INTERPRETIVE MEMORANDUM 2025-01

To: Building Owners
Water Purveyors
Licensed Plumbers
Automatic Sprinkler Contractors
Parish and Municipality Building Officials
Business and Industry Partners
LA Licensed Architects and Engineers

From: Joe Delaune, Chief Architect/Plan Review, OSFM
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Approved: Bryan J. Adams, State Fire Marshal

Date: March 11, 2025

RE: Backflow Preventer Installations for Existing Sprinkled Buildings

This memorandum replaces INTERPRETIVE MEMORANDUM 2014-05 dated October 8, 2014 and is intended to clarify the submittal requirements for backflow preventer installations.

Backflow prevention and cross-connection control programs are continuing to be implemented by water purveyors throughout the State. Cross-connections can occur between a public water system's (PWS's) distribution system and private irrigation systems, fire sprinkler systems, chemical feed systems and other piping systems that receive PWS drinking water. These programs apply to existing buildings as well as new construction and involve the installation of backflow prevention devices at the point of connection to public water supply. The provisions for systems that require backflow protection are contained in the International Plumbing Code, as amended in the Louisiana State Uniform Construction Code (LCUCC – LAC 17:I). The testing, installation, and maintenance qualification standards of these devices are addressed in the State Plumbing Board of Louisiana regulations (LAC 46:LV) and the Louisiana Department of Health's regulations (LAC 51:XII.346), which require a Louisiana-licensed plumber with specific endorsements to perform the work.

For existing buildings without automatic sprinkler systems, the installation of a new backflow preventer is strictly a plumbing issue and can be performed seamlessly. Where fire sprinkler systems are present, the installation requires much more care and coordination. Backflow

prevention devices that are retroactively installed on the water supply serving buildings having an existing automatic fire sprinkler system will directly affect the required hydraulic demand for the system and are required to be listed for "fire protection service" by an approved testing laboratory, in accordance with NFPA 13. Therefore, it is imperative that PRIOR TO the installation of a backflow preventer on a building servicing an existing fire sprinkler system, a Louisiana-licensed fire sprinkler contractor be consulted to ensure that the system will remain effective, or to recommend necessary modifications to the system in order to maintain the required minimum pressure and flow.

Effect on Building Fire and Life Safety Systems

The adopted building and fire codes set forth the thresholds by which a building is required to be protected by an automatic sprinkler system. These Codes reference either NFPA 13, NFPA 13R, or NFPA 13D as the standard for installation of the system. This office requires fire sprinkler systems to be installed, certified and serviced by a life safety and property protection contractor properly licensed pursuant to Louisiana Revised Statute (LRS) 40:1664.1 et seq., and Rule LAC 55:V:2719.

Compliance with the applicable installation standard is mandatory in order for the system to function reliably in a fire emergency. The standards require each system to be hydraulically designed to ensure that the capacity and flow of water from the municipal or other water supply is sufficient enough to operate the most hydraulically demanding sprinkler at its required flow and pressure. Calculations are performed with reductions in pressure due to friction loss through elevation changes, piping, and fittings from the most remote head to the municipal water supply source, including pressure loss associated with a backflow preventer.

Evaluation of Existing Sprinkler Systems Modified by Backflow Preventer Installation

NFPA 13:29.6.5 states, "When backflow prevention devices are to be retroactively installed on existing systems, a thorough hydraulic analysis, including revised hydraulic calculations, new fire flow data, and all necessary system modifications to accommodate the additional friction loss, shall be completed as a part of the installation."

State law LRS 40:1574 et seq. requires plans and specifications to be submitted to this office for any repair, remodeling, addition, or other details of construction that affect the fire protection features of a structure. As such, an evaluation of an existing sprinkler system must be performed by a sprinkler contractor that is licensed by this office whenever a backflow preventer is installed, or changed, at a water supply connection to a building that contains such system. As a minimum, provide the information listed below with the online plan submittal application process (found here: https://lasfm.louisiana.gov/) based upon the applicable system features. Sufficient information regarding the system layout in the most hydraulically demanding area, along with the piping, fittings, and valves in the flow path, must be identified and included in the calculations to document that the system will "still work" as designed after installation of the backflow preventer. While no two situations are alike, the following system types address the more common situations found throughout the State and the information needed for evaluation:

- **Pipe Schedule Systems with or without an Existing Fire Pump:**

1. Provide data (cut) sheets and listing for the backflow preventer to be installed.
2. Provide a current Flow Test.
3. Identify the elevation of the highest sprinkler above the first floor finish slab level.
4. Perform calculations for the water supply requirements of the pipe schedule system (NFPA 13:11.2.2.1).
5. Provide a site plan including:
    a. Riser location and the height of the base of the riser above the first floor finish slab elevation.
    b. Underground piping (size, length, and type) from the base of the riser to the tie-in at the city main, including the location of the backflow preventer.

Systems with a hydraulic design information placard:

- **Hydraulically calculated system without a fire pump:**

1. Provide data (cut) sheets and listing for the backflow preventer to be installed.
2. Provide a current Flow Test.
3. Provide calculations using the hydraulic data plate information.
4. Provide a site plan including:
    a. Riser location and the height of the base of the riser above the first floor finish slab elevation.
    b. Underground piping (size, length, and type) from the base of the riser to the tie-in at the city main, including the location of the backflow preventer.

- **Hydraulically calculated system with a fire pump:**

1. Provide data (cut) sheets and listing for the backflow preventer to be installed.
2. Provide a current Pump Test.
3. Provide calculations using the hydraulic data plate information.
4. Provide a site plan including:
    a. Riser location and the height of the base of the riser above the first floor finish slab elevation.
    b. Underground piping (size, length, and type) from the base of the riser to the tie-in at the city main, including the location of the backflow preventer.

- **Hydraulically calculated system with a fire pump, and with an automatic standpipe:**

1. Provide data (cut) sheets and listing for the backflow preventer to be installed.
2. Provide a current Pump Test.
3. Provide calculations using the hydraulic data plate information.
4. Provide drawings to indicate the riser location, the height of the base of the riser above the first floor finish slab elevation, and the fire pump location.
5. Provide a site plan including:
    a. Underground piping (location, size, length, and type) from the base of the riser to the tie-in at the city main, including the location of the backflow preventer.

Systems WITHOUT a hydraulic design information placard:

In situations where the system's hydraulic data plate and accurate as-built drawings are available, a comparison of the revised system demand to the water supply condition may be simple and straightforward. However, in situations where those items are not available, a redesign of the system to perform the evaluation can be costly, time-consuming, and may impact the building's occupancy. Recognizing the onerous costs that could be associated with a full hydraulic analysis of an existing system, and the difficulties associated with accessing existing systems within building construction, the following appendix statement was added to the latest edition of NFPA 13:

> "It is not the intent of this section to require a full hydraulic analysis of the existing piping system. This requirement should only verify that the additional friction loss through the backflow prevention device is not detrimental to the original calculations when compared with the new flow test data."

In buildings or facilities where the hydraulic data plate is missing or illegible, the following guidelines shall be followed and information provided for system evaluation. Once plans are approved and the installation is completed, **the missing hydraulic data plate shall be replaced with a new hydraulic data plate in accordance with NFPA 13:25.5** utilizing the information obtained through the following processes:

- **Hydraulically calculated system without a fire pump:**

1. Provide data (cut) sheets and listing for the backflow preventer to be installed.
2. Provide a current Flow Test.
3. Identify and calculate the most hydraulically demanding area:
    a. Provide sprinkler plans (layout) and calculations for that area back to the source.
    b. Show the riser location and details, including the height of the base or the riser above the first floor finish slab elevation.
4. Provide a site plan including:
    a. Underground piping (size, length, and type) from the base of the riser to the tie-in at the city main, including the location of the backflow preventer.

- **Hydraulically calculated system with a fire pump:**

1. Provide data (cut) sheets and listing for the backflow preventer to be installed.
2. Provide a current Pump Test.
3. Identify and calculate the most hydraulically demanding area.
    a. Provide sprinkler plans (layout) and calculations for that area back to the source.
    b. Show the riser location and details, including the height of the base of the riser above the first floor finish slab elevation.
    c. Identify storage parameters, if any.
4. Provide a site plan including:

a. Underground piping (size, length, and type) from the base of the riser to the tie-in at the city main, including the location of the backflow preventer.

- **Hydraulically calculated system with a fire pump, and with an automatic standpipe:**

1. Provide data (cut) sheets and listing for the backflow preventer to be installed.
2. Provide a current Pump Test.
3. Provide calculations to show the maximum available psi at pump following the standpipe demand (NFPA 20).
4. Provide drawings to indicate the riser location, the height of the base of the riser above the first floor finish slab elevation, and the fire pump location.
5. Provide a site plan including:
    a. Underground piping (location, size, length, and type) from the base of the riser to the tie-in at the city main, including the location of the backflow preventer.