

# Approval Standard

Approval of Firestop  
Contractors

Class Number 4991  
May 2001



**Approval Standard**

**for**

**Approval of Firestop  
Contractors**

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# Foreword

Factory Mutual Research Approvals are intended to verify that the products and services described will meet stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of Factory Mutual Research Approval Standards is to present the criteria for Factory Mutual Research Approval of various types of products and services, as guidance for Approvals Division personnel, manufacturers, users and authorities having jurisdiction.

Products submitted for Approval shall demonstrate that they meet the intent of the Approval Standard, and that quality control in manufacturing shall ensure a consistently uniform and reliable product. Factory Mutual Research Approval Standards strive to be performance-oriented. They are intended to facilitate technological development.

For examining equipment, materials and services, Factory Mutual Research Approval Standards:

- a) must be useful to the ends of property conservation by preventing, limiting or not causing damage under the conditions stated by the Approval listing; and
- b) must be readily identifiable.

Continuance of Approval and Listing depends on compliance with the Approval Agreement, satisfactory performance in the field, on successful re-examinations of equipment, materials, and services as appropriate, and on periodic follow-up audits of the manufacturing facility.

Factory Mutual Research reserves the right in its sole judgement to change or revise its standards, criteria, methods, or procedures.



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## 1. INTRODUCTION

### 1.1 Purpose

- 1.1.1 The purpose of this Standard is to improve the performance and installation of firestop systems and their components by examining and qualifying contractors involved in the installation of such systems and components.
- 1.1.2 This Standard shall be used to assess the ability of responsible individuals designated by firms that install firestop systems and their components to understand the requirements and restrictions/limitations of the Firestop Contractors International Association's (FCIA) Manual of Practice and Factory Mutual Research Approval requirements.

### 1.2 Scope

- 1.2.1 This Standard sets the requirements for Approval of Firestopping Contractors who install firestop systems and their components as fire rated construction of specific hourly ratings.
- 1.2.2 This Standard examines the contractor's training and education of its workforce, general knowledge of firestop systems and their components, handling, design selection, installation and application procedures to ensure a practical and reliable installation.
- 1.2.3 This Standard, in part, assesses the ability of a Designated Responsible Individual to interpret and understand the information contained in the FCIA's Manual of Practice and Factory Mutual Research Approval requirements as evidenced by satisfying the minimum requirements of written examinations. A contractor who meets this and all other requirements of this Standard shall be listed in the Factory Mutual Research Approval Guide as an Approved Firestop Contractor.

### 1.3 Basis for Requirements

- 1.3.1 The requirements of this Standard are based on field loss experience, research and testing, and/or the application standards and advice of manufacturers, installers, users, trade associations, authorities having jurisdictions and/or loss control specialists.
- 1.3.2 Meeting these requirements qualifies a contractor as an Approved installer of firestopping systems and their components. In cases where the system being installed is a fire rated system shown in a published listing by a recognized listing agency, listing agency requirements prohibit component substitution or modification to a listed system without prior written authorization by the listing agency that published the listing.

### 1.4 Basis for Factory Mutual Research Approval

- 1.4.1 Factory Mutual Research Approval shall be based upon a satisfactory evaluation of the contractor in the following areas:
  - Verification that the contractor has been in the firestop installation business for the two (2) year period immediately prior to obtaining Approval.

- Assurance that the Designated Responsible Individual employed by the contractor has a demonstrated knowledge of the FCIA Manual of Practice, Factory Mutual Research Approval requirements, overall product knowledge in his/her area of expertise and the ability to select firestopping components, systems and assemblies as shown in a published listing by a recognized listing agency that will meet or exceed written specifications, as evidenced by satisfying the minimum requirements of written examinations.
- An initial, in-house and job-site Facilities and Procedures Audit (F&PA) inspection of the contractor's quality control program.

1.4.2 Continued Approval shall be based upon a satisfactory evaluation of the contractor in the following areas:

- Proof that the Designated Responsible Individual employed by the contractor continues to exhibit a demonstrated knowledge of the FCIA Manual of Practice, Factory Mutual Research Approval requirements, overall product knowledge in his or her area of expertise and the ability to select appropriate firestopping components, systems and assemblies as shown in a published listing by a recognized listing agency that will meet or exceed written specifications, as evidenced by periodic written examinations every three (3) years.
- Attendance by the contractor's Designated Responsible Individual at FCIA sponsored seminars or equivalent educational courses resulting in the collection of at least six (6) Continuing Educational Units (CEU's) every three (3) years. Seminars sponsored by the FCIA shall be made available to both members and non-members of the FCIA in order to be eligible for credit. Equivalent educational courses shall deal with topics such as life safety, loss prevention, fire containment, building codes and other subjects at the discretion of Factory Mutual Research. Designated Responsible Individuals may also receive CEU's for giving presentations at industry sponsored seminars with the prior written approval of Factory Mutual Research.
- Verification and proper installation of firestopping systems resulting from annual, in-house and job-site Facilities and Procedures Audits.
- Continued satisfactory performance of firestopping systems installed under this program.
- A documented and archived record keeping system for all installations.

## 1.5 Approval Categories

1.5.1 Factory Mutual Research recognizes that Firestop Contractors may specialize in one or more areas. These areas include, but are not limited to firestop joint systems, floor perimeter/slab edge/exterior wall cavity systems and through penetration systems. For the purposes of this Approval Standard, there shall be only a single Approval category, Firestop Contractor, that will encompass all firestopping systems. Approved Firestop Contractors shall be knowledgeable in and meet the test requirements for all areas of firestopping contained in the FCIA Manual of Practice.

## 1.6 Effective Date

1.6.1 The effective date of an Approval Standard mandates that all services tested for Approval after the effective date shall satisfy the requirements of that Standard.

1.6.2 The effective date of this Standard is May 1, 2001 for compliance with all requirements.

## 2. APPLICABLE DOCUMENTS AND DEFINITIONS

### 2.1 Applicable Documents

The following standards, publications, and practices are referenced in this standard:

Firestop Contractors International Association (FCIA) Manual of Practice (Sept 2000)

### 2.2 Definitions

For purposes of this Standard, the following terms apply:

*Approved Firestop Contractor* — a contractor who meets the requirements established in this Standard.

*Authority Having Jurisdiction (AHJ)* — the organization, office, official or individual responsible for approving or accepting firestopping components, installations, procedures or Equivalent Fire Resistance Rated Assemblies. Firestop Contractors, or their employees, shall not be considered as the Authority Having Jurisdiction.

*Contractor* — a business entity providing the service of installing firestopping assemblies, systems and their components in building constructions.

*Designated Responsible Individual* — the contractor's employee who meets the criteria contained in this Standard. The Designated Responsible Individual shall provide oversight for the proper design selection, installation and transmission of information to field personnel and is responsible for continuing to meet the criteria needed to maintain continued Approval within that firm.

*Equivalent Fire Resistance Rated Assembly* — an assemblage of materials or products that do not qualify as a Fire Resistance Rated System but are acceptable to the Authority Having Jurisdiction.

*Fire Resistance Rated System* — an assemblage of specific materials or products rated in accordance with a nationally recognized test method that resist the passage of fire through openings in fire resistance rated building construction for a prescribed period. The requirements and limitations of such systems shall be listed and shown in publications issued by independent third party testing or certification agencies.

*Firestopping* — fire resistant materials, systems and assemblies installed around and/or directly to through penetrating items, construction joints or floor perimeter/slab edge conditions in order to maintain the fire resistance of rated building construction.

## 3. GENERAL INFORMATION AND REQUIREMENTS

### 3.1 Overview

3.1.1 A firestopping system is designed to protect openings in walls, floors, construction joints and at floor and wall slab edge conditions against the spread of fire within buildings or adjacent compartments. Such systems are tested in laboratory conditions in accordance with applicable test standards recognized by various authorities having jurisdiction.

- 3.1.2 In order to achieve the intended results under actual or field conditions, it is necessary that a contractor not only use the products specified in the published listings, but that the products be installed in accordance with manufacturer's written installation instructions and accepted industry practices. Failure to install any single component in the specified manner may jeopardize the integrity of the entire system.
- 3.1.3 As a means of increasing the reliability and performance of firestopping systems, this Standard was developed to ensure that an Approved Contractor employ at least one Designated Responsible Individual who understands the requirements and restrictions of the various listing agency publications, the FCIA Manual of Practice and Factory Mutual Research Approval requirements. The Designated Responsible Individual shall also have a knowledge of firestopping components, systems and assemblies, their proper selection, installation, and the ability to identify and implement corrective action when deficiencies or non-conformances occur.

### **3.2 Eligibility Requirements**

- 3.2.1 Eligibility as a Factory Mutual Research Approved Firestop Contractor shall be made available to those contractors who have been successfully evaluated in the following areas:
- a) verification that the contractor has been in the firestopping business for at least the two (2) year period immediately prior to obtaining Approval;
  - b) a demonstrated knowledge by the contractor's Designated Responsible Individual of the FCIA Manual of Practice, Factory Mutual Research Approval requirements, overall product knowledge in his or her area of expertise and the ability to select appropriate firestopping components, systems and assemblies as shown in a published listing by a recognized listing agency that will meet or exceed written specifications, as evidenced by written examinations administered by Factory Mutual Research, on which the Designated Responsible Individual obtains a score of 80% or better on each test;
  - c) a demonstrated quality control program;
  - d) a documented and archived record keeping system for all installations;
  - e) and documented technical training acceptable to Factory Mutual Research.

### **3.3 Demonstrated Knowledge**

- 3.3.1 A demonstrated knowledge shall be evidenced by exceeding the minimum examination score indicated above.
- 3.3.2 Examinations will be proctored by Factory Mutual Research personnel, or their designees, at designated times and places. Positive identification will be required for admittance to the examination area. Examinations will be conducted at Factory Mutual Research in individual and group settings. If the demand for testing is sufficient, Factory Mutual Research will conduct such examinations at other locations where groups of contractors are expected to assemble. This includes, but is not limited to, industry trade shows, regional or local trade association meetings or on site at firestopping component manufacturers' sales or training sessions.

### **3.4 Designated Responsible Individuals**

- 3.4.1 Contractors who obtain Factory Mutual Research Approval recognition shall employ at least one Designated Responsible Individual who has passed all written examinations required of this Standard.

- 3.4.2 Contractors who use multiple store fronts or conduct business under multiple business names shall qualify at least one Designated Responsible Individual for each location for which the business entity is seeking recognition.
- 3.4.3 In the event that the Designated Responsible Individual ceases employment with the contractor, or is unable to perform his or her duties due to extended illness, injury or incapacitation, the contractor shall be given a grace period of four (4) months to employ or qualify another Designated Responsible Individual, without penalty or loss of Approval. During any such grace period, the contractor shall not apply labels or markings to any firestopping to indicate Factory Mutual Research Approval.

### 3.5 Approval Categories

Only a single category of Approval, Firestop Contractor, is available. Contractors who specialize in the installation of firestop joint systems, floor perimeter/slab edge/exterior wall cavity systems, through penetration systems or other types of firestopping, shall be knowledgeable and examined on all types of firestopping systems shown in the FCIA Manual of Practice.

### 3.6 Continuing Education

- 3.6.1 The Designated Responsible Individual employed by an Approved Firestop Contractor shall continue to attend training programs and educational seminars resulting in the collection of at least six (6) continuing educational units (CEUs) every three (3) years.
- 3.6.2 CEUs can be obtained by attendance at industry approved education training or technical construction related educational seminars (where CEUs are offered), or by attending educational programs offered by accredited colleges, universities and other providers of adult education. Such training or seminars shall deal with topics such as loss prevention, fire containment, building codes and other construction related topics at the discretion of Factory Mutual Research.
- 3.6.3 Seminars sponsored by the FCIA shall be made available to non-members in order to be eligible for credit. Designated Responsible Individuals may receive CEUs for giving presentations at industry sponsored seminars with prior Approval of Factory Mutual Research.

### 3.7 Terminology for Systems and Assemblies

- 3.7.1 Factory Mutual Research recognizes that due to the large number of variables encountered in building construction, it is not always possible to select materials, components and configurations that meet all criteria for a specific firestop design. As a result, this Approval Standard classifies firestopping into two types — Fire Resistance Rated Systems and Equivalent Fire Resistance Rated Assemblies.
- 3.7.1.1 A Fire Resistance Rated System is an assemblage of specific materials or products that have been rated in accordance with a nationally recognized test method. The requirements and limitations of such systems are listed and shown in publications issued by independent third party testing and certification agencies.
- 3.7.1.2 An Equivalent Fire Resistance Rated Assembly is an assemblage of materials and products that have not been subjected to a fire endurance test or are not listed and shown in publications issued by an independent third party testing or certification agency. In most cases, an Equivalent Fire Resistance Rated Assembly is designed based on the engineering judgement of manufacturers and others. The acceptance of an Equivalent Fire Resistance Rated Assembly is the prerogative of the Authority Having Jurisdiction.

3.7.2 Factory Mutual Research recommends the use of Fire Resistance Rated Systems as firestopping. In cases where a Fire Resistance Rated System is not available, it may be necessary to utilize an Equivalent Fire Resistant Rated Assembly if acceptable to the Authority Having Jurisdiction. In these cases, the Approved Firestop Contractor shall receive written authorization from the Authority Having Jurisdiction responsible for approving and accepting the use of non-Fire Resistance Rated Systems prior to installing Equivalent Fire Resistance Rated Assembly(ies) or their components.

### 3.8 Markings

3.8.1 The need or requirement for labeling or marking firestopping installed under this program shall be done on a job-by-job basis in accordance with the specific project's written specifications. In cases where the project specification states that the firestopping shall be labeled or marked in accordance with Factory Mutual Research Approval Standard 4991, Approval of Firestop Contractors, the requirements shown in Paragraphs 3.8.2 to 3.8.6 shall be applicable. If not specifically stated in the project specifications, the use of Paragraphs 3.8.2 to 3.8.6 is optional at the discretion of the Approved Firestop Contractor.

3.8.2 When required by the project specification, each Fire Resistance Rated System installed by an Approved Firestop Contractor shall bear a permanent label or marking. Samples of such labels or markings are shown in Appendix A. Labels or markings shall be metal or plastic. Metallic labels shall be secured with permanent fasteners. Plastic labels shall be self-adhering and shall be evaluated for adhesive quality for the proposed substrates. The adhesive and label used shall provide for partial destruction of the label when removal is attempted.

3.8.2.1 For penetration type firestop systems or assemblies, the label or marking shall be located adjacent to or within 6 in. (150 mm) of any edge of the system or assembly.

3.8.2.2 For head of wall, expansion joint and floor/exterior wall slab edge type firestop systems or assemblies, the label or marking shall be located adjacent to or within 6 in. (150 mm) of the firestop system or assembly and spaced at not more than 50 ft (15.2 m) on center.

3.8.3 Labels and markings may be omitted if they would be visible in a finished area with the written authorization of the Authority Having Jurisdiction.

3.8.4 Fire Resistance Rated Systems — labels or markings shall contain the Factory Mutual Research Approval mark, a unique serialized number, the words "Installed by [contractor's name and address], a Factory Mutual Research Approved Firestop Contractor", and the words "Do Not Disturb — Fire Resistance Rated Firestop System". Additional information may be included at the Contractor's discretion.

3.8.5 Equivalent Fire Resistance Rated Assemblies — contractors shall be allowed to place a label or marking for such assemblies; however any such label or marking shall be prohibited from using the words 'Approved', 'Factory Mutual Research' or any reference to this program, express or implied, that indicate Factory Mutual Research Approval as a Firestop Contractor.

3.8.6 The labels shown above shall be applied within thirty (30) days of completing the Installation of the individual firestop.

## 4. PERFORMANCE REQUIREMENTS AND VERIFICATION

### 4.1 Eligibility

- 4.1.1 Contractors seeking Approval shall submit the information needed to verify that the company has been in the firestopping business for at least the two (2) year period immediately prior to obtaining Approval.
- 4.1.2 In addition, proof of workers compensation and liability insurance as legally mandated shall be provided.

### 4.2 Written Test Requirements

- 4.2.1 The contractor’s Designated Responsible Individual shall pass two (2) written examinations obtaining a score of 80% or better on each test. The required tests are shown below.

<i>Test Subject</i>	<i>Topic</i>
A	The FCIA Manual of Practice and Factory Mutual Research Approval Requirements — General Information
B	Selection of Firestop Systems and Assemblies

- 4.2.2 The basis for each examination shall be the FCIA Manual of Practice and this Approval Standard. Test subject topics that are likely to be included on each examination are shown in Appendices B and C.

## 5. CONTINUED APPROVAL AND OPERATIONS REQUIREMENTS

### 5.1 Demonstrated Quality Control Program

- 5.1.1 A quality assurance program is required to assure that each component and the finished firestopping system or assembly installed by the contractor shall be in accordance with the requirements of the specified system or assembly. Conformance to design drawings, transmission of design and installation requirements to field personnel, marking of installed systems, attainment of required follow-up CEUs for the Designated Responsible Individual, and records of components used and on-going firestopping system performance are the areas of interest.
- 5.1.2 The contractor shall demonstrate a quality assurance program that specifies controls for at least the following areas:
  - corporate guidelines for quality assurance
  - appropriate measures for designing the system or assembly and transferring the design requirements to installation personnel
  - appropriate measures to ensure proper installation
  - appropriate measures to ensure proper labeling or marking (if required)
  - appropriate material handling procedures
  - appropriate measures for inspecting completed assemblies

- 5.1.3 Documentation/Manual — The contractor shall have written policies and procedures in place as part of their quality assurance program. The written program shall include a record keeping program for each type of system or assembly installed.
- 5.1.4 Records — To assure adequate traceability of components and application, the contractor shall maintain a record of all firestopping installations for a minimum period of seven (7) years from the date of installation.

## **5.2 Facilities and Procedures Audits (F&PA)**

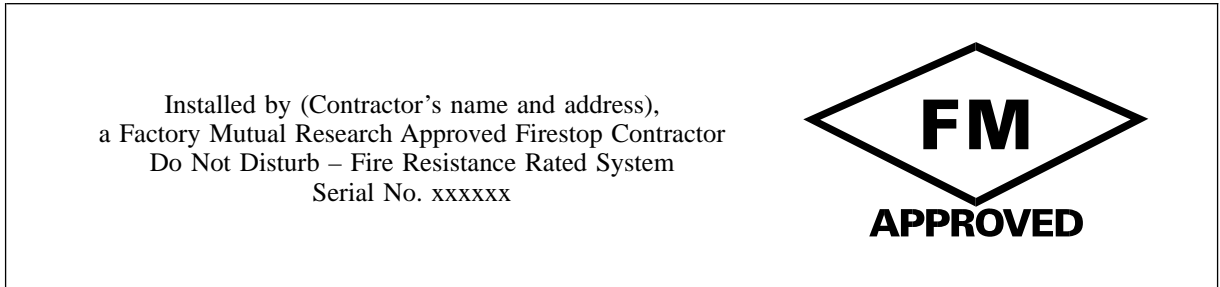
- 5.2.1 An initial audit of the contractor's home office and a job site is part of the Approval process. The intent of the audits is to verify the contractor's quality control program, design selection capabilities, training, transmission of design requirements to field personnel, successful installation, marking of systems and assemblies and handling of non-conformances.
- 5.2.2 Follow-up audits at the home office and at a job site shall be conducted periodically, but at least annually, by Factory Mutual Research or its representatives. Additional audits may be conducted based on jurisdictional requirements.

## **5.3 Re-Examination**

- 5.3.1 The contractor's Designated Responsible Individual shall be required to pass a written re-examination in accordance with Para 4.2 every three (3) years. The re-examination may be required sooner if there are significant changes to the FCIA Manual of Practice or if there is sufficient evidence of poor firestopping performance attributable to improper installation or non-conformance with the requirements of this document on systems and assemblies installed by the contractor.

**APPENDIX A:**

**Approval Marks**



Label for Fire Resistance Rated Systems

## APPENDIX B

### The FCIA Manual of Practice and Factory Mutual Research Approval Requirements — General Information Test

#### I Background

- 1.1 A requirement for obtaining Factory Mutual Research Approval recognition as a Firestop Contractor is that the contractor shall employ at least one Designated Responsible Individual who has demonstrated a knowledge of various aspects of firestopping and Factory Mutual Research Approval requirements.
- 1.2 This knowledge shall be assessed by having the Designated Responsible Individual obtain a satisfactory minimum score on written examinations administered by Factory Mutual Research or its designees.

#### II Purpose

- 2.1 The purpose of this Appendix is to provide information on the topics likely to be included on the written examination entitled “The FCIA Manual of Practice and Factory Mutual Research Approval Requirements — General Information Test”.
- 2.2 This examination shall be a closed book examination.
- 2.3 The items shown in this Appendix are considered to be an overview of what the examination will include and are not to be considered as a complete list. Topics other than those shown below may be included on the examination at the sole discretion of Factory Mutual Research. It is also possible that a topic shown below may not appear on the examination.

#### III Applicability

- 3.1 For details on the eligibility and the minimum test score needed refer to Paragraphs 3.2 and 4.2 of this Standard.

#### IV Topics

4.1 The following topics are likely to be included on the examination referenced above:

- Knowledge of construction materials
- Listing agencies and their systems
- Knowledge of T, F and L ratings
- Authorities having jurisdiction
- Specifications, estimating and bidding
- Non-conformances
- Designated Responsible Individuals
- Terminology for systems and assemblies
- Hourly ratings
- Types of firestop systems
- Definitions/acronyms
- Building codes
- Close-out documents
- Quality control
- Continuing education requirements
- Approval markings and requirements

## APPENDIX C

### Selection of Firestop Systems and Assemblies — Test Information

#### I Background

- 1.1 A requirement for obtaining Factory Mutual Research Approval recognition as a Firestop Contractor is that the contractor shall employ at least one Designated Responsible Individual who has demonstrated a knowledge of various aspects of firestopping and Factory Mutual Research Approval requirements.
- 1.2 This knowledge shall be assessed by having the Designated Responsible Individual satisfy a minimum score requirement on written examinations administered by Factory Mutual Research or its designees.

#### II Purpose

- 2.1 The purpose of this Appendix is to provide information on the general topics likely to be included on the written examination entitled “Selection of Firestop Systems and Assemblies”.
- 2.2 This examination shall be a closed book examination. Materials and listings of various firestop systems and assemblies shall be provided for use during the examination. Calculators shall be permitted to be used.
- 2.3 The items shown in this Appendix are considered to be an overview of what the examination will include and are not to be considered as a complete list. Topics other than those shown below may be included on the examination at the sole discretion of Factory Mutual Research. It is also possible that a topic shown below may not appear on the examination.

#### III Applicability

- 3.1 For details on the eligibility and the minimum test score needed refer to Paragraphs 3.2 and 4.2 of this Standard.

#### IV Topics

- 4.1 The following topics are likely to be included on the examination referenced above:
  - Specifications, estimating and bidding
  - Equivalent Fire Rated Assembly Selection
  - Non-conformances
  - Fire Resistance Rated System Selection
  - Close out documents



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