



Designation: E 2393 – 04

Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers¹

This standard is issued under the fixed designation E 2393; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the establishment of procedures to inspect fire resistive joint systems, including methods for field verification and inspection.

1.2 This standard practice addresses all types of fire resistive joint systems and of perimeter joint protection.

NOTE 1—Fire resistive joint system and joint are defined in Test Method E 1966.

NOTE 2—Perimeter joint protection is defined in Test Method E 2307.

NOTE 3—Fire resistive joint systems include joints between two fire resistive assemblies, and perimeter joints between a fire resistive floor assembly and a non-fire-resistive wall assembly. The application of these systems may be extended based on an evaluation to other types of construction.

1.3 This standard practice provides methods by which qualified inspectors can verify that all required fire resistive joint systems on a project have been installed and that their installations are in accordance with the inspection documents.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.5 *The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.*

2. Referenced Documents

2.1 ASTM Standards:²

E 176 Terminology of Fire Standards

E 631 Terminology of Building Constructions

E 699 Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by

ASTM Committee E06

E 1966 Test Method for Fire Tests of Fire Resistive Joint Systems

E 2307 Test Method for Determining Fire Resistance of Perimeter Fire Barrier Using Intermediate-Scale Multi-Story Test Apparatus

2.2 Other Standard:

UL 2079 Fire Tests of Fire Resistive Joints³

2.3 Other Documents:

International Building Code⁴

NFPA 5000 Building Code⁵

3. Terminology

3.1 *Definitions*—Terms defined in Terminology E 631, Terminology E 176, and Criteria E 699 will prevail for terms not defined in this document.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *authorizing authority (AA)*—the designated person, or organization, or their duly authorized representative, charged with the administration and enforcement of the provisions of this inspection document.

NOTE 4—Examples of the AA include the responsible Architect, Engineer, Building Owner, or their representatives.

3.2.2 *authority having jurisdiction (AHJ)*—the designated authority, or their duly authorized representative, charged with the administration and enforcement of the local fire code or building code or both.

3.2.3 *accredited testing laboratory*—a company engaged in conducting testing and possesses a valid evaluation report for testing services and is recognized by the AHJ.

3.2.4 *evaluation report*—an approved document issued by the Model Code Body Evaluation Service or by the AHJ.

3.2.5 *inspection document*—any information provided to the inspector by the AA that is to be used as the basis for the inspection process. This information shall include, but is not limited to, project specifications, contract drawings, Listed

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Underwriters Laboratories (UL), Corporate Progress, 333 Pfingsten Rd., Northbrook, IL 60062.

⁴ Available from International Code Council (ICC), 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041.

⁵ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.

Designs, judgments, manufacturer's instructions and designs, building codes and other documentation.

NOTE 5—The approved fire resistive joint system submittal should have sufficient details including the manufacturer's product data, a design listing of the tested fire resistive joint system or the engineering judgment design with illustrated drawings or descriptive text or both for the purpose of verifying each installation and conducting the field-inspection procedures.

3.2.6 inspection form—the document contained in this standard practice that is used to record information obtained during the inspection(s).

3.2.7 inspector—an individual meeting the qualifications set forth in this document and who performs the inspection.

3.2.8 judgment—an evaluation of a field condition which does not conform to an existing tested and listed system.

3.2.8.1 Discussion—Manufacturers or an accredited Testing Laboratory should only issue judgments based on Engineering Principles or available testing that approximates the condition encountered, or both.

NOTE 6—The judgment is commonly referred to as an "Engineering Judgment" in the fire stopping industry. It should be noted that these judgments are not always issued by Engineers.

NOTE 7—Some AHJs allow a judgment by a manufacturer if there is no tested and listed system for the non-typical condition, others do not. Most AHJs will allow judgments by accredited testing laboratories. Accredited testing laboratories can verify judgments by manufacturers for validity.

3.2.9 listing label—identification applied to the product that includes the name of a quality assurance agency indicating that a representative sample of the product or material has been tested and evaluated by the quality assurance agency.

3.2.10 quality assurance agency—a company that is engaged in conducting inspections, or certification, or listing and labeling services, or any combination, and possessing a valid evaluation report for quality assurance and is recognized by the AHJ.

4. Summary of Practice

4.1 This standard practice sets forth the minimum requirements to qualify an inspector to use this standard practice.

4.2 This standard practice identifies the types of fire resistive joint systems subject to the inspection procedures outlined in this standard practice.

4.3 This standard practice provides the minimum information required to verify compliance of installed fire resistive joints with inspection documents.

4.4 This standard practice provides a standard inspection form that is to be used when inspecting fire resistive joint systems.

4.5 This standard practice provides a standard report format that is to be used when reporting the inspection results.

5. Significance and Use

5.1 This standard practice is intended to provide a standard set of guidelines that are to be followed when conducting and reporting on inspections of installed fire resistive joint systems.

5.2 This standard practice is intended to provide a means to verify compliance of the installed fire resistive joint systems to the inspection documents.

5.3 This standard practice is not intended to provide a basis for selecting installers or products or both.

5.4 This standard practice is not intended to establish any performance criteria of the inspected fire resistive joint systems.

6. Inspector Qualifications

6.1 Inspectors shall either be contract inspectors or jurisdictional inspectors.

6.2 Contract Inspectors:

6.2.1 Contract Inspectors shall be acceptable to the AHJ and shall meet at least one of the following requirements.

6.2.1.1 Meet the criteria contained in Criteria E 699 for agencies involved in quality assurance, or

6.2.1.2 Have a minimum of 2 years experience in construction field inspections and have education, credentials, and experience acceptable to the AA, or

6.2.1.3 Be a Quality Assurance Agency accredited by the AHJ.

6.2.2 Conflicts of Interest:

6.2.2.1 The contract inspector shall be completely independent of, and divested from, the installer, contractor, manufacturer or supplier of any material being inspected.

6.2.2.2 The contract inspector shall not be a competitor of the installer, contractor, manufacturer or supplier of any material being inspected.

6.2.3 The contract inspector shall submit notarized statements to the AA assuring compliance with **6.2.2**.

6.2.4 The contract inspector shall provide proof of insurance required by statute, or by the AA, or by the AHJ, or by any combination of these.

6.2.5 The contract inspector shall make a written submission to the AA requesting acceptance. If accepted, the AA shall present the contract inspector with written confirmation of acceptance.

6.3 Jurisdictional Inspectors:

6.3.1 A jurisdictional inspector shall have qualifications as required by the AHJ.

7. Inspection Documents

7.1 The inspection documents shall be reviewed by and acceptable to the AA and AHJ.

7.2 The AA shall be responsible for ensuring that the inspection documents do not contain conflicting information.

7.3 The AA shall provide the inspector with a complete set of inspection documents at least 10 working days prior to the inspection. The inspector shall review all inspection documents prior to conducting any inspection. When the inspector believes that the inspection documents contain conflicting information or documentation that the inspector believes is insufficient to perform the inspection, the inspector shall submit written notification of the potential conflict and obtain written clarification from the AA before conducting any inspection.

7.4 As part of the inspection documents, Listed Designs shall be provided for every fire resistive joint system, as a reference against which to compare the installation. As an alternative for every case where a Listed Design does not exist for a particular application, a Judgment, issued by a manufacturer or an accredited testing laboratory and acceptable to the

AHJ, shall be provided as a reference against which to compare and inspect the installation.

8. Materials

8.1 The inspector shall verify that the materials and systems used for fire resistive joints on the job are in compliance with listed systems that have been tested in accordance with Test Method **E 1966** or **UL 2079**, and are Listed and Labeled for the intended use.

NOTE 8—Listed and Labeled refers to materials, devices or assemblies that have been tested by an accredited testing laboratory after which the test results and description of the materials, devices or assemblies are published by an accredited quality assurance agency and the materials, devices or assemblies bear a Listing Label.

8.2 All materials shall bear a Listing Label as defined in **3.2.9**. Manufacturer's container labels shall include the manufacturer's name, product name and product description. Other components of the fire resistive joint system shall also be identifiable by labeling or other method approved by the AHJ.

8.3 All materials shall be as identified on the inspection documents.

8.4 All materials used in fire resistive joint systems shall be in conformance with materials for listed systems that have been tested as part of the system in accordance with Test Method **E 1966** or **UL 2079** as required by the building code or fire code, or both.

9. Inspection Schedule

9.1 The inspector and installer(s) shall mutually agree upon a schedule for the notification of the following:

9.1.1 Start of installation of fire resistive joint systems,

9.1.2 Anticipated schedule of inspection(s) of fire resistive joint systems, and

9.1.3 Anticipated completion of inspection(s).

9.2 The inspection schedule shall not interfere with the installation process.

9.3 The installer shall notify the inspector within 1 working day when any item agreed to on the schedule must be changed due to unforeseen circumstances, such as material delays, project change orders, or other installation conflicts.

10. Inspection

10.1 The inspector shall be permitted to enter the premises to review the applicable inspection documents, to observe the installation in progress, to inspect completed work and to perform overall functions relative to their duty as inspector.

10.2 The inspector shall use the inspection documents, in **7.3**, to identify and locate fire rated assemblies on the project that are subject to the installation of fire resistive joint systems.

10.3 The installer shall notify the inspector of the arrival of the materials (described in **8.1** through **8.4** inclusive).

10.4 Prior to installation, the inspector shall verify that all materials received for the installation of the fire resistive joint systems meet the requirements of **8.1** through **8.4** inclusive and record this information on the inspection form.

10.5 Prior to installation, the inspector shall verify any construction detail on the inspection documents that will not be visible after the fire resistive joint system installation and record this information on the inspection form.

NOTE 9—The following are some examples of construction details that may not be visible after the installation process: amount of free movement area, the rated floor assembly thickness, the width of opening, and the wall construction.

10.6 The inspector shall not supervise or in any manner direct any aspect of the installation process. This includes, but is not limited to, the following:

10.6.1 Handling and storage of materials,

10.6.2 The mixing of materials,

10.6.3 The cutting or fastening of materials, and

10.6.4 The preparation of substrates.

10.7 When work is started and completed per the schedule in Section **9**, the installer shall notify the inspector. Inspection of completed work shall take place within 2 working days from notification by the installer.

10.8 The inspector shall verify and document that all of the fire resistive joint systems required in the inspection documents have been installed.

10.9 The inspector shall verify that every fire resistive joint system inspected as required by **10.12** is in accordance with one of the documents specified in **7.4**.

10.10 The inspector shall verify that every system inspected as required by **10.12.1** is in accordance with the manufacturer's instructions.

10.11 The inspector shall verify compliance of the fire resistive joint system by observing the installation process and by taking and recording measurements of the substrates and materials being installed or by destructive examination of completed installations.

10.12 Inspection frequency shall depend on the method of inspection and the scope of the project. The method of inspection shall be one of the following:

10.12.1 The inspector shall be on site during installation and randomly witness a minimum of 5 % of total linear feet of each type of fire resistive joint system being installed, or

10.12.2 The inspector shall conduct a post-installation inspection, in accordance with **10.12.2.1(1)** through **10.12.2.1(4)**, except for mechanical systems, which shall be inspected per **10.12.1**.

NOTE 10—It is usually practical and cost-effective to inspect mechanical joint systems by witnessing installation.

10.12.2.1 The method shall be approved by the AA and the AHJ, which shall require one of the following methods:

(1) Destructive type verification of the fire resistive joint system and repair of the joint system,

(2) Disassembly and verification of the components and reinstallation of the joint system,

(3) Visual inspection and verification of the component or entire joint system, where a visual inspection can establish conformance to the document enumerated in Section **7**, or

(4) Other appropriate methods showing compliance with the approval process or manufacturers' instructions or specifications or both.

10.12.2.2 Inspection shall consist of a minimum of one sampling per type of joint system per 500 lineal feet.

NOTE 11—The AA should determine the types of fire resistive joint systems and subsequently the number of each type that is to be inspected. The determination of a "type" will typically be a function of a unique