



# CHARLESTON FIRE DEPARTMENT



## Fire Marshal Division

### *Information Bulletin*

## Standpipe Final Acceptance Testing

Standpipe systems are a crucial firefighting component of a building system and must be designed, installed, and inspected to verify proper operation. All new and modified standpipe systems must be submitted for plan review and permitting, either as a standalone system or as part of a fire sprinkler system, before work begins. This document provides general guidance on the final acceptance test, which must be witnessed by the Fire Marshal Division, that should be considered in addition to code requirements and specifications issued by the design team.

The permit holder is responsible for coordinating and scheduling the inspection. We recommend conferring with the assigned member of our division not less than one week prior to the desired test date and verifying all necessary pre-inspection activities have been completed. Approved plans must clearly identify the required FDC pressure to achieve the necessary flow. If pressure other than 150 psi is required, FDC signage must specify the requirement. Please review the [FDC Signage Requirements](#) informational bulletin for details. As a reminder, all permits, and stamped plans must be on the job site.

The permit holder is responsible for providing or coordinating all necessary equipment to safely and effectively perform the test. This will include all necessary equipment to conduct the test and may include, but is not limited to, liquid pressure gauges, communications equipment for personnel at each gauge, approved flow devices, listed and tested fire hoses. This may also include securing a water supply and, when necessary to achieve the design pressure, an appropriate pump. The Charleston Fire Department does not supply any equipment or fire apparatus for testing.

Please ensure the appropriate water authority representative will be available to attend the acceptance test. It is the permit holder's responsibility to comply with the water company's requirements while conducting the test. These requirements are typically focused on utilizing an approved pump, backflow device, or a configuration that provides for an air-gap to protect the water system. The two primary water authorities in our area include: Charleston Water System (843-727-6800) & St. John's Water Company (843-559-0186). Charleston Water System has implemented an application process for conducting Manual Wet and Manual Dry Standpipe Testing. Applications may be found at [Charleston Water Systems Fire Hydrant Water Use Page](#), as well as any additional requirements.

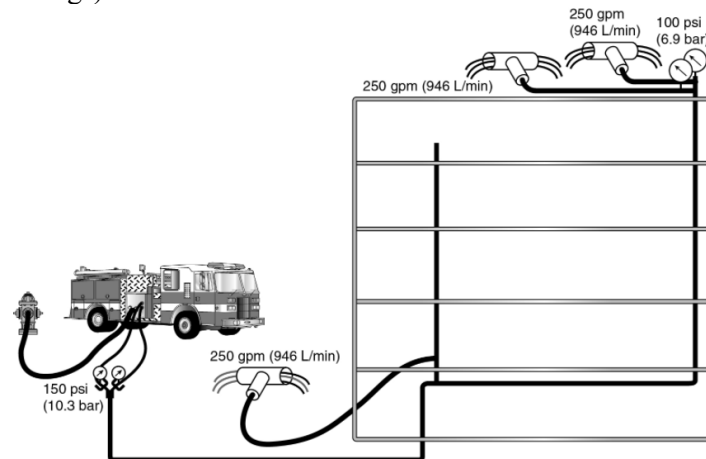
The following is provided as a general summary from NFPA 14, 2019 edition:

- 1) The standpipe shall be flow tested to verify system demand.
- 2) The flow test will be conducted by flowing water simultaneously from the outlet(s) indicated in the approved hydraulic calculations of each standpipe.
- 3) Hydraulically designed standpipe systems shall be designed to provide the required waterflow rate at a minimum residual pressure of 100 psi at the outlet of the hydraulically most remote 2 ½ in. hose connection.
- 4) For Class I and Class III systems, the minimum flow rate for the hydraulically most remote standpipe shall be 500 gpm, through the two most remote 2 ½ in. outlets.
- 5) The minimum flow rate for additional standpipes shall be 250 gpm per standpipe for buildings with floor areas < 80,000 ft<sup>2</sup> per floor. Buildings >80,000 ft<sup>2</sup> per floor, the minimum flow rate for additional standpipes shall be 500 gpm for the second standpipe and 250 gpm for the third standpipe if the additional flow is required for an unsprinklered building.

- 6) Each pressure-regulating device shall be tested to verify the installation is correct and the inlet and outlet pressures and flow at the device are in accordance with the design.
- 7) The maximum flow rate shall be 1000 gpm for buildings that are sprinklered throughout, and 1250 gpm for buildings that are not sprinklered throughout, in accordance with NFPA 13.

## Test Setup and Configuration

- 1) The contractor shall ensure a safe and effective method to discharge water from the test.
- 2) A written test method should be provided to all parties, prior to starting the test, unless the information is specified on the plan submittal. The NFPA 14 diagram below offers one example.
- 3) The contractor shall provide pressure gauges at:
  - a. The Fire Department Connection (FDC) (0-200 PSI).
  - b. The base of system riser (0-200 PSI minimum, may be air-filled).
  - c. The most remote standpipe outlet per hydraulic calculations (0-200 PSI).
- 4) Connect hose with approved in-line flow meter (0-60 PSI liquid filled gauge) to the following:
  - a. Most hydraulically remote standpipe outlet on most remote standpipe riser.
  - b. Second most hydraulically remote standpipe outlet on most remote standpipe riser.
- 5) Connect hose with approved in-line flow meter (0-60 PSI liquid filled gauge) to the following:
  - a. Any standpipe outlet on second most remote standpipe riser.
  - b. Any standpipe outlet on 3rd most remote riser (if applicable for unsprinklered or NFPA 13R buildings).



## The flow test will consist of the following:

- 1) The most remote and second most remote standpipe outlet on the most remote standpipe riser shall be opened until a flow of 250 GPM, per outlet, is reached.
- 2) The outlets on the second most remote standpipe riser and third most remote standpipe riser shall be opened until the approved flow device reaches 250 GPM, per outlet.
- 3) Once the previous steps are completed the pressure at the most remote outlet should be a minimum of 100 PSI. If not, increase input pressure at FDC until the pressure at the most remote outlet is 100 PSI. Ensure maximum pressure does not exceed 175 PSI at FDC, unless pressure reducing hose valves have been utilized.
- 4) Once the pressure at the most remote standpipe outlet is 100 PSI, obtain the gauge readings at the approved flow devices connected to the most remote and second most remote standpipe outlets. The flow at each operating outlet should be not less than 250 GPM.
- 5) Upon completion of the flow test and validation the appropriate outlet pressure, each pressure-regulating or flow regulating device shall be tested. The permit holder is responsible for documenting all locations, verifying the correct installation, and demonstrating operation.