



Inspection, Testing and Maintenance of Fire Protection Systems: Managing the Qualifications of Contractors and Their Employees

Executive Summary

This case study summarizes a presentation at the National Symposium on Model Performance in Fire Prevention in May 2012.

Over a period of time in 2003, the Vancouver (Washington) Fire Department identified inconsistencies with fire alarm test reports submitted by a contractor. The reports validated the performance of smoke detectors in the elevator shaft of three separate buildings that did not have elevators. The root problem was inaccurate or fraudulent test reports. A thorough review identified the only code enforcement option was a lengthy criminal investigation for submitting false information to a public official with no guarantee of a favorable outcome.

In lieu of a lengthy criminal investigation, a stakeholder group of fire protection contractors was formed to address the reliability of reports. The group stressed the need to level the playing field with regard to minimum certification levels for employees of fire protection contractors and an ability to regulate the quality of work. At the time, only fire sprinkler contractors were required to be licensed at the state level. Fire alarm, kitchen suppression, kitchen exhaust cleaners and other contractors identified their efforts to properly train their employees only to be underbid on potential work by contractors utilizing less experienced or non-certified individuals.

Over a four year period of time, a Contractor Endorsement Program (CEP) was developed with the active support from many fire protection contractors. They helped develop minimum certification levels for the design, installation, maintenance/repair and testing of all fire protection systems as well as appropriate levels of enforcement. The CEP was eventually adopted as an ordinance in May 2007 with enforcement beginning in July 2009.

Overview

The contractor endorsement program requires all fire protection systems be designed, installed, inspected, tested and maintained by contractors with an endorsement issued by the fire department. The contractors must demonstrate they have an employee with an individual endorsement for the particular activity and system type (i.e. fire alarm installation or kitchen suppression system testing) before the contractor endorsement can be issued, an installation permit is issued or testing reports are accepted. While the municipal code specifies which endorsements are required for the respective activity, the requirements for each endorsement type are managed via an administrative rule, allowing for changes if the industry identifies other applicable certification programs.

All work is required by municipal code to be supervised by an individual with an endorsement and “supervision” was defined as someone actually on site. The key element of enforcement is that penalties can be assessed to the contractor, the individual or both depending upon the violation(s). Penalties include monetary civil penalties, temporary or permanent revocation of the endorsement, ability to prevent issuance of an endorsement and criminal proceedings.

Three additional and noteworthy elements to this program also require contractors to submit copies of the inspection/testing reports to the Fire Marshal’s Office within 30 days, required that final acceptance test inspection requests be called in by a contractor with an endorsement and adopted NFPA 96 locally for maintenance of commercial cooking exhaust systems.

Formative Evaluation (qualitative or quantitative risk assessment)

Research took place into four main focal areas:

- Quality of reports submitted
- Model practices elsewhere in our region
- Minimum certification requirements for technicians
- Establishing a means to track the testing and maintenance of fire protection systems.

Online research was done to identify programs in place at other comparable jurisdictions as well as a review of certification programs. Concurrently, personal discussions were conducted with contractors and AHJs (locally as well as in other parts of the country) to identify the best practices of programs currently in place. A portion of the discussions with local contractors was done so through a series of open meetings publicized through local industry groups.

Process Evaluation (analysis of the program’s development and early implementation)

As a new program, the exact amount of time spent developing the contractor endorsement system was not accurately tracked. Estimates identify that the equivalent time of .5 of a FTE was spent coordinating meetings, communications and developing the documents necessary during the first few years which increased to roughly a 1.0 FTE during the last year prior to adoption. After 2 ½ years of experience, this program increased from about 4% of the time spent on existing occupancy inspections in 2008 to nearly 37% during 2010. The average amount of staff time managing this program and reviewing reports during 2011 and 2012 has settled at about 15%.

Impact Evaluation (identification of measurable changes that are cognitive gains or behavior changes that reduced risk)

During the first six months after the enforcement date, the number of test reports submitted that contained legitimate violations requiring follow up increased more than 3 times the previous high of 193 in 2008 to 652 in 2009. The vast majority of the violations noted were on sprinkler systems followed closely by fire alarm systems. The number of test reports reviewed during 2010 remained consistent despite a nearly 50% reduction in staffing due to layoffs.

Outcome Evaluation (longer term documentation that supports reduction of injury, death or economic losses)

This is a relatively new program that is showing some indirect benefit of improving the quality and reliability of fire protection systems. Incident response data using the NFIRS Incident Types within the 700 'alarm' series have shown a steady decline for each individual incident types since 2009. During these alarm responses, deficiency forms provide information to the property contact on steps to restore inoperable systems to service and are routed to the Fire Marshal's Office for follow up. In most cases, anecdotal evidence indicates that these systems have not been maintained on required schedules per the respective standards.

A more long term measure is the impact on property loss during fires equipped with a fire protection system. This data is more difficult to analyze during a short time frame and greater experience is needed or greater time is needed reviewing any anomalies or unique incidents that could skew data.

An audit system is one last component that was included in the initial plan. However, the on-site review and thorough follow up/verification of information submitted on test a report has been severely reduced as a result of staff reductions.

Recommendations for Others

Among the several recommendations included in the presentation were the following:

- Maintain open, honest and frequent communication with stakeholders
- Allow stakeholders a means to provide feedback
- Develop and produce educational materials for contractors to disseminate to the customers
- Prepare and educate local policy decision-makers
- Prepare for changes in workflow

For More Information

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To see an expanded version of this case study that was presented at the 2012 National Symposium on Model Performance in Fire Prevention hosted by Vision 2020, click <http://strategicfire.org/page.cfm/go/2012-Model-Performance>.