATER IN SYSTEM

WATER SUPPLIED BY FD ENGINE



A Manual-Dry standpipe system is empty and not connected to a water supply. Manual-dry systems need water from a fire department engine to be pumped into the system in order to meet flow and pressure requirements.

STANDPIPE & HOSE INSPECTION, TESTING & MAINTENANCE



WEEKLY
MONTHLY
QUARTERLY
ANNUAL
5 & 50 YEAR



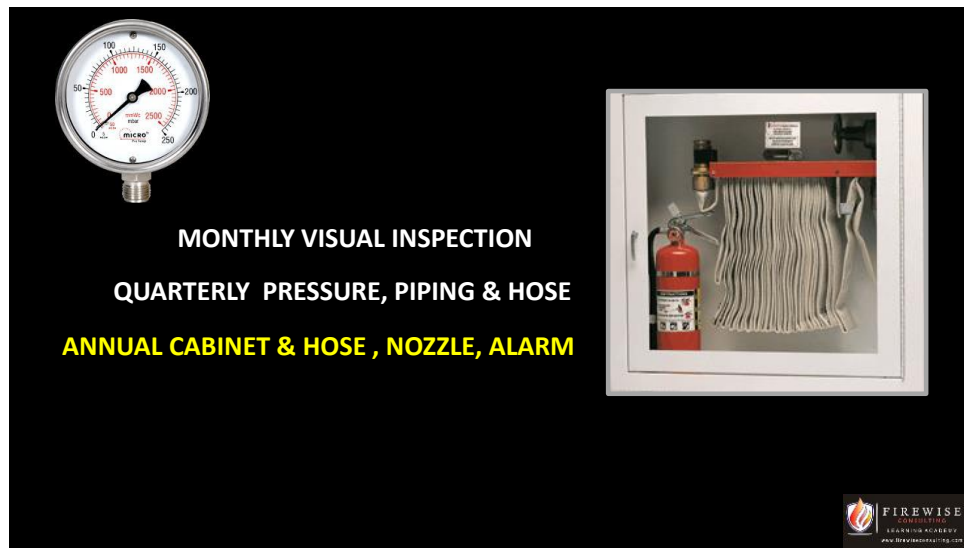
WEEKLY INSPECTION OF VALVES & GAUGES



All standpipe systems are required to be maintained in compliance with the applicable fire code and or NFPA 25 Inspection, Testing and Maintenance of Water Based Fire Protection Systems. NFPA 25 requires a weekly, monthly, quarterly, annual, 5 year and 50 year inspection testing and maintenance.

Weekly, monthly and quarterly inspections may be performed by onsite personnel who have been trained to do them.

The weekly inspection requires air pressure gauges to be checked but if they are monitored they only require monthly inspection.



On a monthly basis the hose cabinets must be visually inspected to ensure that the hose is in the proper position and that all of the equipment is in place. In addition all gauges should be checked to make sure they display the proper pressure.

A quarterly inspection of the pressure regulating devices, piping, and hose connections is required.

An annual inspection of the cabinet, hose, nozzle, water flow alarm connection and hose storage device is required. The hose must be un-racked and physically inspected to ensure there is no damage to the couplings, mildew or delamination of the hose and liner and it must be re-racked so the folds in the hose are in a different location.

**PRESSURE TESTED 5 YEARS FROM MANUFACTURE
& 3 YEARS THEREAFTER**



**5 YEAR WATER FLOW AND
PRESSURE VALVE TEST**

HYDROSTATIC TESTING



REVIEW RECORDS



The hose must be pressure tested five years after its manufacture date and every 3 years thereafter.

Standpipe systems must be flow tested every 5 years. This will flush the system and insure the proper operation of all the valves, piping and the main drain.

Wet systems do not require hydrostatic testing because leaks will become obvious. Dry standpipe system must be hydrostatic tested every 5 years. The hydrostatic test is at 200 psi for 2 hours, or 50 psi in excess of the maximum working pressure.

Fire inspectors should review the inspection, testing and maintenance records to ensure the appropriate service work has been completed.



When doing an assessment of the standpipe system it is important to check the hose cabinet for signs of usage, obstructions and leaks. In this case the door to the cabinet was screwed shut.

In this case the cabinet glass door is broken and the hose has been tampered with. The hose should undergo annual inspection and be re-racked.

Make sure there is sufficient coverage. Hose cabinets designed for use by trained occupants should be placed about 200 feet or 60 meters apart. Hoses should be located so their coverage area overlaps. In this case additional coverage is required.

Standpipes and hose cabinets should be located on each side of horizontal exits. In this way firefighters should have a fire separation between them and the fire.

UNIT REVIEW

USED BY TRAINED OCCUPANTS & FIREFIGHTERS

REDUCE LONG HOSE LAYS

CLASS 1, 11 & 111 SYSTEMS

5 DIFFERENT OPERATING METHODS

INSPECTION TESTING & MAINTENANCE **NFPA 25**

LOCATION & RECORDS



In this unit we discussed:

- that standpipe and hose systems are provided for use by trained occupants and the fire department
- that standpipes reduce the need for long lays of hose
- 3 classes of standpipe systems Class I, Class II and Class III. Class I are usually located in stair towers and are for heavy hose streams to be used by firefighters, Class II are 38mm or 1 ½ hose stations with 100 feet of hose designed for use by trained building occupants and Class III are combination Units that have both 1 ½” and 2 ½” outlets for use by either trained occupants or firefighters.
- 5 different operating methods for standpipes including: automatic wet – manual wet – automatic dry – semi-automatic dry – and manual dry systems
- the Inspection, Testing and Maintenance of standpipe systems in conformance with NFPA 25
- the proper location of standpipes
- And of course the need for the owner to provide accurate records of inspections and testing performed on the system

END OF UNIT 8

COMPLETE UNIT QUIZ



**QUESTIONS?
CONTACT YOUR FIRE DEPARTMENT
FIRE PREVENTION DIVISION**



Congratulations that is the end of Unit 8 which dealt with standpipes and hoses. You are now ready to move on to Unit 9 which deals with commercial kitchens but first please complete the Unit Quiz. If you have any questions now is a good time to contact your local fire department fire prevention division.