

COLORADO DEPARTMENT OF REGULATORY AGENCIES  
OFFICE OF POLICY AND RESEARCH

# COLORADO FIRE SUPPRESSION PROGRAM

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## 1997 SUNSET REVIEW



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# *EXECUTIVE SUMMARY*

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Before the creation of the fire suppression program in 1991, there was no state requirement for those operating in the fire suppression industry. Although some building and fire departments examined fire suppression system plans, there were no consistent requirements for these systems, and enforcement was inconsistent. Furthermore, many areas of the state had no individual who possessed expert understanding of the specifications and workings of these systems.

The Colorado Fire Suppression Program adopted in 1991 required fire suppression contractors to register with the Division of Fire Safety. No licensing provisions were required of the contractors. In addition, a procedure for fire suppression system plan approval and certification of inspectors was implemented.

The Department of Regulatory Agencies has completed its sunset review of the Fire Suppression System Program administered by the Department of Public Safety, Division of Fire Safety. The sunset report recommends that the regulatory program continue. This review concludes that the fire suppression program serves to protect the public health and safety, by ensuring that persons involved in fire suppression system installation, modification, and maintenance meet minimum standards of competency. The installation of fire suppression systems is a highly specialized profession requiring skills that are only available within the trade. A high degree of expertise is needed to develop, evaluate, and install the best systems for the buildings being built and/or retrofitted.

In addition, the report recommends the establishment of a certification program for fire suppression contractors. Certified fire suppression systems inspectors involved in plan review, would not have to spend excessive time to ensure plans are complete or accurate because the contractor involved lacked the expertise in fire suppression systems. The public would be better protected if inspector resources were focused on the approval of plans, calculations, and inspections instead of design systems for contractors.

# INTRODUCTION

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## Sunset Process

The Fire Suppression Program administered by the Director of the Division of Fire Safety in the Department of Public Safety shall terminate on July 1, 1998 unless continued by the General Assembly. It is the responsibility of the Department of Regulatory Agencies (DORA) to conduct an analysis and evaluation of the Fire Suppression Program in the State of Colorado pursuant to §24-34-104, C.R.S.

The purpose of this review is to determine whether the Fire Suppression Program should be continued for the protection of the public, and to evaluate the performance of the Division of Fire Safety of the Colorado Department of Public Safety. During this review, the Department of Public Safety must demonstrate that there is still a need for the certification and registration program and that the regulation is the least restrictive regulation consistent with the public interest. DORA's findings and recommendations are submitted via this report to the Legislative Committee of Reference of the Colorado General Assembly. (Statutory criteria used in Sunset Reviews may be found in the Appendix of this report).

The Sunset Review process includes an analysis of the statute, interviews with state authorities, staff, industry representatives and local government officials. A survey was submitted to a sampling of certified inspectors and registered fire suppression contractors. DORA makes every effort to elicit information and comments from all interested parties.

## History

Fire suppression systems, or sprinklers as they are often called, were invented by an American, Henry S. Parmalee, in 1874 to protect his piano factory. Until the 1940s and 1950s, sprinklers were installed almost exclusively for the protection of buildings, especially warehouses and factories. Insurance savings that could pay back the cost of the systems in a few years, were the major incentives. Following fires with large losses of life (Coconut Grove Nightclub, Boston, 1942, 492 dead and LaSalle Hotel, Chicago, 1946, 61 dead), fire and building officials explored options that would provide life safety for building occupants. During the late 1960s and early 1970s, building codes started taking a stronger position on life safety. The installation of an automatic fire sprinkler system was no longer an option to lower fire insurance rates, but a mandated requirement for public safety. It was found that factories and other buildings equipped with automatic sprinklers had an amazingly good life safety record compared with similar, unsprinklered buildings. Today, contractors must be knowledgeable in the requirements of the National Fire Protection Association (NFPA) and the building codes that are enforced in fire protection. The three most common codes are Building Official and Code Administrators International (BOCA), International Conference of Building Officials (ICBO), and Southern Building Code Congress International (SBCCI). The ICBO controls and publishes the Uniform Building Code (UBC).

The Colorado Fire Suppression Program began on January 1, 1991. It was created by Senate Bill 90-4 that was an outgrowth of a sunrise application submitted to DORA in 1989 by the Colorado Fire Protection Association. The sunrise application originally requested a regulatory program that would require a fire suppression contractor's license for any entity undertaking to sell, install, modify, alter, repair, maintain, or perform maintenance inspections of any fire suppression system. In addition, the applicant recommended that in order to obtain a fire suppression contractor's license, the entity must have a responsible full-time employee who has demonstrated knowledge of the rules, regulations and standards, as well as the techniques of fire suppression design and installation. Each contractor must also have an on site installer who is certified as qualified in the practical installation of the system according to the applicable standards.

In addition to the above-mentioned regulatory program, the Sunrise Report, conducted by DORA, also recommended the following:

- Establishment of a Fire Suppression Advisory Board to set minimum standards for the installation of fire suppression systems, licensure, and certification.
- Administration of the Fire Suppression Advisory Board by the Division of Fire Safety, Department of Public Safety.
- Requirement that design, installation and maintenance of fire suppression systems be in accordance with NFPA Standards.
- Requirement that all inspections on fire suppression systems be performed by personnel qualified in the operation and workings of these systems. Such qualifications should be established by the Fire Suppression Advisory Board.

The Colorado program adopted in 1991 requires fire suppression contractors to register with the Division of Fire Safety. No licensing provisions were required of the contractors. In addition, a procedure for fire suppression system plan approval and certification of inspectors was implemented. Registered contractors are required to have sufficient knowledge and understanding of the design and installation of these systems and to install the systems properly and safely. The Sunrise applicant argued that properly installed and maintained fire suppression systems provide life safety protection and minimize the property damage should a fire occur. Conversely, improperly installed systems can be worse than no system at all. A system that is inoperative or ineffective gives the impression of protection, while creating a false sense of life safety and security.

Before the fire suppression program was created, there was no state requirement for those operating in the fire suppression industry. Any person or company could establish a fire suppression business without first applying to be registered. Although fire suppression system plans were examined by some building and fire departments, there were no consistent requirements for these systems and enforcement was inconsistent. Furthermore, many areas of the state had no individual who possessed expert understanding of the specifications and workings of these systems.

### **Fire Sprinkler Operations**

Automatic fire sprinklers are individually heat activated, and tied into a network of piping with water under pressure. When the heat of a fire raises the sprinkler temperature to its operating point (usually 165°F) a solder link will melt or a liquid-filled glass bulb will shatter to open that single sprinkler, releasing water directly over the source of the heat. Sprinklers prevent the rapid development of fires and intense heat, both which are capable of trapping and killing numerous building occupants. Proper design and installation of sprinkler systems is standardized nationally in a consensus standard promulgated by the National Fire Protection Association - NFPA 13. A basic premise of proper sprinkler protection is that sprinklers be installed throughout all building areas.

### **Profile of the Occupation**

Fire suppression contractors sell, install, modify, alter, repair, maintain, or perform maintenance inspections of any fire suppression systems. The design of these systems includes flow of water or other fire retardant specifications, and hydraulic sizing of all pipes, sprinklers, heads, and other parts of the system. Contractors install all or part of a system, which may include retrofit in existing facilities, or new installations in facilities under construction.

The installation of the piping systems leading to the heads or other distribution mechanism of a fire suppression system is similar to the work of a plumber. However, the design of systems, and the installation of sprinkler heads or other distribution mechanisms, or control systems, is beyond the scope of work done by plumbers. These specialized systems require knowledge of equipment and design parameters that are beyond the scope of expertise required of a plumber, either by practice or by licensing qualification standards. Also under the plumbers licensing legislation, within the definition section dealing with plumbing, it specifically excludes fire protection systems.

Within the United States, there is a body which tests and examines the competency of fire suppression designers. The National Institute for Certification in Engineering Technologies (NICET) has established minimum standards of competency for those persons practicing fire suppression system design. They regularly conduct examinations across the country and give certificates to those who satisfactorily pass the examination. NICET and other training programs are described on the following page.

### **National Institute for Certification in Engineering Technologies (NICET)**

Beginning in 1978, the National Fire Sprinkler Association worked with a division of the Society of Professional Engineers to develop a nationwide program to test and certify the competence of fire protection engineering technicians working in the area of sprinkler system layout and detailing. Today, the National Institute for Certification in Engineering Technologies maintains a program of quarterly testing for status as a Certified Engineering Technician in the field of Fire Protection and the subfield of Automatic Sprinkler System Layout. The Technician program recognizes 4 levels: 1) Student Technician, 2) Associate Engineering Technician, 3) Engineering Technician, and 4) Senior Engineering Technician. Each level is associated with special work elements, the higher levels relating to work elements of greater responsibility. NICET has established enrollment and certification requirements for each level.

**American Fire Sprinkler Association (AFSA)**

AFSA offers a four-book series correspondence course designed specifically for training apprentices in the fire sprinkler trade. In addition, they offer a two week school on principles of sprinkler design, and seminars on selected supplemental topics.

**National Fire Sprinkler Association (NFSA)**

Offers a two-week training seminar for entry level engineering technicians, a sprinkler system designer programmed instruction course, and a sprinkler design certification review handbook.

**National Fire Protection Association (NFPA)**

Offers automatic sprinkler system workshops and special subject seminars.

## SUMMARY OF STATUTE

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### Statute

This section of the report provides an overview of the highlights of the Colorado statute and regulations concerning fire suppression systems.

Part 12 of Article 33.5 of Title 24, C.R.S., outlines Colorado's statutory requirements regarding fire suppression systems. Pursuant to part 12, the Director of the Division of Fire Safety is directed to promulgate rules and regulations to administer the Fire Suppression Program and for the registration of fire suppression contractors. In addition, part 12 outlines the requirements for certification of fire suppression systems inspectors and for installation, inspection, and maintenance of fire suppression systems.

The Department of Public Safety, Division of Fire Safety, is responsible for administering and enforcing the provisions of the Act. In doing so, the Division establishes and collects fees necessary to defray the costs of administering the program. The Division is also empowered to receive, investigate and act on complaints against those persons who violate any provisions of the Act or any rule or regulation. In addition, the Division is responsible for maintaining records of all applications, investigations, disciplinary actions and registrations.

The statute requires that any person who acts or advertises themselves as a fire suppression contractor must be registered with the State of Colorado. The statute further requires that any registered fire suppression contractor must: 1) obtain any locally required licenses or permits and comply with building and fire codes; 2) be responsible for the acts of its agents and employees while acting on behalf of the contractor; 3) assure that a responsible person in the management of the contractor is qualified in the layout, fabrication, installation, alteration, servicing, repair and inspection of fire suppression systems; and 4) have each job supervised by an on-site qualified installer.

The statute imposes the requirement that no installation, modification, alteration, or repair of a fire suppression system shall be completed and cleared for use, and no structure or partial structure in which a fire suppression system is installed, modified, altered, or repaired shall be cleared for occupancy, until the system has been approved by a certified fire suppression systems inspector. This approval includes review of approved working plans and hydraulic calculations, installation inspections and final tests.

Every inspection of a fire suppression system must be conducted by a person certified as having met the inspection and training requirements set by the Division Director.

A fire suppression system contractor registration is valid from the time of issuance until December 31st of the current year. It must be renewed annually, on or before January 2nd of each year.

The Division is granted the authority to provide fire safety inspections to any county, municipality, or special district on a contractual or job by job basis.

A Fire Suppression Cash Fund was created to pay for the administration of the program. All money collected by the Division Director is transmitted to the state treasurer who credits the funds to the fire suppression cash fund. These moneys cannot revert or be credited to the general fund.

## Rules

Pursuant to its authority under the Act, the Division Director has promulgated six sections of rules and regulations in order to interpret and explain more fully the provisions of the Act. The rules and regulations address registration of fire suppression contractors; fees and charges; registration of system plans; codes and standards adopted; complaints; and fire inspector certification.

Section One of the regulations deals with the registration of fire suppression system contractors. It provides for the procedures for registration, application requirements, and registration number posting requirements.

Section Two establishes the conditions for fire suppression system inspector certification. This section also lists the acceptable equivalent qualifications accepted. The following qualifications are required to become certified as a fire suppression systems inspector:

- successfully pass an examination;
- maintain an active State of Colorado Fire Inspector 1 certification; and
- demonstrate to the Division Director that equivalent qualifications, including education, training, and experience have been met; or submit proof of active certification in another state that is determined to be at least equivalent to Colorado's requirements.

Certification renewal is contingent on fulfilling twenty-four hours of continuing education. An eight hour class with a written examination is required if continuing education provisions are not completed.

Section Three defines the requirements for the registration of fire suppression system plans, project specifications, and architectural drawings for the installation, fabrication, modification, or alteration of a system. It details rules regarding the inspection and approval process for above ground and underground piping for fire protection supply lines.

Section Four specifies the codes and standards adopted by the Program Administrator, such as the Uniform Building Code and the National Fire Protection Standards. Section Five discusses the complaint process including the investigation of complaints and the penalties and fines for violation of any provision of the Act.

Section Six sets out the Division of Fire Safety's fees and charges for annual registration of contractors, plan registration form submittal, plans and hydraulic calculations review, travel expenses for inspections and testing, job site inspections and testing and certification of inspectors.

## PROGRAM DESCRIPTION & ADMINISTRATION

The Division of Fire Safety within the Colorado Department of Public Safety administers and enforces the Fire Suppression Program in the State of Colorado. The daily functions of the program are carried out by a staff of one full time equivalent (1 FTE), supervised by the Division Director. An additional 1.2 FTE perform plan review and inspections of fire suppression system installations related to gaming establishments, among other things.

### Registration & Certification

There are currently 223 registered contractors and 208 certified inspectors in the State of Colorado. The number of renewals and registrations have varied over the course of the last six fiscal years, as indicated on the chart below:

Fiscal Year	1991	1992	1993	1994	1995	1996	1997
Fire Suppression System Contractors Registered Per Year	115	136	154	160	115	140	196
Fire Suppression System Inspectors New Certification Per Year	174*	27	38	38	15	12	7
Fire Suppression System Inspectors Renewals Per Year	N/A+	N/A	N/A	142	23	23	116

\* First year of program

+ Inspector certification is renewed every three years

The purpose of the Colorado Fire Suppression Program is to ensure that life safety systems, installed in commercial and residential occupancies, are installed and maintained properly, according to nationally recognized standards. National statistics demonstrate that death and injury are significantly reduced when fires occur in protected buildings where the systems are properly installed, maintained and protected by tamper devices that prevent malicious damage to the systems.

This program annually registers contractors who install or perform maintenance on fire suppression systems, certifies state and local government officials who perform plan reviews and conduct inspections of fire suppression system installations, and suspends or revokes registrations or certifications for cause in accordance with the Colorado Administrative Procedures Act.

## **Complaints And Inspections Procedure**

One of the responsibilities of the Division of Fire Safety is the handling of complaints against certified inspectors and registered contractors. The Division routinely screens complaints to make sure that the Division has jurisdiction and that the complaint at least arguably rises to the level of being a violation of the law. Ninety to ninety-five percent of the complaints are telephoned in, and the rest are written complaints. According to the Division, complaints generally are from inspectors against contractors and have more to do with improper installation or inaccurate plans. The Division usually receives a few complaints a month.

The process of reviewing a complaint, assuming it appears legitimate, usually involves an investigation. A letter is sent to the accused, whereby he/she must respond to the inquiry. Resolving the complaint involves a recommendation to correct, a dismissal of the complaint, or, on rare occasions, legal action. The results of the investigation and the outcome are placed in the respondent's file. The Division does not compile statistics for the number and types of complaints. (Please see Recommendations p. 19)

A goal of the Fire Suppression Program is to enforce compliance with the provisions of Part 12 of the Act and the rules and regulations. Section 24-33.5-1206.4, C.R.S., requires that any installation, modification, alteration or repair of a fire suppression system must be approved by a certified fire suppression systems inspector before the structure is cleared for occupancy. Each county, municipality, and special district that has fire suppression systems enforcement responsibilities provides a certified fire suppression systems inspector. Where there is not a local certified inspector, a certified state inspector performs the inspections and reviews the plans. Since October 1990, there have been 866 state inspections of fire suppression systems and 511 state plan reviews.

During an inspection, an inspector examines the above ground sprinkler piping and the underground piping system, and performs a hydrostatic test of the system. The inspector also performs system operational tests on the waterflow detecting devices, the dry pipe systems, and the control valve tamper switches. A final walk-through inspection is conducted to check system coverage blocked sprinkler heads, and any item noted on plan review or rough-in inspection as deficient. The Division related the following problems as those that could delay approval:

- Problems with piping not holding hydrostatic test,
- Improper installation of fire department connection,
- Inadequate sprinkler system coverage in a building,
- Poor design resulting in inadequate flow or system pressure, and
- Improper installation of alarm system.

As illustrated on the chart below, the average number of inspections required per job has declined since the program was instituted. In addition, the average number of submittals required per job has declined from 1.6 in fiscal year 1991 to 1.1 in fiscal year 1997.

**STATE INSPECTIONS AND PLAN REVIEWS**

Fiscal Year	1991	1992	1993	1994	1995	1996	1997
Fire Suppression Projects	38	69	58	41	59	75	92
Fire Suppression Plan Reviews	60	124*	93	62	82	90	105
Average Number of Submittals Required Per Job	1.6	1.8	1.6	1.5	1.4	1.2	1.1
Fire Suppression System Inspections	110	203	157	103	136	157	203
Average Number of Inspections Required Per Job	2.9	2.9	2.7	2.5	2.3	2.1	2.2

\*Includes 91 plan reviews for limited gaming establishments. In all subsequent years, plan reviews for gaming establishments were tracked separately.

## Disciplinary Actions

The Fire Safety Division has a variety of enforcement mechanisms available to them that are created by statute to assure that the fire suppression system program provides for the health, welfare, and safety of the citizens of Colorado. The Division may take disciplinary action by way of withholding, denying, suspending or revoking the registration of any fire suppression contractor or certification of any fire suppression systems inspector or applicant. The Division may invoke criminal or civil penalties for violations of the law. The Division has never denied registration to a contractor or withheld certification to an inspector.

Since the inception of the program, the Division has revoked two contractor registrations and one inspector certification. In 1995, the Division conducted a hearing for the revocation of a fire suppression system contractor's registration based on complaints from an assisted living center, a hospital project, a commercial store, and a grocery market. The complaints addressed the installation of a sprinkler system prior to review and approval of plans and hydraulic calculations by the Division of Fire Safety. In addition, when reviewed it was determined that the plans and specifications did not comply with Colorado Statutes and NFPA 13. Another contractor registration was revoked in 1992 for nonpayment of registration fees. The only inspector certification revoked occurred in 1991 for demonstrated lack of knowledge, skill, and ability, and failure to pass the certification examination. This inspector was originally granted certification by the administrator because the municipality in which he worked determined that he had met the qualifications.

Measuring the effectiveness of the Fire Suppression Program requires more than simply analyzing the number of disciplinary actions imposed on registered contractors and certified inspectors. This program deals more with preventive solutions to problems than to discipline. As illustrated in the chart on the previous page, the average number of inspections per project has decreased from 2.9 in fiscal year 1991 to 2.2 in fiscal year 1997. In addition, the average number of submittals per project has also decreased from 1.6 to 1.1. This decrease represents the educational and cooperative value of the program. The main purpose of the program is to assure that the fire suppression systems installed in buildings in Colorado are installed and maintained effectively.

## REGULATION IN OTHER STATES

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Many states have seen the need for this type of regulation and many more are investigating the possibility of regulation. The type of regulation varies from short and precise legislation requiring contractor licensure, such as in Alabama, to long detailed laws, rules and regulations, such as in Texas.

Thirteen states currently require certification of plan reviewers including Alaska, Arkansas, Colorado, Delaware, Florida, Georgia, Kentucky, New York, Ohio, South Carolina, Utah, Vermont and Virginia. Sixteen states require certification of inspectors including Arkansas, Colorado, Delaware, Florida, Georgia, Kentucky, Maine, Michigan, New York, North Carolina, Ohio, South Carolina, Tennessee, Utah, Vermont, and Virginia. A majority of states (62%) require some sort of licensing or registration for contractors. Other states continue to introduce legislation concerning the regulation of fire suppression systems (see chart on the following page).

Within the regulating states there are minor variations, such as the particular departments which are responsible for the legislation. Some are under the control of the State Fire Marshall and some are under departments such as buildings and construction, commerce, public safety and insurance.

All regulated states have recognized the need to set standards for the installation of systems and the qualifications of installers. They have recognized the standards set by the National Fire Protection Association (NFPA) and the National Institute for Certification in Engineering Technologies (NICET) and in some cases have added minor clauses and examinations to compliment local issues.

A number of other states, such as California, Mississippi, Maryland, Oklahoma and Wyoming, have adopted NFPA standards or developed fire suppression guidelines within their state fire codes.

There is a continuing push in many states to regulate this industry because of the risk to public health, safety and welfare from inadequate and improper design, installation and maintenance of certain systems.

The information in the chart below was gathered through a survey mailed to Fire Marshals in all 50 states by the journal *Sprinkler Age*.

State Licensing & Certification Requirements								
State	Requires Certification of		Requires Licensing for			Required for Sprinkler Drawings		
	Plan Reviewer	Inspector	Contractor	Fitter	Designer	PE/Arch Seal	NICET Level III	NICET Level IV
AL	Y	N	Y	Y	Y		Y	
AK	Y	Y	Y	Y	Y	N	Y	
AZ	N	N	Y	N	N	Y		
AR	N	N	Y		Y		Y	
CA	N	N	Y	N	N	N	Y	N
CO	Y	Y	Y	N	Y	Y	Y	
DE	Y	Y	Y	Y	Y	Y	Y	
FL	Y	Y	Y	N	N	Y	N	N
GA	Y	Y	Y	N	N	N	N	N
HI	N	N	N	N	N	Y	N	N
ID	N	N	Y	N	N	N	N	N
IL	N	N	N	N	N	N	N	N
IN	N	N	Y	N	N	Y	Y	Y
IA	N	N	N	N	N	N	N	N
KS	N	N	N	N	N	N	N	N
KY	Y	Y	Y	N	Y	Y	Y	Y
LA	N	N	Y	N	N	Y	N	N
ME	N	Y	Y	N	Y		Y	N
MD	N		N	N	N	N	N	N
MA	N	N	Y	Y	N	Y	Y	N
MI	N	Y	Y		N	N	N	N
MN	N	N	Y	Y	Y	N	N	Y
MS	N	N	N	N	N	Y		
MO	N	N	N	N	N			
MT	N	N	Y	Y	Y	N	N	N
NE	N	N	N	N	N	N	Y	N
NV	N	N	Y	Y	Y	Y		
NH	N	N	N	N	N	Y	N	N
NJ	N	N	N	N	N	N	N	N
NM	N	N	Y					
NY	Y	Y	N	N	N	Y	N	N
NC	N	Y	Y	N	N	Y	Y	N
ND	N	N	N	N	N	N	N	N
OH	Y	Y	Y	Y	Y	Y		
OK	N	N	Y	Y	Y	Y	Y	N
OR	N	N	N	N	N	N	N	N
PA	N	N	N	N	N	N		
RI	N	N	Y	Y	Y	N		
SC	Y	Y	Y	N	Y	N	Y	N
SD	N	N	N	N	N	N	N	N
TN	N	Y	Y	N		Y	Y	N
TX	N	N	Y	N	Y	Y	Y	Y
UT	Y	Y	N	N	N		Y	
VT	Y	Y	N	N	N		Y	
VA	Y	Y	Y	N	N		N	N
WA	N	N	Y	N	N	N	Y	N
WV	N	N	Y	N	N	N	N	N
WI			Y	Y	Y	N	N	N
WY	N	N	N	N	Y	Y		

## **STATUTORY FINDINGS AND RECOMMENDATIONS**

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### **Should The Certification And Registration Program Be Continued?**

It is clearly apparent that the installation of an effective fire suppression system is of major importance in the construction of a new building and also in the retrofit of existing buildings. While the majority of fire suppression systems will never be used to combat a fire, it is critical that they be maintained to operate at their fullest capacity if a fire does occur. These systems are the last line of public protection. They have no backup systems that intervene if they fail. They must work to their maximum efficiency the first time and must continue working until they extinguish the fire. There is simply no margin for error. Systems must be designed, installed and maintained by experts who are fully aware of the specifications and operations of all types of fire suppression systems. The experts should be trained, knowledgeable and competent with these systems, and the best way to ensure this will occur is through regulation. The continued regulation of this industry will ensure that the State of Colorado establishes and maintains minimum standards of installation and operation of these systems, including regular maintenance checks.

Each time that a member of the public walks into a building, there is certainly a need for the building to be safe. Further, that safety must be real and not perceived. The existence of fire suppression systems within a building creates a perceived feeling of safety among the public. The current regulatory system ensures that the public safety and security is maintained.

The installation of fire suppression systems is a highly specialized profession requiring skills that are only available within the trade. A high degree of expertise is needed to develop, evaluate, and install the best systems for the buildings being built and/or retrofitted.

It is the conclusion of this review that the Fire Suppression Program serves to protect the public health and safety by ensuring that persons involved in fire suppression system installation, modification, and maintenance meet minimum standards of competency. Many buildings over the past several years in Colorado have undergone retrofitting. Fire suppression systems have been installed where no previous systems existed. When installed by a properly experienced fire suppression contracting firm, the safety and specification aspects have been fully considered. However, if the system is installed by an inexperienced firm, the consequences could be catastrophic. In addition, the inspection of these systems must be performed by someone who possesses the expert understanding of the specifications and workings of these systems.

**RECOMMENDATION 1: THE GENERAL ASSEMBLY SHOULD CONTINUE THE FIRE SUPPRESSION PROGRAM IN THE FIRE SAFETY DIVISION OF THE COLORADO DEPARTMENT OF PUBLIC SAFETY.**

### **Other Statutory Findings And Recommendations**

If the General Assembly decides to continue the fire suppression system program under the Division of Fire Safety of the Colorado Department of Public Safety, the following statutory and administrative recommendations are offered to improve the regulatory performance of the Division.

**RECOMMENDATION 2: ESTABLISH A CERTIFICATION PROGRAM FOR FIRE SUPPRESSION SYSTEM CONTRACTORS.**

Presently, fire suppression contractors submit applications (see Appendix C) to the Division of Fire Safety for registration, agree to comply with National Fire Protection Association (NFPA) standards, and register plans for review with the appropriate state or local jurisdiction. In addition, §24-33.5-1206.1, C.R.S., requires that on-site installers and a responsible person in the employment of the contractor be “qualified” in layout, fabrication, installation, alteration, servicing, repair and inspection of fire suppression systems. The statute requires a qualified person, but there are no requirements in place that measure whether a contractor is qualified. The current type of registration is generally only used where a threat to the public health, safety or welfare is minimal. The potential for danger in the incorrect design, installation and maintenance of fire suppression systems is great.

A good testing process lends credibility to certification. Within the United States, there is an organization that tests and examines the competency of fire suppression engineering layout and design. The National Institute for Certification in Engineering Technologies (NICET) maintains a program of quarterly testing in three locations in Colorado -- Denver, Grand Junction, and Colorado Springs -- for a fee of \$90.00.

The fire protection engineering technician program recognizes four levels. Each level is associated with specific work elements, the higher levels relating to work elements of greater responsibility. NICET has established enrollment and certification requirements for each level. Level III, Certified Engineering Technician, is the level that indicates the technician is qualified to independently prepare sprinkler working drawings based upon the engineer's design decision. Level III certification requirements include a combination of five years of education and experience, while Level IV certification for Senior Engineering Technician, requires a combination of ten years of education and experience.

The Model State Law for Fire Sprinkler Systems prepared by the National Association of State Fire Marshals recommends the following:

Each contractor must employ at least one licensed responsible managing employee on a full-time basis.

Each responsible managing employee must obtain a license issued by the State Fire Marshal and conditioned on the successful completion of the examination requirement and other requirements of this Act.

Responsible managing employee means an individual who shall be designated by each company that plans, installs, or services a fire sprinkler system to assure that each system as installed or serviced meets the standards as provided for by law.

Certified fire suppression systems inspectors involved in the plan review process, either at the local level or at the state level, should not have to spend excessive time to assure plans are complete or accurate because the contractor involved lacks the expertise in fire suppression systems. The public would be better protected if inspector resources were focused on the approval of plans, calculations, and inspections instead of designing systems for contractors.

A number of fire suppression contractors in Colorado have passed the NICET examination. As of April 1997, there were 62 NICET certified contractors in

Colorado -- eight certified at Level I, twelve certified at Level II, twenty-two certified at Level III, and twenty certified at Level IV. DORA recommends that responsible persons in the management or employment of the fire suppression system contractor have, at the minimum, a Level III or higher engineering technician (fire suppression engineering technology - automatic sprinkler design or fire suppression engineering technology - special hazards system layout) whichever is relevant to the particular job or design, certified by the National Institute for Certification in Engineering Technologies.

**RECOMMENDATION 3: REQUIRE THE DIVISION TO KEEP FORMAL RECORDS OF COMPLAINTS AND FINAL DISPOSITIONS OF THOSE COMPLAINTS.**

Currently, after the Division has responded to complaints, there are no statistics kept in order to review this aspect of the program. To make this information more easily available for review, a tracking system should be implemented. Records pertaining to the disposition of complaints are necessary to determine whether the regulatory program is functioning adequately in protecting the health and safety of the citizens of Colorado. In addition, the intent of the complaint procedure is to determine whether there are recurring complaints against an inspector or contractor.

**RECOMMENDATION 4: SET LICENSING FEE BY RULEMAKING**

Colorado law requires that all costs of administration and enforcement by the Department of Public Safety be offset by licensing fees, and maximum licensing and registration fees for the fire suppression system program are established by statute. It is recommended that the amount of the registration and licensure fee be removed from the statute and allow the rulemaking procedure to set the amount necessary to provide enough revenue to efficiently enforce and administer the Fire Suppression Program.

**RECOMMENDATION 5: EXTEND GOVERNMENTAL IMMUNITY TO DIVISION STAFF AND PERSONS LODGING COMPLAINTS AND TESTIFYING IN A LEGAL PROCEEDING UNDER THIS ARTICLE.**

Governmental immunity should be extended to persons who provide testimony with respect to disciplinary matters and for any person lodging a complaint pursuant to the Act. The General Assembly has regularly extended this type of immunity to board or division members and other persons participating in disciplinary matters when those persons are acting in good faith in their official capacities. Immunity for those who lodge a complaint in good faith, encourages compliance with the law and provides the Division with additional information regarding substandard practices.

# *APPENDICES*

## Sunset Statutory Evaluation Criteria

- (I) Whether regulation by the agency is necessary to protect the public health, safety and welfare; whether the conditions which led to the initial regulation have changed; and whether other conditions have arisen which would warrant more, less or the same degree of regulation;
- (II) If regulation is necessary, whether the existing statutes and regulations establish the least restrictive form of regulation consistent with the public interest, considering other available regulatory mechanisms and whether agency rules enhance the public interest and are within the scope of legislative intent;
- (III) Whether the agency operates in the public interest and whether its operation is impeded or enhanced by existing statutes, rules, procedures and practices and any other circumstances, including budgetary, resource and personnel matters;
- (IV) Whether an analysis of agency operations indicates that the agency performs its statutory duties efficiently and effectively;
- (V) Whether the composition of the agency's board or commission adequately represents the public interest and whether the agency encourages public participation in its decisions rather than participation only by the people it regulates;
- (VI) The economic impact of regulation and, if national economic information is available, whether the agency stimulates or restricts competition;
- (VII) Whether complaint, investigation and disciplinary procedures adequately protect the public and whether final dispositions of complaints are in the public interest or self-serving to the profession;
- (VIII) Whether the scope of practice of the regulated occupation contributes to the optimum utilization of personnel and whether entry requirements encourage affirmative action;
- (IX) Whether administrative and statutory changes are necessary to improve agency operations to enhance public interest.

## **Statute**

### **24-33.5-1201. Division of fire safety - creation.**

(1) There is hereby created as a division within the department of public safety the division of fire safety, referred to in this part 12 as the "division". The head of the division shall be the director of the division of fire safety, referred to in this part 12 as the "director", who shall be appointed by the executive director pursuant to section 13 of article XII of the state constitution.

(2) The division of fire safety, the office of the director, and the advisory boards created by sections 24-33.5-1204 and 24-33.5-1402 shall exercise their powers and perform their duties and functions under the department of public safety and the executive director as if the same were transferred to the department by a type 2 transfer, as such transfer is defined in the "Administrative Organization Act of 1968", article 1 of this title.

### **24-33.5-1202. Definitions.**

As used in this part 12, unless the context otherwise requires:

(1) "Administrator" means the state fire suppression administrator, who shall be the director of the division of fire safety, under the department of public safety, or the designee of such director.

(2) "Certification" means the issuance to a firefighter, by the advisory board, of a signed instrument evidencing satisfactory completion by such firefighter of the requirements of the fire service education and training program.

(3) "Certified fire suppression systems inspector" means a person certified as provided in section 24-33.5-1206.4.

(4) "Firefighter" means any person, whether paid or a volunteer, who is actively participating in or employed by a public or private fire service unit in this state.

(5) "Fire suppression contractor" means any individual, firm, corporation, association, or organized group of persons, that, individually or through others, offers to undertake, represents itself as being able to undertake, or does undertake to sell, layout, fabricate, install, modify, alter, repair, maintain, or perform maintenance inspections of any fire suppression system.

(6) "Fire suppression system" means an assembly of any or all of the following: Piping valves, conduits, dispersal openings, sprinkler heads, orifices, and other similar devices that convey extinguishing agents for the purpose of controlling, confining, or extinguishing fire, with the exception of preengineered range hoods, duct systems, and portable fire extinguishers.

(7) "First responder program" means the program developed by the national highway traffic safety administration to train emergency response personnel to deal with an emergency incident upon first arrival at the scene.

(8) "Principal" means an individual having a position of responsibility in any entity acting as a fire suppression contractor, including but not limited to any manager, director, officer, partner, owner, or shareholder owning ten percent or more of the stocks of any such entity.

**24-33.5-1203. Duties of the division.**

(1) The division shall perform the following duties:

(a) Assist units of local government charged with fire prevention, fire protection, fire investigation, and emergency medical services in coordinating their activities with state departments and agencies which have similar responsibilities;

(b) Advise the governor and the general assembly regarding the problems of fire safety;

(c) Regarding problems of fire safety which are common to local, state, and federal governmental units, including but not limited to hazardous waste, protective equipment for firefighters, flammable and toxic characteristics of materials during combustion, fire incident reporting, emergency medical incident reporting, and investigation of fires, be available to assist in the solution of those problems, serve as an information clearinghouse, and collect and disseminate to local governments, the general assembly, and the general public statistical and research reports which are of interest to them;

(d) Refer local fire departments to appropriate state and federal agencies for advice, assistance, and services regarding their specific problems;

(e) Perform such research as is necessary to carry out the functions of the division;

(f) Encourage and, when so requested, assist in cooperative efforts among the officials of various local fire departments to solve common problems;

(g) Encourage the conduct of and participate in training institutes, conferences, and programs for local government officials and employees in the area of fire services;

(h) Upon the request of local government officials, provide technical assistance in defining and developing solutions to local fire safety problems including but not limited to fireworks statutes; electrical hazards; public education programs; regulations concerning explosives; inspection of facilities when the performance of such inspections is the statutory duty of another state agency; certification of emergency medical technicians and paramedics; hazardous materials storage, handling, and transportation; and volatile, flammable, and carcinogenic materials.

(i) Coordinate fire service education and training programs and firefighter and first responder certification programs, which shall be available statewide;

(j) Administer the certification programs for firefighters and first responders, providing office space, equipment, and the services of a clerical staff as necessary for the carrying out of the intent of this part 12;

(k) Train and instruct firefighters and first responders in subjects relating to the fire service and to coordinate fire service-related education and training classes, programs, conferences, and seminars;

(l) Receive and accept gifts, funds, grants, bequests, and services for use in the function of the division.

appointee vacates his or her office during the term for which appointed to the advisory board, the vacancy shall be filled by appointment by the governor for the unexpired term. The advisory board shall annually elect from its members a chairperson and a secretary.

(3) The members of the advisory board shall receive no compensation but shall be reimbursed for all actual and necessary expenses incurred in the performance of their official duties. The expenses shall be paid from the firefighter and first responder certification fund created in section 24-33.5-1207.

**24-33.5-1204.5. Powers of the administrator.**

(1) In addition to any other duties and powers granted by this section or sections 24-33.5-1206.2 and 24-33.5-1206.4, the administrator has the following duties and powers:

(a) To establish a program for registration of fire suppression contractors and to adopt such rules and regulations as may be necessary to administer the fire suppression program for registration of fire suppression contractors and inspection of fire suppression systems pursuant to article 4 of this title;

(b) (I) To establish fees and charges in amounts necessary to defray the anticipated costs of administration of this article. The fees and charges may be adjusted by the administrator from time to time as necessary or appropriate, but shall not exceed the maximum for the specific services described in subparagraph (II) of this paragraph (b).

(II) The administrator shall establish pursuant to subparagraph (I) of this paragraph (b) fees and charges for the following services, not to exceed the amounts indicated:

(A) For annual registration of a fire suppression contractor, fifty-five dollars;

(B) For certification of a fire suppression systems inspector, fifteen dollars;

(C) For plan registration, ten dollars;

(D) For plan review, fifty dollars per hour for actual time expended in conducting said review; and

(E) For inspection, fifty dollars per hour for actual time expended in conducting said inspection.

(III) The maximum fee schedule set forth in this paragraph (b) shall not apply to services provided by local fire safety officials providing the same services under authority of this article.

(c) In the discretion of the administrator, to receive, investigate, and act upon complaints against those persons who violate any of the provisions of section 24-33.5-1206.6 or any rule or regulation adopted by the administrator pursuant to this section;

(d) To maintain records of all applications, investigations, disciplinary or other actions, and registrants;

(e) To conduct hearings upon charges for discipline of a fire suppression contractor or a certified fire suppression systems inspector, issue subpoenas, compel attendance of witnesses, compel the production of books, records, papers, and documents, administer oaths to persons giving testimony at hearings, and recommend prosecution of persons violating this article.

**24-33.5-1206.1. Registration required.**

(1) On or after January 1, 1991, no person shall act, assume to act, or advertise as a fire suppression contractor who is not registered as a fire suppression contractor with the administrator.

(2) Any registered fire suppression contractor shall obtain any locally required licenses or permits and comply with local building and fire codes.

(3) Any registered fire suppression contractor shall be responsible for the acts of its agents and employees while acting on behalf of the contractor to sell, advertise, layout,

fabricate, install, add to, alter, service, repair, or inspect fire suppression systems of any kind.

(4) Every registered fire suppression contractor shall be responsible to assure that:

(a) A responsible person in the management or employment of the contractor is qualified in the layout, fabrication, installation, alteration, servicing, repair, and inspection of fire suppression systems;

(b) Each job is supervised by an on-site installer who is qualified in the layout, fabrication, installation, alteration, servicing, repair, and inspection of fire suppression systems;

(c) Any layout, fabrication, installation, alteration, servicing, repair, or inspection of fire suppression systems is done according to applicable standards adopted by the administrator by rule and regulation or applicable local codes and ordinances. In adopting standards pursuant to this paragraph (c), the administrator may consider the standards of the national fire protection association.

(d) Actual fabrication, installation, alteration, servicing, or repair of any fire suppression system is done in accordance with approved plans, layout, or design;

(e) All interim and final inspections and system tests are completed according to standards adopted by the administrator or requirements laid out by local fire safety inspectors and the administrator and that any required logs, reports, or results of said inspections and system tests are accurately kept and conveyed to the appropriate fire safety inspectors.

(5) No registration shall be granted to any fire suppression contractor who has as a principal any person who, within the past two years, has violated any provision of this part 12 or any rule or regulation of the administrator pursuant thereto.

**24-33.5-1206.2. Job registration and plan review.**

(1) Except for minor alterations, modifications, repairs, or maintenance work which does not affect the integrity of the system, no installation, modification, alteration, or repair of a fire suppression system shall be started until:

(a) Any required local permits have been obtained;

(b) (I) The job, including the name and registration number of the contractor, the address and description of the premises where the job will be done, and the name and address of the general contractor or the name and address of the owner if no general contractor is involved, has been registered with the administrator.

(II) If the local fire safety agency requests job registration and plan review authority, and the administrator determines that said local fire safety agency has the capability and qualifications to conduct plan review, then the administrator shall accept job registration

with local fire safety officials in satisfaction of the job registration requirement imposed by subparagraph (l) of this paragraph (b).

(c) (I) The working plans and hydraulic calculations for the job have been reviewed and approved by the administrator.

(II) The administrator shall establish standards of review and approval and shall, where appropriate, accept review and approval by local fire safety inspectors in satisfaction of the requirements of this paragraph (c).

(2) Any working plans and hydraulic calculations submitted for review by the administrator shall bear the signature and certification number of either a registered professional engineer or a level three or higher engineering technician (fire suppression engineering technology - automatic sprinkler design or fire suppression engineering technology - special hazards system layout), whichever is relevant to the particular job or design, certified by the national institute for the certification of engineering technologists. Such registered professional engineer or engineering technician shall certify that he has reviewed the plan and design and finds that it meets the applicable standards adopted by the administrator for fire safety, and that it is adequately designed to meet the system requirements.

***24-33.5-1206.3. Requirements for installation, inspection, and maintenance of fire suppression systems.***

(1) Fire suppression systems shall be designed and installed in accordance with the applicable standards adopted by the administrator by rule, manufacturer's specifications, and applicable local codes and ordinances. In adopting standards, the administrator may consider and adopt the standards of the national fire protection association.

(2) The contractor shall furnish the user with operating instructions for all equipment installed, together with as-built diagrams of the final installation.

(3) Contractor inspections and tests, where required, shall be conducted by qualified personnel or certified fire safety inspectors and in compliance with applicable standards adopted by the administrator. Complete records shall be kept of the tests and operations of each system. The records shall be available for examination by the local certified fire safety inspector or the fire suppression administrator.

**24-33.5-1206.4. System approval, inspection, and inspectors.**

(1) No installation, modification, alteration, or repair of a fire suppression system shall be completed and cleared for use, and no structure or partial structure in which such fire suppression system is installed, modified, altered, or repaired shall be cleared for occupancy, until such fire suppression system has been approved by a certified fire suppression systems inspector. Approval shall include review of approved working plans and hydraulic calculations, installation inspections, and final tests.

(2) (a) Each county, municipality, and special district that has fire suppression systems enforcement responsibilities shall, as needed, provide a certified fire suppression systems inspector. Such inspector shall conduct all fire suppression systems inspections that are required by this part 12. The governing body of the county, municipality, or special district that has fire suppression systems enforcement responsibilities may provide a schedule of fees to pay the costs of plan review and inspections conducted pursuant to this subsection (2) and related administrative expenses, and collect said fees from the fire suppression contractor.

(b) Two or more counties, municipalities, or special districts that have fire safety enforcement responsibilities may jointly employ or contract with a fire safety inspector.

(c) The administrator or his agent shall be available to provide such fire safety inspections to any county, municipality, or special district on a contractual or job-by-job basis. The county, municipality, or special district shall pay the actual costs of such inspections by the administrator or his agents.

(3) Every inspection of a fire suppression system conducted pursuant to this part 12 shall be by a person certified as having met the inspection training requirements set by the administrator. Such person shall:

(a) Be at least eighteen years of age;

(b) Not have been engaged in any of the activities specified in section 24-33.5-1206.6 (2); and

(c) (I) Have satisfactorily completed the fire suppression systems inspector certification examination as prescribed by the administrator; or

(II) Have demonstrated to the administrator that the applicant has met such other equivalent qualifications, including but not limited to education and experience, as may be prescribed by rule and regulation. If the head of a county, municipality, or special district that has fire suppression system enforcement responsibility determines that the applicant has met the qualifications adopted pursuant to this subparagraph (II), then he shall notify the administrator, who shall certify the applicant; or

(III) Have received in another state training which is determined by the administrator to be at least equivalent to that required by the administrator for approved certified fire safety inspector education and training programs in this state.

(4) Every certificate issued by the administrator is valid for a period of three years from the date of issuance. Renewal of certification shall require the affected person to complete a proper application for renewal and meet any other requirements for renewal as prescribed by the administrator, including successful passage of an examination as established by the administrator.

**24-33.5-1206.5. Unlawful acts - criminal penalties.**

(1) Any person who violates any of the provisions of section 24-33.5-1206.1 commits a class 3 misdemeanor and, if a natural person, shall, upon conviction thereof, be punished as provided in section 18-1-106, C.R.S., and, if a corporation, shall be punished by a fine of not more than five thousand dollars. Any natural person who violates any provision of section 24-33.5-1206.1 subsequent to a prior conviction for such a violation commits a class 2 misdemeanor and shall, upon conviction thereof, be punished as provided in section 18-1-106, C.R.S.

(2) Any person who knowingly and willfully makes any false statement whatsoever or who conceals a material fact in any application, form, claim, advertisement, contract, warranty, guarantee, or statement, either written or oral, with the intent to influence the actions or decisions of any owner or contractor negotiating or contracting for the installation, alteration, or repair of any fire suppression system, or to any bonding agent, commits a class 1 misdemeanor and shall, upon conviction thereof, be punished as provided in section 18-1-106, C.R.S.

**24-33.5-1206.6. Unlawful acts - civil penalties - disciplinary actions.**

(1) Any person, firm, association, or corporation which violates any of the provisions of sections 24-33.5-1206.1 to 24-33.5-1206.3 or any rule or regulation promulgated by the administrator pursuant to this part 12 may be punished upon a finding of such violation by the administrator as follows:

(a) In any first administrative proceeding against a licensee, a fine of not less than one hundred dollars nor more than one thousand dollars;

(b) In any subsequent administrative proceeding against a licensee for transactions occurring after a final agency action determining that any violation of sections 24-33.5-1206.1 to 24-33.5-1206.3 or any rule or regulation of the administrator has occurred, a fine of not less than one thousand dollars nor more than ten thousand dollars.

(2) In addition to the penalties provided in subsection (1) of this section, the administrator may withhold, deny, suspend, or revoke the registration or certification of any registered fire suppression contractor or certified fire safety inspector or applicant therefor if the administrator finds, upon proof, that any such person has committed any of the following:

(a) Fraud or material deception in the obtaining or renewing of a registration;

(b) Professional incompetence as manifested by poor, faulty, or dangerous workmanship;

(c) Engaging in dishonorable, unethical, or unprofessional conduct of a character likely to deceive, defraud, or harm the public in the course of professional services or activities;

(d) Performing any services in a negligent manner or permitting any of his agents or employees to perform services in a grossly negligent manner, regardless of whether actual damage or damages to the public is established;

(e) Directly or indirectly, willfully receiving compensation for any professional services not actually rendered;

(f) Failing to comply with any provision of this part 12 or the standards or rules promulgated by the administrator pursuant thereto;

(g) Contracting or assisting unregistered persons to perform services for which registration is required under this part 12.

(3) All fines imposed by the administrator pursuant to this section shall be credited to the fire suppression fund created in section 24-33.5-1207.6.

(4) A person acting as a fire suppression contractor may not bring any legal action to collect compensation due for performing any act for which registration is required pursuant to section 24-33.5-1206.1 unless such contractor alleges and proves that he was duly registered under said section at the time the alleged cause of action arose.

(2) The moneys in the fire service training fund, which fund was repealed, shall be deposited in and consolidated with the fire service education and training fund.

**24-33.5-1207.6. Fire suppression cash fund - created.**

All moneys collected by the administrator pursuant to the administration of the fire suppression program shall be transmitted to the state treasurer, who shall credit the same to the fire suppression cash fund, which fund is hereby created. All moneys credited to said fund and all interest earned thereon are subject to annual appropriation by the general assembly for paying the expenses of the fire suppression program, and said moneys shall remain in such fund for such purposes and shall not revert or be credited to the general fund.

**24-33.5-1208. Limitation of authority.**

Nothing in this part 12 shall be construed to give the division, director, or administrator any power of control or supervision over any unit of local government.

**24-33.5-1209. Repeal of sections.**

(1) Sections 24-33.5-1204, 24-33.5-1205, 24-33.5-1206, 24-33.5-1207, and 24-33.5-1207.5, concerning the fire safety advisory board scheduled for review and repeal in accordance with section 2-3-1203 (3) (I) (II), C.R.S., are repealed, effective July 1, 1999.

(2) Sections 24-33.5-1204.5, 24-33.5-1206.1, 24-33.5-1206.2, 24-33.5-1206.3, 24-33.5-1206.4, 24-33.5-1206.5, 24-33.5-1206.6, and 24-33.5-1207.6, concerning programs for fire suppression administered by the division of fire safety and scheduled for termination in accordance with section 24-34-104 (27) (b) (III), are repealed, effective July 1, 1998.

## Fire Suppression Contractors Questionnaire

Questionnaires were sent to 56 of the 223 currently registered contractors. Nine survey responses were received, representing a response rate of 16%. In addition to answering the questions posed in the survey, the majority of respondents wrote comments. The purpose of the survey was to elicit such comments as well as to provide general information from the regulated community on its views of the effectiveness of the regulatory program. Please note that the totals of responses in each category may not equal 8 since some respondents left some questions blank. In some cases, the comments were summarized due to similar comments.

**1. Have you noticed an improvement in the quality of the fire suppression system installations since the Fire Suppression Program became law in 1991? Please explain.**

Yes 5

No 1

### Comments:

- Program has eliminated a lot of “fly by night” operators and plumbers who installed inadequate systems. The level of protection being provided today is higher than it was in 1990.
- Certainly in those rural areas where no expertise had previously existed, we now have the Division of Fire Safety available to provide plan review and inspections.
- Less cost to owners for corrections and consistent designs and installations.

**2. The present system allows anyone to register as a fire suppression contractor. (However, a responsible person in the employment of the contractor must be qualified in the layout, fabrication, installation, etc. of fire suppression systems [§24-33.5-1206.1 (4)(a), C.R.S.]. Do you feel the program would be enhanced if contractor qualifications for registration were required up front (testing, etc.)?**

Yes 4

No 1

### Comments:

- Presently practicing contractors have adequate qualifications, however new applicants should be required to pass a test before registration.
- Many dry chemical companies sell their services and inspections without having qualified fire sprinkler personnel on their payrolls.
- Any program that allows registration without confirmation of expertise leaves the door open for an unscrupulous individual to set-up shop without the necessary qualifications.

- Local fire codes and inspections are more than adequate.

**3. Is there anything in the law that has made your job easier or more difficult? Please explain.**

**Comments:**

- Only in the geographic areas where no qualified inspectors are available.
- We now know that there is a minimum standard of design and installation for those areas of the state that previously had no qualified plan reviewer or inspection personnel. This helps to ensure a level playing field.
- The state inspectors have been effective, rational and responsive. They have shown concern for providing a quality, affordable service.

**4. Do you believe that the life safety of occupants in buildings with fire suppression systems installed has been upgraded by this program?**

Yes 9

No 0

**Comments:**

- The systems being installed today are of a higher quality than those of the pre-1991 era. More systems are being brought up to current standards and are being better maintained than before 1991.
- Certainly the plan review provided by the Division of Fire Safety has improved the quality of fire sprinkler installation. But certain municipalities still seem to approve inadequate or incorrect designs and installations.

**5. Currently, there is a fee schedule for contractor registration, plan registration, plan review, travel, job site inspection, etc. Do you feel that the fee schedule is adequate, should be higher, could be lower?**

adequate 7

should be higher 1

**Comments:**

- Obviously, the program should be self funding and should be able to provide the same level of service to all parts of the state. If necessary, higher fees would be appropriate.

**6. Do you feel every sprinkler system in the state is receiving maintenance in accordance with NFPA 25? If no, approximately what percentage of the systems are not being properly maintained?**

Yes 0

No 8

The extent of systems not being properly maintained ranged from 5% to 95%; although most contractors responded in the higher percentage range.

**7. Do you feel that the certified inspectors you have dealt with know the codes and do a good job with plan review and inspections? Comments.**

Yes 7

No 1

**Comments:**

- At the state level, yes. Some of the smaller outlying areas are questionable on both plan review and inspections. Municipal level plan review is sometimes very lax.

**8. Colorado law prohibits plumbers from installing, altering or maintaining fire protection systems. Do you believe that this restriction is valid? Please comment.**

Yes 6

No 1

**Comments:**

- Must plumbers have no concept of fire protection or their design, operation and problems and preventive maintenance.
- If a test for code knowledge was required for plumbers, then this would be acceptable.
- Pipe systems are pipe systems. Installation by licensed and certified pipe fitters should be more than enough.

**9. Do you think that range hoods and ducts should be added to the program? If yes, why?**

Yes 7

No 1

**Comments:**

- The kitchen of a commercial operation poses a high fire risk and should be protected by trained professionals. I have seen numerous systems installed improperly by moonlighters with little or no training.

**10. Do you think that fire alarm systems should be added to the program? If yes, why?**

Yes 6

No 2

**Comments:**

- Fire alarms provide a vital life safety link between the fire building or system and an emergency response agency. The contractors installing and maintaining these systems should be tested and licensed to install and maintain alarm systems.

**11. Do you believe it is your responsibility to ensure that the local fire inspector is certified prior to allowing him/her to review your plans and to conduct your inspections? If not, whose responsibility is it and why?**

Yes 3

No 1

**Comments:**

- The Division of Public Safety should publish a list of jurisdictions and certified inspectors on a periodic basis.
- The State should have a State Fire Marshall who would have a program and checking system to determine if inspectors are qualified.
- Unfortunately, under Colorado's "Home Rule" system, we cannot always be certain of a local fire inspector's certification on face value alone. Therefore, the responsible contractor should confirm a certification with the State when in doubt.
- It should be the responsibility of those who require inspections.

**12. Do you believe that the Division of Fire Safety provides you, as their customer, with enough service for the fire suppression system program?**

Yes 6

No 0

**Comments:**

- I would also appreciate a more reliable certification procedure for person's responsible for plan review and inspection.

**13. Please explain, giving examples, how beneficial (or non beneficial) the fire suppression program has been since 1991.**

**Comments:**

- During the casino building boom, the fire suppression system program provided much needed expertise. The program continues to provide this service for all areas which lack the appropriate personnel
- This program has eliminated amateur sprinkler contractors in our area.
- The quality of systems has improved 100%.

**14. Do you feel that the fire suppression program should be continued?**

Yes 8

No 0

**15. Explain how you feel the program could be improved.**

**Comments:**

- Industrial fire systems, grease hood fire systems and portable fire extinguisher installation and maintenance should be done only by certified or licensed persons who have taken and passed a test. This would eliminate those who tag a fire system or extinguisher without actually servicing it.
- Communication needs to remain positive and cooperative with all parties.
- Should have more local inspectors in Canon City, Trinidad, Lamar, etc.

**DISCUSSION OF SURVEY RESULTS**

The survey results clearly show a consensus in the opinions of the contractors. All of the respondents have noticed an improvement in the quality of fire suppression system installations and all believe that the program should be continued. Likewise, all the respondents believe that a great percentage of fire suppression systems are **not** being adequately maintained. All the respondents believe that the Division of Fire Safety is responsive to their needs.

## FIRE SUPPRESSION SYSTEMS INSPECTOR QUESTIONNAIRE

Questionnaires were sent to 66 of the 208 currently registered inspectors. Thirty-nine survey responses were received, representing a response rate of 59%. In addition to answering the questions posed in the survey, the majority of the respondents wrote comments. The purpose of the survey was to elicit such comments as well as to provide general information from the regulated community on its views of the effectiveness of the regulatory program. Please note that the totals of responses in each category may not equal 39 since some respondents left some questions blank.

**1. Have you noticed an improvement in the quality of the fire suppression system installations since the Fire Suppression Program became law in 1991? Please explain.**

Yes 31

No 5

### Comments:

- Our district has become more involved in making sure buildings that should have systems do.
- All contractors that install suppression systems know up front that all applicable codes will be followed.
- There are still installers out there that are not doing good work. The state has been made aware and yet these people still get their certificates.
- The quality of plans submitted for review has improved.
- There are now more knowledgeable designers and installers. Also, since inspectors must be certified, the quality of plan review and inspections has improved.
- I am not getting called anymore by companies with questions regarding what they should do or how to design systems.
- Few amateurs in the field.
- Contractors can now be held to statewide standards and enforcement procedures.
- I have seen better quality workmanship and installation of systems with the program.

**2. The present system allows anyone to register as a fire suppression contractor. (However, a responsible person in the employment of the contractor must be qualified in the layout, fabrication, installation, etc. of fire suppression systems [§24-33.5-1206.1 (4) (a), C.R.S.]. Do you feel the program would be enhanced if contractor qualifications for registration were required up front (testing, etc.)?**

Yes 33

No 6

**Comments:**

- This would be good even if the testing was as simple as understanding the statute.
- Assurances of knowledge and capability should be handled up front.
- If the contractor has qualified people, why test them?
- Designs should be reviewed by independent professional engineers.
- Although the plan submittal process has improved, some type of control needs to be in force with the management of the company and the employees required to display some proof of knowledge in the operation, installation, and maintenance of the fire suppression systems.
- The system review process insures that the contractor will design the system properly.
- Up front testing would greatly enhance the program. It would provide assurance that contractors were knowledgeable about the systems they were designing and installing. It would reduce follow-up time and eliminate basic questions by unqualified people trying to install systems.
- The plan review process insures that the contractor will design the system properly. If the inspector does the inspections properly, then there is verification that the installation is according to design.
- Current process does not qualify designers and installers but requires local jurisdictions to qualify and approve.
- I don't know that testing is necessary but the contractor should have to prove by way of certificates, etc. their qualifications.
- A professional engineer or fire protection engineer normally designs or signs off on systems and he/she will take responsibility.

**3. Is there anything in the law that has made your job easier or more difficult? Please explain.****Comments:****Easier:**

- Having the backing of the Division of Fire Safety has been of great help at times.
- We now receive a complete set of drawings that cover layout and system calculations.
- By having a licensing process at the state level, individual licensing at local level is no longer a problem. Small fire districts or departments can have the same quality as large cities.
- Puts more "enforcement teeth" into legislation and certification process. Provides quality control and feedback to the fire departments.
- It has made the sprinkler industry perform at a higher standard.
- Easier to do plan reviews because systems normally are submitted properly and rarely rejected.

**More Difficult:**

- It added more paperwork.
- The program adds an additional layer of government controls with no clear definition.

**4. Do you believe that the life safety of occupants in buildings with fire suppression systems installed has been upgraded by this program?**

Yes 33

No 6

**Comments:**

**5. Do you feel every sprinkler system in the state is receiving maintenance in accordance with NFPA 25? If no, approximately what percentage of the systems are not being properly maintained?**

Yes 0

No 35

Inspectors noted that between 10% and 95% of systems are not being properly maintained

**6. Do you feel that the Division of Fire Safety should have more stringent requirements for certified fire suppression inspectors? Please explain.**

Yes 20

No 17

**Comments:**

- Need to certify the installer not just the overall company.
- Inspectors should be required to pass a practical test on actual systems.
- There should be some requirement for continuing education and possibly a recertification test.
- Demonstration of basic knowledge with annual testing similar to ICBO/IFCI.

**7. Should a written examination be required for certified inspectors? Please explain.**

Yes 26

No 10

Undecided 2

**Comments:**

- The state should not be involved in an inspector certification program. The local jurisdiction should be responsible for its individual inspection program. The state should be responsible for state owned buildings only.
- Sometimes tests just prove that people can pass them.
- Only efficient way to measure knowledge.

**8. Do you think that range hoods and ducts should be added to the program? If yes, why?**

Yes 20

No 15

**Comments:**

- It is part of fire safety and goes along the same lines.
- Pre-engineered systems are state-of-the-art installations. They do not need detailed inspection services.
- The quality of installation or installers would improve and make them more uniform throughout the state.
- These systems are much smaller and adequately protected by the Uniform Fire Code.

**9. Do you think that fire alarm systems should be added to the program? If yes, why?**

Yes 25

No 11

**Comments:**

- Because anyone can get into fire alarm business, the false alarm problem plagues the fire service's resources.
- In our area, it is being included in fire inspections and by insurance companies.
- There are many alarm companies out there that are in it for the money rather than life safety.
- This is probably the most neglected area of fire safety systems.
- Fire alarm systems are usually designed by the manufacturers. Testing by the jurisdiction proves if the system works or not.
- There are so many problems with designers and installers that something needs to be done.
- Let's be careful of over regulation.

**10. Do you believe it is your responsibility to ensure that the local fire inspector is certified prior to allowing him/her to review your plans and to conduct your inspections? If not, whose responsibility is it and why?**

Yes 32

No 5

**Comments:**

- The contractor should be responsible for his own registration with the state.
- The local jurisdiction should have the ability to register the contractors in the community and have the responsibility for the enforcement of all codes.
- We require and check the contractor's registration prior to issuing any permits.
- Any contractor should be responsible for compliance with state laws.
- This is the state's responsibility.

**11. Do you feel that the structure for certified inspectors - allowing local qualified inspectors to be certified as agents of the Division of Fire Safety - has worked well for your jurisdiction? Please explain.**

Yes 33

No 3

**Comments:**

- It has helped us distribute the workload.
- Having qualified inspectors as certified agents of the Division of Fire Safety provides an additional layer of enforcement that is outside the community and there is no clear definition what the role of the city is and the role of the Division of Fire Safety.
- Being in a rural area, it is not always practical for the Division to get around in a timely manner for inspections.
- Our town has not adopted a fire code. Consequently, without the state program, there would be no regulation of fire suppression systems.

**12. Please explain, giving examples, how beneficial (or non beneficial) the fire suppression program has been since 1991.**

**Comments:**

- The certification has promoted more expertise in the industry.
- The fire suppression system has provided no benefit to this jurisdiction during this administration. The inspection program is good because of the training of the inspectors and not because of the certification program.
- It has discouraged contractors from venturing out of their area of expertise.
- The ability to revoke licenses has helped correct installations on several occasions.
- We discover problems with systems that wouldn't be discovered without this program.
- Plan submittal packages have improved.
- It has removed people from the industry who are neither qualified or trained to install systems.

**13. Colorado law prohibits plumbers from installing, altering or maintaining fire protection systems. Do you believe that this restriction is valid? Please comment.**

Yes 29

No 7

**Comments:**

- Most plumbers do not understand NFPA 13, 13D, 13R and think there is no difference between plumbing and fire suppression installation.
- Plumbers are not necessarily schooled in fire suppression systems.
- Consideration should be given to plumbers (trained), especially with respect to residential sprinkler installations.

**14. Do you feel that the fire suppression program should be continued?**

Yes 36

No 2

**Comments:**

- It is a very fine program.
- This program helps to keep system installers in line with today's standards.
- Tighten enforcement procedures.
- Local governments should have the option of providing programs that will best suit the needs of the jurisdiction.
- Not as currently administered.
- Jurisdictions that have not adopted a fire code would have no regulation of fire suppression systems without the state program.

**15. Explain how you feel the program could be improved.**

**Comments:**

- Having a testing process for certification.
- A newsletter or annual report sent to inspectors - sharing information.
- Have Division more available to fire departments with questions.
- The local government should be responsible for building code enforcement, and should be allowed to determine the program that will best fit the needs of the community.
- Increase the personnel in the Division of Fire Safety to effectively do the job that they are supposed to do.
- Better testing, good training programs.
- Institute testing and accountability for both installers and inspectors.
- Start an educational program for contractors, architects, building officials - many still do not understand the value of systems.

**DISCUSSION OF SURVEY RESULTS**

A majority of the inspectors have noticed an improvement in the quality of fire suppression system installations since the program began in 1991. Likewise, 86% of those responding believe that there should be testing required of contractors before they receive their registration. Seventy-four percent agree that there should be a written examination required for certified inspectors. All but two respondents believe that the fire suppression program should be continued.

## Examples of Inadequate or Incomplete Plans or Designs

Certified fire suppression system inspectors review fire protection system plans and hydraulic calculations for compliance with NFPA 13 and the Colorado Revised Statutes and rules and regulations governing the Fire Suppression System Program. A combination of plan review, hydraulic calculation review, review of informational product submittal, and all on-site inspections comprise criteria for system approval.

The following summary descriptions are provided as examples of inadequate or incomplete plans or designs that have the potential for threatening the life, safety, and property of the citizens of Colorado. The examples include faulty design and/or installation of fire suppression systems that were found during a plan review or system inspection by a certified state inspector regarding hydraulic calculations and plans and designs.

### 1. Ski Area, Colorado 1996

The head of security for a ski area was inspecting fire sprinkler systems in buildings and allowing modifications, but lacking the proper certification or qualifications. A state inspector found that the approved fire suppression systems in two condominium buildings were actually in violation of state and national codes.

**Action taken:** The Division of Fire Safety issued a cease and desist order.

### 2. Sports Bar and Grill, Pagosa Springs 1996

The flow of one of the sprinkler heads was marginal; total area protected by each system on each floor not shown; sprinkler heads protecting under side of both stairways on the second floor were blocked by a beam; escutcheon plates were missing from several heads throughout the building.

**Action taken:** Plans and hydraulic calculations were not approved until corrections were completed. State officials must be advised when alarm valves and tampers were connected so a final inspection could be scheduled.

### 3. School, Marble 1996

Dual backflow preventor leaked; sprinkler heads were painted and/or coated with drywall mud; sprinkler head under stairway was blocked by the water heater; fittings were leaking.

**Action taken:** System was not approved until corrections were made and a reinspection conducted.

#### **4. Residential Care Facility for Mentally Disabled, Grand Junction 1993**

The plan review found that there was no control valve on each side of the backflow preventor, with tamper switches that would cause an audible signal. In addition, pressure gauges were insufficient, smoke detectors were not installed in all unprotected areas, and the maximum distance between sprinklers exceeded the 12 foot maximum.

**Action taken:** System was not approved until corrections were made and a reinspection conducted.

#### **5. Medical Center, Limon 1992**

The plans and hydraulic calculations were not approved because the contractor had not provided sprinkler protection for the attic or mechanical room of the medical center.

**Action taken:** Revised plans and calculations had to be submitted before final approval was granted.

#### **6. Department Store, Craig 1993**

State inspector found that the building was being occupied before there was a final test and approval of the fire protection system. It was later determined that a hydrostatic test had been carried out by a city building official who was not a certified fire suppression inspector. When a final test of the fire suppression system was conducted, the following deficiencies were found: control panel for the flow alarms and tamper switches had a defective circuit board, not enough alarm horns in the store to allow employees and customers to hear the fire alarm, static water pressure at the riser was insufficient, and two combustible stairways to the mezzanine were not properly protected. The state inspector could not determine whether the fire department connection was accessible to the fire department.

**Action taken:** System was not approved until deficiencies were corrected.

#### **7. Middle School, Durango 1993**

System review found that the gymnasium, computer room, and stage were not sprinkler protected.

**Action taken:** Plans and hydraulic calculations were not approved and corrections needed to be resubmitted for review.

## 8. Ranch, Pagosa Springs 1996

Plans did not indicate total area protected on each floor, designated doors and openings, fire department connection and dual check backflow preventor. The fire pump did not meet NFPA requirements and sprinklers were omitted from bathrooms, closets, and two unidentified rooms.

**Action taken:** Plans and hydraulic calculations were not approved until recommended changes were made and information was resubmitted.

**Application for Registration - Fire Suppression System Contractor**