



ICC
EVALUATION
SERVICE®

Approving or Selecting
Building Products with Confidence

ICC Family of Solutions



Agenda Overview

- Who is ICC-ES?
- ICC – One Stop Shop for Testing & Certification
- Product certification overview
- Acceptance Criteria's
- Examples of ESR's & ESL's
- How code officials can benefit from using ICC-ES reports, what to look for
- Other solutions offerings



What is ICC-ES?

- International Code Council subsidiary
- Evaluates products using codes and standards for the built environment
- Accredited by:
 - ANSI National Accreditation Board (ANAB) to ISO/IEC 17065
 - American Association for Laboratory Accreditation (A2LA)
 - Standards Council of Canada (SCC)
 - EMA to conduct Plumbing Product listing to the Mexican NOMs
 - JAS-ANZ for WaterMark plumbing certification
- Expert in developing and interpreting ICC-ES Acceptance Criteria (ACs) for innovative products



Standards Council of Canada
Conseil canadien des normes



History of ICC-ES

- ICC-ES came into being on February 1, 2003, when America's four building-product evaluation services officially combined their operations. The four "legacy" evaluation services that came together to form ICC-ES were the National Evaluation Service, Inc.; BOCAI Evaluation Services; ICBO Evaluation Service, Inc.; and SBCCI Public Service Testing and Evaluation Services, Inc. Through the legacy evaluation services, ICC-ES has a history that goes back more than ninety years.



A One-Stop Shop Solution

ICC-ES Programs

- Traditional Building Product Evaluation Program (ESR):
Allowing innovation through the issuance of Evaluation Reports (ESRs) as evidence that building products, components, methods, and materials meet code requirements
- Product Listing to Standards Referenced in the Codes (ESL)
- In-House Testing (ICC-NTA)



ICC-NTA – Fire Test Lab in Bryan Texas



ICC-NTA Fire Test Lab Continued

[ICC NTA Fire Testing Facility - Bryan, TX - YouTube](#)



ICC-NTA Fire Lab Scope of Accreditation

Test Method:	Test Description:
ASTM E84	Standard Test Method for Surface Burning Characteristics of Building Materials
UL 723	Test for Surface Burning Characteristics of Building Materials
ASTM E2768	Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test)
NFPA 275	Standard Method of Fire Tests for the Evaluation of Thermal Barriers
CAN/ULC S-124	Standard Method of Test for the Evaluation of Thermal Barriers for Foamed Plastic
ASTM E814	Standard Test Method for Fire Tests of Penetration Firestop Systems
UL 1479	STANDARD FOR SAFETY Fire Tests of Penetration Firestops
CAN/ULC-S115	Standard Method of Fire Tests of Firestop Systems
SFM Standard 12-7A-5	Ignition Resistant Material
ASTM E108 (excluding sections 12 & 13)	Standard Test Methods for Fire Tests of Roof Coverings

Scope of Accreditation Continued

Test Method:

UL 790 (*excluding sections 10 & 11*)

SFM Standard 12-7A-4, Part B

ASTM E119

ANSI-UL-10C

ASTM E1966

ASTM E2707

ASTM E2226

UL 263

ULC S101

ASTM E1725

IMO FTP Code Part 3

IMO FTP Code Part 11

MIL-STD-3020

NFPA 285

ASTM E2307

Test Description:

Standard Test Methods for Fire Tests of Roofing Coverings

Burning Brand Exposure

Standard Test Methods for Fire Tests of Building Construction and Materials

Positive Pressure Fire Tests of Door Assemblies

Standard Test Method for Fire-Resistive Joint Systems

Standard Test Method for Determining Fire Penetration of Exterior Wall Assemblies Using a Direct Flame Impingement Exposure

Standard Practice for Application of Hose Stream

Fire Tests of Building Construction and Materials

Standard Method of Fire Endurance Tests of Building Construction and Materials

Standard Test Methods for Fire Tests of Fire-Resistive Barrier Systems for Electrical System Components

Tests for "A", "B", and "F" class divisions (Resistance to Fire Tests)

Test for fire-restricting division for high-speed craft (Resistance to Fire Tests)

DEPARTMENT OF DEFENSE STANDARD PRACTICE, FIRE RESISTANCE OF U.S. NAVAL SURFACE SHIPS (Resistance to Fire Tests)

Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components

Standard Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components

Scope of Accreditation Continued

Test Method:

NFPA 286

NFPA 265

UL 1715

CAN/ULC-9705-13

CAN/ULC-S145

Test Description:

Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth

Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile or Expanded Vinyl Wall Coverings on Full Height Panels and Walls

Standard for Fire Test of Interior Finish Material

FIRE TESTS - FULL-SCALE ROOM TEST FOR SURFACE PRODUCTS

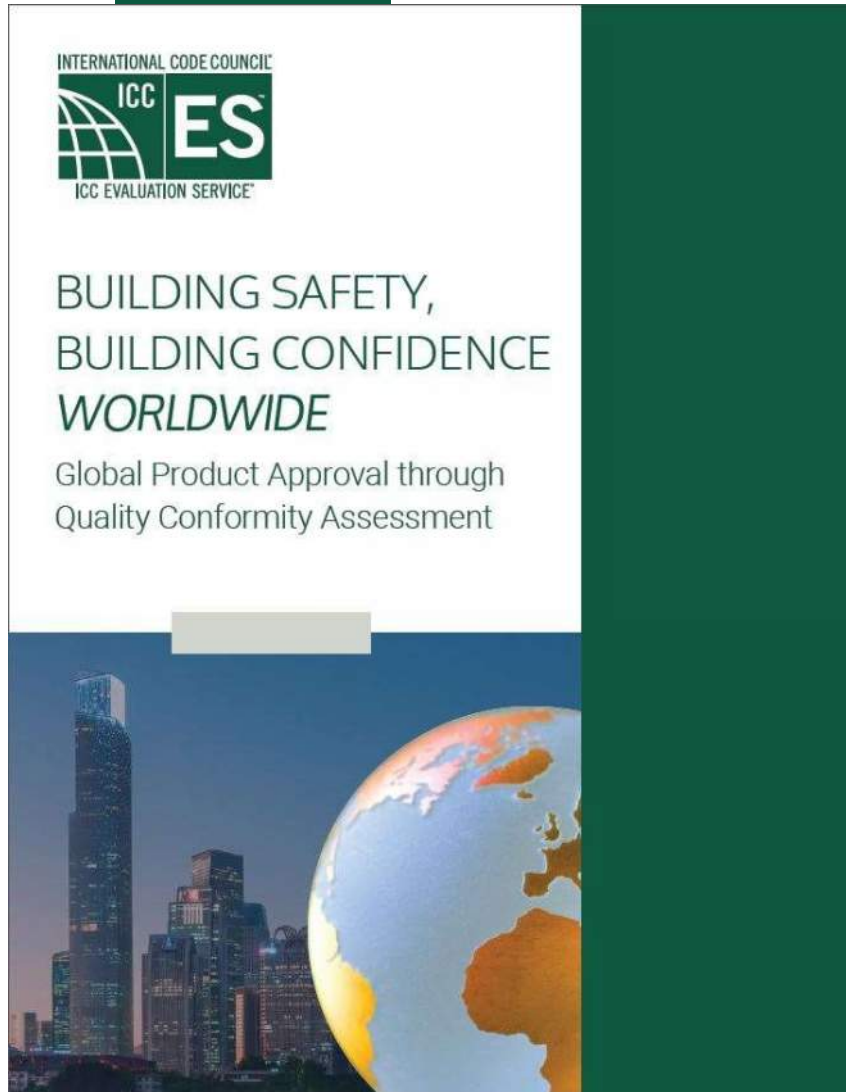
Standard Method of Test for The Evaluation of Protective Coverings for Foamed Plastic Insulation – Full-Scale Room Test

What is Product Certification/Evaluation?



- Review of products against a standard, a criteria, or a code to ensure continuous compliance of products
- Certification steps include review of products, periodic inspection of plants (by an ISO/IEC 17020 accredited inspection agency), periodic review of submitted information against new or revised standards
 - Inspection of the manufacturing plants ensures that the product that was once deemed as compliant continues to comply

Benefits of Product Certification



1. Characteristics such as quality, safety, economy, reliability, compatibility, efficiency and effectiveness can be examined through conformity assessment
2. It assures the products deliver on their promise
3. Investors can be assured their investment is as secure as possible
4. Users can be assured that the products are safe for usage and can perform as expected

Building safety is critical to communities worldwide. Product certification is the best tool we have to achieve building confidence.

ACME Manufacturing, Inc

ACME's "spray foam insulation"

- –It enhances air quality!
- –It's easy to apply!
- –It's safe!
- –It's energy efficient!
- –It's economical!

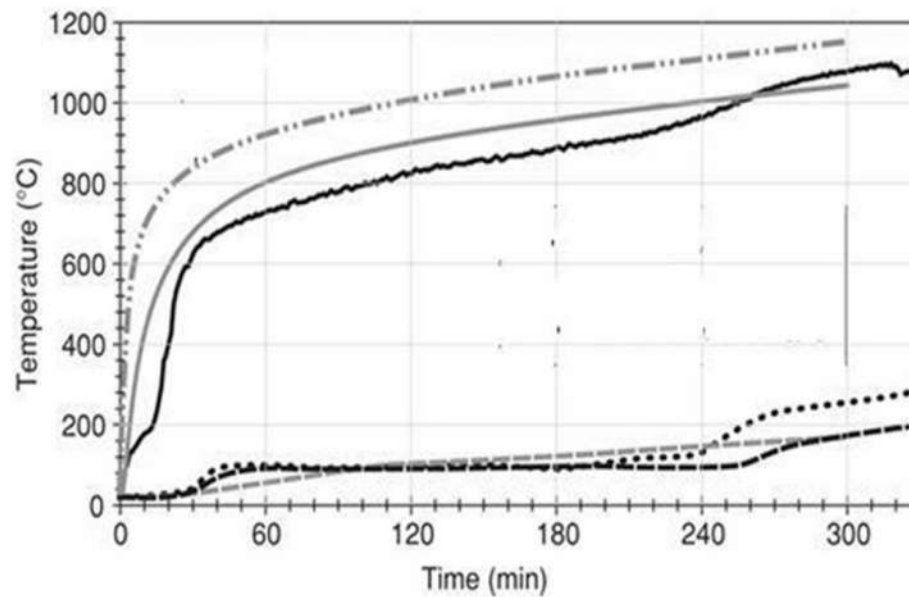
However



The Problem....

Mr. Acme submits all data to the building official.

The building official has to through all the data to approve or disapprove the product



The Solution....

Building Official:

“If you only had an ICC-ES Evaluation Report for your spray foam insulation.”



What's in an ICC-ES Evaluation Report

ICC-ES Evaluation Reports from ICC Evaluation Service® are the most preferred resource used by code officials to verify that new and innovative building products comply with code requirements. The ICC-ES Evaluation Reports provide information about what code requirements or acceptance criteria were used to evaluate the product, how the product should be installed to meet the requirements, how to identify the product, and much more. ICC-ES Evaluation Reports are divided into eleven major areas.

- 1 CSI Division Number**—ICC-ES Evaluation Reports, and the building products represented in them, are organized according to the Construction Specifications Institute's (CSI) Masterformat system.
- 2 Report Holder**—The name and address of the company or organization that has applied for the ICC-ES Evaluation Report.
- 3 Evaluation Subject**—The specific product(s) covered by the report.
- 4 Evaluation Scope**—The code(s) that were used to evaluate the product.
- 5 Properties Evaluated**—A brief description of the properties the product was evaluated against such as fire resistance and wind resistance. This section also shows if the product can be used for structural purposes.
- 6 Uses**—Identifies the scope of the ICC-ES Evaluation Report and relates the product evaluated to code provisions.
- 7 Description**—Provides a general description of the product and its features, such as length, thickness, etc.
- 8 Installation**—Identifies general and often specific requirements to help the inspector ensure the product is installed properly according to the code requirements or acceptance criteria.
- 9 Conditions of Use**—Statement that the product, as described in the ICC-ES Evaluation Report, complies with or is a suitable alternative to the requirements of the applicable code and a list of conditions under which the report is issued.
- 10 Evidence Submitted**—Data (i.e. test reports, calculations, installation instructions) that was used in evaluating the product.
- 11 Identification**—Information that can be used to identify the product, including the manufacturer's name, product code, ICC-ES Evaluation Report number, etc.

ES
ICC
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SERVICE®





• Compliance with International Codes
• Compliance to State/Regional Codes

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ICC-ES Evaluation Report
ESR-3403

Reissued November 2021
Revised January 2022

This report is subject to renewal November 2022.

Vertical ends and horizontal edges must be overlapped a minimum, respectively, of 6 inches (152 mm) and 3 1/2 inches (89 mm). Horizontal edge overlaps must run with the flow of water in a shingling effect. A minimum of two layers of the membrane must be applied, starting at the lower edge (eave) of the roof, and extend a minimum of 24 inches (610 mm) inside the exterior wall line of the building. Final coverage width must comply with the code.

Installation of the roof covering can proceed immediately following application of the membrane. The membrane must be covered by an approved roof covering as soon as possible. For reroofing applications, the same procedures apply after removal of the old roof covering and roofing felts to expose the plywood roof deck.

5.0 CONDITIONS OF USE

The UU 100 membrane described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation must comply with this report and the manufacturer's published installation instructions. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.

5.2 Installation is limited to use on plywood substrates on structures located in areas where nonclassified roof coverings are permitted.

5.3 Installation is limited to use with roof coverings that are mechanically fastened through the underlayment to the sheathing or rafters.

5.4 Installation is limited to roofs with ventilated attic spaces, in accordance with the requirements of the applicable code.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Self-Adhered Roof Underlayment for Use as an Ice Barrier in Severe Climate Areas (AC46), dated February 2012.

6.2 Reports of testing in accordance with ASTM D1970.

7.0 IDENTIFICATION

The membrane is identified by labels on the rolls or packaging, displaying the Acme Underlayments Unlimited's name and address, the product name, the evaluation report number ESR-4802.

ICC-ES Evaluation Reports are not to be construed as representing warranties or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

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Page 1 of 1

View current ICC-ES Evaluation Reports online: www.icc-es.org/Evaluation_Reports

Basis for Evaluation Report



■ Compliance with International Codes
■ Compliance to State/Regional Codes

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ICC-ES Evaluation Report ESR-3403

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DIVISION: 03 00 00—CONCRETE
Section: 03 01 00—Maintenance of Concrete
Section 03 01 30—Maintenance of Cast-in-Place Concrete

DIVISION: 04 00 00—MASONRY
Section 04 01 00—Maintenance of Masonry
Section 04 01 20—Maintenance of Unit Masonry

REPORT HOLDER:

SIMPSON STRONG-TIE COMPANY, INC.

EVALUATION SUBJECT:

SIMPSON STRONG-TIE COMPOSITE
STRENGTHENING SYSTEMS (CSSs)

1.0 EVALUATION SUMMARY

Compliance with the following codes:

- 2021, 2018, 2015, 2012 and 2009 *International Building Code*® (IBC)
- 2021, 2018, 2015, 2012, and 2009 *International Residential Code*® (IRC)

For evaluation for compliance with codes adopted by the Los Angeles Department of Building and Safety (LADBS), see [ESR-3403 LABC and LARC Supplement](#).

Properties evaluated:

- Structural
- Durability
- Interior finish
- Toxicity
- Fire resistance

2.0 USES

The Simpson Strong-Tie Composite Strengthening Systems (CSSs) are used to strengthen normalweight reinforced concrete and masonry structural elements as alternatives to those systems described in the IBC. For structures regulated under the IRC, the Simpson Strong-Tie Composite Strengthening Systems (CSSs) may be used where an engineering design is submitted in accordance

with Section [R301.1.3](#) and where approved by the code official in accordance with Section [R104.11](#). The CSS-CUCF and CSS-CMGF systems are also used as an interior finish.

3.0 DESCRIPTION

3.1 General:

Composite Strengthening Systems (CSSs) are externally bonded fiber-reinforced polymer (FRP) systems applied to concrete and masonry structural elements. CSSs consist of carbon fabrics or glass fabrics combined with epoxy resin to create the FRP composite systems, or a carbon fiber pre-cured laminate applied with an epoxy paste.

3.2 Materials:

3.2.1 General: All material must conform to the approved specifications outlined in the Simpson Strong-Tie CSS Quality Control Manual, dated June 18, 2015, Revision 1.

3.2.2 CSS Fabrics: The CSS fabrics are composed of carbon or glass fibers. CSS-CUCF11 and CSS-CUCF22 unidirectional carbon fabrics come in either 12-inch x 300-foot (305 mm x 91.4 m) or 24-inch x 150-foot (610 mm x 45.7 m) rolls. CSS-CUCF44 and CSS-CUCF44F unidirectional carbon fabrics come in either 12-inch x 150-foot (305 mm x 45.7 m) or 24-inch x 75-foot (610 mm x 22.9 m) rolls. CSS-CUGF27 unidirectional glass fabric comes in 25-inch or 50-inch x 150-foot (635 mm or 1,270 mm x 100 m) rolls. CSS-CBGF424 bidirectional glass fabric comes in 25-inch or 50-inch x 302-foot (635 mm or 1,270 mm x 92 m) rolls. Material properties vary with fiber type designation.

3.2.3 Epoxy Saturants:

3.2.3.1 CSS-ES Epoxy Saturant: The CSS-ES epoxy saturant and primer is a two-component, ambient cure, epoxy resin system used to prime substrates and saturate CSS fabrics. It is available in 3 gallon (11.4 L) kits. Component A is packaged with 2 gallons (7.6 L) in a 5-gallon (18.9 L) bucket to allow enough room for mixing full kits of epoxy. Component B is packaged in 1-gallon (3.8 L) containers. Mixing ratio by volume is two-to-one for components A and B, respectively; by weight the ratio is 100 Part A to 38.8 Part B.

3.2.3.2 CSS-ESLPL Epoxy Saturant: The CSS-ESLPL is a two-component, long pot-life epoxy resin system used

Code Provisions

- This is the basis for evaluation

Acceptance Criteria

- For innovative products not specifically referenced in the code, existing or new Acceptance Criteria developed by ICC-ES are used as the basis for evaluation

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



What is an Acceptance Criteria?



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ACCEPTANCE CRITERIA FOR 3D AUTOMATED CONSTRUCTION TECHNOLOGY FOR 3D CONCRETE WALLS

AC509

Approved December 2021

Previously approved September 2021, December 2020, June 2019

PREFACE

Evaluation reports issued by ICC Evaluation Service, LLC (ICC-ES), are based upon performance features of the International family of codes. (Some reports may also reference older code families such as the BOCA National Codes, the Standard Codes, and the Uniform Codes.) Section 104.11 of the *International Building Code*® reads as follows:

The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

This acceptance criteria has been issued to provide interested parties with guidelines for demonstrating compliance with performance features of the codes referenced in the criteria. The criteria was developed through a transparent process involving public hearings of the ICC-ES Evaluation Committee, and/or on-line postings where public comment was solicited.

New acceptance criteria will only have an "approved" date, which is the date the document was approved by the Evaluation Committee. When existing acceptance criteria are revised, the Evaluation Committee will decide whether the revised document should carry only an "approved" date, or an "approved" date combined with a "compliance" date. The compliance date is the date by which relevant evaluation reports must comply with the requirements of the criteria. See the ICC-ES web site for more information on compliance dates.

If this criteria is a revised edition, a solid vertical line (|) in the margin within the criteria indicates a change from the previous edition. A deletion indicator (→) is provided in the margin where any significant wording has been deleted.

ICC-ES may consider alternate criteria for report approval, provided the report applicant submits data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with the performance features of the codes. ICC-ES retains the right to refuse to issue or renew any evaluation report, if the applicable product, material, or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or if malfunctioning is apt to cause injury or unreasonable damage.

Acceptance criteria are developed for use solely by ICC-ES for purposes of issuing ICC-ES evaluation reports.

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- Developed by ICC-ES technical staff to address products or applications not defined or contained in codes
- New criteria and changes to criteria are vetted in a public input process and are approved by an Evaluation Panel made up of code officials

Why do we create Acceptance Criteria's (ACs)?

- ICC-ES ACs provides independent, third-party validation that a product meets the minimum performance requirements of the IBC.
- ICC-ES develops ACs which serve as baselines against which an innovative product can be objectively measured.
- Acceptance criteria may also be developed when the codes are not clear in a particular area or on specific issues related to a product; when industry raises concerns regarding report requirements; or when a new criteria is deemed necessary by the report applicant, ICC-ES staff, or the ICC-ES Evaluation Committee.

How Are ICC-ES AC's Developed?

- The ICC-ES® Evaluation Committee, composed of building officials, has an open and unbiased process that includes holding public hearings, reviewing comments, and voting on proposed acceptance criteria. (Feb, June, Oct)
- Approved criteria are posted on the ICC-ES® website for use by parties interested in an ICC-ES® Evaluation Report®
- Products that have been successfully evaluated against ACs receive an ICC-ES Evaluation Report, which provides the code official and specifier the assurance of technical accuracy, code compliance consistency, and fairness.

Code Official Access

Home > Approved Criteria (Search / AC # / CSI) > AC377

AC377 - Spray-applied Foam Plastic Insulation

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CODE OFFICIALS ACCESS

INTERNAL USE ONLY AC377

PURCHASE AC377

<https://icc-es.org/>

ESRs: What to Look For

Before approving products for installation, look for:

ES ICC EVALUATION SERVICE[®]



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ICC-ES Evaluation Report
ESR-3403

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This report is subject to renewal November 2022.

DIVISION: 03 00 00—CONCRETE
Section 03 01 00—Maintenance of Concrete
Section 03 01 30—Maintenance of Cast-in-Place Concrete

DIVISION: 04 00 00—MASONRY
Section 04 01 00—Maintenance of Masonry
Section 04 01 20—Maintenance of Unit Masonry

REPORT HOLDER:
SIMPSON STRONG-TIE COMPANY, INC.

EVALUATION SUBJECT:
SIMPSON STRONG-TIE COMPOSITE STRENGTHENING SYSTEMS (CSSS)

1.0 EVALUATION SCOPE
Compliance with the following codes:
■ 2021, 2018, 2015, 2012, and 2009 International Building Code[®] (IBC)
■ 2021, 2018, 2015, 2012, and 2009 International Residential Code[®] (IRC)

For evaluation for compliance with codes adopted by the Los Angeles Department of Building and Safety (LADBS), see [ESR-3403 LABC and LARC Supplement](#).

Properties evaluated:
■ Structural
■ Durability
■ Interior finish
■ Toxicity
■ Fire resistance

2.0 USES
The Simpson Strong-Tie Composite Strengthening Systems (CSSs) are used to strengthen normalweight reinforced concrete and masonry structural elements as alternatives to those systems described in the IBC. For structures regulated under the IRC, the Simpson Strong-Tie Composite Strengthening Systems (CSSs) may be used where an engineering design is submitted in accordance with Section [R301.1.3](#) and where approved by the code official in accordance with Section [R104.11](#). The CSS-CUCF and CSS-CUGF systems are also used as an interior finish.

3.0 DESCRIPTION
3.1 General:
The Composite Strengthening Systems (CSSs) are externally bonded fiber-reinforced polymer (FRP) systems applied to concrete and masonry structural elements. CSSs consist of carbon fabrics or glass fabrics combined with epoxy resin to create the FRP composite systems, or a carbon fiber pre-cured laminate applied with an epoxy paste.

3.2 Materials:
3.2.1 General: All material must conform to the approved specifications outlined in the Simpson Strong-Tie CSS Quality Control Manual, dated June 18, 2015, Revision 1.
3.2.2 CSS Fabrics: The CSS fabrics are composed of carbon or glass fibers. CSS-CUCF11 and CSS-CUCF22 unidirectional carbon fabrics come in either 12-inch x 300-foot (305 mm x 91.4 m) or 24-inch x 150-foot (610 mm x 45.7 m) rolls. CSS-CUCF44 and CSS-CUCF44F unidirectional carbon fabrics come in either 12-inch x 150-foot (305 mm x 45.7 m) or 24-inch x 75-foot (610 mm x 22.9 m) rolls. CSS-CUGF27 unidirectional glass fabric comes in 25-inch or 50-inch x 150-foot (635 mm or 1,270 mm x 100 m) rolls. CSS-CBGF424 bidirectional glass fabric comes in 25-inch or 50-inch x 302-foot (635 mm or 1,270 mm x 92 m) rolls. Material properties vary with fiber type designation.
3.2.3 Epoxy Saturants:
3.2.3.1 CSS-ES Epoxy Saturant: The CSS-ES epoxy saturant and primer is a two-component, ambient cure, epoxy resin system used to prime substrates and saturate CSS fabrics. It is available in 3 gallon (11.4 L) kits. Component A is packaged with 2 gallons (7.6 L) in a 5-gallon (18.9 L) bucket to allow enough room for mixing full kits of epoxy. Component B is packaged in 1-gallon (3.8 L) containers. Mixing ratio by volume is two-to-one for components A and B, respectively; by weight the ratio is 100 Part A to 38.8 Part B.
3.2.3.2 CSS-ESLPL Epoxy Saturant: The CSS-ESLPL is a two-component, long pot-life epoxy resin system used

- A valid evaluation report by a qualified evaluation service provider (such as ICC-ES) with applicable accreditations and similar processes as ICC-ES
- Verify the report relates to the product and use of such product and installation conditions
- Check the product report number, listing number, or mark of conformity
- Valid evaluation reports and listings maybe found on ICC-ES online directory on our website at www.icc-es.org

Product Evaluation Process

Initial contact and estimation of capabilities and cost

Manufacturer submits an application along with supporting documentation

Products tested at an accredited testing laboratory

Initial inspection of manufacturing process

Successful evaluation and issuance of an ICC-ES report

Continuous Compliance: Inspections to verify products are manufactured consistent with originally certified product

How is Compliance Evaluated

Technical Review

- Examine product test reports (which are prepared by accredited testing agencies), data, analysis and calculations based on code requirements.
- Resolve questions with applicant.
- Create the report.
- Internal review process for technical accuracy and consistency.
- Appropriate inspections and review of quality control procedures.

Inspection and Testing Requirements

Inspection Agencies:	Test Laboratories:
<p>Must be accredited to ISO/IEC Standard 17020, <u>General Criteria for the Operation of Various Types of Bodies Performing Inspection</u>, for the specific disciplines they are inspecting.</p>	<p>Must be accredited to ISO/IEC Standard 17025, <u>General Requirements for the Competence of Testing and Calibration Laboratories</u>, for the specific tests they will be conducting.</p>

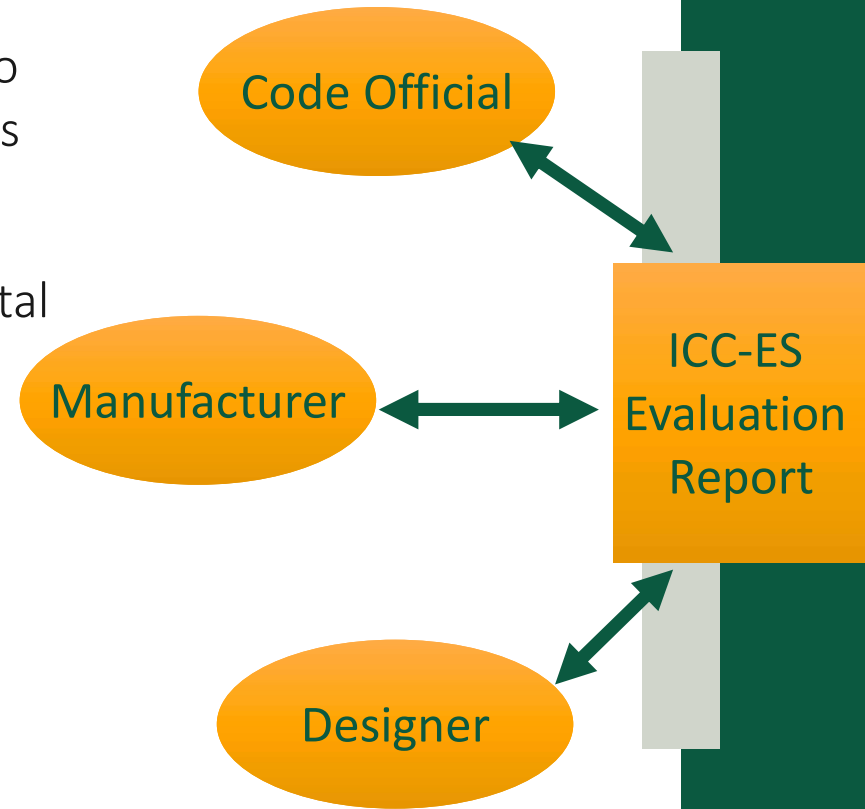
ICC-ES Evaluation Report Maintenance

- Reports are valid for a specific period of time.
- New reports are renewed one year after issuance. After the first year, the is for a one- or two-year renewal.
- Ongoing surveillance inspections at the manufacturing facility are required.
- Report can be revised at anytime through our editorial or technical report revision process.



Benefits of having an ICC-ES Evaluation Service Report (ESR)

- Evidence a code official can evaluate to determine whether a product complies with codes and standards
- Avoids otherwise required departmental time/resources to ensure compliance
- Reduce health and safety risks and associated departmental liability
- Speeds permitting review
- ESRs are freely accessible for building departments



How To Search For An ESR

Search by product type, company name, Acceptance Criteria.....

<https://icc-es.org/>



Example ESR: Spray Foam Insulation

ESR-5150 Genyk: <https://icc-es.org/report-listing/esr-5150/>



ICC-ES Evaluation Report



ESR-5150

Issued January 2023

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DIVISION: 07 00 00—THERMAL AND MOISTURE

Section: 07 21 00—Thermal Insulation

REPORT HOLDER:

GENYK

EVALUATION SUBJECT:

ELITE 2.0 SPRAY-APPLIED POLYURETHANE FOAM PLASTIC INSULATION

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015 and 2012 International Building Code® (IBC)
- 2021, 2018, 2015 and 2012 International Residential Code® (IRC)
- 2021, 2018, 2015 and 2012 International Energy Conservation Code® (IECC)

Properties evaluated:

- Physical properties
- Surface-burning characteristics
- Thermal resistance (R-values)
- Vapor permeability
- Air permeability
- Attic and crawl space installation

2.0 USES

ELITE 2.0 insulation is a closed cell spray foam insulation used as a nonstructural thermal insulating material for Type V construction under the IBC and dwellings under the IRC. The insulation may be used as a vapor retarder when installed in accordance with Section 3.4. The insulation is for use in wall cavities, floor assemblies, ceiling assemblies or attics and crawl spaces when installed in accordance with Section 4.4.

3.0 DESCRIPTION

3.1 ELITE 2.0 INSULATION:

ELITE 2.0 insulation is a medium density rigid spray-applied cellular polyurethane foam plastic insulation. It is a two component, closed-cell, one-to-one by volume spray foam system with a nominal density of 2.0 pcf (32 kg/m³). The foam is produced by blending Polymeric isocyanate (A component) with the ELITE 2.0 resin (B component).

The Polymeric isocyanate (A component) has a shelf life of twelve months when stored in factory-sealed containers at temperatures between 50°F (10°C) and 100°F (37°C). ELITE 2.0 resin (B component) has a shelf life of 6 months when stored in factory-sealed containers at temperatures between 50°F (10°C) and 77°F (25°C).

3.2 Surface-burning Characteristics:

ELITE 2.0 insulation, at a maximum thickness of 4 inches (102 mm) and a nominal density of 2.0 pcf (32 kg/m³), has a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 (UL 723). There are not any thickness limitations when covered by a code-prescribed thermal barrier excepted as noted in Section 4.3.2

3.3 Thermal Resistance (R-values):

ELITE 2.0 insulation has a thermal resistance, R-value, at a mean temperature of 75°F (24°C) as shown in Table 1.

3.4 Vapor Permeance:

ELITE 2.0 insulation has a vapor permeance of between 0.1 perm (5.7x10⁻¹² kg/Pa-s-m²) and 1 perm (5.7x10⁻¹¹ kg/Pa-s-m²) at a minimum thickness of 2 inches (52 mm) when tested in accordance with ASTM E96, Procedure A (Desiccant Method) and qualifies as a Class II vapor retarder under the IBC and IRC.

3.5 Air Permeability:

The insulation at a minimum thickness of 1.0 inch (25.4 mm), is considered air-impermeable insulation in accordance with 2021 and 2018 IBC Section 1202.3 (2015 IBC Section 1203.3) and IRC Section R906.5, based on testing in accordance with ASTM E283.

3.6 DC 315 Coating:

DC 315 Coating, manufactured by International Fireproof Technology, Inc. ([ESR-3702](#)), is a single-component, water-based liquid-applied intumescent coating. The coating is supplied in 5-gallon (19 L) pails and 55-gallon (206 L) drums and has a shelf life of one (1) year when stored in factory-sealed containers at temperatures between 50°F (10°C) and 80°F (27°C).

4.0 INSTALLATION

4.1 General:

ELITE 2.0 insulation must be installed in accordance with the manufacturer's published installation instructions and this report. A copy of the manufacturer's published installation must be available at all times during installation.

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Example ESR: Exterior Wall Cladding

ESR-1844 James Hardie Building Products Inc <https://icc-es.org/report-listing/esr-1844/>



ICC-ES Evaluation Report

ESR-1844

Reissued November 2023


This report also contains:

- CBC Supplement

Subject to renewal November 2025

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DIVISION: 06 00 00 — WOOD, PLASTICS AND COMPOSITES Section: 06 16 00 — Sheathing DIVISION: 07 00 00 — THERMAL AND MOISTURE PROTECTION Section: 07 46 46 — Fiber-Cement Siding	REPORT HOLDER: JAMES HARDIE BUILDING PRODUCTS, INC.	EVALUATION SUBJECT: HARDIE® PANEL (PREVAIL™, CEMPANEL®) SIDING, HARDIE® ARCHITECTURAL PANELS HARDIFLEX® SIDING AND HARDITEX BASEBOARD	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012, 2009 and 2006 [International Building Code® \(IBC\)](#)
- 2021, 2018, 2015, 2012, 2009 and 2006 [International Residential Code® \(IRC\)](#)
- 2006 *International Energy Conservation Code® (IECC)*
- 2013 *Abu Dhabi International Building Code (ADIBC)*[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Property evaluated:

- Weather protection
- Structural
- Noncombustible (Types I, II, III and IV) construction
- Fire-resistance-rated construction
- Thermal resistance

2.0 USES

The James Hardie fiber-cement panels described in this report are used as exterior wall coverings. The panels may be used in fire-resistance-rated construction as set forth in Section 4.3 and may be used on exterior walls of Types I, II, III, IV and V construction.

3.0 DESCRIPTION



3.1 General:


The panels are single-faced, cellulose fiber-reinforced cement (fiber-cement) products identified as Hardie® Panel (Prevail™, Cempanel®) panel siding, Hardie® Architectural Panels Hardiflex® panel siding and Harditex®

Example ESR: Sprinkler System

ESR 2397 Tyco Fire Products Research and Development: [https://icc-](https://icc-es.org/report-listing/esr-2397/)

[es.org/report-listing/esr-2397/](https://icc-es.org/report-listing/esr-2397/)



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ICC-ES Evaluation Report
ESR-2397

Reissued February 2022
 This report is subject to renewal February 2024.

DIVISION: 21 00 00—FIRE SUPPRESSION
Section: 21 13 13—Wet-Pipe Sprinkler Systems

REPORT HOLDER:
 TYCO FIRE PRODUCTS RESEARCH AND DEVELOPMENT

EVALUATION SUBJECT:
 MODEL WS™—5.6 K-FACTOR SPECIFIC APPLICATION WINDOW SPRINKLERS, HORIZONTAL SIDEWALL AND PENDENT VERTICAL SIDEWALL
 MODEL CWS™—5.6 K-FACTOR SPECIFIC APPLICATION WINDOW SPRINKLERS, CONCEALED PENDENT VERTICAL SIDEWALL

1.0 EVALUATION SCOPE
Compliance with the following codes:

- 2021, 2018, 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Property evaluated:
 Alternative to a fire-resistance-rated wall assembly

2.0 USES
 The automatic special-purpose sprinkler system incorporating the Model WS™ and Model CWS™ sprinkler is used in conjunction with a fixed glazed wall assembly to provide an alternative to a two-hour fire-resistance-rated nonload-bearing interior fire barrier assembly prescribed in IBC Section 707, fire partition assembly prescribed in IBC Section 708 or exterior wall assembly prescribed in IBC Section 705. The Model WS and Model CWS sprinklers are recognized as a means to achieve a fire-resistance rating on fixed glazed wall assemblies in exterior fire-resistance-rated walls when the horizontal fire separation distance is 5 feet (1525 mm) or greater.

3.0 DESCRIPTION
3.1 General:
 The Model WS and Model CWS window sprinklers are used as part of a wet-pipe fire suppression system to provide a two-hour fire-resistance rating to an interior nonload-bearing fire barrier, fire partition or exterior wall assembly consisting of fixed glazing as described in this report. When activated, the sprinklers are designed to wet the entire surface of the affected side of the fixed glazed openings in the fire barrier and exterior wall assembly in order to achieve the fire-resistance rating of the wall. For exterior glazed assemblies that are permitted to be rated only from the interior, the sprinklers must be located on the interior side of the glazing. For interior glazed assemblies, the sprinklers must be located on both sides of the assembly. The primary components of the fire-resistance-rated assembly are as described in Sections 3.2 and 3.3.

3.2 Model WS™ Window Sprinklers:
 The Model WS window sprinklers described in this report are quick-response sprinklers that are available in models that activate to release water flow when they reach an ambient temperature of either 155°F or 200°F (68°C or 93°C). The sprinklers have an orifice and thread size of 1/2 inch (12.7 mm). The sprinklers are manufactured for two orientations. The horizontal sidewall type (product number TY3388), as shown in Figure 1, is designed to face the glazing of the fire barrier assembly in a horizontal orientation. The pendent vertical sidewall type (product number TY3488), as shown in Figure 2, is designed to face the glazing of the fire barrier assembly in a vertical orientation.

3.3 Model CWS™ Window Sprinklers:
 The Model CWS window sprinklers described in this report are quick-response sprinklers that are available in models that activate by first releasing a thermo-sensitive drop-away cover plate and then activate to release water flow when they reach an ambient temperature of either 160°F or 212°F (71°C or 100°C). The sprinklers have an orifice and thread size of 1/2 inch (12.7 mm). The sprinklers are manufactured in one orientation; the pendent vertical sidewall type (product number TY3498) as shown in Figure 3, is designed to be installed within the ceiling assembly and oriented to face the glazing of the fire barrier assembly in a vertical orientation.

3.4 Glazed Fire Barrier Assembly:
 The glazing used in the fire barrier must be nominally 1/4-inch-thick (6.35 mm) heat-strengthened or tempered glass complying with ASTM C1048 or Federal Specification

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ICC-ES Listing Program

The ICC-ES Listing Program allows for manufacturers of building products covered by existing consensus standards to show their product compliance with applicable standards as referenced in the IBC and the IRC.

An ICC-ES Listing provides proof of compliance to the standards in Ch 35 of the IBC – allowing a code official to readily approve the product.



Continuous Compliance

After an ICC-ES listing has been issued, ongoing inspections at the manufacturer's site will ensure that the quality of the product that receives an ICC-ES listing remains consistent.

ICC-ES/ICC-NTA Fire Design Listings

- Together with ICC NTA, ICC-ES offers Fire Resistance and Reaction to Fire testing for various industries, including fire testing of building materials to ensure that products are safe and meet the requirements of relevant standards and codes.
- For fire assemblies, ESLs now contain ICC Design Numbers and component information on how assemblies are constructed using a pictorial representation.



Fire Design Listing Example

- <https://cdn-v2.icc-es.org/wp-content/uploads/report-directory/ESL-1290.pdf>

			
			
www.icc-es.org (800) 423-6587 (562) 699-0543		A Subsidiary of the International Code Council®	
ICC-ES Listing Report		Reissued March 2023	
ESL-1290		Revised August 2023	
		This listing is subject to renewal March 2024.	
CSE:	DIVISION 06 00 00—WOOD, PLASTICS AND COMPOSITES Section 06 16 00—Sheathing		
Product Certification System:	The ICC-ES product-certification system includes evaluating reports of tests of standard manufactured product, prepared by accredited testing laboratories and provided by the listee, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the listee's quality system.		
Product:	EXACOR®: NOMINAL 1/2-IN. (12 MM ACTUAL) AND 3/4-IN. (16 MM ACTUAL) THICK MAGNESIUM OXIDE SHEATHING PANELS		
Listee:	HUBER ENGINEERED WOODS LLC		
Evaluation:	EXACOR®: Nominal 1/2-inch (12 mm actual) and 3/4-inch (16 mm actual) thick magnesium oxide sheathing panels were evaluated based on tested load bearing wall assemblies consisting of building material components described in the Design Listings, tested in accordance with the following standards: <ul style="list-style-type: none">■ ASTM E119-18B, ASTM E119-16, ASTM E119-12a and ASTM E119-08a, Standard Test Methods for Fire Tests of Building Construction and Materials.■ UL 263-11 (with revisions through March 2018), UL 263-11 (with revisions through October 2015), UL 263-11 and UL 263-03 (with revisions through October 2007), Standard for Fire Tests of Building Construction and Materials, Underwriters Laboratories, Inc.■ NFPA 285 (-19, -12 and -06), Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior Non-load-bearing Wall Assemblies Containing Combustible Components, National Fire Protection Association.		
Findings:	Evaluation of EXACOR® nominal 1/2-inch (12 mm actual) and 3/4-inch (16 mm actual) thick magnesium oxide sheathing panels as components of the assembly is based on testing in accordance with the applicable test method as referenced in each ICC Design No., and as referenced in the applicable sections of the following code editions: <ul style="list-style-type: none">■ 2021, 2018, 2015, and 2012 International Building Code® (IBC) Applicable Section: 703.2, 2003.5.5■ 2021, 2018, 2015, and 2012 International Residential Code® (IRC) Applicable Section: R301.1.3, R302		
Identification:	1. Each panel must be identified by a stamp or label on the panel that includes the name of the report holder (Huber Engineered Woods LLC), identification of the manufacturing facility, production date or lot number, the ICC-ES evaluation report number (ESR-6035) and/or the ICC-ES listing report number (ESL-1290) and when applicable, the ICC-ES listing mark.		
<small>Listings are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the listing or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this listing, or as to any product covered by the listing.</small>			
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How to find Fire Design Listings.....

- <https://icc-es.org/building-products-listing-program/design-listing-directory/>



ICC-ES Listing Marks

- Inspectors should look for listing marks, such as ICC-ES marks, prior to approving installation where the code or other criteria requires conformity to a standard.
- The ICC-ES mark means that the product has undergone a rigorous evaluation
- ICC-ES has a new mark of conformity!



Talking Points for Code Officials

When facing a **decision to approve** a product or material on a construction site, ask for the **ICC-ES® Evaluation Report**, your **best tool for securing** that a product or material **complies with building codes** and is safe for installation.

- **Developed to ensure public safety while allowing innovation to thrive**

ICC-ES evaluation reports are developed to ensure that materials, designs and products are tested to safeguard public safety while allowing innovation to thrive. ICC-ES evaluation reports are available free of charge online at www.icc-es.org.

- **ICC-ES Evaluation Reports provide peace of mind**

When code officials are entrusted with the application and enforcement of the codes, they rely on ICC-ES to ensure that evaluated products comply with codes and standards and to help them make sound decisions when approving for installation.

- **As a subsidiary of the International Code Council®**

ICC-ES uses the most up-to-date and comprehensive information about codes and standards, is able to draw on the knowledge needed to expertly evaluate products, and has access to the leading experts in code analysis and interpretation.

- **An ICC-ES ESR saves time and resources**

As code officials continue to deal with limited resources, the ICC-ES ESR permits quick, economical access to all necessary data about a product to determine its code compliance and installation requirements.

Talking Points for Code Officials

- **An ICC-ES ESR saves time and resources**

As code officials continue to deal with limited resources, the ICC-ES ESR permits quick, economical access to all necessary data about a product to determine its code compliance and installation requirements.

- **Unique and transparent process for Acceptance Criteria for innovative materials**

When evaluating new innovative products not covered in existing codes, ICC-ES develops Acceptance Criteria that are discussed and approved during public hearings. The ICC-ES Evaluation Committee is made up entirely of code officials from jurisdictions across the U.S. to ensure all needs are addressed. This process is unique to ICC-ES and offers transparency that helps level the playing field for manufacturers, industry professionals and the public.

- **Nonprofit, third-party certification body**

ICC-ES is a nonprofit, third-party certification body that analyzes information from independent testing agencies/laboratories. Data submitted from manufacturers must come from an accredited testing agency to be considered for an evaluation. ICC-ES then conducts thorough evaluations to determine whether a product complies with safety measures. If successful, an ESR is written that lets code officials know a product meets the applicable building code and is safe for installation at a construction site.

- **Ongoing audits for evaluation report holders**

An evaluation report is only issued for products that successfully complete ICC-ES's stringent evaluation process. ICC-ES performs ongoing audits to ensure that products continue to comply with the scope of the original evaluation.



Accredited by  and truly complies with Section 1703 of IBC®.



Additional Resources: ICC Digital Codes

<https://codes.iccsafe.org/>

- ICC member organization receives one DCP License for the I-Codes



Contact:

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QUESTIONS?

Thank You!

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