ICC EVALUATION SERVICE®

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November 22, 2024

TO: **PARTIES INTERESTED IN PLASTIC SANDWICH PANELS CONSTRUCTED WITH THE POLYETHYLENE TEREPHTHALATE FOAM PLASTIC PANEL CORE AND CHOPPED STRAND MAT (CSM) FACERS**

SUBJECT: Proposed New Acceptance Criteria for Plastic Sandwich Panels Constructed with the Polyethylene Terephthalate Foam Plastic Panel Core and Chopped Strand Mat (CSM) Facers, Subject AC571-0225-R2 (PC/YM)

Hearing Information:
WebEx Event Meeting
Tuesday, February 19, 2025
8:00 am Pacific Standard Time
Click the date above to register

Dear Colleague:

You are invited to comment on the enclosed proposal for a new ICC-ES Acceptance Criteria for Plastic Sandwich Panels Constructed with the Polyethylene Terephthalate Foam Plastic Panel Core and Chopped Strand Mat (CSM) Facers (AC571).

The proposed new criteria was posted for public comments only through Alternate Criteria Process in October 2024. The proposed new criteria is applicable to the factory-assembled plastic sandwich panels that are connected to each other and to the supporting concrete foundation by using the CSM facer material and the epoxy resin. The plastic sandwich panels are used as exterior/interior loadbearing and nonloadbearing walls, floor and roof panels for installation in Type V-B construction.

Should the committee approve the proposed new criteria, ICC-ES staff will not recommend a mandatory compliance date, because ICC-ES has not issued any evaluation reports under this new criteria.

You are invited to submit written comments on this or any other agenda item, or to attend the Evaluation Committee hearing and present your views in person. If you wish to contribute to the discussion, please note the following:

1. Regarding written comments and presentations:

   a. You should submit these via e-mail to es@icc-es.org by the applicable due date.

   b. Comments are to be received by **December 18, 2024**. These written comments will be forwarded to the committee before the meeting, and will also be posted on the ICC-ES

web site shortly after the deadline for submission. Written comments that are not submitted by this deadline will not be considered at the meeting.

c. Rebuttal comments, from the proponent noted in this letter, are to be received by **January 9, 2025**. They will be forwarded to the committee before the meeting, and will also be posted on the ICC-ES web site shortly after the deadline for submission. Written rebuttal comments that are not submitted by the deadline will not be considered at the meeting.

d. If you want to make a visual presentation at the hearing, it must be received in PowerPoint format. The presentation is to be received by **January 24, 2025**. These will be forwarded to the committee before the meeting, and will also be posted on the ICC-ES web site after the deadline for submission. Presentations that are not submitted by the deadline cannot be presented at the meeting. **Note:** Videos will not be posted on the web site.

   Presentations will be retained with other records of the meeting.

e. ICC-ES will post to the web site, on **February 5, 2025**, memos by the ICC-ES staff, responding to the previously received public comments.

f. If you miss the deadlines for submission of written comments and visual presentations, your verbal comments can be presented at the meeting.

g. Proposed criteria, written public comments, visual presentations, and responses by ICC-ES staff for this agenda item are all available on our website.

2. Regarding verbal comments and presentations:

   Please plan to speak for not more than ten minutes. As noted above, visuals are to be in PowerPoint format.

3. Keep in mind that all materials submitted for committee consideration are part of the public record and will not be treated as confidential. It is the presenter's responsibility to certify to ICC-ES staff that no materials infringe copyright.

4. Please do not communicate with committee members before the meeting about any items on the agenda.

We appreciate your interest in the work of the Evaluation Committee. If you have any questions, please contact me at (800) 423-6587, extension 3535, or Yamil Moya, P.E, Senior Staff Engineer at extension3691. You may also reach us by e-mail at es@icc-es.org.

Yours very truly,

Ping Cheng, P.E.
Senior Staff Engineer

PC/ls

Encl.

cc: Evaluation Committee

ICC EVALUATION SERVICE, LLC, RULES OF PROCEDURE FOR THE EVALUATION COMMITTEE

1.0 PURPOSE

The purpose of the Evaluation Committee is to review and approve acceptance criteria on which evaluation reports may be based.

2.0 MEMBERSHIP

2.1 The Evaluation Committee has a membership of not fewer than nine, with one of the members named by the ICC-ES president each year to serve as the chairperson–moderator.

2.2 All members of the committee shall be representatives of a body enforcing regulations related to the built environment.

2.3 Persons are appointed to the committee by the ICC-ES president, from among individuals who have formally applied for membership.

2.4 The ICC-ES Board of Managers, using simple majority vote, shall ratify the nominations of the president.

2.5 Committee membership is for one year, coinciding with the calendar year. Members may be renominated and reappointed.

2.6 In the event that a member is unable to attend a committee meeting or complete a term on the committee, the ICC-ES president may appoint a replacement to fill in at the meeting or for the remainder of the member's term. Any replacement appointed for only one meeting must have prior experience as a member of the Evaluation Committee. Appointments under this section (Section 2.6) are subject to ratification as noted in Section 2.4.

3.0 MEETINGS

3.1 The Evaluation Committee shall schedule meetings that are open to the public in discharging its duties under Section 1.0, subject to Section 3.0.

3.2 All scheduled meetings shall be publicly announced. There shall be three to six meetings per year (as necessary).

3.3 More than half of the Evaluation Committee members, counting the chairperson, shall constitute a quorum. A majority vote of members present is required on any action. To avoid any tie vote, the chairperson may choose to exercise or not exercise, as necessary, their right to vote.

3.4 In the absence of the chairperson–moderator, Evaluation Committee members present shall elect an alternate chairperson from the committee for that meeting. The alternate chairperson shall be counted as a voting committee member for purposes of maintaining a committee quorum and to cast a tie-breaking vote of the committee.

3.5 Minutes shall be kept and shall be the official record of each meeting.

3.6 An electronic record of meetings may be made by ICC-ES if deemed necessary; no other audio, video, electronic recordings of the meetings will be permitted. Visual aids (including, but not limited to, charts, slides, videos, or presentation software) viewed at meetings shall be permitted only if the presenter provides ICC-ES before the presentation with a copy of the visual aid in a medium which can be retained by ICC-ES with its record of the meeting and which can also be provided to interested parties requesting a copy.

3.7 Parties interested in the deliberations of the committee should refrain from communicating, whether in writing or verbally, with committee members regarding agenda items. All written communications and submissions regarding agenda items must be delivered to ICC-ES and shall be considered nonconfidential and available for discussion in open session of an Evaluation Committee meeting. Such materials will be posted on the ICC-ES web site (www.icc-es.org) prior to the meeting. Comments and submissions not meeting the following deadlines will not be considered at the meeting:

- Initial comments on agenda items shall be submitted at least 28 days before the scheduled meeting.
- A rebuttal comment period shall follow, whereby rebuttal comments to the initial comments may be submitted by the proponent at least 21 days before the scheduled meeting.
- Those planning on giving a visual presentation at the meeting must submit their presentation, in PowerPoint format only, at least 10 days before the scheduled meeting.

The committee reserves the right to refuse recognition of communications which do not comply with the provisions of this section.

4.0 CLOSED SESSIONS

Evaluation Committee meetings shall be open except that at the discretion of the chairperson, staff counsel may be necessary. Also, matters related to clients or potential clients covered by confidentiality requirements of ICC-ES Rules of Procedure for Evaluation Reports are discussed only during closed meetings.

5.0 ACCEPTANCE CRITERIA

5.1 Acceptance criteria are established by the committee to provide a basis for issuing ICC-ES evaluation reports on products and systems under codes referenced in Section 2.0 of the Rules of Procedure for Evaluation Reports. They also clarify conditions of acceptance for products and systems specifically regulated by the codes.

Acceptance criteria may involve a product, material, or method of construction. Consideration of any acceptance criteria must be in conjunction with a current and valid application for an ICC-ES evaluation report, an existing ICC-ES evaluation report, or as otherwise determined by the ICC-ES President.

EXCEPTIONS: The following acceptance criteria are controlled by the ICC-ES executive staff and are not subject to committee approval:

- The Acceptance Criteria for Quality Documentation (AC10)
- The Acceptance Criteria for Test Reports (AC85)
- The Acceptance Criteria for Inspections and Inspection Agencies (AC304)

5.2 Procedure:

5.2.1 Proposed acceptance criteria shall be developed by the ICC-ES staff and discussed in open session with the Evaluation Committee during a scheduled meeting, except as permitted in Section 4.0 of these rules.

5.2.2 Proposed acceptance criteria shall be available to interested parties at least 30 days before discussion at the committee meeting.

5.2.3 The committee shall be informed of all pertinent written communications received by ICC-ES.

5.2.4 Attendees at Evaluation Committee meetings shall have the opportunity to speak on acceptance criteria listed on the meeting agenda, to provide information to committee members. In the interest of fairness, each speaker requesting to testify on a proposed acceptance criteria or proposed changes to an existing acceptance criteria will be given the same amount of time, as follows:

a. A 10-minute time limit applies to speakers giving their first testimony on any item, which applies to both verbal testimony and/or visual presentations.

b. A 5-minute time limit applies to speakers returning to the microphone to offer additional testimony and/or to rebut testimony given by others.

c. A 2-minute time limit applies to speakers offering testimony on the staff recommendation to criteria.

Should a company have multiple speakers, the speaker time limits above apply the company, in that multiple speakers from the same company shall share the testimony time, i.e., multiple speakers from the same company shall not each get their own testimony times. Time limits do not include time needed to answer questions from the staff and/or committee members. The chairperson–moderator shall have limited authority to modify time limitations on testimony. The chairperson–moderator shall also have the authority to adjust time limits as necessary in order to get through the hearing agenda.

An automatic timing device shall keep time for testimony and shall provide the time remaining to the speaker testifying. Interruptions during testimony will not be tolerated. It is the responsibility of the chairperson–moderator to maintain decorum and order during all testimony.

5.3 Approval of any action on an acceptance criteria shall be as specified in Section 3.3 of these rules. Possible actions made by the Evaluation Committee include: Approval; Approval with Revisions; Disapproval; or Further Study. The Evaluation Committee must give the reason(s) for any Disapproval or Further Study actions with specific recommendations.

5.4 Actions of the Evaluation Committee may be appealed in accordance with the ICC-ES Rules of Procedure for Appeal of Acceptance Criteria or the ICC-ES Rules of Procedure for Appeals of Evaluation Committee Technical Decisions.

6.0 COMMITTEE BALLOTING FOR ACCEPTANCE CRITERIA

6.1 Acceptance criteria may be revised without a public hearing following a 30-day public comment period and a majority vote for approval by the Evaluation Committee (i.e., alternative criteria development process), when at the discretion of the ICC-ES executive staff, the subject is a revision that requires formal action by the Evaluation Committee.

6.2 Negative votes must be based upon one or more of the following, for the ballots to be considered valid and require resolution:

a. *Lack of clarity*: There is insufficient explanation of the scope of the acceptance criteria or insufficient description of the intended use of the product or system; or the acceptance criteria is so unclear as to be unacceptable. (The areas where greater clarity is required must be specifically identified.)

b. *Insufficiency*: The criteria is insufficient for proper evaluation of the product or system. (The provisions of the criteria that are in question must be specifically identified.)

c. *The subject of the acceptance criteria is not within the scope of the applicable codes*: A report issued by ICC-ES is intended to provide a basis for approval under the codes. If the subject of the acceptance criteria is not regulated by the codes, there is no basis for issuing a report, or a criteria. (Specifics must be provided concerning the inapplicability of the code.)

d. *The subject of the acceptance criteria needs to be discussed in public hearings*. The committee member requests additional input from other committee members, staff or industry.

6.3 An Evaluation Committee member, in voting on an acceptance criteria, may only cast the following ballots:

- Approved
- Approved with Comments
- Negative: Do Not Proceed

7.0 COMMITTEE COMMUNICATION

Direct communication between committee members, and between committee members and an applicant or concerned party, with regard to the processing of a particular acceptance criteria or evaluation report, shall take place only in a public hearing of the Evaluation Committee. Accordingly:

7.1 Committee members receiving an electronic ballot should respond only to the sender (ICC-ES staff). Committee members who wish to discuss a particular

matter with other committee members, before reaching a decision, should ballot accordingly and bring the matter to the attention of ICC-ES staff, so the issue can be placed on the agenda of a future committee meeting.

7.2 Committee members who are contacted by an applicant or concerned party on a particular matter that will be brought to the committee will refrain from private communication and will encourage the applicant or concerned party to forward their concerns through the ICC-ES staff in writing, and/or make their concerns known by addressing the committee at a public hearing, so that their concerns can receive the attention of all committee members.■

Revised May 2024

PROPOSED ACCEPTANCE CRITERIA FOR PLASTIC SANDWICH PANELS CONSTRUCTED WITH THE POLYETHYLENE TEREPHTHALATE FOAM PLASTIC PANEL CORE AND CHOPPED STRAND MAT (CSM) FACERS

AC571

Proposed November 2024

PREFACE

Evaluation reports issued by ICC Evaluation Service, LLC (ICC-ES), are based upon performance features of the International family of codes, and may include other codes, as applicable.

For alternative materials, design and methods of construction and equipment, see Section 104.2.3 of the 2024 *International Building Code*® (IBC), Section R104.2.2 of the 2024 *International Residential Code*® (IRC), Section 104.11 of the 2021 IBC and earlier editions, and Section R104.11 of the 2021 IRC and earlier editions.

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

PROPOSED ACCEPTANCE CRITERIA FOR PLASTIC SANDWICH PANELS CONSTRUCTED WITH THE POLYETHYLENE TEREPHTHALATE FOAM PLASTIC PANEL CORE AND CHOPPED STRAND MAT (CSM) FACERS (AC571)

1.0 INTRODUCTION

1.1 Purpose: The purpose of this acceptance criteria is to establish the evaluation requirement for plastic sandwich panels in an ICC Evaluation Service, LLC, (ICC-ES) evaluation reports under the 2024, 2021 and 2018 *International Building Code*® (IBC) and the 2024, 2021 and 2018 *International Residential Code*® (IRC). Bases of the evaluation are 2024 IBC Section 104.2.3 (2021 and 2018 IBC Section 104.11) and 2024 IRC R104.2.2 (2021 and 2018 IRC Section R104.11).

1.2 Scope: This acceptance criteria is applicable to plastic sandwich panels that are factory-assembled with CSM facers bonded with epoxy resin to Polyethylene Terephthalate (PET) foam plastic panel cores. The plastic sandwich panels are connected to each other and to the supporting concrete foundation by using the CSM facer material and the epoxy resin. The plastic sandwich panels are intended for use as exterior and interior loadbearing and nonloadbearing wall panels, floor and roof panels, for installation in Type V-B construction.

1.3 Codes and Referenced Standards:

1.3.1 2024, 2021 and 2018 *International Building Code*® (IBC), International Code Council.

1.3.2 2024, 2021 and 2018 *International Residential Code*® (IRC), International Code Council.

1.3.3 ACI 355.4-19, Qualification of Post-Installed Adhesive Anchors in Concrete and Commentary, American Concrete Institute.

1.3.4 ASTM C273/273M-20, Standard Test Method for Shear Properties of Sandwich Core Materials, ASTM International.

1.3.5 ASTM C297/C297M-16(2024), Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions, ASTM International.

1.3.6 ASTM C303-21, Standard Test Method for Dimensions and Density of Preformed Block and Board-Type Thermal Insultation, ASTM International.

1.3.7 ASTM C393/C393M-20, Standard Test Method for Core Shear Properties of Sandwich Constructions by Beam Flexure, ASTM International.

1.3.8 ASTM C1289, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board, ASTM International.

1.3.9 ASTM D143-23, Standard Test Methods for Small Clear Specimens of Timber, ASTM International.

1.3.10 ASTM D638-22, Standard Test Method for Tensile Properties of Plastics, ASTM International.

1.3.11 ASTM D905-08(2021), Standard Test Method for Strength Properties of Adhesive Bonds in Shear by Compression Loading, ASTM International.

1.3.12 ASTM D1037-12(2020), Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials, ASTM International.

1.3.13 ASTM D1763-00(2021), Standard Specification for Epoxy Resins, ASTM International.

1.3.14 ASTM D3500-20, Standard Test Methods for Wood Structural Panels in Tension, ASTM International.

1.3.15 ASTM D5456, Standard Specification for Evaluation of Structural Composite Lumber Products, ASTM International.

1.3.16 ASTM D6815-22a, Standard Specification for Evaluation of Duration of Load and Creep Effects of Wood and Wood-Based Products, ASTM International.

1.3.17 ASTM D7031-11(2019), Standard Guide for Evaluating Mechanical and Physical Properties of Wood-Plastic Composite Products, ASTM International.

1.3.18 ASTM D7147, Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers, ASTM International.

1.3.19 ASTM E72-22, Method of Conducting Strength Tests of Panels for Building Construction, ASTM International.

1.3.20 ASTM E84, Test Method for Surface Burning Characteristics of Building Materials, ASTM International.

1.3.21 ASTM E661-22, Standard Test Method for Performance of Wood and Wood-Based Floor and Roof Sheathing Under Concentrated Static and Impact Loads, ASTM International.

1.3.22 ICC-ES Acceptance Criteria for Test Reports (AC85).

1.3.23 NFPA 275, Standard Method of Fire Tests for the Evaluation of Thermal Barriers, National Fire Protection Association.

1.3.24 NFPA 286, Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth, National Fire Protection Association.

1.3.25 UL723 Test for Surface Burning Characteristics of Building materials, Underwriters Laboratories LLC.

1.4 Definitions:

1.4.1 CSM: Chopped strand mat. Under this criteria, the CSM is a non-woven fiberglass mat made of long glass fiber strands laid randomly in a styrene binder that holds the glass fibers together.

1.4.2 Epoxy Resin: A type of polymer that is made from monomers that contain oxirane groups.

1.4.3 Plastic Sandwich Panel: A sandwich panel constructed with CSM facers bonded with epoxy resin to a Polyethylene Terephthalate foam plastic panel core.

1.4.4 Polyethylene Terephthalate Foam Plastic: A thermoplastic foam plastic that is made from virgin PET material, mixed virgin PET material with recycled PET bottles, or 100 percent recycled PET bottles and used as a core materials in a plastic sandwich panel under this criteria.

2.0 BASIC INFORMATION

2.1 General: The following information shall be submitted:

2.1.1 Product Description: Complete information describing the plastic sandwich panel, the Polyethylene Terephthalate (PET) foam plastic core material (3.1.1), the panel facer materials (3.1.2), and the epoxy resin (3.2). The method of connecting the panels and panels to supporting structural elements shall be described.

2.1.2 Installation Instruction: The Manufacturer's published instructions for installation (MPII) of the plastic sandwich panels shall be submitted. At minimum, the MPII shall include the following information:

- Description of how the plastic sandwich panels will be used and installed in the field, including preparation of the contact surfaces between panels and the supporting structural elements to panels.
- Quality control procedures used in field installation.
- Field cutting of openings or penetrations in the plastic sandwich panels are not allowed unless specific openings or penetrations or design parameters are specified in the ICC-ES evaluation report.
- Details for door and window openings shall be provided to clarify the manner of supporting axial, transverse and/or racking shear loads. This includes the method of resisting wind loads at the door and window jambs.
- Requirements for panel handling and storage.

2.1.3 Packaging and Identification: Product identification shall be in accordance with the product identification provisions of the ICC-ES Rules of Procedures for Evaluation Reports. A description of the method of packaging and field identification of the panels. The ICC-ES mark of conformity, electronic labeling, and/or the evaluation report number (ICC-ES ESR-XXXX) along with the name, registered trademark, or registered logo of the report holder [and/or listee] must be included in the product label.

2.2 Testing Laboratories: Testing laboratories shall comply with Section 2.0 of the ICC-ES Acceptance Criteria for Test Reports (AC85) and Section 4.2 of the ICC-ES Rules of Procedure for Evaluation Reports.

2.3 Test Reports: Test reports shall comply with AC85 and include, but not limited to, the followings:

- Identification of the version(s) of the test standard(s), relevant information concerning the test procedures, justification for any deviations from the referenced test standard(s), and any critical information relevant to the specific test(s).
- Description of the sampling method in accordance with Section 2.4 of this criteria.
- Description of test assemblies, including connections between panel-to-foundation, wall panel to wall panel and wall panel to roof/floor panel.
- Description of test setup, loading rate, method, steps and measurements.
- Deformation measurements and failure modes.

2.4 Product Sampling: Sampling of plastic sandwich panels for evaluation under this criteria shall comply with Section 3.1 of AC85.

2.5 Qualification Test Plan: A qualification test plan shall be submitted to and approved by ICC-ES staff prior to any testing being conducted.

3.0 TEST AND PERFORMANCE REQUIREMENTS

3.1 General: Materials used in the fabrication of the plastic sandwich panels shall comply with the following requirements:

3.1.1 Panel Core Material: The panel core material specifications shall include the material type, grades, density, dimensions, manufacturer and product name. The strength and stiffness values, as well as water absorption and density of the panel core shall be evaluated by testing in accordance with Section 4.1 of this criteria.

3.1.2 Panel Facer Material: The sandwich panel facers are made of two or more layers of the CSM matts. The specifications for fiberglass used in CSM matts shall include the material identification, weight per square foot, weave type and orientation, or denier. Where evaluation of axial tensile strength of sandwich panel facers is required, the axial tensile testing shall be conducted in accordance with Section 4.2 of this criteria. The allowable tensile strength of the sandwich panel facer shall be established by applying a safety factor of five to the average ultimate load.

3.2 Epoxy: The epoxy used in connections between panel-to-concrete foundation shall be one of the types, grades and classes, complying with the requirements in ASTM D1763. In addition, the epoxy shall be tested in accordance with Section 5.3 of ACI 355.4 to establish a standard baseline performance level for comparison with future production of epoxy during the required quality control audits. The mixing instruction, mixing ratio, pot life, storage information and shelf life, and package system shall be provided.

3.3 Panel Performance:

3.3.1 Durability: The environmental effects on the mechanical properties of the plastic sandwich panels shall be evaluated in accordance with the following sections:

3.3.1.1 Temperature and Moisture Effects: To evaluate the temperature effect on the flexural strength and stiffness of the plastic sandwich panels, a minimum of 10 test specimens with and 10 test specimens without panel joints shall be tested flatwise under a third-point loading in accordance with ASTM D7032 Section 4.5.1. The test specimens shall be 1.5 inches (38 mm) in thickness by inches (76 mm) in width by 24 inches (610 mm) in length and shall be conditioned in accordance with ASTM D7032 Section 4.3 prior to testing. Test specimens shall be prepared by using the same panel core and CSM facer materials. For test specimens with panel joints, the panel joints shall be located at the mid-span. The average change in flexural strength and stiffness properties shall be determined in accordance with ASTM D7032 Section 4.5.1.

To evaluate the moisture effect, a minimum of 10 test specimens with and 10 test specimens without panel edge joints shall be tested flatwise under a third-point loading in accordance with ASTM D7032 Section 4.5.2. The test specimens shall be 1.5 inches (38 mm) in thickness by inches (76 mm) in width by 24 inches (610 mm) in length and shall be conditioned in accordance with ASTM D7032 Section 4.3 prior to testing. For test specimens with panel joints, the panel joints shall be located at the mid-span. The average change in flexural strength and stiffness properties shall be determined in accordance with ASTM D7032 Section 4.5.2.

3.3.1.2 Ultraviolet (UV) Resistance: To evaluate the mechanical property degrade after UV exposure, a minimum of 5 test specimens with and 5 test specimens without panel joints shall be UV conditioned in accordance with ASTM D7032 Section 4.6 and tested flatwise under a third-point loading in accordance with ASTM D7032 Section 4.6.2. The test specimens shall be 1.5 inches (38 mm) in thickness by inches (76 mm) in width by 24 inches (610 mm) in length. Test specimens shall be prepared by using the same panel core and CSM facer materials. The average change in flexural strength and stiffness properties shall be

within 10 percent, determined in accordance with ASTM D7032 Section 4.6.3.

3.3.1.3 Freeze-Thaw Resistance: To determine the mechanical property degrade after freeze-thaw exposure, a minimum of 5 test specimens with and 5 test specimens without panel joints shall be conditioned in accordance with ASTM D7032 Section 4.7 and tested flatwise under a third-point loading in accordance with ASTM D7032 Section 4.7.1. The test specimens shall be 1.5 inches (38 mm) in thickness by 3 inches (76 mm) in width by 24 inches (610 mm) in length and prepared by using the same panel core and CSM facer materials. The average change in flexural strength and stiffness properties between exposed and unexposed test specimens shall be within 10 percent, determined in accordance with ASTM D7032 Section 4.7.2.

3.3.2 Falling Ball Impact: When tested in accordance with ASTM D1037, test specimens shall show no damage to top or bottom surface at a 12-inch (305 mm) drop. A minimum of 5 test specimens shall be obtained from the same batch of the panels for the structural load tests.

3.3.3 Panel Benchmark Flexural Strength: In addition to the panel structural load tests, the benchmark flexural capacity of panels shall be established by testing in accordance with ASTM C393. A minimum of 15 specimens of the actual thickness by 12 inches (305 mm) in width and 48 inches (1219 mm) in length shall be obtained from the same batches of the test specimens for structural load tests. The benchmark flexural strength shall be the average value determined based on the tested specimens and shall be used to establish a benchmark flexural strength value for the quality control purposes. The benchmark flexural strength value shall be adjusted by the lowest factor determined in accordance with Sections 3.3.1.1 through 3.3.1.3 of this criteria.

3.3.4 Connections: Connections between panels, and panels to the supporting structural concrete foundation shall be evaluated by testing in accordance with Section 4.4 of this criteria. Test data shall be provided addressing the connection methods.

3.3.5 Structural Performance: The structural performance of plastic sandwich panels shall be evaluated by structural load tests in accordance with Section 4.3. Evaluation shall be performed, at a minimum, on the longest and shortest design spans for the thinnest and thickest panels manufactured, for each core and facing configuration, as applicable. The minimum panel width shall be 4 feet (1219 mm). Where tests do not achieve a failure, the highest load achieved for each test will be assumed as ultimate. The effects of field installation conditions of panels shall be evaluated to determine if the panel support conditions adversely affect the performance of the panels.

3.3.5.1 Sample Size: Three tests of each type of the panel structural load tests are required with none of the single tested ultimate load varying more than 15 percent from the average of the three tested ultimate loads, unless the lowest tested ultimate load is used. The average tested ultimate loads based on a minimum of five tests may be used regardless of the variations. The tested ultimate loads from two tests may be used when the higher tested ultimate load does not exceed the lower tested ultimate load by more than 5 percent and the lower value is used.

3.3.5.2 Safety Factor: Unless otherwise specified, a minimum safety factor of three shall be applied to the ultimate load determined in accordance with Section 3.3.5.1 of this criteria (AC571), when determining allowable design loads for Allowable Stress Design.

3.3.5.3 Allowable Loads: The allowable design loads of plastic sandwich panels shall be the lower allowable load of 1): The ultimate load determined based on the number of tests described in Section 3.3.5.1 and the panel structural load testing in accordance with applicable Section 4.3, divided by the safety factor specified in Section 3.3.5.2 and 2): The load at L/240 deflection limit for supporting materials specified in IBC Table 1604.3, where L is as defined in footnote i to the IBC Table 1604.3.

The allowable loads based on the ultimate load shall be adjusted by the most restrictive reduction factor determined in accordance with Sections 3.3.1.1 and the percentage amount in the strength loss exceeding of 10 percent determined in accordance with Section 3.31.2 and Section 3.3.1.3 of this criteria.

3.4 Other Requirements:

3.4.1 Thermal Barrier: A thermal barrier complying with IBC Section 2603.4 or IRC Section R316.4 shall be provided to separate the plastic sandwich panels from interior of a building, unless an equivalent thermal barrier is qualified by testing and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test in accordance with NFPA 275 or NFPA 286 related to the actual end-use configuration with the finished assembly constructed with the maximum thickness of plastic sandwich panels. NFPA 286 tested assemblies shall include seams, joints and other typical details used in the installation of the plastic sandwich panels in the manner intended for use.

3.4.2 Ignition Barrier: An ignition barrier complying with IBC Section 2603.4.1.6 and IRC Sections R316.5.3 and R316.5.4, shall be provided where the plastic sandwich panels are used in attics and crawl spaces.

3.4.3 Decay Resistance: The resistance to fungal decay shall be determined in accordance with Section 4.8.1 of ASTM D7032 with criteria of acceptance outlined in Section 4.8.1.1 of ASTM D7032.

3.4.4 Termite Resistance: When the plastic sandwich panels installed in areas where the probability of termite infestation is very heavy in accordance with IBC Figure 2603.8 and IRC Figure R305.4 (2021 and 2018 IRC Figure R318.4), the resistance to termite attack shall be evaluated by testing in accordance with ASTM D3345 or AWPA Standard E1, with criteria of acceptance outlined in Section 4.8.2.1 of ASTM D7032.

4.0 TEST METHODS

4.1 Core Material Tests:

4.1.1 Surface Burning Characteristics: The core material of the plastic sandwich panels shall exhibit a flame-spread index of 75 or less and a smoke-developed index of 450 or less, when tested in accordance with ASTM E84 or UL723 at a maximum thickness up to 4 inches (102 mm) and maximum density intended for use. For panel core thicknesses greater than 4 inches (102 mm), NFPA 286 testing is required in accordance with Section 4.6. The core material shall be obtained from the same batch of the core material used to fabricate the test specimens for structural load tests.

4.1.2 Compressive Strength: The compressive strength shall be determined by testing in accordance with ASTM C1289 Section 11.3. A minimum of 15 specimens shall be obtained from the same batch of the core material

used to fabricate the test specimens for structural load tests. The compressive strength shall be the average value determined based on the tested specimens.

4.1.3 Flexural Strength: The flexural strength shall be determined by testing in accordance with ASTM C1289 Section 11.5. A minimum of 15 specimens shall be obtained from the same batch of the core material used to fabricate the test specimens for structural load tests. The flexural strength shall be the average value determined based on the tested specimens.

4.1.4 Shear Strength: The shear strength and modulus shall be determined by testing in accordance with ASTM C273. A minimum of 15 specimens shall be obtained from the same batch of the core material used to fabricate the test specimens for structural load tests. The shear strength shall be the average value determined based on the tested specimens.

4.1.5 Tensile Strength: The tensile strength shall be determined by testing in accordance with ASTM C297. A minimum of 15 specimens shall be obtained from the same batch of the core material used to fabricate the test specimens for structural load tests. The tensile strength shall be the average value determined based on the tested specimens.

4.1.6 Density: The density shall be determined by testing in accordance with ASTM C303. A minimum 15 specimens shall be obtained from the same batch of the core material used to fabricate the test specimens for structural load tests. The density shall be the average value determined based on the tested specimens.

4.2 Facing Axial Tensile Strength Test: Where the axial tensile strength of the plastic sandwich panel facing material is required, a minimum of 15 specimens obtained, after removing the panel core, from the same batch of the test panel specimens for structural load tests shall be tested in accordance with ASTM D3500 or ASTM D638. The allowable axial tensile strength shall be determined by dividing the average ultimate tensile load by a safety factor of 5.0.

4.3 Panel Structural Load Tests:

4.3.1 Wall Panel Transverse Load Tests:

The transverse load tests shall be conducted in accordance with general principles of ASTM E72 Section 11 or Section 12 with the load application and duration in accordance with ASTM E72 Section 4.2 and 4.3. The wall panels shall be loaded in increments to failure with deflections taken at the mid-span, within 3 inches (76 mm) of each edge and at the center of the panel width to obtain deflection and set characteristics. The test panels shall be supported in a manner representing the standard field installation. Asymmetric wall panels or wall panels with different facing materials on opposite faces shall be tested for loads acting both inwardly and outwardly where there is a question of the most critical direction. Unless panels are tested in both positive and negative directions, panels will be limited to use in the direction tested. The “quarter-point” loading, “bad” method of loading, vacuum chamber of loading, or uniform loading of known unit weighs shall be used. Where preloading is applied, the loading, deflection and recovery shall be noted. The amount of preloading shall not exceed 10 percent of the final allowable load unless permitted by the ICC-ES.

In addition to the allowable design load determined in accordance with Section 3.3.5.3 of this criteria (AC571), for exterior wall panels with the design load imposed, exterior wall panel deflections shall not exceed the deflection limits of IBC Table 1604.3.

For interior walls and partitions, with a minimum 5-pound-per-square-foot (239 Pa) horizontal load imposed, the interior wall panel and partition deflections shall not exceed the deflection limits of IBC Table 1604.3.

4.3.2 Wall Panel Axial Compressive Load Tests:

The axial load tests shall be conducted in accordance with the general principles of ASTM E72 Section 9 with the application and duration of loads in accordance with ASTM E72 Sections 4.2 and 4.3. The wall panels shall be loaded in increments to failure with deflections taken to obtain deflection and set characteristics. Where preloading is applied, the loading deflection and recovery shall be noted. The amount of preloading shall not exceed 10 percent of the final allowable load unless permitted by the ICC-ES.

Load shall be applied with an eccentricity of one-sixth the panel thickness to the interior or towards the weaker facing material of an interior panel. The test setup shall be capable of accommodating rotation of the test specimen at the top of the wall due to out-of-plane deflection with the load applied throughout the duration of the test with the required eccentricity. Axial loads shall be applied uniformly. The test panels shall be supported in a manner representing the proposed field installation.

Allowable axial load is determined from the axial load at a net axial deformation of 0.125 inch (3.18 mm) measured between the deflection gages mounted near the top of the panels and the testing apparatus, or the allowable design load determined in accordance with Section 3.3.4.3 of this criteria (AC571), whichever is lower.

4.3.3 Wall Panel Racking Shear Tests (Optional):

Racking shear tests, amended by this criteria (AC571), shall be performed in accordance with ASTM E72 for plastic sandwich panels used as shear walls to resist wind and seismic loads. Under this criteria the shear walls are limited to Seismic Design Categories A, B, and C.

The test panel shall be constructed and installed as intended in the field, including panel joint connections.

The “stop” detailed in Figure 7 of ASTM E72 for installation against the toe of the test panel shall be located in such a manner that reactive forces are imposed against the end of panel.

The panel top horizontal timber suggested for the test panel in Figure 7 of ASTM E72 shall not be used. The racking shear load should be applied directly against the typical wall panel duplicate actual field construction unless otherwise permitted.

All wall panels shall be loaded in increments to failure with deflections taken to obtain deflection and set characteristics. Where preloading is applied, the loading, deflection and recovery shall be noted. The amount of preloading shall not exceed 10 percent of the final allowable load unless permitted by the ICC-ES.

The allowable racking shear load is determined from the racking load at which a net horizontal deflection of $^1/_2$ inch (12.7 mm), the allowable design load determined in accordance with Section 3.3.4.3 of this criteria (AC571), or the allowable panel joint connection loads determined in accordance with Section 4.5.1 of this criteria, whichever is the lowest.

4.3.4 Roof and Floor Panels:

4.3.4.1 Uniform Loads: The transverse uniform load tests shall be conducted in accordance with the general principles of ASTM E72 Section 11 with the application and duration of loads in accordance with ASTM E72 Sections 4.2 and 4.3. The panels shall be loaded in increments to failure with deflections taken at the mid-span, within 3 inches (76 mm) of each edge and at the center of the panel width to obtain deflection and set characteristics. Where preloading is applied, the loading deflection and recovery shall be noted. The amount of preloading shall not exceed 10 percent of the final allowable load unless permitted by the ICC-ES.

Roof panels having different facing materials on the same panel are to be tested so each facing material will be in compression and tension. Floor panels or panels tested on a two-span condition need not be tested in both directions.

Panels tested over a double span are to have the same three deflection readings taken at the expected maximum deflection point based on analysis. Panels shall comply with the deflection requirements in IBC Table 1604.3.

The “bag method,” vacuum chamber or a uniform loading of known unit weights shall be used for transverse tests.

For roof panels, water accumulation or water ponding shall be addressed in accordance with IBC Section 1611.2 under the IBC and IRC.

The allowable design loads shall be determined in accordance with Section 3.3.5.3 of this criteria (AC571), the loads at a specified deflection limit, and the panel joint connection capacity, whichever is lowest.

4.3.4.2 Concentrated Load Tests:

4.3.4.2.1 Punching Shear Resistance of Facings of Roof and Floor Panels: Facings of roof and floor panels shall be capable of supporting, without failure, a 300-pound (1334 N) concentrated load applied to a 3-inch-diameter (76 mm) disc. A minimum of three tests shall be conducted for each facing and core combination. Tests shall be conducted in accordance with ASTM E661.

4.3.4.2.2 Concentrated Live Loads:

4.3.4.2.2.1 Floor Panels: Concentrated load tests for floor panels are necessary for loads specified in IBC Section 1607.4 for use under the IBC or IRC. Allowable loads for floor panels are determined in accordance with Section 3.3.5.3 of this criteria (AC571). Panels shall comply with the deflection requirements in IBC Table 1604.3 for use under the IBC or IRC. Deflection readings are taken at mid-span at each edge and the panel center. Panels tested over a double span shall have the same three deflection readings taken at the expected maximum deflection point based on analysis.

4.3.4.2.2.2 Roof Panels: For roof panels evaluated under the IBC, roof panel spans must be evaluated for uniform dead load combined with the 300-pound (1334 N) concentrated design live load required by IBC Section 1607.4 and Table 1607.1. When compliance is demonstrated by load testing, the allowable concentrated load determined in accordance with Section 3.3.5.3 of this criteria (AC571) shall exceed the required 300-pound concentrated design live load, with the required safety factor also applied to the uniform dead load. At the design concentrated live load and uniform dead load, the tested panels shall comply with the deflection limitations noted in IBC Table 1604.3.

4.3.5 Creep Rupture: The creep-rupture performance of the plastic sandwich panels shall be evaluated by testing in accordance with ASTM D7031 Section 5.10, as amended by this criteria (AC571) as noted in the following sections. At the end of 90-day loading period, the results should show adequate strength, decreasing creep rate and a limited fraction deflection, determined in accordance with ASTM D6815.

4.3.5.1 Sample Size: A minimum of 15 specimens of actual thickness by 12 inch (305 mm) in width by 48 inches (1219 mm) plus 6 inches (152 mm) in length and shall be obtained from the same batches of the test specimens for axial, transverse and racking shear load tests.

4.3.5.2 Load and Loading Procedures: The applied load shall be determined by applying a factor of safety of 3.0 followed by a permanent load reduction factor of 0.5 to the flexural capacity determined in Section 3.3.1 of this criteria (AC571). The load shall be applied as two equal loads in a third-point-load test setup on specimens as a simple beam spanned approximately 6 inches (152 mm) less than the specimen length.

4.4 Connection Strength Tests:

Connection strengths shall be determined by testing in accordance with the following Sections 4.4.1 and 4.4.2.

4.4.1 Panel to Panel Joint: The panel to panel joint connection is formed by edge-gluing two panels using CSM facer materials. The joint connection strength shall be determined in accordance with test procedures for short-span edgewise bending outlined in Annex A3 of ASTM D5456 with the use of the setup shown in Figure A3.1 of ASTM D5456. A minimum of six assembled test specimens shall be tested. Each of the two pieces of the assembled test specimens shall be obtained from the same batches of test panels for structural load tests. The assembled test specimens, having a rectangular cross-section, shall be prepared by edge-gluing two pieces of 6-inch-thick by 8-inch-deep by 88-inch-long (152 mm by 203 mm by 2235 mm) together, using the representative materials to form the panel joints. The glueline shall be at the mid-depth of the assembled test specimens. The shear strength for each test specimen shall be calculated using Eq. A3.1 of ASTM D5456.

The allowable shear strength shall be determined by dividing the average of the measured shear strength by 3.0 or the measured shear strength at the $^1/_8$ inches (3.18 mm) deflection, whichever is lower. The allowable load, based on the measure shear strength, shall be adjusted by the most restrictive reduction factor determined in accordance with Sections 3.3.1.1, the percentage amount in the strength loss exceeding of 10 percent determined in accordance with Section 3.31.2 and Section 3.3.1.3 of this criteria.

4.4.2 Wall Panel to Floor/Roof Panel Connection:

4.4.2.1 Shear Strength: The connection between wall panel and floor/roof panel is formed by gluing wall panel ends to the face of the floor/roof panel. The connection strength resisting shear force shall be determined by testing in accordance with the principles of the test method for the vertical direct load testing, outlined in ASTM D7147 Section 5 with the use of the test setup shown in Figure 1 and Figure 3 of ASTM D7147, as amended by this criteria (AC571) as the followings:

- "Joist" shall be a single piece of 6-inch-thick by 8-inch-deep by 18-inch-long (152 mm by 203 mm by 457 mm) plastic sandwich panel.
- "Header" shall be the plastic sandwich panels having the same dimensions as those for the "Joist".
- "Joist Hanger" shall be replaced with the connection formed with representative materials used to form the connections.
- There is no gap between the "Joist" and "Header", as the "Joist" will be glued directly to the "Header".

A minimum six assemblies shall be prepared using the representative materials to form the connections. The plastic panels shall be obtained from the same batches of test panels for structural load tests.

The allowable shear strength shall be the average ultimate load per connection divided by 3.0 or the measure ultimate load at the 0.125 inches (3.18 mm) deflection, whichever is lower. The allowable load, based on the measured ultimate load, shall be adjusted by the most restrictive reduction factor determined in accordance with Sections 3.3.1.1, the percentage amount in the strength loss exceeding of 10 percent determined in accordance with Section 3.3.1.2 and Section 3.3.1.3 of this criteria.

4.4.2.2 Wind Uplift Resistance: The wind uplift resistance of connections shall be determined by testing under a tensile load applied through the flange of an "I-shaped" test assemblies. Any standard test method containing provisions for tensile load tests, with proper modifications to accommodate the test assembly, shall be permitted to use to conduct the tests. The conditioning of test specimens and test condition shall be in compliance with those conditions within the test standard used.

A minimum six test assemblies shall be prepared. The "web" shall be a single piece of plastic sandwich panel of 6-inch-thick by 12-inch-deep by 6-inch-wide (152 mm by 305 mm by 152 mm). The two "flanges" shall be the same dimensions as those for the "web". The test assemblies shall be fabricated by gluing the "web" ends to the surface of the "flanges" with the representative materials used to form the connections. The plastic sandwich panels shall be obtained from the same batches of test panels for the structural load tests.

The allowable wind uplift resistance shall be the average of measured uplift resistance per connection divided by 3.0 or the measured uplift resistance load at the 0.125 inches (3.18 mm) deflection, whichever is lower. The allowable load, based on the measured uplift resistance, shall be adjusted by the most restrictive reduction factor determined in accordance with Sections 3.3.1.1, the percentage amount in the strength loss exceeding of 10 percent determined in accordance with Section 3.3.1.2 and Section 3.3.1.3 of this criteria.

4.4.3 Wall Panel to Concrete Foundation:

4.4.3.1 Shear Strength: The connection between wall panel and concrete foundation is formed by gluing wall panel ends to the face of the concrete foundation. The test specimens shall be assembled by end-gluing a 6-inch cubic (152 mm by 152 mm by 152 mm) plastic sandwich panel element to a piece of 6-inch cubic (152 mm by 152 mm by 152 mm) concrete element, using the representative materials that are used to form the panel to concrete connection. The plastic sandwich panel elements shall be obtained from the same batches of test panels for structural load tests. The concrete elements used in test assemblies shall have structural property that meets or exceeds a minimum specified compression strength and shall be representative for the field installation. The concrete elements shall be prepared in accordance with Section 7.2.1 of ASTM D7147.

A minimum 6 assemblies shall be prepared and tested in accordance with block shear test procedure in ASTM D143 or ASTM D905.

To determine the degrade in the connection strength after freeze-thaw exposure, a minimum of 6 test assemblies shall be subjected to the freeze-thaw cycle in accordance with ASTM D7032 Section 4.7 and tested in accordance with ASTM D143 or ASTM D905. The average shear strength of the exposed test assemblies and shall be within 10% of the average shear strength of the unexposed test assemblies. Or the allowable shear strength shall be adjusted by the percentage amount in the strength loss exceeding of 10 percent.

The allowable shear strength shall be the average of measured shear strength divided by 3.0 or the measured shear strength at the 0.125 inches (3.18 mm) deflection, whichever is lower. The allowable shear strength, based on the measured shear strength, shall be adjusted by the lower of the reduction factor determined in accordance with Eq. 9 in Section 13.5.9 of ASTM D7147 or the percentage amount in the strength loss exceeding of 10 percent.

4.4.3.2 Wind Uplift Resistance: The wind uplift resistance of connections shall be determined by testing under a tensile load applied through either plastic sandwich panel element or concrete element of the test assemblies. Any standard test method containing provisions for tensile load tests, with proper modifications to accommodate the test assembly, shall be permitted to use to conduct the tests. The conditioning of test specimens and test condition shall be in compliance with those conditions within the test standard used.

A minimum of 6 test assemblies, same as the test assemblies in Section 4.4.3.1 shall be prepared and tested. The plastic sandwich panels shall be obtained from the same batches of test panels for the structural load tests. The concrete elements used in test assemblies shall have structural property that meets or exceeds a minimum specified compression strength and shall be representative for the field installation. The concrete elements shall be prepared in accordance with Section 7.2.1 of ASTM D7147.

To determine the degrade in wind uplift resistant after freeze-thaw exposure, a minimum of 6 test assemblies shall be subjected to the freeze-thaw cycle in accordance with ASTM D7032 Section 4.7 and tested in accordance with the same standard test method. The average wind uplift resistant of the exposed test assemblies and shall be within 10% of the average wind uplift resistant of the unexposed specimens. Or the allowable wind uplift resistance shall be adjusted by the percentage amount in the strength loss exceeding of 10 percent.

The allowable wind uplift resistance shall be the average of the measured uplift resistance divided by 3.0, or the measured uplift resistance at the 0.125 inches (3.18 mm) deflection, whichever is lower. The allowable uplift resistance, based on the measured uplift strength, shall be adjusted by the lower of the reduction factor determined in accordance with Eq. 9 in Section 13.5.9 of ASTM D7147, or the percentage amount in the strength loss exceeding of 10 percent.

5.0 QUALITY CONTROL

5.1 The plastic sandwich panels shall be manufactured under an approved quality control program with inspections by ICC-ES.

5.2 Quality documentation complying with the ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted for each facility manufacturing or labeling the plastic sandwich panels that are evaluated in the ICC-ES evaluation report.

5.3 A qualifying inspection shall be conducted at each facility manufacturing or labeling the plastic sandwich panels when required by the ICC-ES Acceptance Criteria for Inspections and Inspection Agencies (AC304).

6.0 EVALUATION REPORT REQUIREMENTS

6.1 Basic information required in Section 2.1 of this criteria, including component description, installation procedures, and package and identification information.

6.2 The evaluation report shall include Table(s), providing allowable design capacities for panels and connections.

6.3 The evaluation report is to include a statement that the use of plastic sandwich panels as shear walls in the evaluation report, a statement shall be included that the plastic sandwich panels are evaluated for use as shear walls in Seismic Design Categories A, B and C.

6.4 The evaluation report is to include a statement that a thermal barrier complying with IBC Section 2603.4 or 2024 IRC Section R303.4 (2021 and 2018 IRC Section R316.4) shall be provided to separate the plastic sandwich panels from interior of a building, unless an equivalent thermal barrier is qualified by testing and meets the acceptance criteria in accordance with NFPA 275 or NFPA 286.

6.5 The evaluation report is to include a statement that an ignition barrier complying with IBC Section 2603.4.1.6 shall be provided where the plastic sandwich panels are used in attics and crawl spaces.

6.6 The evaluation report is to include a statement that the exterior surface of the roofs shall be covered by a code-approved roof covering.

6.7 The evaluation report is to include a statement that the exterior surface of the exterior walls shall be covered by a code-approved wall covering.

6.8 The evaluation report is to include a statement that the connections between wall panels and roof/floor panels, and other support members shall be accompanied by complete detailing and design that are satisfactory to the code official.

6.9 The evaluation report is to include a statement that periodic special inspection on connections shall be conducted in accordance with the applicable requirements of IBC Sections 1704 and 1705.

6.10 The evaluation report is to include a statement that the fire-resistance ratings for wall and floor/roof assemblies consisting of plastic sandwich panels as components have not been established and are outside the scope of the evaluation report.

6.11 The evaluation report is to include a statement that the plastic sandwich panels are permitted to be used as components in walls, floors, and roofs under the IRC when engineered design is submitted in accordance with IRC Section R301.1.3.

7.0 ENVIRONMENTAL PRODUCT DECLARATION (Optional):

Environmental impacts shall be assessed via an Environmental Product Declaration (EPD) based on a Life Cycle Assessment (LCA). The EPD and LCA shall be conducted in accordance with ISO 21930 and the appropriate Product Category Rule(s) for the product type.■

TABLE 1—CROSS REFERENCE OF STANDARDS EDITIONS (IBC and IRC)

STANDARD	2024 IBC/IRC	2021 IBC/IRC	2018 IBC/IRC
ASTM C1289	-18	-18	-15
ASTM D5456	-21e1	-18	-14b
ASTM D7147	-21	-2011(2018)	-
ASTM E84	-21a	-2018b	-16
NFPA 275	-22	-17	-17
NFPA 286	-23	-15	-15
UL723	-18	-18	-08 with Revisions through August 2013