

Established Preventive Maintenance

Fire System Maintenance in Older Buildings

By JOHN CAMPBELL

Most everyone will agree that fire systems installed in a building are essential to ensuring the safety and well-being of the occupants and contents. One of the ways to ensure these systems are in proper working order is to have an established preventive maintenance program in place.

The National Fire Protection Association (NFPA) has published a number of standards on the maintenance of fire systems, the most notable of which is NFPA 25, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems." This standard covers the requirements for the majority of the water-based fire suppression systems that are installed in older buildings today.

However, there are other types of systems found in older buildings that require



inspection, testing and maintenance, including: fire alarm systems, passage features (walls, doors, etc.), passive fire protection (firestop), and other special hazard systems (clean agent extinguishing, CO₂, etc.).

While each respective system could be discussed in length regarding its maintenance, testing and inspection, this article provides a general overview of some of the primary concerns in maintaining all fire systems in older buildings and addresses some of the safety precautions that need to be taken in the maintenance of these systems.

Older buildings present unique challenges. In addition to the maintenance of fire systems, fire alarm systems tend to suffer from product support and part replacement over time as new technologies make older systems' hardware obsolete.



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In many cases, specialty parts would need to be made, or entire systems would need to be replaced.

Sprinkler heads that have been in service for 50 years need to have a random sampling tested by a recognized testing laboratory. Depending on the sprinkler type, this time frame could be as low as five years for extra high, or greater, temperature rated sprinklers, and 10 years for dry sprinklers. This testing needs to be completed at 10-year intervals.

Older buildings present other challenges. The building itself presents unique challenges in the maintenance and care of the fire systems. Many buildings constructed prior to 1980 contain asbestos and maintenance may require abatement.

The structural integrity of older buildings is affected by a number of factors – wind and snow loading and seismic forces, in particular – on a daily basis. These forces tend to weaken or shift the building framework over time. Passage features such as doors, which are an integral part of the egress considerations, can become stuck and unusable. Low clearances due to heavy beams and timbers make pas-

sage difficult and may require appropriate head protection.

In order to properly maintain fire systems, it is important to understand what is installed. One of the most popular ways to determine this is to have a fire protection audit, or assessment, completed by a competent fire protection engineer. This audit can address installed systems (suppression, alarm and/or passive systems), as well as structural/building features that are critical to fire protection (doors and walls, smoke management systems, etc.).

A properly performed assessment will identify all areas in need of maintenance, specifically, critical areas requiring immediate attention, as well as those that can incorporate newer technologies to minimize the impact of maintenance costs. The findings from an audit can be prioritized for ease in determining what maintenance work needs to be completed and when. This will allow for accurate budgeting for future maintenance projects.

Historic buildings add additional challenges to the maintenance of fire systems. They require that preservation be

considered in addition to any maintenance work that is being considered. In many cases, the contents of a historic building also have an intrinsic value to the structure, and maintenance issues must take these into account.

Some shortcomings in the provision of fire systems are acceptable in these types of structures, given the historic value of the facility. Alternative levels of fire protection may be, or have been, incorporated to minimize the impact of installing protection on the structure. Again, having an assessment completed by a competent fire protection engineer can aid greatly in identifying areas of concern and establishing a plan of action for maintenance of the systems.

Once a plan of action is determined, it is necessary to introduce repair personnel into the area to address the identified maintenance issues. As stated previously, in some older structures, the maintenance areas may first require some form of abatement (asbestos, lead, etc.).

Afterwards, any personnel entering the area should be appropriately protected depending on the hazard. For example, an old warehouse may require steel-toed

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boots and hard hats, whereas a historic library building may require that the repair technician wear gloves and boot covers.

The fire protection audit/assessment report can assist the owner in determining what levels of protection should be required for maintenance personnel to provide protection for the technician, as well as what is being protected by the fire system. However, when in doubt, it is always advisable to follow Occupational Safety and Health Administration (OSHA) guidelines on the appropriate

personal protective equipment (PPE) for the given situation.

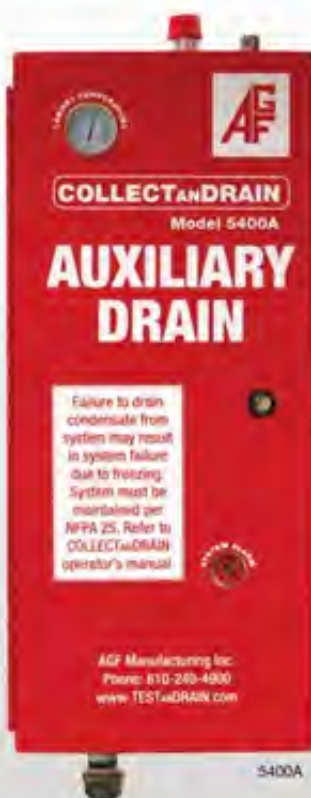
Maintaining fire systems in older facilities does not have to be a burden. A combination of a properly implemented inspection and testing program, combined with a valid fire protection system assessment, can make maintenance and repairs cost efficient. **FSM**

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